Proceedings of the 6th World Halal Summit Scientific Conference (WHS 2020)

Halal for All:
“Halal in All Aspects, from Production to Consumption”

21 - 23 December 2020
Pullman Convention Center, Istanbul / TURKEY
Mohammed Ali AlSheikh Wace
Dilek Sülün
Editors

Preface

The World Halal Summit as the largest halal event providing an outstanding setting for discussing recent developments in a wide variety of topics in halal sector by bringing together eminent experts from all around the globe, was held on 21-23 December 2020 in Istanbul, TURKEY.

The Summit with its theme “Halal for All: Halal in All Aspects, From Production to Consumption” was jointly organized by Standards and Metrology Institute for Islamic Countries (SMIIC) and Discover Events and as one of the organizers, we are honoured to be a partner of this exclusive event.

The World Halal Summit being the first summit conducting a professional process in collecting and reviewing the articles before the conference, was designed to bring experienced scientists together with newcomers to the field, both from industry and academia, to discuss halal issues and to share their research results in both online and offline platforms by the attendance of high-profile speakers in the halal field.

In this rich program, experiences, ideas and information are openly shared, learning and collaborations are fostered with active participation by all attendees throughout its sessions covering all halal-related topics in standardization, halal infrastructure, food, cosmetics, finance, tourism, pharmaceuticals, textile, modest fashion and other sectors. Presented papers maintained the high promise suggested by the written abstracts; and the programme was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. This book with its well-qualified papers provides the permanent record of what was presented during the Summit and will be an invaluable source to all Muslims.

As SMIIC, we are committed to addressing the needs and resolving the issues within our responsibility and capacity as well as grateful to be able benefit from these scientific works that can be used in our technical work carried out in SMIIC Technical Committees for standards projects including animal feed for halal animal, halal laboratories and halal food additives etc.

Allow me to reiterate the ultimate aim of this Summit which is to raise awareness on halal, to present scientific data for the industry and to meet the expectations raised by the actors of the halal market whilst learning the importance of standardization and the role of all relevant actors in halal from all aspects.

The success of the Summit was due to the collective efforts so, we would like to express our sincere gratitude to the keynote and invited speakers whose presence and contribution was stimulating and informative for all Muslims.

We believe that with our partners, we will keep the same spirit in organizing the Summit and be more professional and successful in future events. May Allah help and guide us all in fulfilling our tasks.

İhsan ÖVÜT
Secretary General of SMIIC

Mr. İhsan ÖVÜT is the Secretary General of the Standards and Metrology Institute for Islamic Countries (SMIIC) as of 15 December 2014.

He had a wide experience at international relations and carried almost all activities in terms of international relations during his term of office in TSE. He organized many regional/international meetings, drafted cooperation agreements, accompanied overseas official visits, made presentations, and participated as expert in the committees of International Organization for Standardization (ISO). Most specifically, he leaded in the preparation process of the SMIIC Statute under the Organization of Islamic Countries (OIC) as well as the development of OIC/SMIIC Standards and also leaded several projects in ECO Region and in Euro-Asia Region.

He is the head of the Scientific and Organizing Committee of the World Halal Summit and a keynote speaker in all summit editions.
Foreword

On behalf of the World Halal Summit Council, we are proud and honoured to be part of the largest Halal event around the globe, the World Halal Summit, which has been organized under the auspices of the Presidency of the Republic of Turkey in association with the Islamic Centre for Development of Trade (ICDT) and the Standards and Metrology Institute for Islamic Countries (SMIIC).

The World Halal Summit has become a globally recognized trademark, providing a distinctive platform for the exchange of experience between the participants and experts in all areas related to Halal. The world is getting faster and more complex, and it is high time to look at the Halal market from the global perspective. Better synergy and strategic partnerships at both national and international levels are critical to coordinate the required resources and make a significant change.

The Organization of Islamic Cooperation (OIC) Halal Expo is the largest Halal exhibition organized simultaneously with the World Halal Summit for several subsequent editions, which brings together major Halal industry players and investors allowing them to expand their dealership network, find new products and increase portfolio.

Despite the global Covid-19 crisis that struck the world to its core and created numerous challenges for all countries, we managed to stay united in the organization of the 6th World Halal Summit in 2020. Considering the conditions more globally, our distinguished speakers and experts who joined the event both offline and online proved that the Halal industry is becoming even more outstanding.

With a range of sessions covering crucial Halal topics such as standardization, certification, finance, tourism, pharmaceutics, food, and lifestyle, the Summit encouraged its participants to generate new ideas and developments in the sector. As the event aims at raising Halal awareness and contributing to the unification of Halal standards, we sincerely believe that next editions of the World Halal Summit will take us one step closer to the achievement of our target by bringing together even more well-known Muslim figures, governmental officials, high-level decision-makers, qualified experts, and professional delegates. Thus, we are honoured to confidently step on the path leading to successful accomplishment of the shared objective.

We want to express our sincere appreciation to all our partners, supporters, speakers and everyone who made even the slightest contribution to the World Halal Summit development as a brand.

May Allah give us the blessing to return to the path of health, peace and harmony!

Yunus ETE  
World Halal Summit Council President

Mr. Yunus Ete was born in Van in 1980. He graduated from Kocaeli University Industrial Engineering Department in 2003. In 2005, he completed the Mini MBA program at Loyala University. He has been the Chairman of the Board of Directors of ASEL Expo since 2006 that was the predecessor of ASEL GROUP companies Asel group which includes many sectors within its body established further. He has been working as the Chairman of the Board position in Discover Events since 2012, Expo Travel since 2015 and Aseltech-Poken Turkey since 2016. In 2016, He was appointed as the Istanbul Honorary Consulate of the Kingdom of Lesotho. He also serves as the General Secretary of the World Honorary Consuls Association. He is the member of the board of directors of IFES (International Federation of Exhibition Event Services) and UFYD (International Fair Organizers Association) as well as the member of the Turkey-Africa Businessmen Board of Directors and the Vice President of DEIK South Africa Business Council. Besides all, He is the member of the Board of Directors of the International Halal Tourism Association. Besides, he is the member of the Board of Directors of the International Halal Tourism Association and the Istanbul Cultural Ambassadors Association. He is also a member of other NGOs such as MUSIAD and TUMSIAD. Mr. Ete is also the foreign relations board responsible of MUSIAD.

Mr. Yunus Ete is the President of the World Halal Summit Council at Discover events. The Summit has been organized by Discover Events in cooperation with the Organization of Islamic Cooperation (OIC) and the Standards and Metrology Institute for Islamic Countries (SMIIC).
Letter from the editors

The World Halal Summit in its 6th edition is currently the oldest ongoing conference in the halal field. The World Halal Summit brings together leading researchers and manufacturers, experts, academic scientists and halal international regulators, to network, to share insights and to provide an outlook on the evolving landscape and future of halal products and services.

The World Halal Summit provides a leading interdisciplinary platform for all stakeholders of the halal standards, science and industry to present recent innovations and trends, and to openly discuss practical challenges and solutions, from a technical, theological and regulatory perspective. The World Halal Summit discusses all halal-related topics including food, cosmetics, finance, tourism, pharmaceuticals, textile, modest fashion, halal infrastructure and so on.

Since The World Halal Summit 2018, the door is open to all scientists and experts to send their articles and presentations for evaluation and review before the conference date. The conference proceedings book aims to document all scientific articles and experts’ presentations for the use of all actors in different halal sectors and even for all Muslims to get benefits from the valuable information inside it. The Scientific and Organizing Committee of the World Halal Summit makes every effort to evaluate the abstracts and researches submitted in order to select the best topics and also invites eminent experts and keynote speakers to participate in the summit.

SMIIC and its partners will work hard to improve the World Halal Summit to be more professional, scientific and informative for people working in the halal industry and also for all Muslim consumers.

Dr Mohammed Ali is an associate professor of Clinical Pharmacy – Drug Information from Universiti Sains Malaysia (USM) his thesis is the first around the world about Halal pharmaceuticals.

He is an academic, researcher, Halal auditor, trainer and consultant. His work and research focus on formulation adjustment – halal alternatives for mashbooh ingredients - halal critical chemicals analysis – halal enzymes and culture media solutions and halal drug information.

Dr Mohammed Ali joined SMIIC in 2018 and he is the convener of the Porcine detection experts working group, beside his work as the technical assistance for the TC1(Halal food issues), TC2 (Halal cosmetics issues), TC15(Terminology) and TC16 (Halal pharmaceuticals issues).

He is a member of the Scientific and Organizing Committee of the World Halal Summit and a frequent speaker in all summit editions.

Dilek Sülün was born in 1994 in Istanbul. She received her bachelor’s degree in Political Science and Public Administration at Kadir Has University in 2017. She worked as a teacher for two years and obtained pedagogical formation education from Istanbul University in 2018.

She is a master candidate in Public Policy in Marmara University. She focused on the climate change policies of Turkey from the Europeanization perspective by tackling the Zero-Waste Project. She is interested in politics, diplomacy, Islamic finance, sustainable development, climate change and environmental policies of OIC and non-OIC countries.

She has been working as a project coordinator of the World Halal Summit since 2019 at Discover Events company. She is a member of the Scientific and Organizing Committee of the World Halal Summit. She designs and creates contents on the ‘’Key Facts on Halal’’ on social media post series also.
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WORLD HALAL SUMMIT 2020 ISTANBUL DECLARATION…………………………… 301
Under the auspices of the
PRESIDENCY OF THE REPUBLIC OF TURKEY

It has become essential for us to meet the needs of all Muslims for Halal products and services, create reliable platforms in this domain and ensure establishment of the Halal certification standards by a single institution.

I believe that the event that you have organized in order to facilitate Halal trade, introduce innovative technologies and make new markets accessible will bring all stakeholders together thereby leading to significant developments in the sector.

The organization of World Halal Summit, which is held in Istanbul, the commercial and financial center of our country, is of great importance, as this event has brought a new vision to the global Halal market.

I warmly greet all participants and congratulate those who have contributed to the organization of World Halal Summit and the Organization of Islamic Cooperation Halal Expo.

H.E. MR. RECEP TAYYIP ERDOGAN
THE PRESIDENT OF TURKEY
The 6th edition of World Halal Summit was organized in association with SMIIC (The Standards and Metrology Institute for Islamic Countries) under the theme of “Halal for All: Halal in All Aspects, from Production to Consumption on 21-23 December, 2020, in Pullman Convention Center, Istanbul/Turkey in a hybrid format. Summit which was held in a hybrid format due to the COVID-19 pandemic attracted great interest from all over the world. The program has been started with welcome remarks by Mr. Emre ETE on behalf of the World Halal Summit Council. Afterwards, Mayor of Bursa Municipality, Mr. Alinur Aktaş, Chairman of Turkish Exporters Assembly, Mr. Ismail GÜLLE, Head of Board of Directors of the Turkish Halal Accreditation Agency (HAK), Mr. Zafer SOYLU, Minister of Industry and Commerce, H.E. Nisar Ahmad Faizi GHORYANI and SMIIC Secretary General, H.E. İhsan ÖVÜT have made their speeches in the inauguration ceremony respectively. World Halal Summit 2020 hosted 61 speakers from 15 different countries and the 11 different sessions were followed by 9217 people from 55 different countries both physically and virtually via social media accounts. The speakers have presented their original and authentic researches during the program.
KEYNOTE SPEAKERS

H.E. İhsan ÖVÜT
Secretary General of the Standards and Metrology Institute for Islamic Countries (SMIIC)

H.E. Nisar Ahmad Faizi GHORVANI
Minister of Industry and Commerce of Islamic Republic of Afghanistan

Mr. Zafer SOYLU
Head of Board of Directors of the Turkish Halal Accreditation Agency (HAK)

Mr. İsmail GÜLLE
Chairman of Turkish Exporters Assembly

Mr. Alinur AKTAS
Mayor of Bursa Metropolitan Municipality

Mr. Emre ETE
Vice-President of World Halal Summit Council
SESSION 1: HALAL MARKET AND HALAL QUALITY INFRASTRUCTURE

H.E. İhsan Övün
Secretary General of SMIIIC

Ilhami Aktürk
Deputy Secretary General of Turkish Standards Institution (TSE)

Zafer Soylu
Turkish Head of Board of Directors of the Halal Accreditation Agency (HAK)

Prof. Dr. Faridah Hj. Hassan
INQKA University Technology MARA

Tuğba Daysalğolu
Secretary of SMIIIC/TCI

Organized by: DISCOVER EVENTS
SESSION 2: HALAL STANDARDIZATION: NEW CHALLENGES AND OPPORTUNITIES

Dr. Mufti Arif Ali Shah Alhusaini
Pakistan Standard and Quality Control Authority (PSQCA)

Yousuf A.R. Khan
SANHA Halal Associates
Pakistan

Dr. Emi Normalina Omar
University Technology MARA

Assoc. Prof. Dr. Harlina Suzana Jaafar
University Technology MARA

Irshad A. Cader
Gibothink Consultants
Australasia & Middle-East
SESSION 3: OIC/SMIIC STANDARDS ON CONFORMANCE ASSESSMENT

Erdem Başdemirci
Turkish Halal Accreditation Agency (HAK)

Dr. Mete Çevik
Turkish Halal Accreditation Agency (HAK)

 Çağrı Cankurtaran
SMIIC

Dr. Mohammed Ali Alsheikh Wace
SMIIC
SESSION 4 : THE ROLE OF ISLAMIC FINANCE IN PRODUCTION TO CONSUMPTION

Assoc. Prof. Dr. Yusuf Dinç
Istanbul Sabahattin Zaim University

Dr. Tawfiq Azrak
Social Sciences University of Ankara

Muhammad Zubair Mughal
AlHuda Centre of Islamic Banking and Economics

Assoc. Prof. Dr. Mohamed Eskandar
Shah Mohd Rasid
INCEIF

Dr. M. Kabir Hassan
(Ph.D.)
University of New Orleans

Organized by:
SESSION 5: HALAL LIFESTYLE

Dr. Barbara Ruiz-Bejarano
Halal Institute of Spain
Instituto Halal

Dr. Emine Akin
Alkali Life Center

Prof. Dr. Saffet Köse
Izmir Katip Çelebi University

Yvonne Maffei
My Halal Kitchen

Datuk Seri Mohd Rizal
Euro Jasmine Holding
SESSION 6: HALAL TOURISM

Elif Balcı Fisunoğlu
Turkey Tourism Promotion and Development Agency (TGA)

Yasin Zülfikaroğlu
SMIIC

Hacer Sucuoğlu Adıgüzel
Tesetturyakasi.net

Soumaya T. Hamdi
Halal Travel Guide

Suleiman Bulbulia
Barbados Halal Experience (BHE)
SESSION 7: RECENT DEVELOPMENTS IN HALAL TECHNOLOGY

Prof. Dr. Hasan Yetim
Istanbul Sabahattin Zaim University

Kemal Payza
INSHA

Naeem Shahid
Jamia-tur-Rasheed

Tayeb Habib
EU Halal- Portugal

Diana Sabrain
OneAgrix
SESSION 8: HALAL PRODUCTS IN DAILY LIFE

Prof. Dr. Hasan Yetim
Istanbul Sabahattin Zaim University

Assoc. Prof. Dr. Aydoğan Soygüden
Erciyes University

Assoc. Prof. Dr. Serap Kılıç Altun
Harran University

Yasemin Şeli İ. Küçükata
Istanbul Sabahattin Zaim University

Dr. Mian N. Riaz
Texas A&M University
SESSION 9: HALAL PHARMACEUTICALS

Dr. Mohammed Ali Alsheikh Wace  
SMIIC

Fazal Ur Raheem  
SANHA Halal Associates  
Pakistan

Asst. Prof. Dr. Aldin Dugonjić  
Center for Halal Quality Certification

Roziatul Akmal Osman  
CPA(M)  
Halal Subject Matter Expert

Prof. Dr. Zhari Ismail  
University Sains Malaysia
SESSION 10: HALAL TESTING

Dr. M. H. Shojaee
Aliabadi
Faroogh Life Sciences Research Laboratory

Salih Şengezer
Presidency of the Republic of Turkey
Presidency of Religious Affairs

Prof. Dr. Abdullah Öksüz
Necmettin Erbakan University

Prof. Dr. Murat Şimşek
Karabük University

Dr. Muhamad Shirwan
Abdullah Sani
International Islamic University Malaysia
SESSION 11: NEW DEVELOPMENTS AND OPPORTUNITIES

Axt. Prof. Yüksel Oksak
Bursa Uludağ University

Dr. Gökhan Dağlıgan
Kütahya Dumlupınar University

Saeeda Ahmed
UNGSII Ambassador

Iman Ali Liaqat
DinarStandard

Prof. Dr. Irwandi Jaswir
International Islamic University Malaysia

Mohamed Jinna
World Halal Day
Organized by Discover Events, E-Halal Expo 2020 offered a wide online platform to bring together trade visitors, buyers, halal sector leaders, and investors from all over the world to promote their businesses, products, and services. Held virtually on www.e-halalexpo.com, E-Halal Expo 2020 was attended by 50 companies from 13 different countries operating in the fields of food and beverage, cosmetics, HORECA, pharmacy and health, tourism and health tourism, finance, media, textile, modest fashion, and technology. The exhibition attracted great attention among major players of the halal industry, providing for the participation of 4 thousand buyers in four days. As the first online halal exhibition in Turkey, E-Halal Expo hosted 9217 visitors from 55 countries who joined the event via YouTube, Zoom, social media accounts, or through physical participation.
VIRTUAL E- HALAL EXPO STATISTICS

55 VISITOR COUNTRIES

Interaction with;

13 EXHIBITOR COUNTRIES

50 EXHIBITORS

Organized by:
WE EXPRESS OUR GENUINE APPRECIATION TO ALL OUR PARTNERS
Part I

Halal Quality Infrastructure (Standardization, Conformity Assessment, Metrology and Accreditation)
OIC/SMIIC Standards on Halal Issues and Halal Quality Infrastructure
İhsan ÖVÜT a,*, Mohammed Ali Alsheikh Waceb

a The Standards and Metrology Institute for Islamic Countries (SMIIC), İstanbul Dünya Ticaret Merkezi A1 Blok No:437-438 Yeşilköy-Istanbul/Turkey

*Corresponding author.
E-mail address: ihsanovut@smiic.org (İhsan ÖVÜT).

A B S T R A C T

The speech given by H.E Mr. İhsan ÖVÜT, Secretary General of The Standards and Metrology Institute for Islamic Countries (SMIIC).

According to its statute, SMIIC has 8 objectives. They are summarized here.
1. To prepare OIC/SMIIC standards
2. To achieve uniformity in metrology, laboratory testing and standardization in member states.
3. To provide technical assistance to the Member States which do not possess such bodies.
4. To establish a conformity assessment scheme for the purpose of expediting exchange of materials, manufactured goods and products among Member States, beginning with mutual recognition.

The vision of the institute is creating a quality infrastructure that improves economy, welfare and protects our member states.

With that vision, our mission is to develop quality infrastructure, by establishing uniformity in standardization, metrology and accreditation activities including conformity assessment and quality improvement to facilitate trade and support sustainable economic growth, consumer welfare, environment and innovation promotion for our member states.

SMIIC strategic plan 2021-2030 has been approved at the 15th General Assembly meeting of SMIIC. SMIIC strategic plan includes 3 main strategic priorities and 13 strategic objectives and 20 KPIs. as you can see, our priorities for the next decade are to:

➢ develop high-quality standards that are used worldwide
➢ support members’ needs and ensure effective engagement of their stakeholders
➢ support the enhancement of quality infrastructure and interconnectivity of members

These goals will be implemented via action plans and annual projects. Figure 1 shows the map which summarizes our strategic plan and includes vision and mission along with all priorities, objectives and KPIs within one table to show their internal relation as well as their relevance to the four perspectives.
**Figure 1**: SMIIC strategic plan 2021-2030 map.

### Annex III - SMIIC Strategic Plan 2021-2030 Map

**Vision**: To create a quality infrastructure that improves economy, welfare and protects our member states.

**Mission**: To develop quality infrastructure, by establishing uniformity in standardization, metrology and accreditation activities including conformity assessment and quality improvement to facilitate trade and support sustainable economic growth, consumer welfare, environment and innovation promotion for our Member States.

<table>
<thead>
<tr>
<th>Strategic Goals</th>
<th>Value/Customer</th>
<th>Internal Processes</th>
<th>Learning And Growth</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop high-quality standards that are used worldwide.</td>
<td>Support members’ needs and ensure effective engagement of their stakeholders</td>
<td>Support the enhancement of quality infrastructure and interconnectivity of members</td>
<td>Improve the standardization process</td>
<td>Support and coordinate members especially Least Developed Countries (LDCs) for effective engagement with regional and international organizations</td>
</tr>
<tr>
<td>Encourage adoption and/or Implementation of OIC/SMIIC Standards by Members</td>
<td>Promote SMIIC activities to leverage satisfaction</td>
<td>Support members especially Least Developed Countries (LDCs) to strengthen National Quality infrastructure</td>
<td>Coordinate and organize projects, meetings and trainings for Technical Capacity Building</td>
<td>Utilize SMIIC members’ resources for supporting SMIIC activities to decrease expenses</td>
</tr>
<tr>
<td>Develop high quality standards that are relevant to the needs of Members and stakeholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. What Is A Standard?
Before taking a glance on the standardization activities of SMIIC in short. Firstly, I would like to give a short information about standards and standard’s making process in general. Standard is a document that defines the musts of a product or service or a process. voluntary, agreed on by consensus, approved by a recognized body, for common and repeated use by everybody are the main necessity for a standard. especially in halal industry, the term “standard” is using wrongly. each certification body says they have a standard. this is not a standard. this is their own document. if you want to call a document as a good standard, the document should be a product of consensus-based standardization where the contribution of all stakeholders has been taken into account. stakeholders such as industry, consumers, GOs, NGOs, producers, certifiers, private sector, researchers, laboratories, universities, etc.

![Figure 2: Consensus on standardization is best achieved by the contribution of all stakeholders](image)

3. Halal Quality Infrastructure
So, let’s have a look at the concept of quality infrastructure and then explain briefly halal quality infrastructure.

Quality infrastructure is generally understood to be the totality of the institutional framework (public and private) required to establish and implement standardization, metrology, accreditation and conformity assessment services (inspection, testing, product and system certification) necessary to provide acceptable evidence that products and services meet defined requirements, be it demanded by authorities or the market place (See figure 3 next page).

In brief, it is the composition of four essential pillars namely, standardization, metrology, accreditation and conformity assessment to safeguard the transparency of processes by required standards. (See figure 4 next page).

Quality infrastructure relies on the scientific and technical foundations of Standardization bodies and metrology institutions (scientific, industrial and legal), and to underpin: Accreditation, conformity assessment (supplier’s declaration, certification, testing, verification, and inspection), calibration, and market surveillance. Standardization is at the center and standards for every element of the quality infrastructure are essential. Like standards for products produced by enterprises, testing laboratory standards, certification body standards or accreditation body standards, etc.

And at the end the consumers, manufacturers and governments benefit from the results of a well-established quality infrastructure.

As you see in Figure 5, in each level we need standardized rules to ensure the process to be more effective and trustworthy. Also, we do need a well-established infrastructure to monitor the transparency of the whole operation. This is the international application of travel of a product and OIC/SMIIC standards can be used wherever standardized rules are required.

In figure 6 All in all, with this halal quality infrastructure, consumer trust on halal products will increase since we will have the opportunity to trace the process. And mutual recognition of certificates through accreditation by relevant parties will diminish technical barriers to trade. Finally, all these applications will facilitate halal trade.

![Figure 6: Benefits of OIC global halal quality infrastructure (OHAQ)](image)
organs and activities. Standardization management council (SMC) is the organ of SMIIC which manages all technical committees.

SMC observes the performance of the technical committees and can decide to establish or dissolve a technical committee. Standardization management council consists of a vice-chairman of the SMIIC board of directors as chair and 9 member states elected by the board of directors.

- Who prepares the standards?
  SMIIC is not developing standards itself. Its technical committees who prepare the standards. Each technical committee works as an international body. Here all activities about preparation of standards are carried by the member states, not by central authority. Member states only have right to vote in all levels of study.

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**Figure 3**: Overall quality infrastructure.

**Figure 4**: Pillars of conformity assessment.
• So, what is a technical committee?

Technical committees with specific title, scope, work program and strategic business plan are the key bodies that drive the standardization process. Each committee governed by a secretary and a chairman and the secretariat activities are conducted by a member state. National standardization bodies are represented as participating or observing members in technical committees. All standardization activities are conducted in compliance with main principle documents, namely, SMIIC directives issued by SMIIC.

All technical committees should observe the rules stated in these documents. Figure 8 shows the development process for an OIC/SMIIC Standard. Every standard to be issued or revised is considered as a project under a technical committee.

All standard projects are developed within technical committees and finalized after having consensus. Every standard project pass through stages from proposal of a new standard to publication as defined in SMIIC directives.

For better management of the committees’ work, SMIIC information system has been established. SMIIC information system is the electronic collaborative environment to manage the standardization activities with its built-in tools. Tools on technical committee workspace, online balloting,
project management, mass e-mailing improves the management of the SMIIC technical work and communication.

As SMIC general secretariat we organized eight technical committee weeks where all committees held at least two meetings in a year till now. As of today, 26 new projects on subjects such as halal management system, halal gelatine, porcine detection methods and animal feeding stuffs. The ninth technical committee week is holding next April 2020 virtually due to the COVID19 pandemic.

6. Published SMIC Standards to Date

These are our published standards:
1. OIC/SMIC 1:2019, General Requirements for Halal Food
2. OIC/SMIC 2:2019, Conformity Assessment – Requirements for Bodies Providing Halal Certification
3. OIC/SMIC 3:2019, Conformity Assessment - Requirements for Halal Accreditation Bodies Accrediting Halal Conformity Assessment Bodies
5. OIC/SMIC 5:2017, General Guidelines on Occupational Safety and Health (OSH)
6. OIC/SMIC 6:2019, Particular requirements for the application of OIC/SMIC 1 to places where Halal food and beverages are prepared, stored and served
7. OIC/SMIC 9:2019, Halal Tourism Services – General Requirements
8. OIC/SMIC 10:2019, Saffron (Crocus sativus L.) – Specification and Test Methods
9. OIC/SMIC 11:2019, Date - Specifications and Test Methods
10. OIC/SMIC 15:2020, Disposable Baby Diapers – Specifications and Test Methods
11. OIC/SMIC 16:2020, Disposable Sanitary Pads – Specifications and Test Methods
12. OIC/SMIC 17-1:2020, Halal Supply Chain Management System - Part 1: Transportation -
By the same token, all stakeholders in the halal issues and mandated to work in the area of all kind standards and related issues for the OIC members by the OIC. SMIIC’s technical works are open to all stakeholders in all over the world. Duplicative works will harm all parts. Individual approaches to halal standards under different platforms were not welcomed such as ISO, CODEX and CEN, as SMIIC’s efforts representing Islamic countries were recognized.

As halal issues need religious competency, this kind standardization work also should include all representations which are representing different sectarians/mathabs in Islamic countries or in the world. First of all, we must always know that the standards on halal issues such as products, management, services, processes, certification, accreditation, testing etc. should be in compliance with Islamic rules. On the other hand, these standards should not be considered as figh or fatwa documents; can be globally used in Islamic countries were recognized.

Here you see that the first 4 standards are core halal standards developed initially. While OIC/SMIIC 5 is a result of co-study with SESRIC and OIC organs such as IIFA, the standard on occupational safety and health has been published. and online sale of standards started in 2017.

SMIIC conformity assessment committee is a specialized committee to issue standards for certification and accreditation purposes. Like OIC/SMIIC 2 and 3, this committee’s function is similar to ISO/CASCO. For the halal quality infrastructure, this committee has very important roles. Recently the committee published 4 new halal standards (OIC/SMIIC 33, 34, 35 and 36).

7. Islamic rules in OIC/SMIIC standards.

SMIIC is recognized as the technically competent and authorized platform for the halal issues and mandated to work in the area of all kind standards and related issues for the OIC members by the OIC. SMIIC’s technical works are open to all stakeholders in all over the world. Duplicative works will harm all parts. Individual approaches to halal standards under different platforms were not welcomed such as ISO, CODEX and CEN, as SMIIC’s efforts representing Islamic countries were recognized.

As halal issues need religious competency, this kind standardization work also should include all representations which are representing different sectarians/mathabs in Islamic countries or in the world. First of all, we must always know that the standards on halal issues such as products, management, services, processes, certification, accreditation, testing etc. should be in compliance with Islamic rules. On the other hand, these standards should not be considered as figh or fatwa documents; can be globally used in certification, production and trade but should not be against Islamic rules. Even though there are different school of thoughts and interpretations, the difference
between them is not much on products subject of international trade and daily consumption such as meat and meat products, cattle, dairy, poultry …etc. so, the standards should focus on these common points in order to meet the needs of the consumers from different school of thoughts, mathabs.

Certified halal products according to recognized halal standards are at the same time of good quality. So halal certified means good quality product. as an OIC institution our main partner is The International Islamic Fiqh Academy (IIFA), based in Jeddah. The academy says about the mechanisms of religious us oversight on halal industry and its services as follows: (Islamic rules in OIC/SMIIC standards)-2) important stakeholders in halal infrastructure and conformity assessment have one of the following forms according to the academy’s approach; there should be:

1- A supreme authority at the state level for the religious inspection.
2- Islamic fiqh councils issuing fatwas and decisions.
3- The accreditation bodies: these shall be owned and directed by Muslims at an OIC country.
4- The certification bodies: these shall be owned and directed by Muslims in any country.
5- Internal departments for religious section in the establishment: these shall be directed by Muslims.
6- Officers of the halal religious section: those shall be Muslims.
7- Profession employee, whose mission is to do basic halal work, such as the slaughterer or butcher must be Muslims committed to all the provisions of Islamic law.

8. SMIIC standards on halal issues

Remember always: halal is a sovereign issue of the Islamic ummah. The first 3 core standards regarding halal are products of a hard work firstly at OIC level with the contribution of more than 40 OIC member states and certain OIC institutions. After its establishment, the standards were adopted by SMIIC as OIC/SMIIC standards and now SMIIC is the only organization responsible for maintenance of these standards. These 3 main standards were reviewed and the second edition published in July 2019.

• OIC/SMIIC 1:2019, General Requirements for Halal Food, (with the references of CODEX, ISO 22000, ISO/TS 22002, ISO 22005 + Islamic Fiqh Rules),
• OIC/SMIIC 3:2019, Conformity Assessment – Requirements for Halal Accreditation Bodies Accrediting Halal Conformity Assessment Bodies, (with the references of ISO/IEC 17011 + Islamic Fiqh Rules)
• OIC/SMIIC 4:2018, Halal Cosmetics - General Requirements (with the references of ISO 22716, + Islamic Fiqh Rules)
• OIC/SMIIC 6:2019, Particular requirements for the application of OIC/SMIIC 1 to places where Halal foods and beverages are prepared, stored and served (with the references of ISO 22000 + Islamic Fiqh Rules)
• OIC/SMIIC 9:2019, Halal Tourism Services – General Requirements, + Islamic Fiqh Rules
• OIC/SMIIC 17-1:2020, Halal Supply Chain Management System – Part 1 – Transportation – General requirements, + Islamic Fiqh Rules
• OIC/SMIIC 24:2020, General Requirements for Food Additives and Other Added Chemicals to Halal Food (with the references of CXS 192, CXG 36, + Islamic Fiqh Rules)
• OIC/SMIIC 33:2020, Conformity Assessment – Example of a Certification Scheme for Halal Products (with the references of ISO/IEC TR 17026 + Islamic Fiqh Rules)
• OIC/SMIIC 34:2020, Conformity Assessment - General Requirements for Bodies Operating Certification of Persons Involved in the Halal Related Activities (with the references of ISO/IEC 17024 + Islamic Fiqh Rules)
• OIC/SMIIC 35:2020, Conformity Assessment - General Requirements for the Competence of Laboratories Performing Halal Testing (with the references of ISO/IEC 17025 + Islamic Fiqh Rules)

Each standard has international standards references such as CODEX, ISO and has Islamic fiqh rules which are approved by International Islamic Fiqh Academy (IIFA). As mentioned before, IIFA is the only our stakeholder for religious issues.

final words, SMIIC is the common platform to gather the all stakeholders to contribute to the common standards for the Muslim world and all interested parties, SMIIC is a unity in diversity gathering 45 countries under a roof. and we always need more of expertise, competence and dedication. so, I suggest let’s work together and prepare our standards. We would be glad to get your support and contribution. hence, be our partner for standards and related issues.
Mr. İhsan ÖVÜT was born in Malatya/Turkey in 1966 and completed primary, secondary and high school education in Malatya. He entered to Department of International Relations of Faculty of Political Sciences of Ankara University in 1985. He graduated from this department in 1989 and then started to work at the Turkish Standards Institution (TSE) at Directorate of Bilateral and Multilateral Agreements in 26 August 1991. He was appointed as the Director of Agreement on Foreign Relations in 24 January 2000. He has worked as director of several Directorates in the fields of international relation of TSE between the years 2000-2011. Upon his appointment as Head of Training Department of TSE, he has worked in this department between the years 2012-2014. Currently he is working as the Secretary General of the Standards and Metrology Institute for Islamic Countries (SMIIC) as of 15 December 2014.

He had a wide experience at international relations and carried almost all activities in terms of international relations during his term of office in TSE. He organized many regional/international meetings, drafted cooperation agreements, accompanied overseas official visits, made presentations, and participated as expert in the committees of International Organization for Standardization (ISO). Most specifically, he leaded in the preparation process of the SMIIC Statute under the Organization of Islamic Countries (OIC) as well as the development of OIC/SMIIC Standards and also leaded several projects in ECO Region and in Euro-Asia Region.
Importance of Halal Certification
İlhami Aktürk a,b,*

a Turkish Standards Institution (TSE), Turkey
b Corresponding author. E-mail address: iakturk@tse.org.tr (İlhami Aktürk).

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Halal Certification
Accreditation
Halal Quality Infrastructure

ABSTRACT

The speech given by Mr. İlhami Aktürk, Deputy Secretary General of Turkish Standards Institution (TSE), Turkey.

1. KEY FACTS ON HALAL

According to the State of the Global Islamic Economy Report 2019/20 there are around 1.8 billion Muslim consumers and the Global Muslim spend on Food is estimated at $1.37 trillion in 2018, forecast to grow by 6.3% per year to reach $2.0 trillion by 2024. The Muslims spent on halal products and services: US$2.2 trillion in 2018 and expected to reach US$3.2 trillion in 2024.

Halal, in product and services, meets halal and tayyib criteria which are mentioned in Holy Qur'an.

Conception of Halal is not only limited to food sector or slaughtering process. The issue of halal consumption is also not only about food, but also cosmetics, packaging, textile, finance, tourism, logistics and many other areas that need to be sensitive and focused on.

2. HALAL LEGISLATION IN TURKEY

Halal certification is a voluntary application in Turkey. According to Turkish Food Codex-Food Additives Legislation the usage of additive agents obtained from pig is prohibited. According to Turkish Food Codex Labelling Regulation if an additive obtained from pig is used, it must be declared on the label.

3. HALAL QUALITY INFRASTRUCTURE IN TURKEY

In Turkey the Halal certification activities shall be from a body that conform with OIC/SMIIC 2, TSE the Turkish standards institute is the assigned governmental body for this mission. The Halal accreditation activities made by HAK according to OIC.SMIIC 3. In term of halal standards Turkey adopt SMIIC halal standards.

4. ADAPTED OIC/SMIIC HALAL STANDARDS

1. OIC/SMIIC 1:2019 General Requirements for Halal Food
2. OIC/SMIIC 2:2019 Conformity Assessment – Requirements for Bodies Providing Halal Certification
3. OIC/SMIIC 3:2019 Conformity Assessment - Requirements for Halal Accreditation Bodies Accrediting Halal Conformity Assessment Bodies
4. OIC/SMIIC 4:2018 Halal Cosmetics – General Requirements
5. OIC/SMIIC 6:2019 Particular requirements for the application of OIC/SMIIC 1 to places where Halal food and beverages are prepared, stored and served
5. HALAL CERTIFICATION PROCESS

According to OIC/SMIIC 2:2019 Conformity Assessment – Requirements for Bodies Providing Halal Certification. *Halal certification*: Activities conducted by halal certification bodies to certify halal products/service/process and/or management systems. Halal certification audit is carried out on site in 2 different stages.

<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>STAGE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS EN ISO 22000 – Food Safety Management System</td>
<td>Samples are transferred to</td>
</tr>
<tr>
<td>TS OIC SMIIC 1: General Guidelines on Halal Food</td>
<td>TSE Food Lab. (Ankara)</td>
</tr>
<tr>
<td></td>
<td>TSE Biogenetics and Food Lab. (Gebze)</td>
</tr>
<tr>
<td></td>
<td>Other accredited private or governmental laboratories</td>
</tr>
</tbody>
</table>

We perform Certification audit right after the application. And we perform 1st surveillance in the first year and the 2nd surveillance in the 2nd year. And in the 3rd year, we perform certification renewal audit. Our certificates are valid for 3 years.

Stage 1: This stage is mainly based on conformity of TS EN ISO 22000 – Food Safety Management System and TS OIC SMIIC 1: General Guidelines on Halal Food. If the result of stage 1 audit report does not fulfill the requirements of the standards before mentioned, the second stages is not carried out and halal certification process is disbanded.

Stage 2: This stage is mainly performed according to certification question sheets on specified products to be certified, Turkish Food Codex and TS OIC/SMIIC1 General Guidelines on Halal Food Standard.

Halal Certification Audit Team requires minimum 1 Religious Affairs Expert and minimum 1 Technical Auditor from TSI. Surveillance audit is performed once a year.

**Important Facts on Halal Audit:**
- Islamic Rules
- Compliance with TS OIC SMIIC 1
- Compliance with Food Legislation
- Competence of Production Infrastructure (pre-requisite conditions)
- Evaluation of all input in terms of conformity to halal production
- HCCPs
- System Documentation.

6. ANALYSIS ON HALAL CERTIFICATION PROCESS

<table>
<thead>
<tr>
<th>Instrumental Analysis Section</th>
<th>Food Chemistry Section</th>
<th>Microbiology and Biogenetics Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Pesticide residue,</td>
<td>➢ All kinds of physical and chemical analyses of food and feed products are performed in Food Chemistry Section</td>
<td>➢ Microbiological Analysis</td>
</tr>
<tr>
<td>➢ Preservative and additive detection,</td>
<td>➢ Humidity, Dry Matter, Sensory Properties, Ash, Density, Refraction Index, pH, foreign substance, Sieve Analyses, oil-protein-carbohydrate ratio, acidity, hydroxyproline content, ethyl alcohol analyses (spectrophotometric)</td>
<td>➢ GDO Qualitative Analysis (Real –Time PCR Method)</td>
</tr>
<tr>
<td>➢ Food Contaminants analysis</td>
<td>➢ Beef, chicken, soy, pork, turkey, duck</td>
<td>➢ DNA Detection (Real-Time PCR Method)</td>
</tr>
<tr>
<td></td>
<td>➢ Horse, donkey, sheep DNA Detection (Real-Time PCR Method)</td>
<td></td>
</tr>
</tbody>
</table>

7. Halal Certification Evaluation & Halal Certification Commission

Both the audit and test reports and the reports prepared by the audit team are presented as a recommendation for Halal certification decision to Halal Certification Commission, which has a technical team from TSE and a mufti from the Ministry of Religious Affairs.

Final certification decision is issued by this commission. In the committee’s work, unanimity of votes is taken into account. If the results are considered appropriate, the decision will be in favour of the certification.

The contracts are made with the companies which are decided to be awarded with the certificate and their certificates are given.
8. NUMBER OF HALAL CERTIFICATES ACCORDING TO SECTORS
➢ 249 Companies
➢ 541 Certificates
➢ 26 Different Product Groups

9. TSE HALAL ACCREDITATION SCOPE
TSE is accredited by Halal Accreditation Agency (HAK) in accordance with the OIC/SMIIC 2:2019.

10. IMPORTANCE OF HALAL CERTIFICATION
It is of great importance for Muslims to know the provisions regarding food, drinks and products they have to consume every day and to discipline their nutrition and consumption habits according to Islamic rules. The rapid increase in the Muslim population, the awareness of the need and necessity of halal food among Muslims and the increase in the gross income of Muslims contribute to the halal product consumer potential as a rising power in halal product sector.

Despite the rapid increase in the market potential for the halal sector, the lack of harmonized common standards for halal products and different practices in halal certification affect the development speed of international trade. This situation emerges as an issue that should be considered carefully in order to bring the development of trade between Islamic countries.

For the food products, the halal certificate verifies that the food is not only has to be halal by itself, but it is also produced in clean environment and are safe for everybody to eat.

Halal certificates;
- Enhance the marketability of the halal products in OIC Countries.
- Are only given to companies that manage to comply the requirements of OIC/SMIIC Halal standards.
- Improve the product quality as per OIC/SMIIC standards.

The Biggest Problems in Halal Certification;
- Harmonization of halal certification standards
- Eliminating or minimizing fundamental differences in understanding and practice
- Necessity to operate an accreditation mechanism which apply strong and reliable OIC/SMIIC standards that is accepted by Muslim countries and/or Muslim societies all over the world.
Mr. İlhami AKTÜRK was born in Ankara in 1969. He graduated from the Middle East Technical University - Metallurgical Engineering in 1992. Then, he completed his master’s degree in 1995 in the same department. He started his professional life in 1995 in Turkish Standards Institution as an engineer and expert in Ankara Laboratory of Materials & Mechanics. He gained expertise in the field of management systems. He also lectured on International Quality Management in Marmara University.

In 1999, he provided consultancy services in public and private sector regarding management systems implementation and strategic planning. He continued his career with international trade and production as well as assumed arbitrating activities in international projects which are supported by the World Bank. Later, he was assigned as the Head of Foreign Relations Department in TSE.

Currently, he works as the TSE Deputy Secretary General.
Halal Accreditation Agency of Turkey (HAK)

Zafer Soylu

a Head of Board of Directors of the Turkish Halal Accreditation Agency (HAK) of Turkey.

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ABSTRACT

The speech given by Mr. Zafer Soylu, the Head of Board of Directors of the Turkish Halal Accreditation Agency (HAK) of Turkey.

Bismillahirrahmanirrahim
Distinguished Guests,
May the mercy, peace, and blessings of Allah be upon you.

I would like to take this opportunity to greet all the guests attending the Summit with the sincerest feelings on behalf of myself, the Halal Accreditation Agency of Turkey, and my country. During the days of the COVID-19 we extend our condolences to those who lost their lives.

I want to underline that the message and essence of the concept of halal transcend the Muslim world and it is gaining importance in non-Muslim world day by day. It is also a leading phenomenon in international trade. When we consider the emergence of a global pandemic, we recognize the importance of halal and tayyib concepts once again. In this respect, the halal phenomenon has become a fundamental concept that steers consumer preferences. This situation increases the responsibilities of each one of us.

I believe that this Summit held in such an environment; will open a window of opportunity into halal trade and will have concrete results due to its timing and the contributions of visionary participants like you. In this regard, I would like to indicate once again that the Summit has undertaken an important mission in the halal concept as a platform that gathers all interested stakeholders.

Halal Standards, Accreditation and Certification

Distinguished guests, I would like to emphasize an important point; a common language among the stakeholders of international trade has been created thanks to the internationally harmonized and accepted standards. Those standards ensured access to new markets, improved manufacturing processes in terms of efficiency, eco-friendliness, protection of human health, and environment.

At this point, setting common standards in halal certification, and accreditation against those common standards have gone beyond the arbitrary situation and has become almost a necessity for consumers and producers.

The halal certification once correlated solely with food is today well-spread to other sectors such as cosmetics, textiles, tourism, finance, and supply chain. With its expanding nature, halal certification will be the driving force of trade in today and the future.

Despite the signs of progress in the field of halal, unfortunately, we see that a common language for halal in the Islamic world still couldn’t be established. Different standards, certification processes and practices in this area cause additional costs, hesitations for consumers and loss of time in the trade of halal-certified products and services. These hesitations hinder the formation of a global system in the concept of halal.

We Must Have a Common Stance for Halal

It is essential to produce halal products and services in accordance with common standards and to create a system that will allow for mutual recognition of halal documents among the Muslim countries. I believe that as Islamic countries we have technical competence, human resources, quality infrastructure, and the motivation needed for the formation of this system, which will guarantee that our products are safe, healthy, hygienic, and particularly halal.

The generation of this system by Muslim countries, which is not based on commercial concerns and fully responds to the sensitivities of Muslims, will contribute to the improvement of economic and commercial relations between Muslims.

I do remember that just a few months passed since the Halal Accreditation Agency became operational when I first had a chance to address here two years ago. At that time, I shared the vision of the Agency as establishing a well-functioning accreditation mechanism based on common standards.

In the early days of our Agency, we gave utmost importance to the technical competence of our staff. Our personnel have gone through an extensive training session in close cooperation with our partners like SMIIC, TSE – the standardization organization of Turkey – and TURKAK – Turkey’s accreditation
organization in other fields. We have established our physical, legislation and data processing infrastructure.

Thanks to Allah almighty, during the last two years we had managed to take concrete steps towards achieving our goals.

A little more than a year ago, we announced that we were ready to review accreditation applications of the halal conformity assessment bodies in November 2019. Since then we have received 33 applications all around. I am happy to say that less than half of those applications came from local certification bodies.

Such a high number application is a good indication of confidence and immense attention to our agency, which is derived not only in Turkey but also abroad. 4 out of these 33 applications have been awarded accreditation after thorough assessment processes of the applicant bodies. Three of them are in the final stage.

In 2021, we will work harder to make our aforementioned vision real. In this respect, Insha’Allah, we will conclude many of the current applications from the HCBAs in Asia, Africa, and Europe, and also be able to receive new applications. We are an accreditation body but our efforts are not limited to accreditation. We strive to develop human capital in halal quality infrastructure in Turkey and abroad. With this aim, we have started online training in halal infrastructure and also informing stakeholders in regard to the very basics of halal economy as well as the opportunities in it. Moreover, we had conducted know-how sharing with our counterparts abroad.

In the second half of 2020, technical training on halal was provided both to the professionals of the conformity assessment sector and to the stakeholders who are product and service providers. Until now, almost 100 professionals have participated in our training.

2021, Inshallah, will be a year of progress for us in this field as well. We will be continuing our technical training activities for the enhancement of human capital and quality infrastructure in the field of halal conformity assessment both domestically and abroad.

I do believe that the HAK will contribute to the breakdown of the existing walls in the trade of halal-certified products and the reveal of the real potential of halal trade.

The halal business has a multi-trillion-dollar volume in different sectors such as cosmetics, tourism, and of course food and beverages. The certification (of the goods and services) in this respect corresponds to billions of dollars of worth. Therefore, it is as clear as daylight, this business is lucrative and will get more and more attention day by day. Yet, I believe, these activities cannot be done by merely financial motivations. The responsibility is way bigger than its possible monetary gains. Thus, we sincerely believe and advocate that the certification of halal products and services is a sovereign issue for the Muslim nations.

Halal certification bodies and halal accreditation authorities shall not be owned or managed by non-Muslims. We cannot leave this field to anyone other than Muslims.

SMIIC

I want to express that we will provide all kinds of support for the effective operation of the global halal accreditation system within the SMIIC since we see this as our responsibility, and we will continue to support the SMIIC as we did until now.

Dear participants, I’d like to take this opportunity to express my pleasure for the World Halal Summit to be once again held in our country. I hope that in the forthcoming years, the effect of this cooperation in Istanbul will spread in waves to the whole world and will be the means of the goodwill of the whole ummah.

CONCLUSION

I would like to reiterate that we are very happy to be with you and our esteemed brothers and sisters from all over the world, in Istanbul. I believe that the Istanbul World Halal Summit will open new horizons for us in terms of halal standards, certification and accreditation as a result of the presentations and exchanges of ideas in the sessions attended by valuable participants who are authorities in their fields.

I greet you all with respect and affection. May the peace of Allah be upon you.

Mr. Zafer SOYLU graduated from Ankara University in the International Relations Department in 1997. He holds his master degree from University of Illinois (U.S.A.) in International Economy between 2004-2006. Mr. Soylu has actively engaged in the activities to create a reliable and sound-worthy accreditation mechanism which aims to build mechanism for mutual recognition of Halal certificates among Muslim countries under the roof of Standards and Metrology Institute of Islamic Countries (SMIIC) affiliated institution to Islamic Cooperation Organization (OIC).

In that aspect, Mr. Soylu has especially taken an active role in the foundation of Halal Accreditation Agency (HAK) in line with the rules of SMIIC in order to provide accreditation service in the field of halal certification in Turkey and the world as well. Within this context, Mr. Soylu holds an advanced knowledge and experience in the fields of product safety and inspection, market surveillance and inspection, conformity assessments, technical barriers to trade, quality infrastructure including accreditation, halal trade, certification and accreditation.

Mr. Soylu was appointed as Chairman of the Board of Halal Accreditation Agency on 5th of July 2018.
SWOT in the African Halal Food Marketing and to Uncover Strategies

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1. Introduction

The world halal market is fast becoming recognized as a vitally important emerging market sector. Halal industry shows a significant potential either in domestic or international market (Aziz & Vui, 2012). It is fast becoming a new market force and brand identifier and is now moving into mainstream markets, affecting and changing perception on how business should be conducted (Lada et. al, 2009). With a global consumer base of about 1.6 billion i.e., 23 percent of the world population, the world halal market is estimated to be worth USD 2.3 trillion of which USD 700 billion is food. Although this figure is based on world Muslim population, we cannot underestimate the potential of non-Muslim (cross over markets) Halal demand (Global Halal Food Market Brief, 2008; MITI, 2010). With the onslaught of global trade and changing lifestyle, non-Muslim countries are dominating the trade of halal meat and processed food products.

Halal means what is permissible in Islam. Halal food is tayyib; i.e., slaughtered according to the specific parameters of Islamic law, good, wholesome, healthy, untainted during the stages of processing, packaging, storage, transportation and cooking. The concept of halal also covers non-food industries including services. Halal products include both food and non-food items. Halal food is not only meat and poultry but also other food items such as Halal services and finance. The previous studies mention six areas where halal concept can be implemented namely halal food value chain, non-food halal products, halal services, halal certification, halal traceability and tracking system in food value chain and halal park and regional halal hub.

Muslim community has never been different in Africa – in the past or present – from other Islamic societies, about the fact that al-Shari’ah commitment on food is a determinant factor of their identity. However, focus on this specific Africa seems to be the most and clearest apparent phenomenon. It must therefore be explored further. The most likely explanation for this phenomenon is due to the doctrine of Totemism widely spread out in the African society and by which a tribe or a clan claims the presence of a holy spiritual relationship between the tribe and the species of an animal or plant. This is an ancient relationship, as they claim- agreed upon between the tribe’s ancestors and the animal; a relationship that evolves to naming the clan or tribe as the animal or plant designate. It is said: the elephant or tiger, or serpent tribe. The violation of that bond becomes a serious annoyance to social harmony and a threat to the fate of the group (Ntiamoa-Baidu, 1997). Based on the above, Muslims refrain from eating a type of animal, and their commitment to specific controls on the slaughter of animals, could not be overlooked in the social sense of African culture; as the social experience in Africa classifies this action in totemic box, a
significant phenomenon; for totemism creating a social association within each tribe or clan confirms relationship of an individual to the tribe. As long as Muslims adhere to certain controls in nutrition, an African observer classifies them as conjunctivitis “spiritual tribe,” and is keen to respect this strange association in his culture; because it is an association not based on blood as a habit, and this is enough to attract an African man’s interest and curiosity about Halal food phenomenon among Muslims. That is the socio-cultural interpretation that focuses on Halal food in Africa.

Africa was the second continent that Islam spread into, which explains why almost one-third of World Muslim population resides in this continent. According to study by Houssain Kettani in 2010, he summarises and identified that the total African population increased from 79 million in 1870, to 227 million in 1950 to 1,307 million by 2020, the percentage of Muslims in Africa decreased from 47% in 1870, to 44% in 1950, to 41% by 2020. The total population estimate for each country and the corresponding APGR since 1950 are based on UNP. An estimate for the Muslims demographies in the decennial estimates based on these growth rates. Furthermore, the study also shows the numbers of Muslim population from each decade in order to capture its overall growth trending. The identification includes all regions in Africa which includes Northern Africa, Western Africa, Upper Central Africa, the Horn of Africa, Lower Central Africa, the Eastern Islands, and Southern Africa (see Appendix A).

2. Problem Statement
Food studies are considered the most intractable and interconnected issues in various scientific fields agricultural, medical, social, and economic. Various studies have been carried out in this area (Nestle 2003, Patel 2007, Guthman 2011, Counihan 2012), as well as specialized studies in a delicate area, such as: food, human rights and social justice (Barth & Kracht, 2005, Kent 2007), food globalization (George Ritzer 1983, Willey 2001), and food future (Belasco, 2006), among others. These have led to a pluralistic nature of food studies and consequently the emergence of scientific courses, concerns of modern research and issues such as “Food Ethics”. This means a wide range of complex food issues, including obesity, food and biotechnology, and the issues of agricultural crops use in bioenergy production, global trade system, etc. (Golnaz et al.,2012, pp 35 - 46). Specifically in the field of social studies, which is the area of the present paper, many studies have been conducted on food relationship to social identities (Abarca 2006, Williams-Forson 2006), the direct impact of religion on food choice and consumer by individuals and groups (Pettinger et al, 2004) and the relationship between religion and dietary habits (Blackwell et al. 2003, Dindyal 2003, Delener 1994, Essoo & Dibb 1994).

It should be noted that most studies on the impact of religion on consumer choice of food consumption focus on Islamic impact on Muslims behavior towards food production and consumption known as Halal food. From these studies, for example, a study by Syed Shah and Nazurah, 2011, was to look into the factors that determine the tendency of Malaysians consumers to buy Halal food. It was found that the 29.1% proportion of consumers have a positive attitude to Halal food (p. 8-20.). In a similar study the researchers (Shafie & Othman, 2006), show that the 891 respondents among the 1000 reported that “Halal” logo plays a direct role in their decision to buy food items (p. 7). On the other hand, it should be noted that this Islamic influence on the Muslim food consumer is not only in Muslim societies but is also steady in the country which hosts Muslim immigrants or visitors. In the religious sphere, doctrine has a direct impact on human vision about food, his dealings with it, and consuming it. This is determined mostly in the field of faith and Islamic law; where Muslim’s commitment to Halal food is a necessary requirement religiously.

Food studies have evolved in recent decades to many scientific and technical branches, and the intervention of this concept in a few political and economic equations, is no longer a superficial issue concerned with only animal slaughter method legitimacy. Rather, it has evolved into complex global issues including environmental, human rights and many political and economic concerns, such as food security, environment preservation, social justice, and care for the rights of minorities, and even in educational fields; where Games and “Islamic” toys have appeared, alcohol-free perfumes, resorts reserved for women, and “Halal tourism” ... all this refers to a new Muslim consumer, conscious and conservative, who at the same time, is able to positively deal with global consumer culture, and in researcher Reynalo words, Muslim consumers “Muslim Consumers are not unlike their Western counterparts in using consumption as a means to construct an Islamic identity and lifestyle” (p. 44). Hence, there several main questions being raised towards this project:
• What kind of an opportunity do you have for Halal Food Business in African Region?
• What kind of perception and acceptance of Halal Food in those regions?
• What are the strategies that are able to enhance the Halal Food Business in those regions?

As more food available in the market, the authenticity of halal food has raised much concern among Muslim consumers throughout the world especially African region. Muslim requires some protection to ensure that information on food labels and elsewhere presented to them is accurate (Eliasi, 2002). Usually, the ingredient label does not list the origin of the ingredients. Hidden ingredients from various sources present another serious problem for Muslim consumers (Riaz and Chaudry, 2003). The high demand for transparency in the food industry has enhanced the development of methods for the analysis of food ingredients. Additional to this, there are several main objectives being established in order to achieve the direction of this project study:
• To identify key challenges & opportunities of Halal Food Business in African Region.
• To further review on the African Region’s understanding and perception towards Halal Food
Business.
• To develop strategies on how to enhance Halal Food Business in Africa Region

After viewing (based on the gathered information from several studies) the reality of Halal food in the African community, and attempting to understand it in light of the current policies, particularly in the context of the relationship between the acceptance of Halal Food demand and their awareness, a strategy could be proposed for dealing with Halal food business in Africa, both at economic, social, political and cultural level. However, there are few limitations had been identified:
• The concurrent of Halal Food Business Market in African Region unable to foresee.
• Constraints of resources to analyze further on the matters arises.
• The identified resources may vary from the actual scene.
• Any developed ideas or formula based on the resources may not be effective since it doesn’t include the groundwork (interviews, field visit, etc.).

In order to understand better on the market situation of Halal Food position in African society and contribute to the economic and political development and the rise of the African affairs. There are TWO (2) main tools that were adapted in this analysis. The aims are to develop strategies which enable to capture possibilities and improvement towards this matter: SWOT (to identify internal/external issues) and TOWS (to identify strategies).

3. Literature Review
The literature review summary shown in table 1 in the next page.

4. Methodology
In order to understand better on the market situation of Halal Food position in African society and contribute to the economic and political development and the rise of the African affairs. There are TWO (2) main tools that were adapted in this analysis. The aims are to develop strategies which enable to capture possibilities and improvement towards this matter: SWOT (to identify internal/external issues) and TOWS (to identify strategies).

5. Findings
The main findings are based on gathered information from identified reliable sources such as journals, articles and published documents. Hence, with this information, we are able to generate an analysis using SWOT & TOWS (in Table 1) whereby hypotheses are raised throughout the analyzing process.

Based on the SWOT and TOWS analysis, we found out that African region has great opportunities to offer for Halal Food business. The main key factors that contribute such augmented statement because of supportive government, the needs of supplying talents and knowledge in Halal Food business are very encouraging, the urgency of establishment of Halal Standards among African region are crucial and, promoting and collaborative effort between industry players and African Halal Organization Body were positively good sign. See Table 2 in the next page which illustrate the SWOT & TOWS Analysis on Halal Food Business in Africa

6. Discussion
The global halal market has emerged as a new growth sector in the global economy and is creating a strong presence in developed countries. The most promising halal markets are the fast-growing economies of the African Region. With a growing consumer base, and increasing growth in many parts of the world, the industry is set to become a competitive force in world international trade. The halal industry has now expanded well beyond the food sector further widening the economic potentials for halal. Based on this, we may illustrate that Muslims in every Muslim country are the supervisors to monitor halal food products, and providers of its licenses. That, no doubt, will underscore the benefit of Islam and witness Muslims contributions in their civilizational tasks on economy and development in Africa, and that, without any shadow of doubt, will positively impact support of peaceful coexistence in the African country; where studies have confirmed that conflicts in Africa or elsewhere, are caused by basic economic deterioration, poverty, and that most of the problems of disease and ignorance are directly related to the communities low level of living.

In addition, Muslims engagement in Halal Food in Africa economies, and the need of national and international companies to them as mediators or associates in the Halal sector – in all fields – will raise the importance of Muslims in Africa, especially in countries that represent the minority and it will also change their citizens views about them, added to how governments deal with them, which will translate to mutual respect. In culture and education; despite the fact food enjoys strong economic support that makes it a pragmatic utilitarian option at global level, however, it must be supported by raising children, strong and educating initiated by Muslims themselves; to define this ritual and its social applications in the best picture, is knowledge ensures tolerant spirit in Islam, affording gentle persuasion through Halal Food; it is apparent that some Muslims ignorance of Halal Food regulations leads them to excessive attitudes and behaviors that alienate other neutral religions. As for Islam, it its globalization is just the opposite, and what was announced by researcher Roy in this regard in the field of halal food is outlined here. He said: “when Muslims open a restaurant in Europe, it never promotes Ottoman (Turkish), or Moroccian food, but halal food.” In the field of fashion, he said: “Muslim fashion”(halal dress) may not be
## Table 1: Summary of Literature Review

<table>
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<tr>
<th>Title Source</th>
<th>Focus Topics</th>
<th>Findings</th>
<th>Conclusion/Recommendation</th>
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<tr>
<td>Potential of Halal Industry for Maghreb Countries by Mohd Ali Mohd Noor and Mohammed Rizki Moi, 2015</td>
<td><strong>SWOT Analysis</strong></td>
<td><strong>Algeria:</strong> Majority Muslims, Supportive Government, Poor financial Capacity, No halal certification body, Lenient concept of halal. <strong>Libya:</strong> Large Muslim population, politically instable, No halal certification body, small value of export. <strong>Mauritania:</strong> Muslim (official) 100%, The legal system is based on Islam, the government banned political Parties, Military rule, Population density: 8 people per square mile. <strong>Morocco:</strong> Women are the privileged target - reference for producers of food, major consumers of cosmetic, Attitudinal problem – halal food is a personal choice, Halal certification regulation (inspired by the Malaysian model) has been in place since 2010, Canada &amp; US are the primary competitors– Canada is rated as ‘best’ in terms of quality, service and safety of Agrit-products. <strong>Tunisia:</strong> More liberalized market compares to other parts of Maghreb countries, High living cost (possibly cost of production is also high) Lack of security and political stability between new emerging Islamic party and former liberal Party, has established relationship with Malaysia regarding halal industries in 2012, Export in food is high compared to other Maghreb Countries.</td>
<td>The main finding implies that only four out of five Maghreb countries have potential to develop halal industry namely Algeria, Libya, Morocco and Tunisia on the ground that their net exports are positive. The opportunities do exist for Malaysia to expand the halal food market in Maghreb countries since Tunisia has initiated a process of certification of products and halal service after establishing a relationship with Malaysia regarding halal industries and Morocco has developed halal certification regulation in 2010 which is inspired by the Malaysian model.</td>
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<td>In Morocco, Halal Certification Opens the Door to New Markets by International Trade Centre, 21 Sept. 2016</td>
<td><strong>The Challenge</strong></td>
<td>The global halal food market, valued at US$1.29 trillion, presents opportunities to would-be exporters in developing and least developed countries. In many markets, however, seizing these opportunities requires products to be certified and labelled as halal. And even in predominantly Muslim countries like Morocco, where production processes are generally in line with halal requirements, getting such certification can be a complex and expensive process, especially for SMEs.</td>
<td>Morocco is seeking to become a regional hub and a trade bridge between Europe and Africa for halal products. ITC is supporting the Moroccan government in designing a national level strategy to develop the halal sector. ITC will continue to work with SMEs in different parts of Morocco to develop halal products and enter the global market.</td>
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<td><strong>The Response</strong></td>
<td>Since early 2014, ITC has collaborated closely with Morocco’s Ministry of Foreign Trade and IMANOR to support the country’s ambition to become an important player in global halal food production and trade. The work has proceeded on multiple tracks: (i) building awareness among both SMEs and national institutions about global market potential and how to meet different standards; (ii) institutional capacity building for auditing and certification; (iii) facilitating cooperation with halal authorities elsewhere, notably work to get JAKIM to recognize IMANOR’s halal standard; and (iv) linking SMEs to potential markets.</td>
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<td><strong>The Results</strong></td>
<td>In January 2015, JAKIM, Malaysia’s halal authority, recognized “Halal Maroc,” IMANOR’s halal certification as equivalent to its own. Not only has this mutual recognition opened new market possibilities for Moroccan SMEs in Malaysia, it also creates opportunities in markets that use the Malaysian standard as a benchmark.</td>
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<td><strong>Prospect of Halal Products in Developing Countries: Comparison Between Nigeria &amp; Malaysia</strong> by Idris Oyewale Oyelakin and Asnidar Hanim Yusuf, 2018</td>
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<td><strong>Target market Muslim population</strong></td>
<td>Malaysian population with about 60% of Muslims, yet the country has achieved so much in terms of the contribution from halal industry to the country’s gross domestic product. Nigeria, on the other hand is the largest country in Africa with a population of over 180 million. 48.9% are Muslims. Known to follow their religion strictly thereby it is no surprise that they are conscious about the type of products they consume.</td>
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<td><strong>Halal Certificate</strong></td>
<td>Presently, in Nigeria there are so many products with the halal logo being imported into Nigeria, which has no certification from any credible government authority in charge to check whether the products actually meet halal standards and requirements. It is however interesting to note that the only regulatory body for halal product compliance in Nigeria is the Standard Organization of Nigeria (SON) which to a certain extent cannot ascertain the integrity and standard of halal products in terms of its logo and certifications even among the halal industry players.</td>
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<td><strong>Halal Industry in Nigeria</strong></td>
<td>Nigeria now has no or little history in terms of halal products. This is partly because the country is multi-religions. There is a huge Muslim population in Western Africa, especially in Nigeria (about 80 million Muslim population), but the halal market is still not fully harnessed. This is mainly because halal standards and certification are also not yet available in Nigeria. This is seen as a huge waste to the country as Nigeria has the potential to become the Africa hub for the production and trade of halal products and services.</td>
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<td><strong>KBHC Positioning Kenya as Regional Hub for Halal Certification</strong> by Kenya Bureau of Halal Certification Halal Bulletin, 2012</td>
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<td><strong>Halal Certification</strong></td>
<td>Kenya is among the countries which have embraced the Halal Certification concept considered as one of the fastest growing industries in the world to-day with an annual turnover of more than US$2 trillion. The establishment of the Kenya Bureau of Halal Certification was driven by concerns of Muslims in the country who expressed fears that many products in the market do not meet halal guidelines contrary to the requirements of their faith. These fears were more evident when it became clear that some products were being labelled as halal, yet it was clear that they were susceptible to contamination from non-halal foods while others contained ingredients which did not conform to halal practices. These concerns drove a number of Muslim leaders drawn from various organisations to deliberate on the matter and among the resolutions was the need to put in place a body to regulate halal standards in the country. On the global scene, KBHC has opened links with other halal organisations in different parts of the world which includes the World Halal Council, the South Africa National Halal Authority (SANHA) and the Malawi Halal Council.</td>
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<td><strong>KBHC</strong></td>
<td>Apart from the certification procedure, Kenya Bureau of Halal undertakes regular training for certified establishments to keep up to date with halal standards. To build Kenya towards becoming a Halal Hub in the region.</td>
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It is clearly seen that Nigeria still has a lot of opportunities to venture into halal industry, as it has a huge target market, and not to mention its own halal resources such as poultry, livestock and other agriculture products (Onwueme, 2014). Due to lack of government intervention in regulating and authenticating the halal product industry in Nigeria, most of the local manufacturers have no clear directions, especially in terms of certifying their products with halal authorization. Without this proper control of halal recognition, industries in Nigeria have difficulties in growing, either locally or globally.
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<td>Muslims Go for Substitutes as Sacrificial Sheep Scarce by Voice of America News, 2019</td>
<td>Yaounde, Cameroon</td>
<td>Cameroon Muslims are looking for alternatives for the sacrifice as recommended by prophet Muhammad on the day of the Eid al-Adha feast. Sheep, traditionally slaughtered, have become very scarce as a result of the Boko Haram conflict and separatist war in the country's main production areas. Hundreds of Muslims are buying food stuffs from the popular market called &quot;Marche Huitieme&quot; in Cameroon's capital Yaounde in preparation for the feast of sacrifice. Most of the sheep sold in Cameroon towns comes from the area around the central African state's northern border with Nigeria that has been suffering Boko Haram atrocities, or from the English-speaking Northwest and Southwest regions where separatists have been fighting to create an English-speaking state, or neighbouring Chad. In 2016, the World Bank approved a $100 million fund to help Cameroon improve the productivity and competitiveness of livestock production over six years. It said besides replenishing what had been lost as a result of the Boko Haram conflict, the program would help build resilience to climate change and improve the nutrition status of vulnerable populations. Last July, Cameroon began distributing 60,000 goats and sheep to young people in villages along the border with Nigeria to provide livestock for a basic income and replenish what has been lost in order to stop the Islamist militant group from recruiting the youths.</td>
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<td>Factors Affecting Consumers Intention towards Purchasing Halal Food in South Africa</td>
<td>Halal food products in South Africa</td>
<td>South Africa’s halal industry has changed it into a Sub-Saharan Africa’s halal powerhouse, with its halal business valued at $3.22 billion (SalaamGateway.com, 2017). Although the population of Muslims in South Africa is only around 2.5% of the country’s total population, there is an increased focus in meeting the needs of these Muslim consumers. Concerning the non-Muslim community, there is awareness in halal products. Primarily, it is believed to be the same as Kosher, and many of the non-Muslim South Africans are not sufficiently enlightened about the halal requirements. Most non-South African consumers are aware of the importance of halal food products. This might be due to the adequate knowledge and familiarity on halal and the benefits of consuming halal food products. Halal Awareness and consumers’ attitude are significant factors in explaining the intention to purchase halal food products among non-South African consumers. Useful for the South African manufacturers and marketing managers of halal trade, as well as it will have a potential to be the basis of further explorations of halal food consumption for other South African scholars.</td>
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<td>Theory of planned behaviour (TPB)</td>
<td>TPB was applied to examine how attitude, subjective norms, and perceived behaviour control can influence the intention. Subsequently, it influences the behaviour of non-South African consumers to buy halal food products.</td>
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<td>Awareness of Halal</td>
<td>It is a relative concept where a person possibly will be, to some extent, subconsciously or very aware of the issues relating to halal aspect of what is allowable by Allah (God). Aziz and Chok (2013) emphasised that halal awareness has an influence on clarifying the intention to purchase halal products. Furthermore, Hamdan, Issa, Abu, and Jusoff (2013) in their study reveal that most influential factor in Muslim consumers’ choices to buy halal food is the level of knowledge about dealing with the product.</td>
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<td><strong>The Orion Cold Storage Saga: Debating Halal in South Africa</strong> by Auwais Rafudeen, 2013</td>
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<td><strong>Introduction</strong> In November 2011, Cape Town meat importer Orion Cold Storage was publicly accused, most prominently by the South African National Halal Authority (SANHA) - a major halal certifying body in South Africa- of deliberately branding its non-halal products as halal (or permitted to consume according to Islamic law). The specific accusations were as follows: 1) Importation of Irish and Belgian pork products and re-labelling them as Halal sheep/veal products. 2) Importation of Australian Kangaroo meat and re-labelling it as Halal beef trimmings. 3) Importation of Canadian dairy powder for animal feed and relabelling it as Halal skim milk powder. 4) Importation of ‘non-Halal’ Spanish poultry products and relabelling them as Halal (South African National Halal Authority 2011).</td>
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<td><strong>The Unfolding of the Saga</strong> The search and seizure order were granted after videotape evidence was presented showing irregularities and apparent fraud in the labelling processes at the company’s plant. On the 10th November, SANHA, SAMIC, the Red Meat Industry Forum and 14 others (including members of the ‘ulama’ associated with SANHA) applied for an interdict against Orion in the Cape High Court.</td>
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<td><strong>Analysing the Saga</strong> Engaging the Media: A noteworthy feature of the saga was SANHA’s deft handling of the media and, inversely, the MJC’s apparent ineffectiveness in this sphere. Public Sensitivity: public’s sensitivity to halal matters is itself, in part at least, a product of the symbolic goods produced by halal bodies acting as cultural intermediaries. And such public pressure in turn has significantly shaped the development of the saga.</td>
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<td><strong>The South African Halal Industry: A Case of Cultural Intermediaries</strong> (by Shaheed Tayob, 2012)</td>
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<td><strong>Consumption and Cultural</strong> South African halal authorities conform to this model of cultural intermediaries, as defined. In the context of halal certification, it is the halal authorities that provide symbolic goods to the Muslim consumer, who desires to limit him or herself to halal. These authorities have in tum aimed to generate demand using gazettes, road shows and radio media that communicate halal awareness to prospective consumers.</td>
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<td><strong>Halal Authorities and Islamic Dietary Law</strong> A comparison of traditional scholarly opinions to that of the South African halal authorities has been done in order to illustrate this tendency towards more rigid, less inclusive definitions. English translations of the following texts have been consulted as a basis of comparison to which the rulings of the halal authorities could be compared. Rules regarding the food of the people of the book, and the pronunciation of the tasmiya (Arabic word for the invocation of the name of God over an animal before it is slaughtered by a Muslim) before slaughter have been presented as examples of how the opinions of South African halal authorities produced stricter interpretations of Islamic Law.</td>
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<td><strong>The People of The Book</strong> Halal authorities in South Africa denied the faith and commitment of self-professing “people of the book”. The SANHA director noted the impracticality of the rule for halal certification purposes, because he doubts the belief of someone who appears to be Christian. Interestingly, there does not appear</td>
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Halal Food in Multi African Society and Muslim Christian Relations Formation: A Strategy Vision in Political and Economic Dimension by Yusof Talek and Abdulai M. Kaba, 2017

Halal Food in Multi African Society and Muslim Christian Relations Formation: A Strategy Vision in Political and Economic Dimension

Halal Food and Islamic Identity in Africa

Identities of African Muslim communities are linked to halal food and make it differential priorities for Muslims. For example, researcher Sicard describes Tribal Group called Antemoro in Madagascar as a predominance Muslim, which, however, indicates that the Islamic faith in this traditional group is not deep, but he stresses that several external appearances as a distinct determinant of Islamic identity of this group, namely: “Eating only ‘halal’ meat that is ritually slaughtered, use Arabic script to write the local language, their respect for Friday and taboo against consumption of pork.”

Study of Manza community in central Africa, which is still influenced by tribal traditions. The study referred to perfect harmony between Muslims, Christians and traditional religions, especially in a period ranging from mass circumcision of young men; where children are subject to a common social education in commitment to honesty, respect for adults, courage and bravery.

Halal Food: A Tool for Peaceful Co-Existence in Africa

Clashes in Nigeria that claim hundreds lives for trivial reasons! The incident broke out in Tafawa Belawa town, a town of a long Islamic history, as a Muslim bought meat from a Christian butcher in market. There was another Muslim standing nearby, who came to the Muslim reproaching him for buying meat from a Christian, claiming that the meat was not Halal, and asked him to return the meat the meat seller and get his money back. The meat seller refused to return the money. Then the two quarrelled, which became so rage leading to intervention of the Muslims by siding with the Muslim to help him, and Christians favouring the Christian.

Number of disputes especially between Muslims and Christians, and how anti halal food movements by Christian leaders especially in Western and Eastern parts of the African continent. History records Christian opposition to halal food in African communities date back to the earliest era of colonization. The confrontation has numerous features, social, economic and political realities associated with halal food in Africa.

Table 2: SWOT & TOWS Analysis on Halal Food Business in Africa

<table>
<thead>
<tr>
<th>The Findings (Analysis)</th>
<th>Internal Strength</th>
<th>Internal Weakness</th>
<th>External Opportunities</th>
<th>External Threats</th>
<th>SWOT Strategies</th>
<th>WO Strategies</th>
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<tr>
<td></td>
<td>S1: String Government Support</td>
<td>W1: Incorporating the Halal in Description of Product</td>
<td>O1: Increasing Halal Consumption Rate</td>
<td>T1: Anti-Halal Campaign by Non Muslim States</td>
<td>1. More Government efforts in supporting the existing and potential Halal Market</td>
<td>1. Halal Food Certification (W1, T1)</td>
</tr>
</tbody>
</table>

Conclusion/Recommendation

Halal food in bringing about harmony in African society and based on the mentioned events in which halal food has been made to achieve negative religious or political goals.

Number of disputes especially between Muslims and Christians, and how anti halal food movements by Christian leaders especially in Western and Eastern parts of the African continent. History records Christian opposition to halal food in African communities date back to the earliest era of colonization. The confrontation has numerous features, social, economic and political realities associated with halal food in Africa.
different from the West outfits: Winter coats, gloves, mufflers and others. The “halal” is a system that can be adapted to any culture” (Roy, 2005, p. 271). Halal Food not only does achieve cultural unity between the peoples of the Islamic world, but it also supports it and provides all the cultures of the world an antibiotic, and a solid protection against the globalized threat. It is, thus, by achieving this task, an effective tool in achieving peace and harmony socially, not only in Africa, but in the whole world.

Conclusion

It must first be stated that the Islamic dietary and consumption system is different and unique compared to other ethnic dietary systems. The world community has now begun to understand the importance of the Muslims requirement for food and other consumption known as halal. The market for certified halal food and products is growing robustly, both domestically and internationally. Although the term halal has never attracted as much attention as in recent times, today, wherever there are Muslim consumers whose tastes and preferences are governed by halal rules on food specification, a halal food market exists.

Halal authorities were needed to establish as the increasing of halal-demands of Muslim consumers especially in African region. Furthermore, the industry’s existence was necessitated by the increasing use of food-technology that allowed the infiltration of halal considerations into previously harmless scenarios. However, as shown, these authorities were in a position to generate demand for their own services. This demand has taken the form of communications with the Muslim consumer that reinforced the necessity of their position. Indeed, only an educated consumer, aware of the halal risk that food technology represents would demand the services of a halal authority. Furthermore, only products from which Muslims abstained, due to their non-halal status, represented potential revenue earning business should the authority be approached by the producer to offer certification services. There was therefore a direct correlation between a halal authority declaring a product to be haram, and the potential profit of the halal authority.

Recommendation

There are ample opportunities for Malaysia Companies/organizations to develop its Halal Industry and to tap the expanding Global Halal Market especially in African Region. This may create better opportunities for all International Halal Organization Body to work together in establishing Halal Standards which can be applied throughout the world. Hence, Malaysia is able take this opportunity to be a leader in this field. There is a big potential for Malaysian Companies to manufacture and export Halal Certified products to the world market. However, in order to penetrate its market, there are several items to be consider such as do research before entering market, design product that suitable to the region itself, have own logistic support, pricing strategies, educating consumers as marketing tools, and establish local partners for localization in order to tackle and understand market a bit more.

7. Marketing Plan

Executive Summary

Halal is an Arabic word which means permissible or lawful. In the Holy Quran, God commands Muslims and all of mankind to eat of the halal things. Nowadays, the demand for Halal foods is continuously increasing throughout the world.

In African region especially, the need for halal food showed a positive growth based on the increase of community’s awareness & perception towards it which gave a good opportunity to the Malaysian’s entrepreneurs to produce varieties of Halal food.

The objective of this establishment is to be a leader in Halal Food trader in African Region by providing Halal raw and processed food which comply with standards by Malaysia Authority Body (JAKIM). This is to accommodate the demands of African Region for Halal food.

Target Market

Capturing the rising and highly potential Halal Market in African Region which is fully supported by the Government.

Promote and improve Collaborative Effort African Halal Organization Body in order to overcome issues which relate to existence and emergence of Haram and doubtful substance by consumers.

There are ample opportunities for Malaysia companies/organizations to develop its Halal Industry and to tap the expanding Global Halal Market especially in African Region.

Competitor

Due to growing Muslim population the global halal market has emerged as a new growth sector in the global economy and is creating a strong presence in developed countries. The most promising halal markets are the fast-growing economies of the African Region.

The competition in this market is considered to be an advantage to Malaysian companies since the understanding and approach of Halal Standards in this country are well developed than other countries.

Strong government support will enhance more opportunities to penetrate the halal Market. (Strength)

The lack of collaborative efforts between industry players and African Halal organization bodies will create opportunities for Malaysian companies to lead this collaboration with the support of JAKIM. (Weakness)

With collaboration initiated between Malaysia & African in Halal Standards, it will enhance the Halal Global trade potential (Opportunity) and able overcome Uniformity Issue of Halal Standard (Threats).

Human Resource

At the beginning of business, the operation will be run by locals (Malaysian).

When they go for expansion, they will collaborate with African locals.

Vendor / Suppliers

Distribution is a major challenge so many companies
Attributes a large part of the success to its wide network of depots and factories.

Marketing Plan

Do research before penetrating the market in order to get a better understanding of the region’s demand and/or needs.

Branding and advertising strategies are crucial and often have to go hand in hand as education to consumers in African region.

To develop pricing strategy which is able to retain in the business of that region.

Operations

At the beginning, the operation will be based fully in Malaysia.

When go for expansion, it will be based at African Region and partnering with a local firm whereby can be hugely helpful towards a company’s expansion into an African country as local partners can provide insight into the local consumer behavior, have the valuable local networks in place for business, and have the operating or legislative know-how.

Financial Projection

Potential of high profitable business.

High in favor of market penetration which has a high capacity of high demand.

References


OIC/SMIIC 1:2019, General Requirements for Halal Foods

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OIC/SMIIC 1
Standards
Requirements

**ABSTRACT**

The speech given by Ms. Tuğba Daysaloğlu, Director of the Halal Certification Department, Turkish Standards Institution (TSE).

**About TC1**

TC 1 was established in 2011. It’s the first technical committee of SMIIC. Committee Secretariat task is undertaken by Turkey, by Turkish Standards Institution. And Secretary is Tuğba Daysaloğlu and SMIIC Technical Assistant task is conducted by Dr Mohammed Ali Alsheikh. There are 29 P-members and 6 O Members in TC 1.

**Publications of TC 1**

As to the publication of TC 1, OIC/SMIIC 1 General Guidelines on Halal Food is the first standard that SMIIC and TC 1 published.

Then it was revised on 2019 and the title has also changed as General Requirement for Halal Food. OIC / SMIIC 1 is a roof standard and it forms the basis of all other standards.

And the last standard published by TC 1 is OIC/SMIIC 24: 2020 General Requirements for Food Additives and Other Added Chemicals to Halal Food.

**Work Programme of TC 1**

If we take a look at ongoing Project and work programme of TC 1, we can see that there are 5 different Project under development.

<table>
<thead>
<tr>
<th>Project name</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIC/SMIIC DS 22</td>
<td>40.99</td>
</tr>
<tr>
<td>Halal Edible Gelatin – Requirements and Test Methods</td>
<td></td>
</tr>
<tr>
<td>OIC/SMIIC CD 23</td>
<td>30.60</td>
</tr>
<tr>
<td>General Requirements for Halal Animal Feeding Stuffs</td>
<td></td>
</tr>
<tr>
<td>OIC/SMIIC WD 25</td>
<td>20.00</td>
</tr>
<tr>
<td>Test Method for detection of porcine in Food Products and cosmetics</td>
<td></td>
</tr>
<tr>
<td>OIC/SMIIC WD 26</td>
<td>20.00</td>
</tr>
<tr>
<td>Test Method detection of ethanol in Food Products and cosmetics</td>
<td></td>
</tr>
</tbody>
</table>

**General Approach to OIC/SMIIC 1:2019, General Requirements for Halal Food**

The first edition of OIC/SMIIC 1 standard has originally been prepared with the title of “General Guidelines on Halal Food” by the representatives of 40 OIC Standardization Expert Group (SEG) Member States such as Tukey, Iran, Iraq, Malaysia, Egypt, Nigeria, Pakistan, Senegal, Somalia, Sudan, Tunisia, United Arab Emirates and so on and the OIC and its Organs:

(a) Afghanistan, Albania, Azerbaijan, Bangladesh, United Arab Emirates, Brunei Darussalam, Algeria, Indonesia, Morocco, Palestine, Gabon, Iran, Qatar, Kyrgyzstan, Kuwait, Libya, Lebanon, Maldives, Malaysia, Egypt, Nigeria, Oman, Uzbekistan, Pakistan, Senegal, Somalia, Sudan, Syria, Saudi Arabia, Tajikistan, Tunisia, Turkey, Turkmenistan, Uganda, Jordan, Yemen, Bosnia and Herzegovina.)
The first edition has been considered and adopted by the SMIIC Technical Committee Meeting on Halal Food Issues which was held in Yaoundé, Republic of Cameroon on 16-17 May 2011.

After revision by SMIIC TC 1, the second edition has been adopted by SMIIC Members with the new title of “General Requirements for Halal Food” on 31 July 2019 as per the procedures stated in the SMIIC Directives. Despite the change of the title, the document remained much close to the original document.

Figure 2: OIC/SMIIC 1: 2019

Standard Introduction

This standard specifies the general requirements for the production of halal food products and services for any stage of food chain. The standard gives general information to consumers, manufactures, and conformity assessment bodies…etc. mainly on the requirements for halal food products, production and services on the issues which you see in this slide:

- Sources of halal food (Halal and non-halal animals, plants... etc.)
- Rules of slaughtering
- Specific rules for food products and services (Meat and meat products, egg and egg products, milk and dairy products, beverages, GMF, food services and premises…etc.)
- Food processing
- Machinery, utensils, production lines
- Storage, display, service and transport
- Hygiene, sanitation and food safety
- Validation and verification
- Identification and traceability
- Presentation for the market (packaging and labelling)
- Legal requirements and etc.

And these are contents which are defined in OIC/SMIIC 1:
3. Food Products/Services
Clause 4 Products/Services involves:

a. Meat and meat products
b. Milk and dairy products
c. Egg and egg products
d. Cereal and cereal products
e. Vegetable and animal oils and fats
f. Fruit and vegetables and their products
g. Sugar and confectionery products
h. Beverages (Non-alcoholic soft drinks)
i. Honey and its by-products
j. Dietary supplements
k. Genetically modified food (GMF)
l. Food additives
m. Enzymes
n. Microorganisms
o. Packaging materials
p. Processing aids
q. Fish and fish products
r. Drinking water
t. Herbs, spices, condiments and seasoning are covered by this standard.

5. Requirements
Source of food, food of animal origin, halal and non-halal animals, aquatic animals, amphibious animals, food of plant origin, blood and other materials of human or animal origin are all defined in the scope of this clause.

5.1. Rules of Slaughtering

Subclause 5.2 Rules of Slaughtering is of great importance in terms of Meat and Meat Production Industry. There are some basic points shall be taken into consideration for slaughtering:

a. The operator of the mechanical knife shall be an adult Muslim.
b. The slaughterer shall recite tasmiyah “BISMILLAH” prior to switching on the mechanical knife and shall not leave the slaughter area.
c. Should the slaughterer leave the slaughter area, he shall stop the machine line and switch off the mechanical knife. To restart the operation, he or another Muslim slaughterer shall recite tasmiyah “BISMILLAH” before switching on the line and mechanical knife.
d. The slaughterer shall repeat the tasmiyah “BISMILLAH” during each slaughtering operation as long as it is possible and not only at the time of operating the machine. It is not also allowed to use a recording device.
e. The knife used shall be of single blade type and shall be sharp, and be made of steel (stainless steel).
f. The slaughter act shall sever the trachea (halqum), oesophagus (mari) and both of the carotid arteries and two jugular veins (wadajain) to hasten the bleeding and death of the animals.
g. The slaughterer is required to check that each poultry is properly slaughtered and any poultry that missed the mechanical knife shall be slaughtered manually.
h. If the heads are removed completely by the mechanical blade, the poultry and their heads shall be considered non-Halal.
i. Bleeding period shall be minimum 180 seconds.

5.2. Rules of Slaughtering: ANNEX A
In clause 5.2 Rules of Slaughtering Annex A is mentioned as a guideline parameter for electrical stunning. Current value and duration changes according to the type of animal. Electrical current and duration shall be validated and determined by the organization, taking into account the type and weight of the animal and other varying factors.

<table>
<thead>
<tr>
<th>Type of animal</th>
<th>Current (Amper)</th>
<th>Duration (Seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamb</td>
<td>0.50-0.90</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Goat</td>
<td>0.70-1.00</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Sheep</td>
<td>0.70-1.00</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Calf</td>
<td>0.50-1.50</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Steer</td>
<td>0.50-2.00</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Cow</td>
<td>0.50-2.00</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Bull</td>
<td>0.50-2.00</td>
<td>2.00-3.00</td>
</tr>
<tr>
<td>Buffalo</td>
<td>0.50-2.00</td>
<td>2.00-3.00</td>
</tr>
</tbody>
</table>

5.3. Requirements

<table>
<thead>
<tr>
<th>Meat and Meat Products</th>
<th>Halal animals, slaughtering rules</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food additives and any ingredients</td>
</tr>
<tr>
<td></td>
<td>Processing Aids</td>
</tr>
<tr>
<td>Milk and Dairy Products</td>
<td>Derived from halal animals</td>
</tr>
<tr>
<td></td>
<td>Food Additives (Such as rennet, gelatine etc.)</td>
</tr>
<tr>
<td>Beverages</td>
<td>Non-alcoholic, non-poisonous, non-intoxicating</td>
</tr>
<tr>
<td></td>
<td>Non-hazardous to health</td>
</tr>
<tr>
<td></td>
<td>Food additives (such as colorants, preservatives etc.)</td>
</tr>
<tr>
<td>Dietary Supplements</td>
<td>Originated from halal sources, Not contain any non-halal ingredients.</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Halal Sources, Shall be listed on the label.</td>
</tr>
<tr>
<td>Genetically Modified Food (GMO)</td>
<td>Halal sources</td>
</tr>
<tr>
<td>Food Additives and Processing Aids</td>
<td>Derived from halal ingredients</td>
</tr>
<tr>
<td></td>
<td>Free of any non-halal component</td>
</tr>
<tr>
<td>Microorganisms</td>
<td>Non-poisonous and non-hazardous to health, Culture medium derived from halal sources.</td>
</tr>
</tbody>
</table>
Packaging Materials
- Made from halal materials,
- Not contact and contaminated with non-halal materials,
- Food contact materials shall be food grade,
- Shall not contain any materials hazardous to human health and non-halal.

Machinery, Utensils and Production Lines
- Converting processing line
- Oils used in maintenance
- Measuring and testing devices

Hygiene, Sanitation and Food Safety
- Chemicals and materials used in hygiene and sanitation
- Food safety measures

Validation and Verification
- Methods that are based on validated and verified methods recognized at national or international levels.

Identification and Traceability
- Monitoring and measurement requirements,
- Controlled and the unique identification of the product.

Presentation for The Market Packaging and Labelling
- The shape of the packaging, the contents of the labels and advertisements (text, images and illustrations).

Meat and Meat Products- Milk and Dairy Products:
Meat shall be derived from carcasses of Halal animals. And legal requirements shall be taken into consideration. Food additives such as preservatives used in meat and meat products shall not contain any non-Halal ingredients or using any processing including processing aids which is not according to Islamic Rules. Any ingredient derived from the non-Halal animals is not Halal.

a) Milk and dairy products shall be derived from animals which are Halal.
b) Food additives such as rennet and gelatine shall not be produced from non-Halal sources.
c) Human milk and its derivatives shall not be used in food production.

Beverages- Dietary Supplements: All kinds of water and non-alcoholic beverages are Halal except those that are poisonous, intoxicating or hazardous to health or containing non-Halal substances. All products or beverages containing alcohol are prohibited according to Islamic Rules even for cooking purposes or in filling in candies. Food additives such as colorants, preservatives, etc. used in beverages shall not have been produced from non-food grade and non-Halal ingredients.

Dietary supplements shall be produced or originated from Halal sources such as plant or animals and shall not contain any non-Halal ingredients.

Genetically Modified Food (GMO)- Enzymes:
Food and beverages containing products and/or by-products of genetically modified organisms (GMOs) or ingredients made by the use or manipulating of genetic material of animals and plants that are non-Halal according to Islamic Rules, are not Halal.

Enzymes used as raw material, processing aid or final product shall be originated from Halal sources and shall be listed on the label.

Food Additives and Processing Aids-Microorganisms:
Food additives are regarded as food. Food additives which are derived from non-Halal ingredients are not Halal. All food additives and processing aids used for the production of Halal food shall be free of any non-Halal component; including its manufacturing process and its packaging.

Microorganisms used in food or food production shall be produced using culture medium derived from source(s) which are deemed to be Halal.

Packaging Materials:
The packaging materials shall not be made from any materials that are non-Halal. They shall not be prepared, processed or manufactured using equipment that is contaminated with non-Halal materials. The food contact materials shall be food grade and shall not contain any materials that are considered hazardous to human health and non-Halal.

Machinery, Utensils and Production Lines-Hygiene, Sanitation and Food Safety:
In case of converting any processing, line contaminated by any non-Halal product into Halal production line, it shall be washed and cleaned according to Islamic Rules, hygiene and sanitary rules.

Oils used in the maintenance of machines and devices that come into contact with the food shall be food grade oil and shall not contain any ingredients that are non-Halal.

Measuring and testing devices used in the process that affect the product quality or health shall be properly maintained and calibrated.

Validation and Verification- Identification and Traceability:
Inspections and testing conducted for the purposes of assessing non-Halal sources and content shall be carried out in accordance with inspection and testing methods that are based on validated and verified methods recognized at national or international levels.

a) Halal food shall be identified by suitable means throughout the entire production process. The Halal food status shall be identified with respect to monitoring and measurement requirements.
b) Where traceability is a requirement, the product shall be controlled and the unique identification of the product shall be recorded.

Presentation for The Market Packaging and Labelling:
The shape of the packaging (physical form of packaging), the contents of the labels and advertisements (text, images and illustrations) of food products shall not be in conflict with Islamic ethics and shall not promote hostility and hatred.

Packaging process shall be carried out in a clean and hygienic manner and in sound sanitary conditions and temperature satisfies safety and quality of the product.

All Halal products should be appropriately labelled so that they can be identified and differentiated from non-Halal products. For certain products that are sold without packaging, it is possible to mark the point of
sale. In addition to requirements specified in ISO 22000 or Codex CAC/RCP 1 and CODEX STAN 1 each package shall be marked legibly and indelibly. The product shall comply with the relevant requirements currently in force in the country in addition to the requirements of this standard.

Ms. Tuğba Daysaloğlu was born in 1983 in Turkey. She was graduated from Ege University Engineering Faculty, Food Engineering Department in 2006. She worked in dairy and bakery products sector, and took charge in studies of establishing an environmental laboratory in private sector. She started work in TSE in 2011. She worked in different laboratories in TSE such as chemistry (Gebze), food (Ankara), Biogenetics and food laboratories in Gebze. She is the director of the halal certification department since 2016.

Besides, she assigned as SMIIC TC 1 (Halal food issues) secretary in 2014 and she still carries out this task until now.
Capacity Building for Halal, in the OIC and Non-OIC Countries: Importance, Need, and Recommendations

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ARTICLE INFO

Keywords:  
World Trade Organization  
Free Trade Organizations  
General Agreement on Tariffs and Trade (GATT)  
Technical Barriers to Trade

ABSTRACT

Globalization has converted all the world into a small global village, far distances are covered by Modern sciences and technology. Revolution is food science and technology has enabled the world to make available all the products everywhere through the world.  
On the other hand, UNO, World Trade Organization (WTO) and Free Trade Organizations (FTO) etc. have tried to remove all the non-technical custom barriers. In the modern era there is only one way for any country to secure its economy in terms of TBTs, (trade barrier transactions). Halal industry is a modern fast-growing and value-added sector of the global economy. Every country either OIC or Non-OIC, is trying its best to gain the maximum share of this new sector. Halal is not only required by Muslims, but also recommended for Non-Muslims. The two Mian stack holder’s manufacturer and consumer/customer can be both Muslim and Non-Muslim. Various areas of Halal industry services are also commonly shared by Muslims and Non-Muslims. However, on the other hand there are some possible technical issues and lack of basic awareness regarding the concept of Halal, that can cause potential hazards for Halal industry. Keeping in mind, capacity building, awareness, research, and training on Halal aspects the essential need both, in the OIC and Non-OIC Countries, to protect and safeguard the Halal integrity. The most important role in this regard is for OIC/SMIIC standards, to eliminate all above hazards and to remove all kinds of misunderstandings in terms of capacity building.

Author’s Note: Importance, need and Reason for Research on the topic:  
Globalization has converted all the world into a small global village, far distances are covered by Modern sciences and technology. Revolution is food science and technology has enabled the world to make available all the products everywhere through the world. On the other hand there are some possible technical issues and lack of basic awareness regarding the concept of Halal, that can cause potential hazards for Halal industry. Keeping in mind, capacity building, awareness, research, and training on Halal aspects the essential need both, in the OIC and Non-OIC Countries, to protect and safeguard the Halal integrity.

Research Methodology:  
The paper is based on comparative study of GATT 1997-1994, GATS, WTO rules and regulations, contemporary Halal standards, trade indications, food safety and quality management systems, along with moderate concepts of Halal given by Quran and Sunnah.

Research outline:  
The paper is divided into five major areas as follows:  
1. Halal & Tayyib - The Islamic lifestyle  
2. GATT-WTO (1947-1994) structure and its potential affect/impact on Halal industry  
3. Identification and sustainable solution of TBT’s in Halal industry.  
4. Role of OIC-SMIIC in Harmonization of Global Economy  
5. Capacity building plan for Halal in OIC and Non-OIC Countries.
1. Halal & Tayyib - The Islamic lifestyle:

Meaning of Halal in Islam, and its application in Halal industry

By literal meaning in Arabic language, the word Halal comes from the route of جعل - يحل, that means a thing that is not restricted, not bounded and is open.

In Islamic Shariah, Halal means things or actions permitted by laws of Islam. The word Halal relates sometimes to a substance, things, mass, either it is in solid tangible form, liquid or in gas form. Similarly, the word Halal is related in so many ways to the actions of Muslims, in terms of permitted or prohibited actions. 1

In the Quran we have 33 times the word Halal, 20 out of it is used for Halal Foods, 13 times for general permission. 2 In Hadith we have a lot of time.

Halal in Halal industry we have three major areas, materials, processes, and Halal management systems. Material is related to things, while the process and Halal management system come under the actions. Keeping in mind the meaning of Halal, anything or product is sometimes Halal or Haram, because of its materials, while sometimes anything or product becomes Halal or Haram, because of its process or system. Therefore, both the material and systematic process is the scope of the Halal.

In Halal conformity assessment system, the first one confirmed during Raw-material evaluation, and the second one is assessed in Halal audit.

The word Haram means: Things or actions strictly prohibited by Laws of Islam.

The word Haram is the opposite of Halal in all above aspects.

Meaning of Tayyib in Islam, and its application in Halal industry

By literal meaning in Arabic language, the word Tayyib comes from the root of مطبخ - طاب - طابض A thing that gives someone, great satisfaction, and enjoyment, be agreeable, delicious, Healthy, Delicious, Wholesome, and pure, nutritious, provided that it is not in conflict with any law of Islam. 3

In Islamic Fiqh, there is some slight details is the meaning and application of Tayyib as follows:

In Fiqh Malik, Tayyib means Tahir. 4 In Fiqh Shafie/ Hanbali, Tayyib means Safe, Healthy, Delicious, Wholesome, adopted by Arab Muslims. 4

In Fiqh Hanafi, Tayyib means Safe, Healthy, Delicious, Wholesome, adopted by competent, safe, and sound Muslims. 5

In my opinion summarizing the above details, the preferable meaning of Tayyib is “Thing That is intrinsically and naturally liked by the Muslims; and that is Safe, Healthy, Delicious, Wholesome, pure, and nutritious, provided that it is not in conflict with any law of Islam.”

In halal industry requirements and practices of Hygiene, Sanitation and Food Safety can be correlated with Tayyib, similarly the Quality Management System requirements and practices, might be the Tayyib way of Halal management system.

However, it must be kept in mind that Halal and Tayyib are two Quranic and pure Islamic terms, that must be taken with all details given about, in Quran (Tafseer) and Sunnah.

2. GATT-WTO (1947-1994) structure and its potential affect/impact on Halal industry:

History of the GATT

General Agreement on Tariffs and Trade (GATT) On 30 October 1947, twenty-three countries signed the Final Act of the General Agreement on Tariffs and Trade (GATT) after a period of intensive negotiations. 6

The negotiations of the General Agreement on Tariffs and Trade (GATT) were formally concluded on 30 October 1947. Considered the largest trade negotiation of its time, the GATT was concluded in little over six months thanks to a series of innovative approaches, bold decisions, and a colossal effort by those involved. 7

The General Agreement on Tariffs and Trade (GATT) was the first multilateral free trade agreement. It first took effect in 1948 as an agreement between 23 countries, and it remained in effect until 1995. 8

The purpose of the GATT was to eliminate harmful trade protectionism. Trade protectionism likely contributed to the 66% reduction of

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https://www.wto.org/english/tratop_e/gatt_e/task_of_signing_e.htm
global trade during the Great Depression. The GATT helped restore economic health to the world after the devastation of the Depression and World War II.9

**GATT and the Goods Council**

The General Agreement on Tariffs and Trade (GATT) covers international trade in goods. The workings of the GATT agreement are the responsibility of the Council for Trade in Goods (Goods Council) which is made up of representatives from all WTO member countries. The Goods Council has 10 committees dealing with specific subjects (such as agriculture, market access, subsidies, anti-dumping measures and so on). Again, these committees consist of all member countries.10

**What is the WTO?**

The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world’s trading nations and ratified in their parliaments. The goal is to help producers of goods and services, exporters, and importers conduct their business.

WTO head office is located in Geneva, Switzerland, established on 1 January 1995, Created by Uruguay Round negotiations (1986-1994). WTO currently consists of 164 members representing 98 percent of world trade.11

**What are ‘WTO terms’?**

WTO terms is a way of describing a trading relationship between countries that is based only on World Trade Organization (WTO) rules, without a free trade agreement between the parties. The WTO’s rules are agreements negotiated by consensus among its member governments. They cover different aspects of trading relations between members. One of the most important WTO rules is ‘non-discrimination’ – in the absence of a free trade agreement, WTO members must treat all other trading partners in the same way, for example by applying their “most favoured nation” tariffs to them.12

**GATT Article 24**

Article 24 is a provision of the General Agreement on Tariffs and Trade (GATT). The GATT is a World Trade Organization (WTO) agreement aimed at reducing tariffs and other barriers to trade in goods across the world. Ordinarily, under WTO rules, tariffs and other barriers applied to goods coming from other countries must be the same for all WTO members. This is known as the most-favoured nation principle. However, the GATT provides several means for members to negotiate agreements among themselves to reduce barriers selectively without having to apply the same benefits to all WTO members: one of these is Article 24. Its main purpose is to ensure that barriers are not raised to other WTO members because of these agreements. In principle, Article 24 also allows members to reach ‘interim’ agreements so they can offer preferential treatment prior to the implementation of a full agreement.13

**Some Important rules of GATT-WTO and its potential impact on Halal industry**

**Most-favoured nation (MFN)**

What does ‘most-favoured nation’ (MFN) mean?

This is a principle of the World Trade Organization (WTO). It means that WTO members cannot discriminate between their trading partners and must, with a few exceptions, offer access to their market on the same terms for all WTO members. Any favour offered to one country must be offered to all. However, members can go further and offer better trading terms to some countries if, for example, they agree to a free trade agreement or they give developing countries better terms. The Most-favoured nation’ (MFN) principle applies both to goods and services.14

**Time based special agreements:**

As per the paragraph 5(c) of Article XXIV the WTO members can enter in a time-based special agreement in a special circumstance for a specific goods. The "reasonable length of time" referred to in paragraph 5(c) of Article XXIV should exceed 10 years only in exceptional cases. However, in cases where Members parties to an interim agreement believe that 10 years would be insufficient, they shall provide a full explanation to the Council for Trade in Goods of the need for a longer period.15

**Impact on Halal industry:**

In the light of above paragraph 5(c) of Article XXIV OIC countries can have a special agreement for a “reasonable length of time” in exceptional cases related to Halal integrity. These exceptions may come from the unavailability of Halal products/goods, raw material market etc. later on In cases where the OIC/Muslim countries to an interim agreement believe that given period would be insufficient, they can exceed this period, however, WTO Muslim countries can provide justified and reasonable explanation to the Council for Trade in Goods of the need for a longer period.

This paragraph also clearly indicates that even being a member to the WTO, the Muslim countries could not be compelled to open their Market for all kind of products regardless the check the status of Halal and Non-Halal.

**Transparency and Good-faith-based negotiations**

In principle all WTO member countries are bound to follow the equal rate of custom duties, however, as per the Paragraph 6 of Article XXIV, the member countries can negotiate for compensatory adjustment. These negotiations will be entered into in good faith with a view to achieving mutually satisfactory compensatory

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9 https://www.thebalance.com/gatt-purpose-history-pros-cons-.  
10 https://www.wto.org/english/tratop_e/gatt_e/gatt_e.htm  
12 WTO | Regional Trade Agreements - GATT Article XXIV  
13 GATT Article 24 What is GATT Article 247 | UK in a changing Europe (ukandeu.ac.uk)  
14 https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top  
15 (paragraph 5(c) of Article XXIV) https://www.wto.org/english/tratop_e/region_e/region_art24_e.htm#top
Halal is significant need and fundamental reason for Transparency and Good-faith-based negotiations for OIC countries:

Paragraph 6 of Article XXIV grants space to the OIC countries, to stabilize and relate their custom duties system to the requirements of Halal. They can negotiate for compensatory adjustment to the export and import of Halal products; as Halal is a significant need and fundamental reason for Transparency and Good-faith for Muslims.

No obligation on WTO Members for compensatory adjustment on reduction of duties

GATT 1994 imposes no obligation on Members benefiting from a reduction of duties consequent upon the formation of a customs union, or an interim agreement leading to the formation of a customs union, to provide compensatory adjustment to its constituents.

OIC Member countries can reduce duties on Halal products:

In the light of GATT 1994, OIC Member countries can reduce custom duties on Halal products, based on Transparency and Good-faith for Muslims. Muslim countries could not be imposed an obligation to provide compensatory adjustment to other countries. In this way Halal goods can be easily provided among the Muslim countries.

notification of changes in agreement

As per the paragraph 7(a) of Article XXIV, GATT 1994, Members parties to an interim agreement shall notify substantial changes in the plan and schedule included in that agreement to the Council for Trade in Goods and, if so requested, the Council shall examine the changes.

changes in Halal conformity requirements:

the paragraph 7(a) of Article XXIV, if the OIC countries feel any need related to Halal conformity requirements, they may make substantial changes in the plan and schedule in the mutual agreement. In this regard the Muslim countries can justify and notify the required changes to the Council for Trade in Goods for examination. However, it is important to ensure the council, that these changes are needed and related to the main purpose of Halal products in the Muslim consumer society.

Such significant changes may base on the change in the source of Raw materials, processes, Halal management system, HR is special cases, change in the Human resources e.g. in the meat industry or change of conformity assessment bodies etc.

WTO Dispute Settlement system:

WTO has a detailed and strong Dispute Settlement system: The provisions of Articles XXII and XXIII of GATT 1994 as elaborated and applied by the Dispute Settlement Understanding may be invoked with respect to any matters arising from the application of those provisions of Article XXIV relating to customs unions, free-trade areas or interim agreements leading to the formation of a customs union or free-trade area.

When the Dispute Settlement Body has ruled that a provision of GATT 1994 has not been observed, the responsible Member shall take such reasonable measures as may be available to it to ensure its observance. The provisions relating to compensation and suspension of concessions or other obligations apply in cases where it has not been possible to secure such observance.

Nullity of Dispute Settlement system for Halal:

WTO having a strong Dispute Settlement system, on the contrary, OIC countries have no Dispute Settlement system or any Dispute Settlement Body, that can rule that the provisions of Halal are observed or not.

This is the most horrendous situation for Halal industry. On one side Halal industry is facing Lack of awareness, competency, training and understanding of Halal requirements. On the other hand, there are some potential threats that may create disputes among Halal industry stakeholders.

Apart from the variations in quality and food safety management system, these potential threats might be identified from Shariah point of view.

These areas can be the regional requirements, Raw material sources, manufacturing processes, slaughtering protocols, difference of opinion from different schools of Fiqh etc.

We all are well aware that difference of opinion in the explanations and implementations of Shariah primary sources, is passed down for the last 14 centuries. The variations based on Shariah proof is beauty of Islam and are negotiable and understandable and easily Decipherable. But it is true that at the moment the OIC countries have no systematic approach to settle disputes regarding Halal. Rather than there is no system existing in this regard.

OIC/SMIIC can play the role of Dispute Settlement Body for Halal:

This is much needed to establish as soon as possible, a unanimous platform or unanimous Dispute Settlement Body that can rule the provisions relating to Halal. We strongly believe that OIC/SMIIC can play the role of Dispute Settlement Body for Halal, however, this is the most sensitive and high intensity area of Halal industry, and needs most competent personnel. In my opinion if OIC/SMIIC initiates and they must initiate to establish Dispute Settlement Body for Halal, that shall be comprised of Shariah scholars, relevant technical experts, economists, personnel who understand international preferably economical politics and representatives of all stakeholders e.g. Industry, Govt relevant departments and authorities, Halal certification bodies, Halal accreditation bodies, Halal standardization

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16 Paragraph 6 of Article XXIV)

https://www.wto.org/english/tratop_e/region_e/region_art24_e.htm#top

17 (GATT 1994, Paragraph 6 of Article XXIV)

https://www.wto.org/english/tratop_e/region_e/region_art24_e.htm#top

18 (paragraph 7(a) of Article XXIV, GATT 1994)

https://www.wto.org/english/tratop_e/region_e/region_art24_e.htm#top

19 https://www.wto.org/english/tratop_e/dispu_e/dsu_e.htm
bodies etc. the role of OIC/SMIIC harmonized Halal standards is also very vital in future for ejection of disputes in Halal.

**General Agreement on Trade in Services (GATS)**

(Article I — XXVI)

As per the General Agreement on Trade in Services (GATS) the Members are agreed for,

Recognizing the growing importance of trade in services for the growth and development of the world economy.

Wishing to establish a multilateral framework of principles and rules for trade in services,

Desiring the early achievement of progressively higher levels of liberalization of trade in services,

Recognizing the right of Members to regulate, and to introduce new regulations, on the supply of services within their territories,

Desiring to facilitate the increasing participation of developing countries in trade in services,

And Taking particular account of the serious difficulty of the least-developed countries in view of their special economic situation and their development, trade and financial needs; 20

**Part I: Scope and Definition**

This Agreement (GATS) applies to measures by Members affecting trade in services.

The word “services” includes any service in any sector except services supplied in the exercise of governmental authority;

“a service supplied in the exercise of governmental authority” means any service which is supplied neither on a commercial basis, nor in competition with one or more service suppliers. 21

**Halal services industry and GATS**

The service industries (More formally termed: 'tertiary sector of industry' by economists) involve the provision of services to businesses as well as final consumers. Service industry is any industry that produces value that is primarily intangible such as customer services, management etc.

Halal services industry is a fast-growing industry, recognizing the growing importance of trade in services for the growth and development of the world economy.

The scope of Halal services can be extended to Halal certification, accreditation, inspection, audits, research, training, consultancy, Legal services, Hospitality, traveling and tourism, transportation, logistics, healthcare, wellness, finance, professional services, retail, education, product as services such as maintenance, etc. In Halal services industry, particular accounts can be taken of the serious difficulties regarding Halal requirements in specific areas, countries in view of their special economic or industrial situation and their development, trade and financial needs as well as the availability of Halal products and services.

**Part II: General Obligations and Disciplines**

**Disclosure of Confidential Information**

As per the GATS Article III: “Nothing in this Agreement shall require any Member to provide confidential information, the disclosure of which would impede law enforcement, or otherwise be contrary to the public interest, or which would prejudice legitimate commercial interests of particular enterprises, public or private. 22

**Confidential Information in Halal industry**

Although the GATS Article III does not require any Member to provide confidential information, however, in Halal industry some time we need disclosure of Confidential Information for the confirmation of Halal statues of the product, raw materials or service such a Halal certificate. If any party is not ready to provide confidential information, or the disclosure of which would impede law enforcement, or otherwise be contrary to the public interest, or which would prejudice legitimate commercial interests of particular enterprises, public or private, we can require the minimum level by which we can confirm he status, such in the product, flavour or raw material we do not need quantitative formula, we can proceed with qualitative formula.

**Domestic Regulation and GATS**

Special attention is derived to the Domestic Regulations. Similarly, members entered in a WTO enforceable agreement, in sectors where specific commitments are undertaken, each Member shall ensure that all measures of general application affecting trade in services are administered in a reasonable, objective and impartial manner. 23

Each Member shall maintain or institute as soon as practicable judicial, arbitral or administrative tribunals or procedures which provide, at the request of an affected service supplier, for the prompt review of, and where justified, appropriate remedies for, administrative decisions affecting trade in services. Where such procedures are not independent of the agency entrusted with the administrative decision concerned, the Member shall ensure that the procedures in fact provide for an objective and impartial review. 24 The provisions of subparagraph (a) shall not be construed to require a Member to institute such tribunals or procedures where this would be inconsistent with its constitutional structure or the nature of its legal system. 25

**Halal industry and Domestic Regulation (GATS Article VI 1 & 2)**

**sovereignty and independence of Local/domestic constitutional structure and the nature of legal system**

As per the GATS article VI members are bound to maintain or institute as soon as practicable judicial, arbitral or administrative tribunals or procedures, for an

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20 General Agreement on Trade in Services (GATS) (Article I — XXVI)

21 https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top

22 (GATS Article III) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top

23 (GATS Article VI 1) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top

24 (GATS Article VI 2. (a)) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top

25 (GATS Article VI.2, (b)) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
objective and impartial prompt review of, and where justified, appropriate remedies for, administrative decisions affecting trade in services.

However, in the very next clause, sovereignty and independence of the member constitutional structure and the nature of its legal system is clearly granted.

The member constitutional structure and the nature of its legal system is exempted from the review in administrative tribunals or procedures.

In this regard the GATS Article VI 1 & 2, are very clear and documented proof, for the safety of Halal integrity. If the OIC member countries constitutional structure and legal system is based on Quran and Sunnah and the requirements of Halal, nobody can impose its TORs, polices, products or services where this would be inconsistent with the OIC member countries constitutional structure and legal system. In this sense, no import-export policy or any WTO member has the right to force an Islamic country to trade freely for any goods or services that violate the Islamic country’s religious values and religious laws.

Alhamdulillah, Most of OIC member countries have import/export policies, constitutional structure and legal system based on Quran and Sunnah, Islamic values and the requirements of Halal.

**constitution of The Islamic Republic of Pakistan:**

reference to the provisions of GATS article VI, the constitution of The Islamic Republic of Pakistan is very clear in this regard. We mentioned hereunder only two examples: constitution of The Islamic Republic of Pakistan and the Import Policy Order, 2020 (S.R.O. 902 (I)/2020.)

**Islam to be State religion**

As per constitution of The Islamic Republic of Pakistan, Part I: Introductory, article 2: “Islam to be State religion: Islam shall be the State religion of Pakistan.” 26 Part II: Fundamental Rights and Principles of Policy

Chapter 2: Principles of Policy, article 31 Islamic way of life:

(1) Steps shall be taken to enable the Muslims of Pakistan, individually and collectively, to order their lives in accordance with the fundamental principles and basic concepts of Islam and to provide facilities whereby they may be enabled to understand the meaning of life according to the Holy Quran and Sunnah.

(2) The state shall endeavour, as respects the Muslims of Pakistan: -

(a) to make the teaching of the Holy Quran and Islamiat compulsory, to encourage and facilitate the learning of Arabic language and to secure correct and exact printing and publishing of the Holy Quran;

(b) to promote unity and the observance of the Islamic moral standards; and

(c) to secure the proper organisation of zakat,

[ushr,] auqaf and mosques. 27


(1) All existing laws shall be brought in conformity with the Injunctions of Islam as laid down in the Holy Quran and Sunnah, in this Part referred to as the Injunctions of Islam, and no law shall be enacted which is repugnant to such Injunctions.

[Explanation: - In the application of this clause to the personal law of any Muslim sect, the expression "Quran and Sunnah" shall mean the Quran and Sunnah as interpreted by that sect.]

(2) Effect shall be given to the provisions of clause (1) only in the manner provided in this Part.

(3) Nothing in this Part shall affect the personal laws of non-Muslim citizens or their status as citizens. 28

**Halal industry and the nature of Pakistan legal system**

Import Policy Order, 2020 (S.R.O. 902 (I)/2020.)

(12) Fresh meat or products from poultry:

(c) entire consignment of fresh poultry meat or poultry meat products being imported are accompanied by a Halal certificate from a Halal agency accredited and approved by Pakistan Halal Authority. 29

**APPENDIX-A, BANNED ITEMS, (NEGATIVE LIST)**

Import of commodities specified in the following Table is not permissible, namely: -

3. Anti-Islamic, obscene or subversive literature.

4. Any goods containing ingredients or parts which may be repugnant to the injunctions of Islam as laid down in the Holy Quran and Sunnah of the Holy Prophet (Peace be upon him), including pigs, hogs, boars and swine, and their products and by-products.

14. Alcoholic beverages and spirits (excluding ethyl alcohol of industrial grade), including brewing and distilling dregs and waste, wine lees and argol.

43. Sheesha (tobacco and non-tobacco) and related substances. 30

**APPENDIX-B, RESTRICTED ITEMS, PART-I, HEALTH AND SAFETY REQUIREMENTS**

10: All edible products

(ii) They shall be free of any ‘haram’ element or ingredients.

(iii b) The logo of the Halal certification body is printed on the consumer packaging.

(iii d) The shipment is accompanied by a ‘Halal certificate’ issued by a Halal Certification Body, accredited with an Accrediting Body (AB) which is a member of International Halal Accreditation Forum (IHAF) or Standard Metrology Institute for Islamic Countries (SMIIC);

(v) That, in case of meat, it was obtained from ‘halal’ animals and slaughtered in accordance with the Islamic injunctions. 31

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26 constitution of The Islamic Republic of Pakistan, Part I: Introductory, article 2
27 constitution of The Islamic Republic of Pakistan, Part II: Fundamental Rights and Principles of Policy
Chapter 2: Principles of Policy, article 31 Islamic way of life:
28 constitution of The Islamic Republic of Pakistan
29 Import Policy Order, 2020 (S.R.O. 902 (I)/2020.)
30 Import Policy Order, 2020 (S.R.O. 902 (I)/2020.)
APPENDIX-A, BANNED ITEMS, (NEGATIVE LIST)
31 Import Policy Order, 2020 (S.R.O. 902 (I)/2020.)
service supply authorization and domestic laws and regulations

Where authorization is required for the supply of a service on which a specific commitment has been made, the competent authorities of a Member shall submit an application considered complete under domestic laws and regulations under domestic laws and regulations, within a reasonable period of time. At the request of the applicant, the competent authorities of the Member shall provide, without undue delay, information concerning the status of the application. 32

Halal industry related services supply authorization and domestic laws and regulations

As per the GATS Article VI 3, for the authorization is required for the supply of a service submission of an application considered complete under domestic laws and regulations under domestic laws and regulations, within a reasonable period of time is required. This clause is clear that if the domestic laws and regulations are based on the requirements of Halal, any service cannot be authorized by OIC member countries, where this would be inconsistent with domestic laws and regulations regarding Halal.

GATS qualification requirements and procedures, technical standards and licensing requirements

4. With a view to ensuring that measures relating to qualification requirements and procedures, technical standards and licensing requirements do not constitute unnecessary barriers to trade in services, the Council for Trade in Services shall, through appropriate bodies it may establish, develop any necessary disciplines. Such disciplines shall aim to ensure that such requirements are, inter alia:

(a) based on objective and transparent criteria, such as competence and the ability to supply the service;

(b) not more burdensome than necessary to ensure the quality of the service;

(c) in the case of licensing procedures, not in themselves a restriction on the supply of the service. 33

5. (a) In sectors in which a Member has undertaken specific commitments, pending the entry into force of disciplines developed in these sectors pursuant to paragraph 4, the Member shall not apply licensing and standards qualification requirements and technical that nullify or impair such specific commitments in a manner which:

(i) does not comply with the criteria outlined in subparagraphs 4(a), (b) or (c); and

(ii) could not reasonably have been expected of that Member at the time the specific commitments in those sectors were made.

(b) In determining whether a Member is in conformity with the obligation under paragraph 5(a), account shall be taken of international standards of relevant international organizations applied by that Member. 34

Halal industry related qualification requirements and procedures, technical standards and licensing requirements

GATS Article VI 4, a, b, c. and Article VI 5, a, b. describe the measures relating to qualification requirements and procedures, technical standards, and licensing requirements, based on objective and transparent criteria. for the conformity with the obligation, account shall be taken of international standards of relevant international organizations applied by that Member.

Coming to the point of Halal services requirements, sectors in which a Member has undertaken specific commitments relevant to Halal services, an objective and transparent criterion is required can be set for the conformity with the obligation, based on the recognized Halal standards of relevant international organizations applied by that Member.

These recognized Halal standards can be easily referred to the OIC/SIMIC relevant Halal standards for services supplied to Halal industry, however, it is extremely required the special attention by the OIC member countries in this regard.

Example of Pakistan is clear that Halal certification and Halal accreditation services requirements are referred to the OIC/SIMIC and IHALF, accredited and approved by Pakistan Halal Authority

Competency matrix for Halal industry professional services

In Halal industry related sectors where specific commitments regarding Halal professional services are required to be undertaken, OIC Member countries are immediately required to prepare and provide adequate procedures to verify the competence of professionals of any other Member. 35

Article VII: Recognition

Recognition of required education or experience

1. For the purposes of the fulfilment, in whole or in part, of its standards or criteria for the authorization, licensing or certification of services suppliers, and subject to the requirements of paragraph 3, a Member may recognize the education or experience obtained, requirements met, or licenses or certifications granted in a particular country. Such recognition, which may be achieved through harmonization or otherwise, may be based upon an agreement or arrangement with the

32 (GATS Article VI 3).
33 (GATS Article VI 4, a, b, c.) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
34 (GATS Article VI 5, a, b.) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
35 (GATS Article VI 6) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
country concerned or may be accorded autonomously. 36  

afford adequate opportunity for other interested Members

2. A Member that is a party to an agreement or arrangement of the type referred to in paragraph 1, whether existing or future, shall afford adequate opportunity for other interested Members to negotiate their accession to such an agreement or arrangement or to negotiate comparable ones with it. Where a Member accords recognition autonomously, it shall afford adequate opportunity for any other Member to demonstrate that education, experience, licenses, or certifications obtained, or requirements met in that other Member’s territory should be recognized. 37  

recognition shall not create discrimination between the countries

3. A Member shall not accord recognition in a manner which would constitute a means of discrimination between countries in the application of its standards or criteria for the authorization, licensing or certification of services suppliers, or a disguised restriction on trade in services. 38

4. Each Member shall:

(a) within 12 months from the date on which the WTO Agreement takes effect for it, inform the Council for Trade in Services of its existing recognition measures.

(b) promptly inform the Council for Trade in Services as far in advance as possible of the opening of negotiations on an agreement or arrangement of the type referred to in paragraph 1 in order to provide adequate opportunity to any other Member.

(c) promptly inform the Council for Trade in Services when it adopts new recognition measures or significantly modifies existing ones. 39

5. Wherever appropriate, recognition should be based on multilaterally agreed criteria. In appropriate cases, Members shall work in cooperation with relevant intergovernmental and non-governmental organizations towards the establishment and adoption of common international standards and criteria for recognition and common international standards for the practice of relevant services trades and professions. 40

Harmonized Halal recognition system:

As per the WTO GATS Article VII-1, required education or experience for the fulfilment of standards or criteria for the authorization of services suppliers, may be recognized by members, through harmonization or may be based upon an agreement accorded autonomously. In Halal industry related services mentioned in the above, can be easily recognized through harmonized standards e.g., OIC/SMIIC or based on mutual agreements with the country concerned. Through transparent recognition system we can reduce the services cost as well as, the Muslim customer satisfaction will also be increase.

WTO GATS Article VII-2 can be easily exercised for the harmonization of Halal recognition system. As a Member is bound to afford adequate opportunity for other interested Members to negotiate their accession to such recognition autonomously or by harmonization, to demonstrate the fulfillment of required education and experience. The OIC member countries are seriously required to establish a mutual Harmonized Halal recognition system and afford adequate opportunity for other interested Members.

In the light of GATS Article VII-3, OIC member countries shall not accord recognition in a manner which would constitute a means of discrimination between countries in the application of its standards or criteria for the authorization, licensing or certification of services suppliers, or a disguised restriction on trade in services.

Reference to the GATS Article VII-5, recognition should be based on multilaterally agreed criteria. This criteria can be prepared by competent personnel, having sufficient expertise in the field of Shariah and relevant technical requirements. These personnel can be requested from relevant intergovernmental and non-governmental organizations.

Harmonized Halal monitoring system:

In this regard we need a strong Harmonized Halal monitoring system; because on one side it is highly recommended to establish a Harmonized Halal recognition system, but at the same time it is extremely required to monitor the Halal recognition system. Otherwise, it will lead for a serious condition of discrimination between OIC member countries.

Article VIII: Monopolies and Exclusive Service Suppliers

Monopoly rights can be considered for monopoly suppliers; a Member can grant monopoly rights regarding the supply of a service covered by its specific commitments; The Member shall notify the Council for Trade in Services for Monopoly rights, no later than three months before the intended implementation.

The provisions of this Article shall also apply to cases of exclusive service suppliers, where a Member, formally or in effect, (a) authorizes or establishes a small number of service suppliers and (b) substantially prevents competition among those suppliers in its territory.

However, monopoly suppliers shall not act in a manner inconsistent with that Member’s obligations under Article II and specific commitments. 41

Halal industry Monopolies and Exclusive Service Suppliers

Muslims/Muslim countries have no monopoly on Halal products industry:

Halal products are common for all human beings, regardless, that he is Muslim or non-Muslim. There is no

36 (GATS Article VII-1) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
37 (GATS Article VII-2) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
38 (GATS Article VII-3) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
39 (GATS Article VII-4, a, b, c,) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
40 (GATS Article VII-5) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
41 (GATS Article VIII-1-5) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
monopoly for Muslims/Muslim countries on Halal products.

In Quran Halal products are commonly recommended for all human beings.

Allah S.W.T. says:

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“Allah shall never give the disbelievers a way against Shaitan (Satan); indeed, he is an open enemy for you.”

42

Non-Muslims can be (and they are) the major shareholders and beneficiaries of Halal industry, in term of Halal production, manufacturing, processing, supply chain. At the same time as a consumer Halal is recommended for non-Muslims.

Is there any monopoly for Muslims/Muslim countries on Halal services industry?

Halal services industry is the fastest growing industry. The scope of Halal services can be extended to Halal certification, accreditation, inspection, audits, research, training, consultancy, Legal services, Hospitality, traveling and tourism, transportation, logistics, healthcare, wellness, finance, professional services, retail, education, product as services such as maintenance, etc.

Halal services industry can be divided into two categories, one the services related to Halal conformity assessment system and second services other than Halal conformity assessment system. The second category services can be carried out, if needed, by Non-Muslims.

Halal conformity assessment system related services are just like, Halal certification, accreditation, inspection, audits, lab test or other reporting, research, training, consultancy, standardization etc.

These services of this category are reserved and monopolized only for Muslims. The reason behind this is; that Halal is Exclusive Islamic religious obligation (الشريعة الإسلامية) for Muslims.

In this regard In the Quran, Allah S.W.T. says:

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“Allah shall never give the disbelievers a way against the believers.”

43

In the interpretation of this Ayat (verse) Islamic Shariah scholars say that as per the laws of Islam, any statement for the confirmation of Halal status of a product, carrying the meaning of testimony in Pure Islamic religiose affairs. Whereas the Non-Muslim does not believe in Islam, therefore he has no right of testimony in Pure Islamic religiose affairs, and Halal is one of them. That is why the Non-Muslim individual/organization claim, statement, certification or accreditation for Halal is invalid and will not be accepted. Therefore, the non-Muslim owned manufacturing plants get Halal certification from a Muslim organization/certification bodies. Similarly, Non-Muslim owned certification bodies are not eligible for Halal certification.

Under the GATS Article VIII, Exclusive services related to Halal conformity assessment system are reserved and monopolized only for Muslims.

Article XII: Restrictions to Safeguard the Balance of Payments

As per the GATS Article XII In the event of serious balance-of-payments and external financial difficulties or threat thereof, a Member may adopt or maintain restrictions on trade in services on which it has undertaken specific commitments, including on payments or transfers for transactions related to such commitments. These restrictions shall not discriminate among Members and shall avoid unnecessary damage to the commercial, economic, and financial interests of any other Member; shall not exceed those necessary to deal with the circumstances and shall be temporary and be phased out progressively as the situation specified improves.

Restrictions to Safeguard the Halal integrity

Despite the free and open trade among the WTO members, as per the GATS Article XII In the event of serious balance-of-payments and external financial difficulties or threat thereof, Members are allowed to adopt or maintain restrictions on trade in services under the specific commitments.

In the same way this clause can be easily exercised for serious situation, difficulties, or threat thereof, OIC member countries and Muslim consumer society can be allowed to adopt or maintain restrictions on Non-Halal or doubtful products to Safeguard the Halal integrity.

Article XIV: General Exceptions

Despite the strict requirements of WTO/GATS for free, some general exceptions are granted in GATS Article XIV. We mentioned hereunder some important points that can be related to Halal industry. Consequently, GATS Article XIV says: “nothing in this Agreement shall be construed to prevent the adoption or enforcement by any Member of measures:

necessary to protect public morals or to maintain public order.

(a) The public order exception may be invoked only where a genuine and sufficiently serious threat is posed to one of the fundamental interests of society.

(b) necessary to protect human, animal or plant life or health.

(c) necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement including those relating to:

(i) the prevention of deceptive and fraudulent practices or to deal with the effects of a default on services contracts.

(ii) the protection of the privacy of individuals in relation to the processing and dissemination of personal data and the protection of confidentiality of individual records and accounts.

(iii) safety; 45

Halal industry and General Exceptions

44 (GATS Article XII) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top

45 (GATS Article XIV) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
Based on GATS Article XIV, some General Exceptions can be granted in Halal industry as well. These exceptions might be construed to protect the public morals or to maintain public order of Muslim society. Similarly, protection of human health and security of compliance with laws or regulations is also in exceptional cases. Halal requirements are the most important point and example of public morals, public order, protection of human health and security of compliance with laws and regulations of OIC member countries.

Article XVI: Market Access
Market access is the main requirement of WTO and GATS. Market-access commitments are undertaken in all WTO and GATS agreements. However, some limitations are granted as follows:
(a) limitations on the number of service suppliers whether in the form of numerical quotas, monopolies, exclusive service suppliers or the requirements of an economic needs test.
(b) limitations on the total value of service transactions or assets
(c) limitations on the total number of service operations or on the total quantity of service output
(d) limitations on the total number of natural persons that may be employed in a particular service sector
(e) measures which restrict or require specific types of legal entity
(f) limitations on the participation of foreign capital.

Halal Market Access
Should Halal market have open access?
Halal market is open for everyone, however, same as above GATS Article XVI, some limitations might be required, in term of exclusive Halal conformity assessment services that is indicated in GATS as limitations on the total number of exclusive Halal market access commitments are undertaken in all WTO and GATS agreements. However, some limitations are granted as follows:
(a) limitations on the number of service suppliers whether in the form of numerical quotas, monopolies, exclusive service suppliers or the requirements of an economic needs test.
(b) limitations on the total value of service transactions or assets
(c) limitations on the total number of service operations or on the total quantity of service output
(d) limitations on the total number of natural persons that may be employed in a particular service sector
(e) measures which restrict or require specific types of legal entity
(f) limitations on the participation of foreign capital.

Article XXIV: Council for Trade in Services
1. The Council for Trade in Services shall carry out such functions as may be assigned to it to facilitate the operation of this Agreement and further its objectives. The Council may establish such subsidiary bodies as it considers appropriate for the effective implementation of Halal standard requirements.

2. The Council and, unless the Council decides otherwise, its subsidiary bodies shall be open to participation by representatives of all Members.

3. The Chairman of the Council shall be elected by the Members.

Need of Council for Trade in Halal Services
Concerning the level of The Council for Trade in Services of GATS, it is much needed to establish a similar Council for Trade in Halal Services, to facilitate the operation of Halal industry functions, services, and further its objectives. This council can be easily formed on the OIC/SMIIC level. The Council may establish such subsidiary bodies in OIC member states as it considers appropriate for the effective implementation of Halal standard requirements.

OIC/SMIIC also assign to some observatories as it considers appropriate in Non-OIC countries to observe the effective implementation of Halal standard requirements.

These proposed OIC/SMIIC council its subsidiary bodies, and observatories shall be open to participation by representatives of all Member states and observer members. The organizational structure can be easily reflected by SMIIC structure.

3. Identification and sustainable solution of TBT’s in Halal industry.

The WTO agreements series and Technical Barriers to Trade
The WTO agreements were the outcome of the 1986–1994 Uruguay Round of world trade negotiations.48

Introduction
The TBT Agreement
An overview
Background and purpose
The WTO Agreement on Technical Barriers to Trade (the "TBT Agreement") entered into force on 1 January 1995 as one of the WTO agreements under Annex 1A of the Agreement Establishing the World Trade Organization. The TBT Agreement strengthened and clarified the provisions of the "Standards Code" – the original plurilateral 1979 Tokyo Round Agreement on Technical Barriers to Trade governing regulations and standards.

The TBT Agreement is binding on all members of the WTO. It shares many of its fundamental principles with other WTO agreements – non-discrimination, promoting predictability of access to markets, and technical assistance and special and differential treatment for developing countries in the implementation of the Agreement.

Scope
The TBT Agreement covers trade in all goods (both agricultural and industrial) The following are not covered:

services (Article 1.3 and the opening paragraph of Annex 1 of the TBT Agreement)
purchasing specifications prepared by government bodies for production or consumption requirements of governmental bodies (Article 1.4 of the TBT Agreement)
measures covered by the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).

Three categories of TBT measures

46 (GATS Article XVI) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
47 GATS Article XXIV) https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#top
48 https://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm
49 (Article 1.5 of the TBT Agreement, see Figure 3)
The TBT Agreement distinguishes between three categories of measures: technical regulations, standards, and conformity assessment procedures. The precise definition of these measures is contained in the TBT Agreement.

**Key principles**

The Key principles The TBT Agreement are Non-discrimination among the Members, Avoidance of unnecessary barriers to trade, In terms of technical regulations, Conformity assessment procedures, and standards.

**International standards**

The TBT Agreement strongly encourages members to use "relevant" international standards, guides or recommendations "as a basis" for their regulations and standards.

However, harmonization on the basis of international standards may not be desirable in all contexts due to divergent national preferences and circumstances. The TBT Agreement foresees the possibility that some international standards might not be effective or appropriate in certain cases (e.g. because of climatic, geographical or technological reasons); thus members may decide not to use a standard if it is an ineffective or inappropriate way of fulfilling the public policy objective pursued (see Box 5). The Agreement also recognizes that developing country members should not be expected to use international standards that are not appropriate to their development, financial and trade needs. 50

**Technical assistance and special and differential treatment**

Recognizing the difficulties and challenges that developing-country members may face with implementation, the TBT Agreement contains provisions both on technical assistance (Article 11) and on special and differential treatment (Article 12) – provisions which give developing countries special rights, and which give developed countries the possibility to treat developing countries more favourably than other WTO members.

Article 11 of the TBT Agreement requires members to provide advice and technical assistance to other members, and especially developing country members.

**Transparency**

Transparency is a cornerstone of the TBT Agreement. Transparency in the context of the TBT Agreement involves three core elements:

- provisions on the notification of technical regulations 51 and conformity assessment procedures 52, as well as the "one-time" notification of each member's organizational "set-up" for the implementation of the Agreement. 53
- the establishment of enquiry points 54 and a notification authority. 55
- publication requirements for technical regulations 56, conformity assessment procedures 57 and standards 58.

These three elements have been further developed by the decisions and recommendations of the TBT Committee (see page 84).

**TBT Committee**

The transparency disciplines discussed above are closely linked to the work of the TBT Committee. The Committee serves as a platform to discuss concerns that may arise in the context of the exchanges of information required by the TBT Agreement's transparency provisions. The committee's mandate is broad; it is intended to afford:

"... members the opportunity of consulting on any matters relating to the operation of this Agreement or the furtherance of its objectives". 59

Meetings are open to all WTO members, and countries seeking to join the WTO can participate as observers. Governments choose their representatives at TBT Committee meetings. Representatives include capital-based trade officials and officials from national regulatory and standardizing bodies. There are generally three meetings per year, but delegations also meet informally in between the regular meetings.

TBT Committee work involves two broad areas: a: Review of specific measures. b: Strengthening implementation. Review of specific measures

Strengthening implementation

Over the years, the TBT Committee has developed a series of decisions and recommendations intended to facilitate implementation of the TBT Agreement.

The Committee’s discussions on how to improve regulations

Good regulatory practice (GRP) describes best practices and procedures developed by governments and organizations to improve the quality of regulation. The need to improve international cooperation on regulation is also done by committee.

**What are technical barriers to trade and what are the aims of the WTO Agreement on Technical Barriers to Trade?**

Technical barriers to trade (including technical regulations, standards, and conformity assessment procedures) affect trade in goods. It is common practice for governments to rely on these measures to achieve public policy goals, including the protection of human health and the environment. However, these types of measures are sometimes used to shield domestic producers from foreign competition. The TBT Agreement helps WTO members distinguish between "legitimate" and protectionist motivations for TBT measures. As such, the TBT Agreement is an important tool to improve coherence and mutual supportiveness between open trade, on the one hand, and the internal policies that countries use to achieve public policy

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50 (Article 12.4 of the TBT Agreement)
51 (Articles 2.9, 2.10, and 3.2)
52 (Articles 5.6, 5.7 and 7.2)
53 (Article 15.2)
54 (Article 10.1)
55 (Article 10.10)
56 (Articles 2.9.1 and 2.11)
57 (Articles 5.6.1 and 5.8)
58 (Annex 3, paragraphs J and O)
59 (Article 13.1 of the TBT Agreement)
objectives, on the other. In short, the disciplines of the TBT Agreement are intended to help governments achieve a balance between upholding legitimate regulatory policy objectives and avoiding the creation of unnecessary obstacles to international trade (see also Figure 2 on page 12).

**What is the TBT Committee and who sits on it? What are the issues it considers?**

The TBT Committee is composed of representatives from each member of the WTO. It usually meets three times a year for "the purpose of affording Members the opportunity of consulting on any matters relating to the operation of this Agreement or the furtherance of its objectives..." (Article 13). The Committee has come to fulfil two main functions: (i) to serve as a forum where delegations may discuss specific trade concerns about particular laws, regulations or procedures that affect their trade, and (ii) to provide an opportunity for members to discuss how to strengthen the implementation of the TBT Agreement, primarily by exchanging experiences on generic, cross-cutting themes, including technical assistance, transparency, standards, conformity assessment and good regulatory practices.

**Agreement on Technical Barriers to Trade (the legal text)**

As per the Uruguay Round of Multilateral Trade Negotiations; the Members: Recognizing and Desiring to further the objectives of GATT 1994; , important contribution of international standards and conformity assessment systems, suitable technical regulations and standards, surety and protection of local market, exports, protection of human, animal or plant, protection of members essential security interest and to assist developing countries for special difficulties in the members essential security interest and to assist developing countries for special difficulties in the formulation and application of technical regulations and standards and procedures.

**Technical Regulations and Standards**

Preparation, Adoption and Application of Technical Regulations by Central Government Bodies, Local Government Bodies and Non-Governmental Bodies

With respect to their central government bodies, Members shall ensure that Technical Regulations:

- are based on the principal of non-discrimination,
- shall not create unnecessary obstacles to international trade,
- shall not be maintained if the circumstances or objectives are no longer exist or changed,
- shall be referred to relevant international standards,
- shall be explained and justified upon the request of another Member,
- shall be harmonized on as wide a basis as possible,
- shall be published promptly or otherwise made available to enable interested parties.
- Members shall give positive consideration to accepting as equivalent technical regulations of other Members,

- shall be specified Wherever appropriate, based on product requirements/performance rather than design or descriptive characteristics.
- Whenever a relevant international standard does not exist or technical regulation is not in accordance of relevant international standards, and if the technical regulation may have a significant effect on trade of other Members, Members shall: publish a notice in a publication, shall notify other Members through the Secretariat of the products, upon request, shall provide to other Members particulars or copies, without discrimination, shall allow reasonable time for other Members for comments in writing, discussion.
- provisions can be omitted, where urgent problems of safety, health, environmental protection, or national security arise or threaten to arise for a Member, provided that the Member, shall: notify immediately other Members shall, provide the copies, without discrimination, shall allow other Members to present their comments in writing.
- Except in those urgent circumstances referred to in paragraph 10, Members shall allow a reasonable interval between the publication of technical regulations and their entry into force.60

**Preparation, Adoption and Application of Standards**

Members shall ensure that their central government standardizing bodies accept and comply with the Code of Good Practice for the Preparation, Adoption and Application of Standards. 61

**Conformity with Technical Regulations and Standards**

Members shall ensure that suitable conformity assessment procedures are prepared, adopted, applied, and recognized along with the formulation of International and Regional System, by central government bodies, Local Government Bodies, Non-Governmental Bodies. 62

**Information and Assistance about Technical Regulations, Standards and Conformity Assessment Procedures is established.** 63

**Technical Assistance to Other Members is granted.** 64

**Special and Differential Treatment of Developing Country Members is provided.** 65

**Institutions, Consultation and Dispute Settlement**

**The Committee on Technical Barriers to Trade**

13.1 A Committee on Technical Barriers to Trade is hereby established, and shall be composed of representatives from each of the Members. The Committee shall elect its own Chairman and shall meet as necessary, but no less than once a year, for the purpose of affording Members the opportunity of consulting on any matters relating to the operation of this Agreement or the furtherance of its objectives, and shall carry out such responsibilities as assigned to it under this Agreement or by the Members.

13.2 The Committee shall establish working parties or other bodies as may be appropriate, which shall carry out such responsibilities as may be assigned to them by

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60 (Article 2, 2.1 to 2.12), (Article 3: 3.1, 3.2, 3.3, 3.4, 3.5.)  
61 (Article 4, 4.1/4.2)  
62 (Article 5, Article 6, Article 7, Article 8, Article 9)  
63 (Article 10)  
64 (Article 11)  
65 (Article 12)
the Committee in accordance with the relevant provisions of this Agreement.

13.3 It is understood that unnecessary duplication should be avoided between the work under this Agreement and that of governments in other technical bodies. The Committee shall examine this problem with a view to minimizing such duplication. 66

Consultation and Dispute Settlement

14.1 Consultations and the settlement of disputes with respect to any matter affecting the operation of this Agreement shall take place under the auspices of the Dispute Settlement Body and shall follow, mutatis mutandis, the provisions of Articles XXII and XXIII of GATT 1994, as elaborated and applied by the Dispute Settlement Understanding.

14.2 At the request of a party to a dispute, or at its own initiative, a panel may establish a technical expert group to assist in questions of a technical nature, requiring detailed consideration by experts.

14.3 Technical expert groups shall be governed by the procedures of Annex 2.

Annex 1

TERMS AND THEIR DEFINITIONS FOR THE PURPOSE OF THIS AGREEMENT are taken as per the sixth edition of the ISO/IEC Guide 2: 1991, General Terms and Their Definitions Concerning Standardization and Related Activities, for, Technical regulation, Standard, Conformity assessment procedures, International body or system, Regional body or system, Central government body, Local government body, Non-governmental body. 67

Annex 2

TECHNICAL EXPERT GROUPS

Annex 2 contains procedures for technical expert groups establishment in accordance with the provisions of Article 14. 1. Technical expert groups are under the panel’s authority. technical expert groups shall be restricted to persons of professional standing and experience in the field in question.

technical expert group members shall not Government officials, nor the Citizens of parties to the dispute, except in exceptional circumstances, e.g., need for specialized scientific expertise Members of technical expert groups shall serve in their individual capacities and not as government representatives, nor as representatives of any organization. Technical expert groups may consult and seek information and technical advice from any source they deem appropriate. The parties to a dispute shall have access to all relevant information provided to a technical expert group, unless it is of a confidential nature. The technical expert group shall submit a draft report to the Members concerned with a view to obtaining their comments, and taking them into account, as appropriate, in the final report, which shall also be circulated to the Members concerned when it is submitted to the panel. 68

Annex 3

Annex 2 contains CODE OF GOOD PRACTICE FOR THE PREPARATION, ADOPTION AND APPLICATION OF STANDARDS, General provisions, and Substantive provisions. 69

Identification TBT’s in Halal industry.

Are there any technical barriers to trade in Halal industry?

Technical barriers to trade (including technical regulations, standards, and conformity assessment procedures) affect trade in goods. It is common practice for governments to rely on these measures to achieve public policy goals, including the protection of human health and the environment. However, these types of measures are sometimes used to shield domestic producers from foreign competition.

Sources of Islamic Shariah Laws:

Islamic Shariah law is derived from four sources. Qur’an, Sunnah, Ijma’ and Qiyas. The first two are considered as a primary source for Shariah, while the last two sources are considered as secondary Shariah laws.

Primary Shariah sources set fundamental rules and regulations for Islamic injunctions, that are unanimously accepted and adopted by All the Muslims. For example, to adopt Halal and to avoid Haram and Non-Halal expressly mentioned in Quran and Sunnah, e.g., pig, carrion, flowing blood and wine (Khamar) etc.

Secondary Shariah sources set explanatory rules and regulations for Islamic injunctions for Islamic Fiqh, that are accepted and adopted by Muslims as per their respective School of Fiqh. For example, detailed requirements described in sea foods etc.

In Halal industry (goods and services), there are some areas that may be considered as TBTs for trade in Halal industry. And some people may entitle it as a common practice for Muslims in general or particularly the OIC countries and governments that they rely on these measures to achieve public policy goals, including the protection of human health and the environment. It is also possible that some people may think about these types of measures taken for Halal, which are used to shield domestic producers from foreign competition.

Three types of requirements that may be considered as barriers to trade in Halal industry

Technical barriers related to Halal, that may create any obstacles to international Halal trade, can be categorized in three types: 1st: fundamental Islamic Shariah requirements, 2nd regional and domestic requirements for Halal, set by respective Muslim country or their public based on their particular school of Fiqh. And 3rd the administrative and managerial requirements.

However, in principle the 1st type requirements are not a barrier or obstacle, these are the fundamental Islamic Shariah requirements and basic conditions for Halal, that cannot be overruled or neglected.

The 2nd type requirements are not a barrier or obstacle as well, these are the explanatory Islamic Shariah requirements for Halal, however it can be negotiated in special circumstances.

The 3rd type requirements administrative and

66 (Article 13) 68 Gats Annex 2
67 GATS Annex 1 69 GATS Annex 3
managerial requirements can be sometime Islamic Shariah requirements for Halal, and some time merely required from administrative and managerial point of view. This type of requirements can be easily based and negotiated as per the internationally recognized standards.

Details are as follows:

Type 1: fundamental Islamic Shariah requirements
Identification and traceability of the source and process of the Raw Materials used in Halal industry.

Halal industry related fundamental Islamic Shariah requirements are derived from Primary Shariah sources Quran, Sunnah.

For example, this is basic and fundamental requirement for sources of the Raw Materials used in Halal industry shall be only from Halal sources, using Halal processes. Sometimes we have multiple/more than one source for a single material, some of the sources might be non-Halal. Similarly, if the origin is Halal, however, during the processing, production, manufacturing, storage, transportation might occur. In this case of the Halal standards preventing import to the OIC countries, this is not a technical barrier, it is a fundamental Shariah requirement. The manufacturer or the exporter shall disclose the source of its raw materials and the process flow of its process.

Non-Halal or Doubtful materials and contamination with Non-Halal or Doubtful materials, are really Technical barriers to trade in Halal industry.

Exclusive Services related to Halal conformity
All the services related to Halal conformity to the Halal product/service, that are monopolized, specified, and reserved only for Muslims. Details are mentioned in above. These services can be Halal monitoring, Halal audit, Halal accreditation, Halal recognition, Muslim Halal slaughters.

Non-Muslim CBs, Halal self-claim by Non-Muslim organizations/companies, non-Muslim slaughterers are also Technical barriers to trade in Halal industry.

Type 2: Explanatory Shariah requirements for Halal, by respective OIC member country's Central Government Bodies, Local Government Bodies and Non-Governmental Bodies based on their respective school of Fiqh.

Halal industry related explanatory Shariah requirements derived from Secondary Shariah sources Ijma’ and Qiyas described in Islamic Fiqh (jurisprudence)

As per the Islamic Jurisprudence laws, this type of requirements is also Shariah requirement, that may be by respective OIC member country’s Central Government Bodies, Local Government Bodies and Non-Governmental Bodies based on their respective school of Fiqh.

For example, E120, stunning, mechanical slaughtering, other than fish aquatic animals and sea foods.

In this regard relevant OIC Member countries shall ensure, that the Shariah requirements for Halal, by respective OIC member country’s Central Government Bodies, Local Government Bodies and Non-Governmental Bodies based on their respective school of Fiqh, are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade.

Type 3: The administrative and managerial requirements
Halal industry related administrative and managerial requirements derived from internationally recognized standards, management systems e.g., food safety management systems (FMS) and Quality management systems (QMS) etc.

This type of requirements can be easily based and negotiated as per the internationally recognized standards.

Measures need to be developed for Halal industry
As per the WTO/GATT technical regulations, standards, and conformity assessment procedures are the basic measures needed to be developed and set for the Halal industry.

4. Role of OIC-SMIIC in Harmonization of Global Economy

Role of OIC/SMIIC for the harmonization of technical regulations, standards, and conformity assessment procedures required for Halal industry

In this regard a lot of work is done by OIC member countries on national and domestic level. On international level OIC/SMIIC is the only platform that can play a vital role for the harmonization of technical regulations, standards, and conformity assessment procedures required for Halal industry.

OIC/SMIIC as per its directive, has established, adopted, and implemented Key principles of Transparency, Non-discrimination among the Member countries, Avoidance of unnecessary barriers to trade, In term of technical regulations, standards, and conformity assessment procedures required for Halal industry

OIC/SMIIC International Halal Standards

The OIC/SMIIC secretariat strongly believes to develop harmonized regulations, standards, and conformity assessment procedures required for Halal industry.

OIC/SMIIC encourages members to use OIC/SMIIC harmonized relevant standards, guides or recommendations as a basis for their regulations and standards.

However, harmonization on the basis of international standards may not be desirable in all contexts due to divergent national preferences and circumstances. The OIC/SMIIC standards can be adopted, with the possibility that some harmonization or unification in standards might not be effective or appropriate in certain cases (e.g. because of climatic, geographical, technological or respective school of Fiqh reasons); thus members may decide not to use a standard if it is an ineffective or inappropriate way of fulfilling the public policy objective pursued.

TBT Committee need to establish for Halal

The Shariah and administrative disciplines, discussed above, need an international committee platform that may play the role of the TBT Committee for Halal. The Committee serves as a platform to discuss concerns that may arise in the context of the Halal requirements, fundamental, secondary explanatory or administrative. Halal TBT Committee shall be composed of representatives from each of the Members.

The TBT Committee for Halal and its Meetings must be open to all OIC/SMIIC members, and countries
seeking to join the OIC/SMIIC can participate as observers. Halal TBT Committee work should involve two broad areas: a: Review of specific measures. b: Strengthening implementation.

**OIC/SMIIC TECHNICAL EXPERT GROUPS for Halal TBTs settlement**

Following the WTO/GATT’s practices, technical expert group members for disputes settlement shall be established by OIC/SMIIC. Taking in consideration the impartiality requirements, this group members preferably not the Government officials, nor the Citizens of parties to the dispute, except in exceptional circumstances, e.g., need for specialized Shariah or scientific expertise. Members of technical expert groups shall serve in their individual capacities and not as government representatives, nor as representatives of any organization. Technical expert groups may consult and seek information and technical advice from any source they deem appropriate. The parties to a dispute shall have access to all relevant information provided to a technical expert group, unless it is of a confidential nature. The technical expert group shall submit a draft report to the Members concerned with a view to obtaining their comments, and taking them into account, as appropriate, in the final report, which shall also be circulated to the Members concerned when it is submitted to the panel.

5. **Capacity building plan for Halal in OIC and Non-OIC Countries.**

**Capacity building plan for Halal in OIC and Non-OIC Countries and solution of TBTs in Halal industry.**

Keeping in mind the above mentioned detailed 05 parts, and as mentioned in the abstract, capacity building, awareness, research, and training on Halal aspects is the essential need both, in the OIC and Non-OIC Countries, to protect and safeguard the Halal integrity.

In the above four parts Halal requirements are discussed in detail step by step. In this part we state in brief the Halal capacity building plane, that can be outlined and summarized as per the stakeholders as follows:

**Halal capacity building plane for Conformity Assessment Bodies:**

The most important part of Halal capacity building plan for Conformity Assessment Bodies is human resources, the technical and shariah personnel. This is the most important part of Halal industry, and as discussed in part 02 and part 03. Halal conformity assessment services are reserved and monopolized for Muslims only, and this monopoly is granted by Quran, Sur-e-Nisah Ayat:141.

HSB’s, The Halal standardization bodies, the Halal technical committees are strongly required to consist of Muslim trained and competent experts. HSBs should develop and competency criteria for its members.

In HCB’s, in the departments of audit, decision making, raw material evaluation, consumer department and top management, their competency development in terms of training on relevant Halal and technical standards, the same criteria can be applied for Halal accreditation bodies, HAB’s.

**Halal capacity building plane for Industry:**

On the industrial level the most important area is to develop a capacity plan for the procurement department, the RM purchase, receiving, storage and processing. The most important area in industry is how to implement halal management system. In this internal and external training plan should be developed and executed. In industry and manufacturing plant is the HCPs plan. The Halal control points how to develop, validate, and assess. The Halal risk assessment based on Halal control points should be carefully checked by Halal audit team of HCBs.

Training and awareness of packaging and labelling is also a key area of Halal management system. if the top Management is non-Muslims, they shall appoint a Muslim representative (MR) for Halal.

General solutions are awareness, research, and training in OIC and Non-OIC Countries. While the Technical solutions are standard Halal Audit, real labelling, supervision, ongoing monitoring, and facility dedication.

**Halal capacity building plane for Consumers:**

The challenges on consumer side are wrong Logo, Halal Self claim and non-Muslim HCBs Halal certification. The stakeholders for Halal the HCBs, HABs, and HSBs should develop an awareness and training course to educate consumers for the above challenges and how to evaluate and approach the real Halal certificate.

**Halal capacity building plane for Academia:**

Academia is the mother and nursery for Halal supply chain. Halal capacity building plan for academia is to develop a building module. The main and significant areas and modules can be Short courses, post graduate diplomas (PGDs), Degree programs on MS and Ph.D. level. These degree programs can be designed as per the credit hours dedication linked to the respective country education. I have designed and developed in detail the above-mentioned Halal degree programs as per the US and UK education system.

It is very important to keep care of career future of passing outs and degree holders. Similarly, it is very important that before the launching of any degree program, it must be affiliated and recognized as per the international and national recognized educational system. This is very important to note, that without degree affiliation and registration there will be no future for passing outs and it may bring the system and resources on stake.

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The Halal Traceability System and Critical Ingredients in Food Industry

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A R T I C L E  I N F O

Keywords:
Traceability,
Ingredients,
Halal,
Principles

A B S T R A C T

This paper intends to introduce the Halal traceability system. Shariah principles have been stated in the light of this traceability system. With the help of these Shariah principles the methodology of examining the food ingredients with regard to Halal and Haram have been mentioned. So that through a common strategy the mutual trust of the certification bodies can enhance and be helpful for the harmonization.

1. Introduction

The soul of halal certification is the in-depth research of the product’s components. Any halal management system works to ensure the same. The organization with a strong research and evaluation department becomes a symbol of trust and the organization which is weak in it can be harmful not only for its own clients and consumers, but it is one of the main reasons why Halal CBs around the world are hesitant in accepting each other's certificates despite having a common Halal standard due to weakness in this department. Unfortunately, there is no mention of evaluation procedure in any Halal accreditation system at present, so, on what basis is the system standing, how is it going? This article is being written so that if the Halal CB or the accreditation body (AB) is part of its system, it may be easy to achieve the objectives of halal certification and accept each other's certificates.

Through the traceability system, we access the source of any item, and this concept has been given to us by Islam 1400 years ago. Traceability system can be reflected through the guidance in the religious issues, in this case Quran, Sunnah, analogy and consensus constitute this system in the form of Sanad-e-Din, to protect human race Islam advises to maintain the family system2, also there is a full code for contract3 and news verification in terms of matters4. In essence, Islam has directed the setting up of the system of traceability in every field.

Consuming Halal and avoiding Haram are related to human food and human health. Islam has given full guidance in this field, so that human beings eat halal and Tayyib items and stay away from Haram5, abominable

1 O humanity! Indeed, We created you from a male and a female, and made you into peoples and tribes so that you may get to know one another. Surely the most noble of you in the sight of Allah is the most righteous among you. Allah is truly All-Aware. [Al-Hujurat, 13].

2 O believers! When you contract a loan for a fixed period of time, commit it to writing. Let the scribe maintain justice between the parties. The scribe should not refuse to write as Allah has taught you. [Al-Baqarah, 82].

3 O believers! When you contract a loan for a fixed period of time, commit it to writing. Let the scribe maintain justice between the parties. The scribe should not refuse to write as Allah has taught you. [Al-Baqarah, 82].

4 O believers! If an evildoer brings you any news, verify it so you do not harm people unknowingly, becoming regretful for what you have done. [Al-Hujurat, 06].

5 O humanity! Eat from what is lawful and good on the earth, and avoid what is unlawful, abominable.
اللقاء الأزلي

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فول الصور:

12. عاشورأ من النبى صلى الله عليه وسلم وقال: "أصر رضوانك على الحرام..." (صحح)

11. يقف بخصوص من النبى صلى الله عليه وسلم وسمى: "النبي الذي أصبر على الحرام..." (صحح)

10. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

9. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

8. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

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4. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

3. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

2. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)

1. يقف بإجابة من النبى صلى الله عليه وسلم وسمى: "أصحابي..." (صحح)
human dignity. These five causes can be found already in a substance and can be found as an effect of an act, such as:

1.8. If we take the example of filthiness, wine is filthy by itself, so it is Harām.

1.9. If the lawful animal is slaughtered in a non-Shariah manner, the meat will be rendered (Najis) according to shariah, originally the animal was lawful, but it was rendered Matha (Dead) for not having fulfilled the condition of slaughter, so the meat became Najis.

1.10. Or if a part of Haram is added to a Halal item, it will be contaminated by including the Najis and harama, and therefore the Halal item will also be deemed forbidden because of it

2. Procedure for examining the ingredients of the composition in the light of the above Sharia principles:

Before you the examination of the ingredients, we must know that the ingredients are of two types:

3.1. Non-compound.

3.2. Compound

3.2.1. If the ingredient is non-compound, it will be examined in the light of above principles, either it is from minerals or plants or from the animals

3.2.2. If it is from plants and minerals, it is lawful in the light of the first principle

3.2.3. In the light of second principle, if the plants and minerals are not injurious to health, and do not cause intoxication, then it is lawful, otherwise these would be rendered forbidden due to the harmfulness and intoxication, such as opium etc.

3.2.4. If the ingredient is from animal source, then either it is derived from the Halal animal or Haraam animal? If it is from a Halal animal, was it slaughtered in a shariah way or not? If the animal was lawful and slaughtered in a shariah way, it would be considered lawful and if a single condition is not fulfilled, it cannot be considered lawful.

3.2.5. If the ingredient is made up of compound, more than one ingredient, it will be examined in the light of above principles and not a single part can be considered lawful if it does not meet these conditions.

This is the system of shariah traceability through which the lawfulness, unlawfulness and doubtfulness of any ingredient can easily be examined and determined or further research can be done.

With the help of this system, for the last fifteen years, we have collected a data in terms of the food industry which is being offered only for public interest.

4. List of critical Ingredients regarding Food Industry:

4.1. Baking Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baking fats</td>
<td>Lard</td>
<td>Pig</td>
</tr>
<tr>
<td>Fortification agents</td>
<td>Vitamin B</td>
<td>Possible animal source</td>
</tr>
<tr>
<td>Baking Adj. Oils/B.C. Conditioner</td>
<td>L-Cysteine (900)</td>
<td>Poultry feathers/human hair</td>
</tr>
<tr>
<td>Baking brushes</td>
<td>Animal bristles</td>
<td>Pig</td>
</tr>
<tr>
<td>Pan-grease</td>
<td>Lard</td>
<td>Pig</td>
</tr>
<tr>
<td>Eggs</td>
<td>Impurities</td>
<td>Feathers/blood spots</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
<td>Animals, wines</td>
</tr>
</tbody>
</table>

4.2. Dairy Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coloursants</td>
<td>Carnivorous Acid (E120)</td>
<td>Cochineal Insect</td>
</tr>
<tr>
<td>Stabilizers</td>
<td>Gelatine</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Rennet, Lypoase</td>
<td>Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
<td>Pig, non-zabihah animals</td>
</tr>
</tbody>
</table>

4.3. Snacks Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasoning</td>
<td>Cheese powder</td>
<td>Rennet from Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Seasoning</td>
<td>Whey powder</td>
<td>Rennet from Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Seasoning</td>
<td>Animal &amp; Khamr ingredients</td>
<td>Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Frying Oil</td>
<td>Fatty acids</td>
<td>Pig, non-zabihah animals</td>
</tr>
</tbody>
</table>

4.4. Confectionary Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gelating agent</td>
<td>Gelatin</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Preservative</td>
<td>Alcohol</td>
<td>Khamr, wines</td>
</tr>
<tr>
<td>Humectant</td>
<td>Glycerine</td>
<td>Pig bone &amp; hides, non-zabihah animals, non-zabihah animals</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Whey Powder</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Colourants</td>
<td>Carnivorous acid (E120)</td>
<td>Cochineal Insect</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
<td>Pig, wines</td>
</tr>
</tbody>
</table>

List of critical Ingredients regarding Food Industry:

1.1. List of critical Ingredients regarding Food Industry:

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<tr>
<th>Critical Area</th>
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<tbody>
<tr>
<td>Baking fats</td>
<td>Lard</td>
<td>Pig</td>
</tr>
<tr>
<td>Fortification agents</td>
<td>Vitamin B</td>
<td>Possible animal source</td>
</tr>
<tr>
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<td>L-Cysteine (900)</td>
<td>Poultry feathers/human hair</td>
</tr>
<tr>
<td>Baking brushes</td>
<td>Animal bristles</td>
<td>Pig</td>
</tr>
<tr>
<td>Pan-grease</td>
<td>Lard</td>
<td>Pig</td>
</tr>
<tr>
<td>Eggs</td>
<td>Impurities</td>
<td>Feathers/blood spots</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
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</tr>
</tbody>
</table>

4.2. Dairy Industry:

<table>
<thead>
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<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coloursants</td>
<td>Carnivorous Acid (E120)</td>
<td>Cochineal Insect</td>
</tr>
<tr>
<td>Stabilizers</td>
<td>Gelatine</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Rennet, Lypoase</td>
<td>Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
<td>Pig, non-zabihah animals</td>
</tr>
</tbody>
</table>

4.3. Snacks Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
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<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasoning</td>
<td>Cheese powder</td>
<td>Rennet from Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Seasoning</td>
<td>Whey powder</td>
<td>Rennet from Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Seasoning</td>
<td>Animal &amp; Khamr ingredients</td>
<td>Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Frying Oil</td>
<td>Fatty acids</td>
<td>Pig, non-zabihah animals</td>
</tr>
</tbody>
</table>

4.4. Confectionary Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gelating agent</td>
<td>Gelatin</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Preservative</td>
<td>Alcohol</td>
<td>Khamr, wines</td>
</tr>
<tr>
<td>Humectant</td>
<td>Glycerine</td>
<td>Pig bone &amp; hides, non-zabihah animals, non-zabihah animals</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Whey Powder</td>
<td>Pig bone &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Colourants</td>
<td>Carnivorous acid (E120)</td>
<td>Cochineal Insect</td>
</tr>
<tr>
<td>Favourants</td>
<td>Fatty acids &amp; khamr</td>
<td>Pig, wines</td>
</tr>
</tbody>
</table>

4. List of critical Ingredients regarding Food Industry:

4.1. Baking Industry:

- Baking fats
- Fortification agents
- Baking Adj. Oils/B.C. Conditioner
- Baking brushes
- Pan-grease
- Eggs
- Favourants

4.2. Dairy Industry:

- Coloursants
- Stabilizers
- Enzymes
- Favourants

4.3. Snacks Industry:

- Seasoning
- Frying Oil

4.4. Confectionary Industry:

- Gelating agent
- Preservative
- Humectant
- Enzymes
- Colourants
- Favourants
4.5. Beverage Industry

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavoursants</td>
<td>Fatty acids &amp; kharr</td>
<td>Pig, wines</td>
</tr>
<tr>
<td>Clarification agent</td>
<td>Gelatin</td>
<td>Pig bones &amp; hides, non-zabihah animals</td>
</tr>
<tr>
<td>Amino Acids</td>
<td>Taurine</td>
<td>Non-zabihah animals</td>
</tr>
<tr>
<td>Colourants</td>
<td>Carnimic Acid (E120)</td>
<td>Cochimel insect</td>
</tr>
<tr>
<td>Taste profile</td>
<td>Alcohol</td>
<td>Khary/anne</td>
</tr>
</tbody>
</table>

4.6. Tourism Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry products</td>
<td>Chicken</td>
<td>Mechanically slaughtered/ non-zabihah chicken</td>
</tr>
<tr>
<td>Meahirna, sauces</td>
<td>Alcohol</td>
<td>Rahn, wine</td>
</tr>
<tr>
<td>Bakery products</td>
<td>As mentioned above</td>
<td>-</td>
</tr>
<tr>
<td>Cooking/ frying oil</td>
<td>Fatty acids</td>
<td>Pig, non-zabihah animals</td>
</tr>
<tr>
<td>Dairy products</td>
<td>As mentioned above</td>
<td>-</td>
</tr>
<tr>
<td>Basting brushes</td>
<td>Animal byproducts</td>
<td>Pig</td>
</tr>
<tr>
<td>French fries</td>
<td>Par-frying agent</td>
<td>Animal shortening</td>
</tr>
</tbody>
</table>

4.7. Packaging and Printing Industry:

<table>
<thead>
<tr>
<th>Critical Area</th>
<th>Critical Ingredient</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymer Granules</td>
<td>Tallow</td>
<td>Pig, non-zabihah animal fat</td>
</tr>
<tr>
<td>Colourants</td>
<td>Charcoal/Carbon Black</td>
<td>Pig, non-zabihah animal fat</td>
</tr>
<tr>
<td>-</td>
<td>Camimic acid (E120)</td>
<td>Cochimel insect</td>
</tr>
</tbody>
</table>

4.8. Material data sheet exhibits product composition, which is helpful to known about other ingredients found in compound component composition.

4.9. Sometimes the composition in MSDS is not mentioned, so it may be required to separately ask for details. Remember! Quantitative formulation is not required, just the qualitative formulation is required, because how can a CB issue any statement on Halal and Haraam regarding an ingredient if the information is not maximally provided.

It also helps that if a partial ingredient is prohibited in a country, it also becomes known, as Msg is prohibited in the food safety laws of Punjab Province in Pakistan and later the Supreme Court also banned its import, then it is the responsibility of the CB to prevent the use of such a component in the light of the country’s laws.

4.10. With the help of COA, the quantity of ingredients added to the product is checked in the light of local or global laws to prevent the beyond the limit inclusion of ingredients in the product, so to prevent the consumer from the harmfulness of the product.

4.11. Sometimes the manufacturer is very sensitive and does not share composition, in such a case a statement can be taken from him with the company stamp on its letterhead stating that my product is free of any kind of animal, insect, alcohol ingredients, hence, making it possible to take him to court in case of misstatement.

5. Evaluation Methodology of the Ingredients:

Keeping in mind the above-mentioned principles and the industrial information, following is the examination methodology of any ingredient:

5.1. Step 1:
First, a format must be set up that must be filled and sent with the submission of ingredients. This format should include the following basic components:

5.1.1. Name of the ingredient, Category, Supplier’s name and its contact information, Manufacturer, and its information

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Supplier Code</th>
<th>Supplier Contact Details</th>
<th>Manufacturer Code</th>
<th>Manufacturer Contact Details</th>
<th>Status</th>
<th>Remarks</th>
</tr>
</thead>
</table>

5.1.2. It is important to know the name of the item that is its identity

5.1.3. The supplier code helps to mark the ingredients in the store during audit

5.1.4. Details of Supplier or manufacturer also gives benefit because sometimes they do not want to give details to their client so the CB can directly contact to them and can have the information

5.1.5. In status column, the CB declares the status of ingredient either Halal or Haraam after the examination

5.1.6. In Comment box, if any further details are required, to be mentioned in this box by the CB

5.1.7. Halal certificate, If a Halal certificate of ingredient is found, the material data sheet or product composition, certificate of analysis, statement. Collecting all this information should be the top priority of the CB so that it can establish a complete traceability chain

5.1.8. With the help of halal certificates, it is found that on which Halal standard the ingredient is Halal certified, so that the CB can check the complete compliance of the standard on which the certification is being carried out. For example, some CBs accept mechanical slaughter, or if a standard allows it, but Pakistan’s standard forbade it, it will be forgiven

5.2. Step 2:

5.2.1. For instance, if we take the seasoning of BBQ flavor, we come to know through its product composition information that cheese powder has been used in it. Since cheese powder is made of cheese, hence, rennet is used while making the cheese. Therefore, information will be sought about rennet either the rennet used in the cheese making is of microbial source or from animal source? If it is from microbial source then it is well and good, otherwise it is from the animal source then the information about the animal would be sought either that animal is Halal or Haraam, in case if the animal is halal then the question of slaughter would be raised, either that animal has been slaughtered in accordance with the Shariah rulings or not. For this proposed Halal certificate shall be required as an important requirement. In case, if the Halal certificate could not be presented than the flavor shall not be allowed to be used

5.2.2. Sometimes chicken powder is used in cheese flavor. It will also require the same examination procedure. The inquiry about chicken that has it been slaughtered in accordance with the Shariah principles?

5.2.3. It has also been observed that particular codes are mentioned in the composition, upon asking
their further description, more ingredients are disclosed. Once we discovered red meat as a source of the ingredient during the application of this mentioned traceability system.

5.2.4. It was also observed that upon pointing out the doubtful ingredients, the manufacturer changed the documents of that ingredient. In such a case testing is the important technique to remove the doubt. For instance, either tallow is used as sleeping agent or not in manufacturing of polymer?

6. Conclusion

The crux of the conversation is that if technical and shariah experts start working together in the light of the principles mentioned above, we can easily find the composition of the forbidden or suspicious ingredients. When the angle of research is same, confidence in each other's research for CBs will increase and the acceptance of halal certificates will become more common as a result.

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12. سنن ابن المعاذ، أبو عبد الله بن عبد الرحمن بن عبد الواحد.
13. سنن ابن ماجه، أبو عبد الله بن عبد الرحمن بن عبد الواحد.
14. سنن ابن المعاذ، أبو عبد الله بن عبد الرحمن بن عبد الواحد.

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International Trade Facilitation of Halal Products Supply Chain in the Cross Border: Issues or Opportunities?

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\textbf{A B S T R A C T}

International trade is the exchange of capital, goods, and services across international borders or territories because there is a need or want of goods or services that involve the supply chain activities. The trade facilitation aim consists of four principles: simplification, harmonization, standardization and transparency for ease of movement in the cross-border process. Regardless of the importance of trade facilitation throughout the world and its benefits to the users in terms of time and saving cost, thus of late, the emerging need for the halal supply chain has formed value added to the existing supply chain process. Therefore, this has created arguments as well as enquires towards the current practice of halal products that go through the cross-border operations. The growing competition in halal products industry has proven to be the main challenge for the international business trade to stay relevant in the market. Based on this reason, it is vital for the country to create a differentiation in their supply chain to attract more international trade customers. One of the ways to create this differentiation is by establishing and facilitating its international trade for halal products. Halal products do not only differentiate from one product to another but are also a common strategy used by marketers to create a competitive advantage for their business. Although international trade facilitation has been studied on various aspects, limited research has been done on halal products specifically cross border supply chain. Because halal supply chain has been emerging in today’s supply chain industry, this paper aims to examine the international trade facilitation issues and challenges of the halal products through the cross border with the aim of providing a better understanding and enhancing of the existing supply chain as well as halal supply chain. Indeed, this study is deemed important due to the rising of health-conscious customers lately with regards to the pandemic covid-19.

\textbf{1. Introduction}

Trade is very important in the movement of goods in a country. The flow of trade process will stimulate the efficiency of movement of goods in and out of the country. Therefore, the importance of trade has become like an artery in the human body which plays a vital role in the human body.

1.1. Trade Facilitation Definition

Recently, an increase in trade volume, removal of borders among the countries and broaden of globalisation concept have made the logistics sector seen as lucrative in the global trade [1]. Moreover, with the logistics activities playing an important role in world trade today, the e-business transaction emerges into borderless across the world.

Trade facilitation refers to the transparency and efficiency of international trade procedures aimed at reducing the time and cost of international trade transactions [2]. It is an extensive concept which can be applied to the supply chain and can be specified to logistics as well.

According to UN Economic Commission of Europe (UNECE) and UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) trade facilitation is defined ‘the simplification, standardization and harmonization of procedures and associated information flow required to move goods from seller to buyer and to make payment ’ [3].

The World Trade Organization defined trade facilitation as ‘the simplification and harmonisation of international trade procedures, including the activities, practices and formalities involved in collecting, presenting data and other information required for the movement of goods in international trade’ [4].

2. Logistics and trade facilitation Scenario

To date, the logistics industry has become the backbone of the supply chain. As logistics activities are one of the components in the supply chain. It has been identified as a catalyst to foster economic growth as well as trade, and aid to expedite business efficiency. It is also important for the rest of the world and the nation’s connectivity to remain a competitive edge.

Besides, the 11th Malaysia plan stated that the
efficiency of logistics and trade facilitation are important determinants for a country’s competitiveness and employment opportunities. This can be done through collaboration in which it can reduce cargo clearance and paperless trading. The 11th Malaysia plan also provides significant strategies for trade facilitation moving towards the national agenda [5].

Malaysia can place itself as a regional logistics gateway due to its strategic location, stable in economic development, good regional linkages and transport infrastructure. Therefore, the Economic Planning Unit (EPU), Malaysia has developed the Logistics and Trade Facilitation Masterplan to give proper direction for the advancement of the logistics industry productivity and competitiveness. A comprehensive stakeholders’ consultations were carried out in establishing the masterplan which involves the industry players, public sector agencies, non-governmental organisations and academicians.

Logistics and trade facilitation are interrelated, this is due to the fact that the process of trade movement involves logistics activities. Trade facilitation fosters the movement of goods across borders in which facilitating trade at the border, behind the border and beyond it. Besides, the logistics and trade facilitation ecosystem are made up by the players consist of Figure 1:

- Manufacturers, traders, e-business organisations, logistics service providers, who are involved in the movement of goods and provision of support services.
- Customs officers who facilitate the documentation and clearance of moving and stored goods
- Permit approval agencies and local authorities are responsible for licensing and approvals for business [6].

Trade facilitation addresses the logistics of moving goods through a port or more efficiently moving customs documentation associated with cross-border trade. Indeed, Wilson et al. define trade facilitation incorporates relatively ‘border’ elements, such as port efficiency and customs administration, and ‘inside the border’ elements such as domestic regulatory environment and the services infrastructure to enable the effective use of information technology for e-business [7].

3. Objectives

The research aims to understand the practice of international trade facilitation of halal products supply chain at the cross border as well as the challenges.

4. Cross border Malaysia

The Malaysia borders can be divided into land and maritime borders and shared maritime boundaries. The land and maritime borders include Brunei, Indonesia and Thailand whereas for shared maritime boundaries consist of Philippines, Singapore and Vietnam [8]. The trade facilitation scenario at the border depicts farthest significant aid during import clearance which act to protect trade formalities that can cause trade hindrances [9].
The road border crossing areas can be classified into as followings:

-  Wang Prachan (Thailand) – Wang Kelian (Malaysia)
-  Pa-dang Besa(Thailand) – Padang Besar (Malaysia)
-  Sadao (Thailand) – Bukit Kayu Hitam (Malaysia)
-  Ban Prakop (Thailand) – Durian Burung (Malaysia)
-  Betong (Thailand) – Pengkalan Hulu (Malaysia)
-  Buketa (Thailand) – Bukit Bunga (Malaysia)
-  Sungai Kolok (Thailand) – Rantau Panjang (Malaysia)

Another cross border for Malaysia-Thailand railway is Padang Besar, Malaysia.

Both road and railway border infrastructures become the main trade activities between the two countries i.e., Malaysia and Thailand. Another cross border of Malaysia are sea freight and airfreight.

5. Cross Border Process

![uCustoms process](image)

uCustoms stands for the ubiquitous system is integrated systems that deliver a single window for good clearance. The system is managed by Dagang Net which is the service provider that helps to link and give access to the trade services to the trade community consisting of importers, exporters, shipping agents, traders, manufacturers, forwarders, and warehouse and depot operators.

Various advantages offered by uCustoms system such as followings:

- Consistent operating procedures.
- National Single Window.
- Cost savings on transactions.
- Automation of manual processes.
- Ease of information/Data sharing.
- Enable working remotely

With the use of uCustoms, the process of trade at the cross border becomes more efficient. The trade also involves halal products that go through the cross border. This is due to the fact that the demand for halal products is increasing tremendously across the world. Furthermore, it is undeniable that a quarter of the world population come from Muslim and in fact by the year 2025, it is forecasted that 30 per cent of the world population would be Muslim as reported by various sources. Therefore, the demand for halal products projected will be increasing yearly following the increase of the Muslim population. Due to this reason, the need for halal products that go through halal supply chain shows demand in the future. The halal products supply chain is the concept whereby the process must be halal from the source of the supply until it reaches the consumer.

6. Issues and Challenges or Opportunities

Notwithstanding Malaysia’s capabilities, other main issues need to be highlighted in order to support the unceasing growth of the logistics industry. The issues also have been identified in the logistics and trade facilitation masterplan which classified into three area consists of transport infrastructure, service competence and trade facilitation issues such as followings:

6.1. Transport Infrastructure

- Competing transport facilities
- Hinterland connectivity bottlenecks
- International gateway connectivity limitations
- Inadequate alternate modal options

6.2. Service Competence

- Limited capabilities of service providers
- Institutional challenges
- Lack of skilled human capital
- Low technology adoption rate

6.3. Trade Facilitation

- Poor coordination in cargo clearance
- Low compliance to international standards
- Cargo security concerns

7. Conclusion

In conclusion, in other countries like Japan, shows that an increase in the level of trade facilitation that comes from various inbound tourists from other regions has stimulated the efficiency of Japan inbound tourism. Moreover, trade facilitation plays a significant role in enhancing the performance of the inbound business tourism market of Japan as well as an increase in income and air transport capacity of its tourism industry.

Indeed, it is important to highlight the issues of border clearance procedures for halal products in ensuring the halal products goes through halal supply chain in which the final results will be halalan toyyiban products to the consumers. Moreover, this may also assist the e-commerce traders in the trading activities of halal products which involve cross border due to an increase in online demand from the customer recently.

Involvement of relevant parties such as Royal Malaysian Customs, Malaysia Quarantine and Inspection Services (MAQIS), the Food quality and safety division, Department of Health as well as the free zone area warehouse operator, terminal operator and customs brokerage agents may also help in ensuring the operations of trade for halal products are more efficient at the cross border.
References


Emi Normalina Binti Omar obtained her degree in professional studies in The Chartered Institute of Logistics and Transport from Universiti Teknologi MARA (UiTM), Malaysia. Previously, she was attached to the logistics industry and after that, she pursued her master study in MSc International Logistics at the University of Plymouth (UK). Just after she obtained her master scroll from the university, she joined UiTM as a lecturer.

Currently, she is a senior lecturer under the Centre for Technology and Supply Chain Management Studies, Faculty of Business and Management. Her PhD thesis is specifically in the area of halal supply chain management. She is also involved in various programs and courses related to halal, logistics and supply chain with The Islamic Development Department of Malaysia (JAKIM), Malaysia Institute of Transport (MITRANS), UiTM and IHALALMAS, UiTM, Malaysia. Moreover, she has published various papers in the area of the halal supply chain in journals and proceedings papers.

Furthermore, she also received various grants related to her work in transport and logistics, as well as in the field of halal such as; Developing the Halalan Tayyiban Supply Chain Framework for Logistics Industry (2015-2018), Roadmap of Halal Logistics in the Food Industry (2010-2014). Also, in training, she is an appointed trainer for the Halal Executive Training Programme (HEP) by the Halal Professional Board (HPB), JAKIM, Malaysia. She had trained various students from different backgrounds in the HEP for several years.
Development of Halal Supply Chain Standard OIC/SMIIC 17:2020 Series: From Local to Global

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\textbf{A R T I C L E I N F O}

\textbf{Keywords:}
Halal supply chain
Standards
International trade
Certification
Uniformity

\textbf{A B S T R A C T}

It is generally agreed that standards bring positive impact on international trade and thus improving the economy [1-5]. The German Institute for Standards emphasised that standards are the “key driver of economic growth” [6]. Within the halal industry, the critical needs to establish one global halal standard keeps pressing [7]. In fact, it is claimed that the sluggish nature of the halal industry was due to the absence of the global halal standard [8]. The diverse nature of the economic structures among the OIC member states adds to the calls of having a unified standard development and establishment. Having considered the need to establish a sound mechanism for harmonisation of standards among Islamic states, the Standard Metrology Institute for Islamic Countries (SMIIC) Statute entered into force in May 2010 after series of deliberation of its importance since 1984. SMIIC, which is an affiliated organisation of the OIC was established in August 2010. It plays a significant role in developing necessary mechanisms for the OIC countries aims at setting new standards for the Member States so that trade barriers could be eliminated and thus increasing intra OIC member trade. The Institute also aims to establish conformity assessment schemes for the purpose of expediting exchange of materials, manufactured goods and products among Member States beginning with mutual recognition of certificates.

Following the publication of OIC/SMIIC 17:2020 Series of standards, this paper elaborates the development of standards, justifications of its development and most importantly, the implications of the standards to the OIC countries.

\section{1. Introduction}

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\section{2. Background of the Study}

Standards is a normative document which is formulated by consensus and approved by recognised bodies for common use and repeated use in achieving product/service quality specification. Thus, standards developed by institutions, which can be regarded as one of the factors of production that has an impact on economic growth [6].

Currently, standards have been considered as a significant part of international trade [6]. It plays an exceptional role in the advancement of product quality assurance, building trust in trade, facilitating the flow of goods, and improving the development of the global market. In facing the current world competitive market, standards play a significant role in striving for economic efficiency and competitive advantage. Patent standards is an important feature of industrial competition. Some multinational enterprises maintain their competitive advantage by participating in international standards activity.

\subsection{2.1 The impact of standards on economic growth}

A study by [6] pointed out that the process of technological innovation – dissemination – application could be accelerated with the adoption and application of standards [6]. Other study on the influence of standards on international trade demonstrates that trade
value shows a positive relation with standards [9]. Some empirical studies agree that standards have become an important factor in promoting economic development [10-13]. Other studies have shown that international standards have significant influence on international trade [1-5]. There are also evidence demonstrating the positive impact of national standards on trade [14, 2].

It is argued that standards influence macroeconomic growth mainly based on four (4) characteristics, namely unity, compatibility, compliance, and security [6]. First, standards ensure consistency in product/service specification. It also indicates that the products have fulfilled its specification requirements, thus reducing technical barriers to trade in international markets as well ensuring the free goods circulation [15]. Without a unified and complete standard, there will be obstacles in the dissemination of knowledge about the products and services. Second, standards allow product/service compatibility across countries, thus encouraging integration and creating a fair innovation environment for large and small enterprises. Compatibility through standardisation may also generate economies of scale leading to the reduction of costs. Third, compliance to standards enhances mutual trust and ensures efficient transactions. This is because the breakdown of technical barriers to trade resulting from standardisation would accelerate market access. Fourth, standards are normally guaranteed for its security features through its product quality, safety and environmentally friendly because certification is obtained only after thorough audit process. Thus, it protects customer’s rights by ensuring only quality products and services disseminated to customers [6].

2.2 The Needs for Standardisation.

Developing countries/economies face a mix of challenges and opportunities in accelerating trade, attract direct foreign investment, and implement global supply chains. Large buyers, industrial partners, and potential investors are increasingly demanding evidence of compliance. Countries that have invested in strong standardisation and metrology bodies over the years and can meet these standards will correspondingly be able to trade and attract investment [16].

Unfortunately, capacity in meeting standards is weak in most OIC countries. With several new international standards envisaged particularly in halal, this lack of capacity will leave many developing countries ever further behind in their struggle to attain economic and social development.

Standards and technical regulations are particularly vital to trade, commerce, and the diffusion of technology, but they can also serve as important nontariff barriers to trade. The process of market liberalisation and increasing openness to trade drives the demand for the harmonisation and adoption of international standards and related procedures, as does the desire to contain the global consequences of environmental degradation [16].

2.3. Organisation of Islamic Cooperation (OIC).

The Organisation of Islamic Cooperation (OIC) is the second largest organisation after the United Nations with a membership of 57 states spread over four continents particularly Africa, Asia, Europe, and South America. As at 2018, the collective population of OIC member states is over 1.8 billion. The Organisation is the collective voice of the Muslim world in the spirit of promoting international peace and harmony as well as to strengthen intra-Islamic economic and trade cooperation to achieve economic integration, leading to the establishment of an Islamic Common Market (ICM) [17]. However, in terms of trade, it is well known that the cross-trade among Muslim countries is very modest in comparison to its global external trade.

The Islamic countries are known to be a diverse group in terms of their economic structures, levels of development, political systems, ethnic backgrounds [18]. From a socio-economic perspective, there is a mixture of low-income (e.g., Djibouti and the Comoros), middle-income (e.g., Turkey and Malaysia), and wealthy oil-exporting (e.g., the Gulf countries, Libya, and Algeria) countries. All these characteristics are potentially viable for building economic cooperation through trade. And yet there has never been any visible cooperation among these nations [19]. Generally, the OIC countries have different socio-cultural backgrounds, although most of them draw from a common source – Islam. This heterogeneity has always been the hindrance to a feasible Islamic Common Market (ICM), which accommodates a free flow of products, capital entrepreneurship, labour, and technology among members, and places a common tariff wall against third parties [18].

[18] emphasises that there are several impediments to trade among OIC countries. Apart of being economically weak in most of the OIC countries, there is lack of reliable and updated trade information among these countries. A database at the commodity level seemed deficient to identify demand of certain commodities. There are also other limited opportunities for business contacts among the private bodies of the OIC countries. Exhibitions are not organised on a regular basis to establish such contacts. Lack of marketing and distribution skills among the businesspeople of OIC has also been a major obstacle. Products do not always meet buyers’ specifications or international standards concerning packaging, colour, style, and environmental standards. As a result, the exports of many OIC countries are not diversified. For any OIC countries, a small number of products accounts for a significant chunk of their exports [18]. [20] claim that the lack of visible cooperation could be the absence of a definite framework and infrastructure that could point out the potential economic gains from such economic cooperation. As a result, SMIC was formed as one of the initiatives to address these issues.

3. Standards Metrology Institute of the Islamic Countries (SMIIC)

The idea to establish a sound mechanism for harmonisation of standards among Islamic states can be
traced back to the 1st Meeting of Economic and Commercial Cooperation Standing Committee (COMCEC) of OIC in 1984. The Standardisation Experts Group for Islamic States (SEG) which was established in 1985 for this purpose worked to this end and its work led to the approval of the SMIIC Statute at the 14th COMCEC Meeting in 1998. The Statute of SMIIC was first submitted to the Member States for its signature during the 15th COMCEC Meeting held in Istanbul, Republic of Turkey on November 04-07, 1999. The Statute entered into force after fulfilling the ratification requirement of 10 OIC member states in May 2010 and the Institute established in August 2010. 13 OIC Member States which ratified the SMIIC Statute are Algeria, Cameroon, Guinea, Jordan, Libya, Mali, Morocco, Pakistan, Somalia, Sudan, Tunisia, Turkey and United Arab Emirates and the Headquarters is in Istanbul, Turkey.

Being an affiliated organisation of the OIC, SMIIC is committed to develop necessary mechanisms for the OIC countries in the form of establishment of new standards for the Member States with the purpose to eliminate technical barriers to trade, thus increasing trade among them. The Institute also aims to establish conformity assessment schemes for the purpose of expediting exchange of materials, manufactured goods and products among Member States beginning with mutual recognition of certificates.

The SMIIC also seeks to achieve uniformity in metrology, laboratory testing and standardisation activities among Member States and ensuring education and training and providing technical assistance to the OIC Members in the domain of standardisation and metrology. Hence, the Institute may cooperate with other regional and international organisations interested partially or wholly in standardisation, metrology, or related fields.

SMIIC’s ultimate mission is to develop quality infrastructure, by establishing uniformity in standardisation, metrology and accreditation activities including conformity assessment and quality improvement to facilitate trade and support sustainable economic growth, consumer welfare, environment, and innovation promotion for the Member States. In achieving the mission, SMIIC together with its 39 Member States strives to develop high-quality standards that are used worldwide, support members’ needs and ensure effective engagement of their stakeholders as well as to support the enhancement of quality infrastructure and interconnectivity of members [21].

### 3.1 Malaysia as a SMIIC Member

Malaysia, through the Standards Malaysia joined as a SMIIC member in 2015. Standards Malaysia is the National Standards Body (NSB) and National Accreditation Body (NAB) of Malaysia, which was established on 28 August 1996 under Standards of Malaysia Act 1996 (Act 549). The main function of Standards Malaysia is to foster and promote standards, standardisation, and accreditation as a means of advancing the national economy, promoting industrial efficiency and development, benefitting the health and safety of the public, protecting the consumers, facilitating domestic and international trade, and furthering international cooperation in relation to standards and standardisation [7]. As a member, Malaysia participates in nine (9) technical committee, namely:

- TC1 Halal Food Issues
- TC2 Halal Cosmetic Issues
- TC5 Tourism and Related Services
- TC8 Leather and Tanning Material
- TC10 Halal Supply Chain
- CCA SMIIC Committee on Standards for Conformity Assessment
- TC11 Halal Management Systems
- TC15 Terminology Committee
- TC16 Halal Pharmaceuticals Issues

Out of nine (9) technical committees, Malaysia leads TC10 and TC16 as Chairman and Secretariat after the proposal was approved in 2016 and 2019. Upon joining SMIIC as member, Malaysia has been invited to join the Board of Directors (BOD) of SMIIC. The involvement as BOD is viewed as significant in assisting OIC countries in the harmonisation process as well as spearheading global halal standards.

Halal standards in Malaysia are developed through consensus by committees, which comprises balanced representation of producers, users, consumers, and others with relevant interests, as may be appropriate to the subject of hand. To the greatest extent possible, Malaysian standards are aligned to or are adoption of international standards. Approval of a standards as a Malaysian Standard is governed by the Standards of Malaysia Act 1996 (Act 549). Malaysian Standards are reviewed every 5 years. The use of Malaysian Standards is voluntary except in so far as they are made mandatory by regulatory authorities by means of regulations, local by-laws, or any other similar ways [7].

Globally, Malaysia has always been looked upon as a respected, progressive, and highly regarded Islamic country. The development of the halal industry in Malaysia which has successfully penetrated the international halal market, especially in the food sector, has further boosted the country’s reputation. The current halal industry landscape in Malaysia focuses not only on the food and beverage sector alone, but also expands in several other sectors such as cosmetics, toiletries, pharmaceuticals, logistics, consumable goods, and original equipment manufacturer. The rapid development of halal-related industries has become more diverse and complex. Hence, the development of halal-related industries has been taken seriously to further contribute and generate the country’s economic growth. As globalisation takes place, Malaysia has also been a pioneer in the development of Halal standards. Halal standards refer to the standards which entail specific technical requirements for products or services according to Shariah compliance. Currently Standards Malaysia has published 15 halal standards (refer to Table 1) namely:

<table>
<thead>
<tr>
<th>TC</th>
<th>Committee Name</th>
</tr>
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<tbody>
<tr>
<td>TC1</td>
<td>Halal Food Issues</td>
</tr>
<tr>
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<td>Halal Management Systems</td>
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<tr>
<td>TC15</td>
<td>Terminology Committee</td>
</tr>
<tr>
<td>TC16</td>
<td>Halal Pharmaceuticals Issues</td>
</tr>
</tbody>
</table>
Many studies focusing on its manufacturing process. Of Global Islamic Economy Report 2019/20 estimated in 2018, the size has developed progressively from USD 5.1 billion in 2008 to USD 13.69 trillion in 2024. In terms of consumption, the global halal food market is estimated to worth more than USD 3.2 trillion in 2024. The demand for halal products has increased tremendously across the globe, both from Muslim and non-Muslim communities. With 1.8 billion of Muslims across 6 real economy sectors, the trade of halal products is estimated to worth more than USD 3.2 trillion in 2024. In terms of consumption, the global halal food market size has developed progressively from USD 13.69 trillion in 2018 to USD 1972 billion in 2024. The 2019/20 State of Global Islamic Economy Report 2019/20 estimated that there will be 5.5% year on year growth with projected CAGR growth of 6.2% between 2018 to 2024. Quality management systems are now concern not only the manufacturing process, but also all activities along the supply chain of the halal food products. This is because the halal compliance applies to the entire supply chain ranging from the sourcing of raw materials to the manufacturing, transportation, warehousing, freights handling. Accordingly, the halal status of a product could be affected when they are in direct contact with the non-halal products, unless it is completely segregated. As such, to maintain the halal status of the product requires a different procedure of handling, storage and managing the product [22].

### 4.2. TC 10 Halal Supply Chain

The proposal of halal supply chain standard was proposed by Malaysia in the 7th General Assembly (GA) meeting, which was the first GA meeting attended by Malaysia in Istanbul on the 20th November 2014. After it was accepted, the proposal was submitted by Standards Malaysia to the SMIC General Secretariat. The formation of TC10 was approved on the 25 January 2016. From the ballot, the Chairman and Secretariat were elected from Malaysia. The scope of the standard covers the standardisation in the field of halal supply chain including transporting, warehousing/ storage and retailing that excludes manufacturing process of halal products based on Islamic jurisprudence rules and ethics. Nine (9) voted to be the TC10 members in which seven (7) were participating (P) members and 2 observer (O) members. The P members were Afghanistan, Algeria, Turkey, Uganda, Senegal, Somalia, and Suriname while the O members were Morocco and Bosnia Herzegovina. Accordingly, the first meeting of TC10 was conducted on 28th September 2017.

As the standards develop, the number of P and O members grows. As of September 2020, there are 16 ‘P’ members (including Malaysia) and 6 ‘O’ members. The additional members were Djibouti, Iran, Iraq, Libya, Mali, Pakistan, Saudi Arabia with Indonesia came in as the recent P member. The additional ‘O’ members were Kyrgyz Republic, Palestine, and Thailand while Russia came in as ‘O’ member recently (September 2020).

### 4. The Establishment of Technical Committee (TC) 10 Halal Supply Chain

#### 4.1 The Concept of Halal Supply Chain

The demand for halal products has increased tremendously across the globe, both from Muslim and non-Muslim communities. With 1.8 billion of Muslims across 6 real economy sectors, the trade of halal products is estimated to worth more than USD 3.2 trillion in 2024. In terms of consumption, the global halal food market size has developed progressively from USD 13.69 trillion in 2018 to USD 1972 billion in 2024. The 2019/20 State of Global Islamic Economy Report 2019/20 estimated that there will be 5.5% year on year growth with projected CAGR growth of 6.2% between 2018 to 2024.

The increasing demand for halal products has led to many studies focusing on its manufacturing process. However, as the halal food trade is more globalised, its supply chain is getting more complex. Thus, consumers are now concern not only the manufacturing process, but also all activities along the supply chain of the halal food products. This is because the halal compliance applies to the entire supply chain ranging from the sourcing of raw materials to the manufacturing, transportation, warehousing, freights handling. Accordingly, the halal status of a product could be affected when they are in direct contact with the non-halal products, unless it is completely segregated. As such, to maintain the halal status of the product requires a different procedure of handling, storage and managing the product [22].

#### Table 1: List of Halal Standards in Malaysia

<table>
<thead>
<tr>
<th>STANDARDS</th>
<th>TITLE</th>
</tr>
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<tbody>
<tr>
<td>MS1500:2019</td>
<td>Halal Food – General Requirements</td>
</tr>
<tr>
<td>MS2400-1:2019</td>
<td>Halal Supply Chain Management System Part 1: Transportation – General Requirements (First Revision)</td>
</tr>
<tr>
<td>MS2400-2:2019</td>
<td>Halal Supply Chain Management System Part 2: Warehousing – General Requirements (First Revision)</td>
</tr>
<tr>
<td>MS2400-3:2019</td>
<td>Halal Supply Chain Management System Part 3: Retailing – General Requirements (First Revision)</td>
</tr>
<tr>
<td>MS2634:2019</td>
<td>Halal Cosmetics – General Guidelines (First Revision)</td>
</tr>
<tr>
<td>MS2627:2017</td>
<td>Detection of Porcine DNA – Test Methods – Food and Food Products</td>
</tr>
<tr>
<td>MS2594:2015</td>
<td>Halal Chemicals for Use in Portable Water Treatment – General Guidelines</td>
</tr>
<tr>
<td>MS2610:2015</td>
<td>Muslim-Friendly Hospitality Services - Requirements</td>
</tr>
<tr>
<td>MS1900:2014</td>
<td>Shariah-Based Quality Management Systems – Requirements with Guidance (First Revision)</td>
</tr>
<tr>
<td>MS2565:2014</td>
<td>Halal Packaging – General Guidelines</td>
</tr>
<tr>
<td>MS2393:2013</td>
<td>Islamic and Halal Principles – Definitions and Interpretations on Terminology</td>
</tr>
<tr>
<td>MS2424:2012</td>
<td>Halal Pharmaceuticals – General Guidelines</td>
</tr>
<tr>
<td>MS2300:2009</td>
<td>Value-Based Management System – Requirements from an Islamic Perspectives</td>
</tr>
<tr>
<td>MS1900:2005</td>
<td>Quality Management Systems – Requirements from Islamic Perspectives</td>
</tr>
</tbody>
</table>

5. The Development of OIC/SMIIC 17: 2020 Series Halal Supply Chain

On 28th September 2017, the OIC/SMIIC 17: 2020 Series Halal Supply Chain standard was first proposed by Malaysia during the first OIC/SMIIC Technical Committee (TC) 10 meeting. There were three (3) projects proposed namely:

- Halal supply chain management system – Part 1- Transportation – General requirements
- Halal supply chain management system – Part 2- Warehousing – General requirements
- Halal supply chain management system – Part 3- Retailing – General requirements

The standards were adopted from Malaysia Standard (MS) 2400:2019 series namely:
The first version of MS2400 was published in 2010 by Standards Malaysia, which was known as
- MS2400-1:2019 Halal Supply Chain Management Systems – Part 1: Transportation General requirements

From the New Proposal, the draft jump to Committee Draft (CD) and omit Working Draft (WD). This is because the draft was already a complete draft since they were adopted from Malaysia. The three (3) committee drafts (CD) on halal supply chain management systems have been circulated for comments on 7 March 2019 for a month. Iran submitted their comments, and the comments were discussed during SMIIC TC 10 meeting on 19th April 2019.

The Resolution of SMIIC TC 10 meeting on 27th September 2019 agreed that the three (3) drafts to be registered as Draft Standards (DS) by the SMIIC General Secretariat and be circulated to all SMIIC members for ballot through SMIIC Information System for 3 months, i.e., from 19 Dec 2019 to 19th March 2020.

Upon approval of more than 77% of the TC10 members and comments received from Iran, Iraq, and Saudi Arabia, the three (3) DS proceeded to the next stage. According to the SMIIC Directives, Part 1 on Procedures for the Technical Work, which states that the SMIIC Secretariat may proceed directly to publication when the approval criteria have been met and there are no technical changes to be included. Consequently, the results of the voting were circulated to members on 18th September 2020. Accordingly, the three (3) documents together with the responses from the Chairman and Secretariat were forwarded to members and SMIIC General Secretariat on the 19th September 2020. As a result, the three (3) documents were published on 31st of October 2020 (refer to figure 1 and 2). As shown in Figure 2, the process of the standards development omits two (2) stages namely preparatory stage (Working Draft) and Approval Stage (FDS). This is because there were not so many arguments being debated over the contents of the standards as the member countries have not implemented the standards except Malaysia. Thus, Malaysia has been respected for most of the decisions and justifications.

6.1. Contents

6.2. Scope, Normative References and Terms and Definitions
As indicated in the title of each standard, the scope of Part 1, Part 2 and Part 3 applies to transportation, warehousing, and retailing. All three standards have similar normative references. In terms of the terms and definitions, except for Part 1: Transportation which has listed 39 terms and definitions, both warehousing and retailing have 32 terms and definitions each. It is because the scenario for warehousing and retailing are almost similar in terms of storage function.

6.3. Requirements
Section 4 on Requirements details the requirement related to Islamic rules, management responsibility, halal management system requirements, halal risk management plan summary as well as information and communication system.

6.4. Preliminary Steps to enable risk management process
Overall, Section 5 of all three (3) standards explain the overall process of transportation, warehousing, and retailing, which covers process characteristics, process flow diagrams, layout plan and chain of custody.

6.5. Operations of the Halal Risk Management Plan
Section 6 differentiates all three (3) standards as it underlines the operational aspect of transportation, warehousing, and retailing. All three (3) standards have 9 sub-sections, in which seven (7) sub-sections address similar aspects particularly records to be maintained, control of non-conformity, communication, traceability, control of monitoring and measuring equipment, emergency preparedness and outsourced service providers/ subcontractors’ control. The first sub-section in each part of these standards explains each transportation, warehousing and retailing activities. However, sub-section 6.4 differentiates Part 1: Transportation with the other two (2) standards on Part 2: Warehousing and Part 3: Retailing as it includes isolation and notification as compared to Warehousing and Retailing that includes withdrawals/ recalls as part of the activities. This is because transportation activities do not involve withdrawals/ recalls activities when the goods are transported. Instead, the isolation and notification are significant when transporting halal goods as it requires segregation of halal goods with haram as well as hazardous goods. In contrast with warehousing and retailing, withdrawals / recalls are significant activities when it involves product contamination (refer to table 1).
6.6. General requirements for premises, infrastructure, facilities, and personnel.

As outlined in Section 7 of the standards, the requirements for premises, infrastructure, facilities, and personnel are slightly different among the standards. Part 1: Transportation lists ten (10) requirements particularly namely transport location, premises design and layout, facilities, equipment and materials, personnel hygiene, health status and cleanliness, environment, perimeter and grounds, maintenance of equipment, cleaning and sanitation, cleaning process according to Islamic rules, and training of personnel as well as contamination control. Both Part 2: Warehousing and Part 3: Retailing have additional two (2) requirements explicitly requirement on the equipment as well as employee and product flow for warehousing and employee, consumer, and product flow for retailing (refer to table 1). This is because both warehousing and retailing activities must address a wider process flow in the premise in the storage as well as display function [23-25].

Figure 1. Halal Supply Chain Management System – Transportation, Warehousing, Retailing (OIC/SMIIC 17: 2020 Series)

Figure 2. Development Process of OIC/SMIIC 17: 2020 Series
### 6. Implications of OIC/SMIIC 17: 2020 Series Standards

The completion of OIC/SMIIC 17:2020 Series marked another milestone for SMIIC. The development of the standards provides several implications to the halal industry particularly SMIIC member states and the OIC countries.

These standards offer guidelines in the aspect of handling of halal goods along the delivery process along the supply chain. It establishes the management systems covering transportation, warehousing, and storage as well as retailing activities. The provision of procedures in avoiding product contamination particularly the requirements of cold chain network through the journey is also addressed. The adoption of halal supply chain management system practice among the member countries will allow a standardised management practice of handling halal goods across OIC member states enabling a faster movement of halal goods across border, as less time is needed for inspection. Significant cost savings can be achieved, thus cheaper and affordable halal products could be offered to consumers.

Like other standards, OIC/SMIIC 17 series of standards are developed based on the consistency of standard terminologies, specifications, and requirements. This *unity* features embedded in the standards enable products to be consistent with requirements and gain market recognition. The market with certified products and services will have less uncertainty and thus could enhance integration [26-28]. Product specifications could be improved, and the consistency could be maintained. Standards also verify that products or services meet its requirements. Consequently, enterprises production costs and technical barriers to trade could be reduced, and thus ensures the free goods circulation [15].

Companies who are certified with OIC/SMIIC 17 will find *compatibility* in the management of supply chain systems of the halal products across other certified companies in the OIC countries, thus offers easy trading among these companies. Consequently, much marketing costs and effort could be saved from a standardised supply chain management system.

Companies certified with OIC/SMIIC 17 indicate its *compliance* to the standard guideline. Accordingly, the certification may enhance trust in the trading partner and ensure smooth transaction. The technical barriers to trade could therefore be eliminated and accelerate market access. With certifications, time spent on product/process adjustments, meeting specifications, and ensuring product quality would be reduced.

The implementation of halal standards such as OIC/SMIIC 17 safeguard product quality, product safety, product assurance and product guarantee through the *security* features embedded in certified products or services. This means consumers’ right will be protected.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Transportation of products, goods and/or cargo chain services and related activities</td>
<td>Warehousing and related activities</td>
<td>Retailing activities</td>
</tr>
<tr>
<td>Records to be maintained</td>
<td>Records to be maintained</td>
<td>Records to be maintained</td>
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<tr>
<td>Control of non-conformity</td>
<td>Control of non-conformity</td>
<td>Control of non-conformity</td>
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<tr>
<td>Isolation and notification</td>
<td>Withdrawals/recalls</td>
<td>Withdrawals/recalls</td>
</tr>
<tr>
<td>Communication</td>
<td>Communication</td>
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<tr>
<td>Traceability</td>
<td>Traceability</td>
<td>Traceability</td>
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<td>Control of monitoring and measuring equipment</td>
<td>Control of monitoring and measuring equipment</td>
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<tr>
<td>Emergency preparedness</td>
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<tr>
<td>Outsourced service providers/subcontractors’ control</td>
<td>Outsourced service providers/subcontractors’ control</td>
<td>Outsourced service providers/subcontractors’ control</td>
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</tbody>
</table>

### Table 1. Mapping of Section 6 and 7 of OIC/SMIIC 17: 2020 Series

<table>
<thead>
<tr>
<th>Transport location</th>
<th>Warehouse location</th>
<th>Retail location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premises design and layout</td>
<td>Premises design and layout</td>
<td>Premises design and layout</td>
</tr>
<tr>
<td>Facilities, equipment, and materials</td>
<td>Equipment</td>
<td>Equipment</td>
</tr>
<tr>
<td>Personnel hygiene, health status and cleanliness</td>
<td>Personnel hygiene, health status and cleanliness</td>
<td>Personnel hygiene, health status and cleanliness</td>
</tr>
<tr>
<td>Environment, perimeter, and grounds</td>
<td>Environment, perimeter, and grounds</td>
<td>Environment, perimeter, and grounds</td>
</tr>
<tr>
<td>Maintenance of equipment</td>
<td>Maintenance of equipment</td>
<td>Maintenance of equipment</td>
</tr>
<tr>
<td>Cleaning and sanitation</td>
<td>Cleaning and sanitation</td>
<td>Cleaning and sanitation</td>
</tr>
<tr>
<td>Cleaning process according to Islamic rules</td>
<td>Cleaning process according to Islamic rules</td>
<td>Cleaning process according to Islamic rules</td>
</tr>
<tr>
<td>Training of personnel</td>
<td>Training of personnel</td>
<td>Training of personnel</td>
</tr>
<tr>
<td>Contamination control</td>
<td>Contamination control</td>
<td>Contamination control</td>
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</tbody>
</table>
through guaranteed quality and services.

Thus, it is expected that the completion of OIC/SMIIC 17 Series standards would accelerate the progress of the economic development of OIC member countries through the uniformity, compatibility, compliance, and secured supply chain management systems of halal products.

7. Conclusions
In conclusion, the uniformity, compatibility, compliance, and secured nature of halal standards would enhance the industry standards of the OIC countries and thus may attract not only trade in inter OIC countries but also intra OIC countries. It may also strengthen and unite the OIC countries when each country complements each other’s strengths and weaknesses. With the support from all members countries, it is hoped that SMIIC will continuously play its significant role to provide the platform for discussion in upgrading the industry standards for the OIC member countries.

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Dr. Harlina Suzana Jafaaar is an Associate Professor in Transport and Logistics at the Universiti Teknologi Mara, Malaysia. Since 2015, she actively involves in the development and revision of Halal Supply Chain standards with Standards Malaysia. Internationally, she is the Chairman of Technical Committee (TC) 10 Halal Supply Chain under the Standard Metrology Institute for Islamic Countries (SMIIC) based in Istanbul, a standard development platform for the Organisation for Islamic Cooperation (OIC) countries. She is also an Academic Member of National Logistics Task Force at the Ministry of Transport and appointed as trainer for the Certified Professional Halal Executive Program by the Department of Islamic Development of Malaysia (JAKIM). She has also published in more than 100 journals, proceedings, chapter in a book, technical report, professional report, and policy paper in third-party logistics halal supply chain, trade logistics, green logistics and smart mobility cities. She graduated her PhD (Logistics) from Loughborough University in 2006, England and Masters in Transport from Cardiff University, UK in 1993.
Challenges and Recommendations in Promoting the Halal Industry in The OIC And Non-OIC Member Countries

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ABSTRACT

The global halal industry is arguably one of the fastest growing industries in the world. The economic potential of the industry has attracted not only OIC member countries, but also OIC non-member countries and their conglomerates. The most promising halal markets are the fast-growing economies of Asia, Middle East, Europe and the Americas. With a growing consumer base, and increasing growth in many parts of the world, the industry is set to become a competitive force in the Global trade. The global halal industry is estimated to be worth around USD2.3 trillion (excluding Islamic finance) and making it one of the fastest growing consumer segments in the world. Data and statistics highlighting the size and growth of the Islamic Finance market has been able to sustain its total assets valuing at approximately USD2.1 trillion. The Islamic finance sector has witnessed tremendous growth over the past few years with the emergence of crowd funding platforms. Lack of awareness has resulted in an enormous opportunity for products & services offered by this segment. The segment is likely to grow at a CAGR of 10.5% from 2017 to 2024.

1. Introduction

The global halal market of 1.8 billion Muslims is no longer confined to food and financial related products. The halal industry has now expanded beyond these two industries to include pharmaceuticals & healthcare, cosmetics, Fashion, Travel & Tourism, supply chain & logistics and halal media & entertainment. The sizeable and growing Muslim consumer market across the globe will continue to fuel the halal industry’s double-digit growth, creating opportunities in the market for halal products and services.

2. OIC member and non-member countries

There are 57 member countries in the OIC with a total population of 1.4 billion Muslims account for the 80 per cent of the world’s total Muslim population. The rest of the 20 percent live in the OIC non-member countries. Halal markets in OIC and non-OIC countries are fragmented by ethnicity, location, income, awareness and a few other determinants. Therefore, a one-size-fits-all strategy simply cannot work. There has been a noticeable shift of perception in and around the halal market over the past decade. A range of factors – such as national halal initiatives, conferences, expos, online networking and media, as well as values have combined to bring halal into the spotlight. This shared awareness has contributed to the inherent strength of the halal sectors.

The growth of the halal industry has coincided with the rise of the digital economy, and the social networking and connectivity that it has resulted. While this has not had a far-reaching effect on the halal sector in the past decade, it will very likely have a significant effect in the coming years. Digital technology has produced online platforms that give access to global audiences, and has been a factor in the growth of SMEs entering the halal marketplace across a range of sectors.

However, there are a number of challenges faced by the Halal industry which needs to be addressed and to find solutions in order to enhance the industry to the next level.

3. Some key Challenges faced by the Halal industry in the OIC and non-OIC member countries

An unusual period in history, the coronavirus pandemic has unleashed a series of unprecedented
events affecting every industry. The Halal industry needs to reset to a new normal when going forward into the post COVID-19 era which will be continuously redefined and redesigned.

3.1 Due to the COVID 19 pandemic, there will be a number of Halal product manufacturers and service providers who will face financial hardships in continuing their businesses.

3.2 Halal certifying bodies are on the increase without any proper supervision or control. Australia is an example with 28 halal certifying bodies without an umbrella body to supervise or coordinate. This could pave the way for malpractices in the halal industry.

3.3 Islamophobia is on the rise in countries where Muslims live as a minority. Particularly in the non - OIC member countries. The recent anti - Halal campaigns in Sri Lanka and India are significant to mention. The Buddhist extremists’ groups in Sri Lanka launched a campaign against a halal certification body which was under the patronage of “All Ceylon Jemmiyathul Ulama” demanding that the Halal logo which appeared on certain food products to be removed. As a result, the Muslims are in a state of confusion to identify whether the products they want to purchase is Halal certified or not.

3.4 The increase in activities against the Halal certified products by the far-right movements in the west is also a concern for the Muslims living as a minority.

3.5 Currently, the Islamic financial products offered by the Islamic Financial Institutions are expensive compared to the conventional banks. As a result, it makes it harder on the families to easily opt for such products for their requirements.

3.6 Even though the conventional Banks offer Islamic financial products, a considerable number of Muslim families are sceptical in accepting these products due to the doubt they have in abiding the Sharia compliance by the conventional banks.

3.7 There is a severe shortage of trained professionals in the halal travel and tourism industry. As a result, the mainstream travel and tourism brands struggle to fill the gap in implementing the sharia compliances in meeting the requirements of the halal certifying bodies.

3.8 The lack of investor interest in halal media limits the growth of the industry. Halal media could become a viable force for good, changing Muslim narratives especially in the west, however more funding is needed.

3.9 The lack of Islamic-themed content writers is a major obstacle in the industry. As a result, producers and the media production houses face difficulties in expanding their services.

3.10 One of the concerns is that modest fashion has lost its uniqueness and is now almost interchangeable with wider fashion. We could notice that the modest fashion has been misinterpreted widely and sometime crossing the boundaries of Islamic values and principles. This has been a dangerous development and as a result the average youngster/ millennials would blindly follow this trend thinking that they are adhering to the Islamic values and the principles.

3.11 The challenge of wearing modest clothing still persists in non-Muslim majority countries, which has a negative impact on the industry growth. Islamophobia campaigns are on the rise in some western cities. Far-right movements/ political parties are active in creating such hate campaigns. For example, in Australia, the One Nation party headed by Paulin Hanson continuously advocates this hate campaign.

3.12 Due to the entrance of the leading global apparel brands and retailers, Muslim–native brands find it difficult to compete for the market share. Heavy marketing spent by the global brands make the modest fashion industry to become highly competitive for the Muslim-native brands.

3.13 The consumers increasingly face challenges from the presence of fake halal cosmetic brands. This has been a worrying factor when making the buying decision by the consumer.

3.14 The stiff competition from the global brands makes the new entrants difficult to survive in the lucrative halal industry due to their bigger advertising budgets and established distribution.

3.15 The halal cosmetics segment is dominated by small and medium-sized enterprises with the sector at risk of remaining niche. Due to the halal cosmetics firms fail to upscale, they face competition and acquisition from the multinational players.

3.16 The Muslims who live in non-Muslim majority countries constantly find it hard to get the pharmaceutical products which are confined to the ‘halal and tayyib’. This has been a major challenge for the families living in these countries.

3.17 Lack of professionally trained halal pharmaceutical auditors is a major concern in the halal pharmaceutical industry. We need professionals who could maintain the good manufacturing practices (GMP) guidelines, which are important for maintaining quality.

3.18 The pharmaceutical industry often faces challenges in sourcing the halal gelatine for their product manufacturing, as the constant supply for the demand is not met. This has been an ongoing challenge for the pharmaceutical companies.

4. Some key recommendations in promoting Halal industry in OIC and non-OIC member countries

4.1 It is important that the OIC member countries devise policies in providing financial and other necessary support to secure these businesses.
4.2 Standards and Metrology Institute for the Islamic Countries (SMIEC)/OIC must set universal Halal certifying guidelines/standards to all Halal Certifying bodies around the globe.

4.3 There is an increased global demand for organic and natural foods which is starting to appear among Muslim consumers, especially the younger millennial generation. Example: producing farm-raised, organic-fed meat. Therefore, OIC countries must focus on this new phenomenon and invest in this emerging sector.

4.4 Halal certifying bodies/ Da’wah Organizations must produce Halal concept related materials in a number of languages and make them freely available for easy access for both the Muslims and the Non-Muslims.

4.5 The Halal industry must position “Halal’ logos as a symbol of Quality assurance and Lifestyle choices for both Muslims and Non-Muslims.

4.6 While Islamic finance has not kept pace with the conventional banking sector’s adoption of technology, therefore it has become the paramount need for adoption of digital banking and fintech at the earliest possible. This will provide the customers with a sophisticated service as a conventional bank.

4.7 GCC countries must seriously consider in funding/investing on Islamic financial institutions in the Asia pacific region in which 60% of the Muslims live in. In addition, the GCC countries must provide financial support for the existing Islamic financial institutions in building their capabilities. For example, in Australia, half a million Muslims are left with only few Islamic Financial Institutions for their requirements. Given the scope and competitive nature of the Australian home loan market, there are limited Sharia Compliant Islamic home loan providers in the market, namely: MCCA, ICFAL, Amana and Iskan. The market is in demand for more of such institutions which will certainly create an impact on the lives of many Muslim families and youth.

4.8 With the rapid growth of Islamic finance in all corners of the world, there has been an urgent need to increase in human capital. The Islamic Development Bank could initiate and facilitate amongst its member countries to produce industry-ready professionals. Malaysia is currently leading in providing Islamic finance education to the Islamic finance industry professionals. Therefore, IDB could seek its support to expand to the rest of the member countries.

4.9 Universities and other educational institutions must offer halal travel and tourism courses at affordable prices. This will provide opportunities for the younger generations to choose the halal hospitality industry as their future career. OIC member countries must focus on this area in particular as a capacity building exercise for their current and future workforce.

4.10 OIC member countries must help the new start-ups and the young entrepreneurs in their respective countries by providing financial support in developing travel apps, halal booking portals, artificial intelligence (AI) and virtual reality (VR).

4.11 OIC member countries must take the initiative to host halal travel & tourism expos and conferences on a yearly basis promoting the industry. Moreover, OIC member countries could assist the non-OIC member countries in promoting the halal travel & tourism industry by extending their support by providing experts, consultants, capacity building activities or by investment.

4.12 The leading universities from the OIC countries must produce Islamic-themed content writers. The more we produce, the more we can also supply to the entertainment industry in the non-Muslim majority countries, since they are equally shifting their outlook to include Islamic-themed content which will appeal to Muslims.

4.13 The OIC countries must revive the Islamic Calligraphy and re-launch it to the world. This is a pride of the Islamic civilization and must be reintroduced to the wider audience and Muslim youth in particular. Organizing exhibitions on Islamic calligraphy alongside with Muslim literature and cultural festivals would certainly provide a sense of belonging and pride to the Muslim families and the youth.

4.14 The OIC countries must clearly define the concept of modest fashion. It is important to draw the guidelines within the Islamic values and principles. This would help the consumers to have a clear understanding of the modest fashion and prevent them from misleading concepts. Modest fashion show organizers in the OIC member countries in particular must be clearly informed of the requirements that they must fulfil when organizing such events. As a result, these guidelines would assist the global brands to understand modest fashion from the Islamic perspective well.

4.15 OIC countries must start investing in the modest fashion industry and develop independent brands which can compete with the leading global brands. Moreover, these new independent brands must closely associate with influencers and advisors of the modest fashion industry to ensure the marketing campaigns are well executed for a wider reach.

4.16 There is an increase in opportunity to market halal cosmetics to non-Muslim consumers. Most halal cosmetics focus on natural ingredients, eco-friendliness and fair trade. UK-based PHB Ethical Beauty and Eco Trail, along with the Iba brand. Therefore, small and medium-sized halal cosmetic businesses must focus on the non-Muslim consumers as well. By implementing a strong marketing campaign to promote a halal cosmetic range, it could attract the non-Muslims for its natural ingredients and eco-friendliness.

4.17 OIC countries must impose heavy penalties on the fake halal cosmetic brand manufacturers. Consequently, this could become a serious issue, which will lead to huge negative impacts on the halal cosmetics
industry as a whole.

4.18 OIC countries must assist the small and medium-sized halal cosmetic companies in their capacity building activities by providing financial support, human resources development, assistance to participate in the international halal beauty exhibitions, and extending their support in marketing & promotional campaigns in local and overseas markets.

4.19 OIC governments to invest on halal pharmaceutical industry development initiatives in order to be a part of the industry growth.

4.20 OIC countries to adopt one halal pharmaceutical standard developed by Malaysia which will help to develop this sector further.

4.21 OIC countries must work together in coordinating the gelatine supply to the industry. Islamic Development bank and the Ministry of Hajj in Saudi Arabia could take the lead on this initiative by utilizing the relevant parts from sacrificed animals during the Hajj period and continue to fund other OIC member countries to further continue this initiative.

4.22 Blockchain would help to make halal compliance more traceable, and products more easily be traded. This technology can quickly confirm halal compliance at each stage of the production. Such application can eliminate fraud and support the regulators. As a result, the families will have the greater confidence when purchasing products.

4.23 Blockchain and automation can play a vital role in making Islamic finance more accessible to a wider audience. Islamic finance has historically more transaction structuring and verification processes, which has resulted in a higher financing cost. Blockchain enables the use of “smart contracts” which can automatically enforce contractual terms, substantially reducing the cost and becoming more competitive. This will help the families to obtain financial products at affordable rates from the Islamic financial institutions.

4.24 The next generation technologies promise to make Islamic lifestyle a truly immersive experience and open up new advertising channels to meet consumers’ evolving demands. The halal travel experience can be substantially enhanced through VR and AR. This technology will provide a completely different experience even before the consumers embark on the travel.

4.25 The adoption of advanced technology is at a very early stage across the lifestyle industry. However, the roadmap for companies involved in halal travel, media and fashion involves developing a compelling, exponential solution for Muslim consumers. This will certainly benefit the families and the youth in particular.

4.26 OIC member countries must develop partnerships with non-OIC countries and strengthen their Halal capabilities. (China, South Korea and South Africa are already partnering with Malaysia and the UAE to develop their Halal capabilities).

4.27 SMII-C-OIC to establish strong relationships with other International standard organizations in the OIC non-member countries such as ESO (EU), NIST (US), Standards Australia.

4.28 The Governments must provide accreditations for Halal related courses such as Halal Auditors, Food technologists, and laboratory technicians.

4.29 Halal certifying bodies/ Da’wah Organizations must produce Halal concept related materials in a number of languages and make them freely available for easy access for the Muslims and the Non-Muslims living in the OIC member and non-member countries.

4.30 Human Capital Development – Governments and Halal certifying bodies must invest in producing more experts for the industries such as Food, Pharmaceutical, cosmetics, Fashion, halal media & entertainment and Travel & Tourism. This would certainly provide solutions to the shortage of industrial experts in the Global Halal market.

Conclusion

In summation, the Halal Industry has further improvements to be undertaken in the promotion of every sector of the industry amongst both OIC and non-OIC member countries. Human capital development is one of the top priorities for the governments and halal certifying bodies by investing in producing more experts for the industries such as Food, Pharmaceutical, Cosmetics, Fashion, and Travel & Tourism. This would certainly provide solutions to the shortage of industrial experts in the global halal market.

The halal market is no longer exclusive to Muslim consumers as the demand is also from non-Muslim communities who acknowledge the quality of halal products and services. The Halal industry is steadily growing and is gaining attraction amongst industry players worldwide. The inclusiveness of the industry which can be integrated into all sectors, makes it an attractive niche for companies to invest in as the opportunities are endless. Furthermore, the Halal industry is expected to continue on this path as it garners for more recognition and exposure.

There has been a gradual shift in public awareness and acceptance of values that are inherently in harmony with Islam and Muslims. The halal market lies in this arena of shared values of good food, cleanliness, health, appropriate concern for animals and the environment. This is a growth market niche where the twin currents of the halal and mainstream markets converge around this notion of bringing purity, ethics and even a sense of spirituality, back into the matters of diet and lifestyle of individuals. The continuous efforts to hold halal exhibitions and trade shows around the globe, engaging dialogues with non-Muslim stakeholders, SMII-C-OIC to establish a Halal consortium for coordinating with halal certifying bodies and halal event organizers around the world are some of the recommendations to implement. Technological advancements play a vital role in the progress of the current Islamic economy. Every sector of the halal industry must quickly embrace the technological potentials in order to keep pace with the
The dynamism of the halal industry has moulded and enriched the families and the youth with its products and services. The halal industry is swiftly becoming a lifestyle choice for both Muslims and non-Muslims.

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Mr. Irshad A Cader is a leading Business & Management professional and a Halal economist with vast experiences in managing internationally reputed businesses in Australia, South East Asia and the Middle Eastern region. Some of his key achievements include the establishment of the Duty-Free concept for the first time at all International Airports in the Kingdom of Saudi Arabia known as “Saudi Duty Free”.

He has been instrumental in developing a high-end, well renown Halal cosmetic brand called “Sensi” in the Middle-East. He has been a recipient for a number of international awards in the Private and the Government sectors and has attended a number of international conferences and seminars as a guest speaker.
Comparative Study of Istihalah Shariah And Chemical Changes

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ABSTRACT

The first command that Allah directed to mankind after its creation, is from the chapter of Halal and Haram. Therefore, the topic has been of great importance not only in Islam, but also in previous religions. Due to the scientific revolution, the standards adopted in other sciences have changed gradually. Consequently, it has also created complications in halal and haram issues. Over the years, the researchers have been working day and night to find solutions related to these underlying problems. The significant issue in the matter of halal and haram is of “Transformation (Istihalah)” which has always been debatable among the scholarly people for decades. However, due to the scientific advancements, this matter has further worsened instead of getting better. So, the issue becomes more critical now. “Transformation (Istihalah)” actually is the highest peak of the mountain that is not only difficult to climb, but also time-consuming. Therefore, only a few researchers have written about it, and they too have failed to form a definitive opinion on it.

“Transformation (Istihalah)” refers to a change in some aspect of something that changes the reality in it and establishes a shariah ruling on it. Hence, if that thing was previously Haram then it should be called Halal now and if it was Najas then it should be purified now. The Fuqaha have mentioned the issues of “Transformation (Istihalah)’” and have given some explanations for it, but they have not given any comprehensive meaning and elaboration. As a result, we do not find any definite definition of it in Islamic literature today. On the other hand, chemistry has evolved over the years and deals with the changes involved in the matter by discussing each of its stages, explaining its causes and effects as well as changes in its properties, composition and structure. It also deals with the principles governing the changes which matter may undergo. Due to this change, there is a need to give an unambiguous definition of “Transformation (Istihalah)” which is not only jurisprudentially acceptable but also conforms to the terminology of chemistry. This paper collects definitions and examples of Istihalah and examines them in detail and then compares them with the possible chemical changes to find commonalities. The paper provides a comparative review of the definitions of Istihalah and chemical changes and attempts to offer a common definition.

1. Introduction

The halal industry is currently facing many problems; some of which are related to administrative matters, and some are related to research. From a research point of view, the significant and complex issue that needs to be addressed with urgency is “Istihalah”. The concept of transformation is an incontrovertible fact upon which ancient philosophers did have a belief. Allah (SWT) has also mentioned the concept of transformation in the Holy Quran where he describes the different stages of human creation:

لاَّ تَأْسِرْنَّكُمْ عَلَىَّ مَا شَذَّةَ مَصَّةً مِّنْ مَّنْ أَنْتُمْ نَفْسِيَ ؛ وَلْكَنْ خَلَقَنَا الْإِنْسَانَ مِنْ شَرْطَينَ مَعْلُومَيْنَ مُّقْلِدَيْنَ، خَلَقْنَاهُ مِنْ نِّيرٍ وَخَلَقْنَاهُ مِنْ غَيْرِ نِّيرٍ. (verse 13)

After that, beautiful Hizmat (Birth) was performed by Allah. This is the reason why it is said in the verse:

فَلَأَشْرَكُوا َّلَهُ أَحَدَنَّ الْخَلْقِينَ، (verse 14)

(We have created man from an extract of clay. [12] Then We made him a sperm-drop in a firm resting place. [13] Then We turned the sperm-drop into a clot, then We turned the clot into a fetus-lump, then We turned the fetus-lump into bones, then We clothed the bones with flesh; thereafter We developed it into another creature. So, glorious is Allah, the Best of the creators. [14] Then, after all this, you are to die. [15] Then you are to be raised again on the Day of Judgment. [16])

It is clearly evident from the aforementioned verses that when the creation goes from one stage to another, the product (in all these stages) is completely different from the previous one.
According to the polytheists of Makkah, “Transformation” seems to be an impossible notion, and because of this they have objected to the Life after death: (WHO WILL GIVE LIFE TO THE BONES WHEN THEY ARE DECAYED?) [78]

Then, Allah Almighty replied: (SAY, THESE WILL BE REVIVED BY THE SAME ONE WHO HAD CREATED THEM FOR THE FIRST TIME.)

Similarly, the Qur’an highlights the idea of Transformation in another place: (FROM DUST WE CREATED YOU, AND IN THIS WE SHALL RAISE YOU UP AGAIN)

The Transformation has a considerable impact on the rulings of Shariah. We find examples in jurisprudence according to which some halal thing gets declared haram after transformation or a pure thing is ordered to be impure after transformation. Likewise, we find examples of the opposite, in which a haram thing becomes halal, or an impure thing becomes pure because of transformation.

This contemporary world is full of products, many of which originate from haram sources. These haram raw materials reach the hands of customers after passing through multiple stages. As these products are manufactured according to international standards, they are considered a benchmark product, and safe for use by human beings. However, for a Muslim, the issue of halal and haram is more essential, and questions hover over their mind that after all these stages, whether this thing will be considered pure and halal or not? And whether this change has considered Istihalah (transformation) or not?

The scholars have not mentioned any comprehensive definition of Istihalah (transformation). Whereas, they have mentioned some relevant signs and examples regarding this concept. On the other hand, the concept of changes in science is broader in scope, which has made this problem even more complicated. Consequently, this has led to a confusion among the public, particularly Muslim people, who are unsure of classifying products Halal or Haram.

In this paper, I will try to provide a comparative analysis of the definitions of chemical changes and Istihalah. And provide an opinion that makes it easier to determine the Shari’ah ruling on these aforementioned Mashbooh (doubtful) things.

2. Change in the Matter

The matter is any substance or material that has mass and occupies space. Matter can neither be created nor be destroyed but can be transformed from one form to another. Since we have to analyze the definitions and examples of transformation mentioned by the jurists, it is necessary for us to first mention the basic types of change and explain them by giving examples so that it is easy to understand. Transformation of matter occurs in different ways like physical, chemical, and nuclear changes.

2.1. Physical Change

A physical change is an alteration in the form of matter, but not in its composition. In a physical change, no bonds are broken or formed. This means that the types of compounds or elements are similar at the beginning and at the end of the change.

A change of state, such as from a solid to a liquid or a gas, is a physical change. There are many techniques commonly used for the separation of mixtures like filtration, evaporation, crystallization, and centrifuging.

For example, when ice is warmed, it melts into a liquid state, water. When water is heated and boiled, it changes into steam (gas), gaseous state, but the composition of the particles in each state remains the same that is, water molecules (H2O).

H2O (s) → H2O (l) → H2O (g)

2.2. Structural Change

Structural Change is when only the structural formula changes, and the molecular formula remains the same. There are several subtypes of structural isomerism: positional, functional group, and chain isomerism.

For example, the molecular of Ethanol (Khamr) and Dimethyl ether is the same: C2H5O, but the structural formula is different:

- Ethanol (Khamr); C2H5OH or CH3CH2OH.
- Dimethyl ether; CH3OCH3.

2.3. Spatial Change (Stereoisomerism)

Stereoisomerism is when molecular formula and structural formula both remains the same, but atoms change their arrangement in space. There are two subtypes of stereoisomerism, conformational isomerism and configurational isomerism; the latter can be further subdivided into optical isomerism and geometrical isomerism.

For example, the chemical compound 2-Butene has two geometrical isomers, both have the same molecular formula (C4H8) and structural formula (CH3-CH=CH2), but it exists in two geometric isomers cis-2-butene and trans-2-butene as seen below.
2.4. Chemical Change

Any change, which alters the composition of a substance, is a chemical change. In this type of change one, or more new substances are formed from the original substances.

For example, when iron (Fe) rusts, it reacts with oxygen (O) of air in presence of moisture to form red-brown iron oxide (rust). The composition of rust is chemically different from the original substances. Similarly, when coal burns, it forms smoke, gaseous products and ashes. The burning of coal is a chemical reaction (change) in which it combines with oxygen in the air to form entirely new substances.

Types of Chemical Reactions:

A large number of different types of chemical reactions occur which can be distinguished from one another. Although some of these reactions are interrelated but they may be classified on the following basis:

(a) Reactions among similar atoms and molecules.
(b) Reactions among different kinds of atoms and molecules.
(c) Miscellaneous reactions.

Let us discuss various chemical reactions that are directly related to our purpose.

- Decomposition reactions.
- Addition reaction (combination reaction).
- Single displacement reaction.
- Double displacement reaction.
- Combustion reaction.

2.4.1. Decomposition Reactions:

A reaction in which a chemical substance breaks down to form two or more simpler substances is called a decomposition reaction.

For example: carbonic acid (H2CO3) in soft drinks decompose in two new compounds water (H2O) and carbon dioxide (CO2), which can be represented by the chemical equation:

\[ \text{H}_2\text{CO}_3 \rightarrow \text{H}_2\text{O} + \text{CO}_2 \]

2.4.2. Addition or Combination Reaction:

A reaction in which two or more substances combine to form a single substance is called an addition or combination reaction.

For example: one oxygen molecule combining with two hydrogen molecules to form two water molecules is written:

\[ \text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O} \]

2.4.3. Single Replacement (Displacement) Reaction:

A reaction in which one atom or group of atoms of a compound are replaced by another atom or group of atoms.

For example: when potassium (K) reacts with water (H2O). A colorless solid compound named potassium hydroxide (KOH) forms, and hydrogen gas (H2) is set free. The equation for the reaction is:

\[ 2\text{K} + 2\text{H}_2\text{O} \rightarrow 2\text{KOH} + \text{H}_2 \]

2.4.4. Double Displacement Reaction:

It is a reaction in which two compounds exchange their partners so that two new compounds are formed.

For example: the reaction between sodium sulfide and hydrochloric acid to form sodium chloride and hydrogen sulfide:

\[ \text{Na}_2\text{S} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{S} \]

2.4.5. Combustion Reaction:

A reaction in which substances react with either free oxygen or oxygen of the air (with rapid release of heat and flame) is called a combustion reaction. For example, methane reacts with oxygen and form carbon dioxide and water. The equation for the reaction is:

\[ \text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} \]

2.5. Nuclear change.

In a nuclear change, the nucleus of an element’s atom is altered, thus producing a different element. The different types of nuclear change include Fission, Fusion, Nuclear Decay and Transmutation. For example, the reaction of an α particle (4He) with nitrogen (14N) converts it into oxygen (17O). which can be represented by the chemical equation; 

\[ ^{4}\text{He} + ^{14}\text{N} \rightarrow ^{17}\text{O} + ^{1}\text{H} \]

3. Istihalah In Islamic Jurisprudence.

The Shariah Scholars have mentioned the issues of “Istihalah” and have given some explanation for it, but they have not yet come up with any comprehensive meaning and elaboration. However, some jurists have tried their level best to define transformation.

Firstly, I will mention a few definitions that have been quoted by scholars. Then, I will shed light on the examples in which the jurists believe that Istihalah (transformation) has been implemented.

Following are the definitions:

(a) The change of form, color, smell, and taste is Istihalah (transformation).
(b) Istihalah (transformation) is only the change of those properties which are related to the identity of that matter.
(c) The change in which the product is completely different from its previous form, reality, nature, effect, name, and uses, will be called Istihalah (transformation).
(d) Istihalah (transformation) is a change that cannot be reversed.
(e) Istihalah (transformation) is converting one thing into another.

From these definitions, we can conclude that the following changes have been claimed by schoolers for Istihalah (transformation):

- Change of form.
- Change of reality.
- Change of properties that are related to the identity of that matter.
- Change of color, smell, and taste.
- Change of name.
• Change of nature and effect.
• Change of uses.
• Change must be irreversible.
• The product must be Differ from the starting material.

No definite conclusion can be drawn from the aforementioned definitions of Istihalah (transformation) because these interpretations are so obscure from a scientific and chemical point of view that they do not apply to any definition of scientific change.

while the jurists have tried to discuss Istihalah (transformation), they have mentioned some causes of Istihalah (transformation), and explained them with relevant examples. After analyzing several problems mentioned by the jurists, and carrying out a comparative study with the scientific changes occurring, I have concluded the following outcomes:

4. Comparative Study

Impurity (Najasah) or haramness of something is either due to some internal reasons or due to the contamination with an impure or haram thing. For the latter, only that change will be considered under the definition of Istihalah If something which is haram or impure is separated from a pure or halal thing.

For example: If impure (Najas) water is freeze into ice, then this change of state (physical change) will not come under the definition of Istihalah. This is because this frozen (Najas) water is still contaminated with an impurity (Najasah).

On the contrary, if this impure (Najas) water is filtered to such an extent that the impurity is completely separated, then this physical change will be considered as Istihalah. Then, the water will be declared as pure because the water molecules (H2O) were pure in themselves. Due to contamination of impurity, it was declared as impure. However, after filtration that impurity (in the Najasah water) has been removed. Because of which the water has returned to its original status of purity (Taharah).

In the same way, if there is any impurity of blood etc. on a transparent and smooth surface, it becomes impure. The way to purify it is to wipe the impurity in such a way that it completely gets removed, which is a physical change (desorption process).

These examples completely illustrate that claim made by some scholars: "physical change alone is not enough for transformation" is based on a misunderstanding.

Here it is important to keep in mind that for Istihalah (transformation); the physical process that takes place during the contamination with impurity must be reversed. For example, the impurity caused by the desorption process (during contamination) can be removed only by the desorption process and the impurity caused by physical absorption can be removed only by the opposite process. Likewise, the impurity caused by mixing can be removed only by the filtration technique.

If something is not impure (Najas) or haram due to contamination, then we have to examine whether it is haram in itself or because of some specific reason. If something is haram because of the latter reason, then for Istihalah, that change is required because of which effect of the specific reason is eradicated.

For example, alcohol (Khamr) is haram due to intoxication. But, by bringing about a functional group change, the OH functional group converts into COOH group. Due to this change, the intoxication effect ends. This is why this resulting product will be classified as Halal.

CH3-CH2OH + O2 → CH3-COOH + H2O

The hadith of the Holy Prophet (صلى الله عليه وسلم) is as follows:

“اللَّهُ أَحَبَّ الْإِنْسَانَ إِلَّآَ أنْ يَلْبِسَهُ اللَّهُ الطَّخَّانَ”

“What a good condiment vinegar is!”

Similarly, in case of something which is haram due to being poisonous or harmfulness, will become halal only if we incorporate a change that eliminates that effect of poisoning or harmfulness. This change may be structural, Spatial, chemical, or nuclear. There are many drugs whose activity is affected only by structural or Spatial change.

If something is haram or impure not because of the previously mentioned reasons (contamination and specific reason) but, it is haram or impure in itself, e.g. haram meat, Najasah, human waste, and urine, etc. Over here, the change to be considered under Istihalah only when there is a nuclear change, or some specific chemical change takes place. It cannot be due to physical, structural, or stereo changes, i.e. melting haram animal’s fat is not an Istihalah. the Holy Prophet (صلى الله عليه وسلم) says:

"قلتُ: ﴿فَأَنَّ اللَّهَ الْيَهُودِينَ خَزَّمَ عَلَيْهِمْ النَّشُورَ، فَجَعَلَهُمْ، فِي أَعْمَالِهِمْ".

"May Allah curse the Jews, for Allah had forbidden them to eat the fat of animals but they melted it and sold it."
For instance, if we burn the Najasah so much that it becomes ash completely, then it will be termed as pure because all kinds of molecules that were Najas would have undergone a chemical change.

Likewise, when the human body decomposes after burial into other elements, then these elements will be considered pure and halal because they have undergone a chemical change.

But if there is such a chemical change in an impure or haram thing in which only some kind of its molecules are changed. Then, in this case, this process will not be enough to be considered as Istihalah. For example, even after cooking haram meat, it remains haram because only a partial chemical change takes place.

When yogurt is made, it undergoes a chemical change, but this is not a complete change. Only a few types of molecules undergo this change, so even here, this process is considered insufficient for Istihalah.

(Lactose) C12H22O11→C3H6O3 (Lactic Acid)

This means that whatever is Najas or haram in itself, all kinds of molecules in it are also impure or haram. For its transformation, it will be necessary that all kinds of molecule should undergo a chemical change. Changing a few types of molecules will not change the status of the whole thing.

There are some common questions that must be answered. The first common question is; if unclean water can be pure after being filtered out, why can't urine be? In the light of the above description, the answer is very simple that the molecules of impure water were pure in themselves. It was declared impure because of the contamination with impurity. Now, as a result of filtration, the water molecules return to their original pure form. On the other contrary, urine itself is Najas meaning that all the molecules in it are impure, and filtration does not cause any change in its composition. Therefore, they are still considered haram and impure.

Another common question in the minds of people is that; if alcohol (Khamr) changes into vinegar, it becomes pure. But, if alcohol (Khamr) contains impurities like urine (before changing into vinegar), then why is it still impure even after changing into vinegar? The answer is again very simple, that when the alcohol (Khamr) contaminated with impurity turns into vinegar, it only changes the functional group. Whereas, the impurity still remains in the resulting solution. Hence, the solution i.e. the vinegar is still going to be declared as haram.

5. Results and Conclusion

This paper aimed to collect definitions and examples of Istihalah, to examine them in detail, and then compare them with the possible chemical changes to find commonalities to give an unambiguous common definition of “Transformation (Istihalah)”.

After comparative study, the following conclusions were drawn:

1. Istihalah (transformation) of something which is impure (Najas) or haram due to the contamination; a physical change is enough if the contaminant is removed. But it is necessary to reverse the physical process that takes place during the contamination with impurity.
2. Istihalah (transformation) of something which is impure (Najas) or haram because of some specific reason (e.g. Intoxication); a structural, spatial, chemical, or nuclear change is required because of which the effect of the specific reason is eradicated.
3. If something is haram or impure in itself, e.g. haram meat, Najasah, human waste, and urine. it means that all kinds of molecules in it are impure or haram. For Istihalah (transformation) of such thing, it will be necessary that all kinds of molecules should undergo a nuclear change, or an irreversible chemical change which gives a stable new product. Changing a few types of molecules will not change the status of the whole thing.

The above interpretation of Istihalah Shariah is not only jurisprudentially acceptable but also conforms to the terminology of chemistry. It will help the industry to determine the Shari’ah ruling on Mashbooh (doubtful) things.

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Part II

OIC/SMIIC Standards on Conformity Assessment
OIC/SMIIC 3:2019: Requirements for Halal Accreditation Bodies Accrediting Halal Conformity Assessment

Erdem Başdemirci

Abstract

The speech given by Mr. Erdem Başdemirci, Acting Head of Department of Turkish Halal Accreditation Agency (HAK), Turkey.

Keywords: Conformity Assessment, Halal Accreditation Agency (HAK), Halal Accreditation Bodies, Halal Certification, OIC/SMIIC standards

1. Introduction

The Standards and Metrology Institute for the Islamic Countries (SMIIC) aims to encourage a framework in which impartial, consistent and competent execution of halal certification activities across the Organisation of the Islamic Cooperation (OIC) region takes place. For this purpose, OIC/SMIIC 3:2019 Standard for defining the fundamental requirements for halal accreditation bodies accrediting halal conformity assessment bodies holds a decisive position in order to reach a common ground for monitoring the halal certification practices of various organizations.

2. The Accreditation Structure OIC/SMIIC 3:2019 Draws Upon

OIC/SMIIC 3:2019 standard sets out the rules to be adhered by the organizations providing accreditation services for halal conformity assessment bodies which operate in OIC member countries or in those countries trading with them or in any other country in which there is a demand for halal certification.

In elaborating the standard, it is basically intended that the accreditation system planned to be developed under SMIIC or amongst OIC member countries is not isolated from the world and disconnected from the practices under the Multilateral Recognition Agreements of regional and international accreditation associations such as EA, APAC, and IAF, ILAC. Therefore, we can fairly contend that it is targeted with the Standard that this structure-to-be-established will also be recognized by non-OIC member countries all over the world.

The standard chiefly draws upon ISO/IEC 17011 and primarily goals to specify requirements for halal accreditation bodies, procedures for the execution of halal accreditation activities, and the rules for the use of accreditation symbols granted as a result of the final attestation. Peer evaluation mechanisms have been formulated and targeted at regional and international levels in OIC frame, through which assurance is provided that national halal accreditation bodies are operating in accordance with this standard. Those who have passed such an evaluation can become members of mutual recognition arrangements within OIC. Through regular re-evaluations, the continued adherence to this standard is assured. These mutual recognition arrangement members facilitate the one-stop process, through recognition, promotion and acceptance of each other’s accredited conformity assessments bodies for halal certification. This means that a halal conformity assessment body in an economy should not need to be accredited more than once for the same scope by different halal accreditation bodies.

Figure 1: The Accreditation Structure OIC/SMIIC 3:2019 Draws Upon

Nonetheless, it is not possible to run peer-evaluation process until the structure SMIIC pins down through this Standard has properly been introduced.
3. OIC/SMIIC Perspective in Three Dimensions

Given this general framework envisaged, the Standard is outlining the fundamental principles for an accreditation body to operate through impartial, consistent and competent practices. It is also appropriate as a requirements document for the peer evaluation process for mutual recognition arrangements between halal accreditation bodies of OIC Member States.

4. Main Pillars of SMIIC’s Halal Certification Approach

One can classify the requirements of the standard, which in effect form the main pillars of SMIIC’s halal certification approach: general, structural, resource, information, process and management system.

4.1. General Requirements of the Halal Accreditation Body

As the indispensable principles of the Standard clearly set, a halal accreditation body shall have the responsibility to comply with all relevant Islamic requirements. In the same vein, the halal accreditation body shall be an Islamic entity legally registered by the OIC Member States. With these core elements in hand, the halal accreditation body has to establish, implement and continuously enhance an accreditation scheme whose structure and operation shall be such as to give confidence in its Islamic responsibility and integrity. The halal accreditation scheme shall be organized and operated so as to safeguard Muslims to be served or from receiving non halal products or services. For it is essential to safeguard impartiality, Islamic integrity and credibility for the management of the accreditation scheme, the halal accreditation body shall have documented and implemented an Islamic value-based scheme to provide opportunity for effective implementation of the Islamic values for the benefit of all Muslims worldwide.

4.2. Structural Requirements of the Halal Accreditation Body

The structural organization of the halal accreditation body must meet the basic criteria that form the impartial and consistent implementation of the accreditation scheme outlined above. The halal accreditation body shall identify the top management having overall authority and responsibility for each of the core activities pertaining to the execution of accreditation services. Likewise, the halal accreditation body shall have access to necessary expertise including Islamic rules and halal requirements for advising the halal accreditation body on matters directly relating to Islamic perspective.

4.3. Resource Requirements

Resource management is one another crucial area for the halal accreditation body to effectively manage. First and foremost, the Standard binds the personnel of a halal accreditation body to act with due regard to Islamic principles. The halal accreditation body shall have sufficient and competent Muslim personnel having the education, training, skills and experience necessary for handling the type, range and volume of work performed.

4.4. Process Requirements

As a direct reflection of this general perspective, the halal accreditation body shall ensure that all personnel involved in the halal conformity assessment body’s assessments and other type of halal accreditation activities are Muslims who are technically competent and ethically committed to Islamic values. Should the halal accreditation body deem it necessary to outsource a certain scope of its activities, then it shall ensure that the body that provides outsourced services and the individuals that it resorts to need to comply with all the requirements briefly underlined above.

Having all these requirements satisfied, the halal accreditation body shall consistently document and implement fundamental halal accreditation processes encompassing a wide array of various activities including application & resource review, on-site visits, decision, attestation, surveillance and such. Had the accreditation body granted the accreditation status together with the related marks and symbols, it has to guarantee that the accredited conformity assessment body adheres to the set of rules stemming from the Standard and halal accreditation body’s own scheme, as well as from the national regulations. The accreditation body shall take suitable actions (like suspending, withdrawing or reducing accreditation etc.) to deal with any violation of these rules.

Furthermore, the accreditation body shall establish, document, implement and maintain a management system that is capable of supporting and demonstrating the consistent achievement of the requirements of the Standard. As part of this management system, there shall be clearly defined policies and objectives related to competence, consistency of operation and impartiality. Accordingly, the accreditation body shall provide evidence of its commitment to the development and implementation of its management system.

Conclusion

To summarize, the OIC/SMIIC 3:2019 Standard and the accreditation scheme it introduces are well defined for the purpose of expediting exchange of materials, manufactured goods and products among Member States beginning with mutual recognition of certificates. OIC Members ought to embrace the opportunity and implementation ground that the Standard sets- which will inevitably engender an increased welfare of Muslim Ummah in a sustainable manner.
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OIC/SMIIC 2:2019 Requirements for Bodies Providing Halal Certification Basic Information

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1. Introduction
The Standards and Metrology Institute for the Islamic Countries (SMIIC), as an intergovernmental organization, aims to set common standards to be implemented across the Organisation of the Islamic Cooperation (OIC) region where the Institute aims to ensure the protection of consumers and the interoperability of products. It is without a doubt that these efforts will also strengthen the marketplace position of the OIC Member States in the global economy while fostering innovation and free trade initiatives.

Certification of a halal product or service or process or management system of an organization is one means of providing assurance that the product or service or process or management system in question complies with specified standards, as well as other normative documents, and the organization has implemented a system for the management of the relevant aspects of its activities, in line with its policy in conformity with Islamic rules. As such, halal certification for products, services, processes or management systems is basically carried out to ascertain the halal status of the products, and hence, they can provide confidence to Muslim consumers. On the producers’ side, halal certification can prevent any confusions and disputes on the halal status of the commodity they produce.

2. Brief History and Objectives of the Standard
OIC/SMIIC 2: 2019 Standard specifies requirements for halal certification bodies. Observance of these requirements is intended to ensure that halal certification bodies operate halal product or service or process or management system certification in a competent, consistent and impartial manner, thereby facilitating the recognition of such bodies and the acceptance of their certifications on national and international basis. OIC/SMIIC 2: 2019 Standard serves as a foundation for facilitating the recognition and acceptance of halal certification in the interests of international trade as well.

The standard mainly draws upon ISO/IEC 17065 with normative references to ISO/IEC 17021-1 and ISO/TS 22003 and goals to define requirements for halal certification bodies, procedures for the execution of halal certification activities, and the rules and for the use of certificates and marks granted as a result of the final attestation.

The standard is first adopted on May 2011 by SMIIC Technical Committee on Halal Food Issues as «OIC/SMIIC 2:2011 Guidelines for Bodies Providing Halal Certification» after 3 years of hard work of representatives from OIC Standardization Expert Group (SEG) Member Countries, OIC and its organ. After SMIIC Committee on Standards for Conformity Assessment (CCA) was established on November 2015, the second edition was developed by SMIIC/CCA and adopted on July 2019 as «OIC/SMIIC 2:2019 Conformity Assessment – Requirements for Bodies Providing Halal Certification».

3. Halal Certification Principles
The main 3 principles of the standard are Islamic sensitivity, commitment to Islamic values and risk-based approach the first two principle mentioned differentiates OIC/SMIIC 2:2019 from the normative references. With Islamic sensitivity, the standard wants adherence and approaching the Islamic sensitivities with utmost respect, the halal certification body with all people working there shall be committed to all Islamic values especially related with Halal. Risk based approach is in fact the mirror image of what we are generally doing before deciding to do anything in our
daily life and become an important trend in many areas in our century.

4. Main Pillars of the Standard

In OIC/SMIIC 2:2019, the basis that a halal certification body shall follow is given in the requirements parts namely general, structural, resource, information, process and management systems. In addition to these parts, the standard has annexes for classification categories, minimum audit time calculation and competence criteria.

In the general requirements part, the standard sets criteria for legal and contractual matters and Islamic responsibility, halal certification agreement, responsibility for halal certification decisions, use of license, certificates and marks of conformity. The most important thing is that a halal certification body shall be an Islamic entity, i.e. it shall be wholly owned managed and operated by Muslims and cannot be a part of any non-Muslim organization. Management of impartiality is also a crucial issue that have to be taken into consideration. There are rules for halal certification body to obey about liability and financing, operations, non-discriminatory conditions, traceability and transparency.

According to the structural requirements parts, halal certification body shall:
- have formal rules for the appointment, terms of reference and operation of any committees that are involved in the certification process
- document its entire organizational structure including authorities & responsibilities
- establish a mechanism for safeguarding impartiality with a balanced representation of significantly interested parties including ISLAMIC AUTHORITY
- control activities undertaken with an appropriate level and method

Third requirements topic is dealing with the resource. With the «resource» word, the standard mainly sets the rules for the human resources. There are also some important principles for outsourcing and using individuals from outside. The training, experience, education, criteria for personnel involved in the halal certification activities such as technical experts and auditors, Islamic affairs expert, personnel carrying out contract review and personnel granting halal certification. The issue that shall be emphasized is that audit team and the committee that give the decision shall have include an Islamic affairs expert and the decision shall be taken unanimously.

Process requirements part defines the steps of the audit process, and the actions to be taken before and after audit and halal certification decision. The process begins with the application, the application will be reviewed, if review ends positively the stage 1 audit begins followed by a stage 2 audit. The decision is given by halal certification body according to the information they have, mainly audit report. After the decision, a body monitor what is going on by surveillance activities. While surveillance, scope can change, be reduced or certification may be suspended or withdrawn. Throughout the audit process and in surveillance activities sampling and inspection tests are important processes. You can make appeals to the decision and complaints. After 3 years with minimum 2 surveillance audit the certificate will be renewed with almost the same process from the beginning. This part also defines how the applicants’ records are managed and the changes in the certification are handled.

The last part is for establishment of a management system within the halal certification body. The management of the halal certification body shall:
- establish and document policies and objectives related to its activities
- ensure that the policies are understood, implemented and maintained at all levels of the body
- shall assign responsibility and authority for ensuring the management system procedures and processes are established, implemented and maintained AND reporting about any need for improvement and performance.

The body shall construct a system including a manual, control of documents and records, internal audit and management review, corrective and preventive actions.

Conclusion

All these constructive requirements are for implementing a halal certification process in an impartial, competent and consistent manner.

Dr. Mete Çevik was born in 1979 in Karabük. He completed his primary and secondary school education in T.E.D. Karabük College. He graduated from Middle East Technical University (METU) Food Engineering Department in 2000. After completing his military service, he worked as a shift and manufacturing engineer at a dairy factory between 2001-2003. Later, during his Ph.D. Study in 2004 in METU Food Engineering Department, he worked as a research assistant in the same department until 2010. In the same year, he started his duty as Assistant EU Affairs Expert in the Secretariat General for EU Affairs and ended as an EU Affairs Expert in 2019 and has been working at the Halal Accreditation Agency (HAK) as a Halal Accreditation Expert since that date.

Mete Çevik speaks English at a very good level and beginner level in French. He is married and has two children.
New OIC/SMIIC Standards Related to Conformity Assessment

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OIC/SMIIC 36

**Abstract**

The speech given by Mr. Çağrı Cankurtaran the secretary of SMIIC Committee on Standards for Conformity Assessment (SMIIC/CCA).

1. Introduction

**Standardization within SMIIC**

What is SMIIC/CCA?

SMIIC Committee on Standards for Conformity Assessment (SMIIC/CCA) is the SMIIC committee that works on issues relating to conformity assessment standards.

SMIIC/CCA was established in the 11th SMIIC Board of Directors (BOD) on 30 November 2015 in Istanbul. It develops policy and publishes OIC/SMIIC standards related to conformity assessment. It does not perform conformity assessment activities. Membership is open to all SMIIC Members.

**Scope of SMIIC/CCA**

Preparation of policies and standards for bodies involved in testing, calibration, certification, inspection, accreditation, and other related standards especially halal conformity assessment and accreditation.

**Liaisons of SMIIC/CCA**

International Islamic Fiqh Academy (IIFA) is one of the liaison organizations of SMIIC/CCA from the time of the establishment of the committee.

SMIIC TC 1, TC 2, TC 5, TC 10, TC 11 are internal liaisons of SMIIC/CCA.

**Conformity Assessment Elements**

Conformity assessment includes activities used to ensure products, processes, services, persons, systems and bodies meet specified requirements.

These activities can include testing, inspection, evaluation, examination, auditing, assessment, declaration, certification, accreditation, peer assessment, verification and validation.
2. Halal Conformity Assessment

3. Publications of SMIIC/CCA

<table>
<thead>
<tr>
<th>Standard</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIC/SMIIC 2:2019 - Conformity Assessment – Requirements for Bodies Providing Halal Certification</td>
<td>22.07.2019</td>
</tr>
<tr>
<td>OIC/SMIIC 3:2019 - Conformity Assessment - Requirements for Halal Accreditation Bodies Accrediting Halal Conformity Assessment Bodies</td>
<td>22.07.2019</td>
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<th>Projects</th>
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<td>OIC/SMIIC 33 - Conformity assessment - Example of a Certification Scheme for Halal Products</td>
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<td>20.02.2020</td>
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OIC/SMIIC 33: Conformity Assessment – Example of a Certification Scheme for Halal Products

It describes the fundamentals of halal product certification and provides guidelines for understanding, developing, operating or maintaining certification schemes for halal products, processes and services.

It provides an example of a type 5 product certification scheme for halal products as described in ISO/IEC 17067 based on Islamic rules.

Expected Benefits
- The scheme owners will have the opportunity to use this standard to decide how a scheme for halal products can be developed based on ISO/IEC 17067 and OIC/SMIIC 2 standard.
- Scheme type 5: type test plus periodic assessment of production process and/or audit of management system plus periodic testing of products from point of production and/or the market.

OIC/SMIIC 34: Conformity Assessment - General Requirements for Bodies Operating Certification of Persons Involved in the Halal Related Activities

It contains principles and general requirements for bodies operating certification of persons involved in the halal related activities against specific requirements, and includes the development and maintenance of a certification scheme for these persons.

It can be used by governmental authorities, programme owners and others as a document of criteria for accreditation, peer assessment and appointment.

Expected Benefits
- The certification body will comply with to demonstrate that it is competent to certify persons for a halal related activity. The purpose of certification of persons is to measure the competence of individuals.
- There will be certified persons such as halal auditor, halal assessor, halal expert, Islamic affairs expert etc. which will be accepted worldwide.

OIC/SMIIC 35: Conformity Assessment - General Requirements for the Competence of Laboratories Performing Halal Testing

It specifies the general requirements for Laboratories performing Halal Testing. Compliance to this document does not in any way exempt laboratories from or diminish their responsibilities in observing/complying with existing national laws and regulations/guidelines currently enforced in the country.

Expected Benefits
- Professional working approach
- Reliable ‘laboratory – customer’ relations
- Competence demonstration
- An iterative process of management
- The validity of the final report
- Conformity with testing trends
- There will be more labs dedicated to halal analysis and further improvement on halal test methods with accreditation, reports will be accepted everywhere.

OIC/SMIIC 36: Conformity Assessment - General Requirements of Proficiency Testing for Halal Purposes

It specifies general requirements for the competence of providers of halal proficiency testing schemes and for the development and operation of halal proficiency testing schemes. It can be used as a basis for specific technical requirements for particular fields of application.

Expected Benefits
- Encourages correct measurement and their international recognition of tests for halal purposes which is essential for Global Halal Quality Infrastructure.
- Needed to demonstrate competence and guarantee the quality of results of laboratories participating in PTs and/or, where available, interlaboratory comparison.

4. New Work Item Proposal(s)

There is a new standard project on inspection of halal product, process, service, system, installation, project, data, design, material, claim, person, body or organization, or any combination thereof sectors during halal supply chain.

It will in line with ISO/IEC 17020 - Conformity assessment — Requirements for the operation of various types of bodies performing inspection.

5. Why integration with ISO Standards?

Halal conformity assessment activities are in line and parallel with other practice and have technical nature in many aspects.

Halal CBs should be more integrated with other conformity assessment practices to strengthen their infrastructure and work diversity. (Ex. ISO 22000 and halal food goes hand in hand)

No need for applicants to deal with different CBs and HCBs for halal and other conformity assessment procedures.

Conclusion

The main objective of SMIIC is to develop a series of generic OIC/SMIIC guides and standards on conformity assessment. We should focus more to the technical aspects of halal. Conformity assessment bodies should be more involved in personnel certification, halal testing, inspection, etc.

Mr. Çağrı Cankurtaran was born in Ankara in 1982 and completed primary, secondary and high school education in Yozgat. He was graduated from Department of Food Engineering of Ege University in 2004 and had his M.A. degree on Management in 2007. He worked as production manager and quality control manager between 2004-2005 at private sector producing chewing gum, chocolate and waffle, and worked as food controller / food inspector at Ministry of Food, Agriculture and Livestock of the Republic of Turkey between 2005–2006.

He started to work at TSE on September 2006 and since then he worked at İstanbul Personnel and System Certification Directorate in 2010 he worked in the Surveillance and Inspection Directorate. He is auditor on TS EN ISO 9000 – TS 18001 – TS EN ISO 22000. He has been appointed and working as an Expert at Standards and Metrology Institute for Islamic Countries (SMIIC) General Secretariat since 11/2011. He is the secretary of SMIIC/CCA.
OIC/SMIIC 24:2020, General Requirements for Food Additives and Other Added Chemicals to Halal Food

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\textbf{ABSTRACT}

This paper gives a brief overview of OIC/SMIIC 24:2020, General Requirements for Food Additives and Other Added Chemicals to Halal Food and exploring its important topics.

1. Introduction:
The modern food industry uses many chemicals during food processing and production. These chemicals include but are not limited to food additives, processing aids, added nutrients and flavourings. Knowing the halal status of these chemicals is a great challenge for the halal certification and manufacturing sector.

Food Additives and other added chemicals perform a variety of useful functions in foods that consumers often take for granted. It is almost impossible to eliminate these chemicals from the modern food industry due to its many valuable functions we can summaries why we add them to the food and their functions in 3 main points:

1. To Maintain or Improve Safety and Freshness: Preservatives slow product spoilage caused by mold, air, bacteria, fungi or yeast. In addition to maintaining the quality of the food, they help control contamination that can cause foodborne illness, including life-threatening botulism. One group of preservatives -- antioxidants -- prevents fats and oils and the foods containing them from becoming rancid or developing an off-flavor. They also prevent cut fresh fruits such as apples from turning brown when exposed to air.

2. To Improve or Maintain Nutritional Value: Vitamins and minerals (and fiber) are added to many foods to make up for those lacking in a person's diet or lost in processing, or to enhance the nutritional quality of a food. Such fortification and enrichment has helped reduce malnutrition in the U.S. and worldwide. All products containing added nutrients must be appropriately labeled.

3. Improve Taste, Texture and Appearance: Spices, natural and artificial flavors, and sweeteners are added to enhance the taste of food. Food colors maintain or improve appearance. Emulsifiers, stabilizers and thickeners give foods the texture and consistency consumers expect. Leavening agents allow baked goods to rise during baking. Some additives help control the acidity and alkalinity of foods, while other ingredients help maintain the taste and appeal of foods with reduced fat content.

Using the natural food ingredients only will not give the good marketing picture of the final product. The peanut butter for example will not have the smoothy nice texture without the food additives as seen in figure1.

\textbf{Figure1:} natural vs processed peanut butter. The difference in colour and texture is clear.

The purpose of the OIC/SMIIC 24:2020, General Requirements for Food Additives and Other Added Chemicals to Halal Food is to guide the food industrialists in selecting halal food additives and other added chemicals for producing halal foods. For those purposes, these requirements provide a detailed list that specifies whether this additive to be used is classified as doubtful or non-halal. It also serves as a useful reference for consumers to check if the food additive mentioned on the product label is doubtful or not. The OIC/SMIIC 24:2020 is the first halal standard in the world dedicated to regulate the halal related issues for food additives and other added chemicals. Before that it’s only a summarized list mentions the possible halal status for the E numbers only.
2. OIC/SMIIC 24:2020 general view:

SCOPE

The standard sets the requirements and conditions needed for food additives and any other added chemicals (processing aids, flavourings, added nutrients, enzymes) used during food production to ensure that the final product is halal and safe to consume in OIC countries and all over the world.

It also defines the halal status of food additives in foodstuffs intended for human consumption. It sets a list of doubtful and non-halal food additives and the needed action for each of them.

The OIC/SMIIC 1 General requirements for halal food is a general document and its need to be specified, explained, restricted or give details to its main topics. SMIIC TC1 Halal food issues start to published different new standards to support OIC/SMIIC1. Halal auditors need these requirements and have been looking for it from long time. The main rule in establishing these new standards is not to contradict with OIC/SMIIC 1.

The term and definitions section contains 16 terms e.g.,

- Food additives
- Doubtful food additives
- Indirect food additives
- Other added chemicals
- Added nutrients
- Processing aids

Other than the food additives the standard set the halal requirements for the other added chemicals which includes processing aids, added nutrients and flavourings. Some chemicals are not covered in the standard a) Substances used for the protection of plants and plant products in accordance with the community rules relating to plant health; b) Extraction solvents used in the production of foodstuffs and food ingredients. c) Food contact substances and indirect food additives used in it.

3. Important topics in the OIC/SMIIC 24

Fatty acids transformation

The standard gives detailed answers to different common questions in Halal industry. The standard stated clearly that all halal food additives and other added chemicals shall be from halal animal sources and slaughtered according to the Islamic method mentioned in details in OIC/SMIIC1. This statement will end the discussion about the acceptance of many fatty acids used as food additives and some HCBs certify them as halal according to the transformation rule (Istihalah). SMIIC TC1 follows the IIFA recommendations which forbidden the concept of Istihalah in food specially from the porcine fatty acids which found in many processed foods.

Using ethanol as solvent

OIC/SMIIC 24 give in details the strict conditions to use ethanol in food industry. Some food additives (usually colourants) and any other added chemicals need an organic solvent to dissolve them. It is permissible to use alcohol under the following conditions:

- alcohol shall be used in the minimum amount required to dissolve the chemical,
- the alcohol amount shall not cause euphoria to the person who consumes it (less than 0.05 BAC) this means that the alcohol limit shall not exceed the 0.5% w/v or w/w of the final product.

The above conditions illustrated from the related fatwa from IIFA. And its applied only after the manufacturer verify the absence of other safe solvents like Isopropyl alcohol.

Halal status of insect’s origin food additives

Since that all insects are non halal according to OIC/SMIIC 1 the famous E120 carmine considered as non halal. The standard gives detailed requirements about using carmine from industrial sources. The Shellac E904 considered as doubtful material because it is a secretion of the insects and not the insect body itself.

Labelling enzymes in halal food products

Labelling processing aids in halal food products

OIC/SMIIC 24 contains a special part concern about the labelling requirements. The Muslim consumer has the right to know the names of all chemicals undergo in the food production process. Enzymes and processing aids requirements are mentioned in details.

Safety and maximum daily dose

As in all SMIIC standards the safety issues are considered as a halal critical point. The non-safe product is considered as non halal product. The standard adopted the maximum daily doses set by JECFA (Food codex). JECFA is an international scientific expert committee administered jointly by the Food and Agriculture Organization of the United Nations (FAO) and WHO. It has been meeting since 1956, to evaluate the safety of food additives, contaminants, naturally occurring toxicants and residues of veterinary drugs in food. There is a proposal of SMIIC JECFA committee to evaluate the halal status of the different food additives.
Dr Mohammed Ali is an associate professor of Clinical Pharmacy – Drug Information. He finished his Ph.D. in Clinical Pharmacy, in September 2014 from Universiti Sains Malaysia (USM) his thesis title was: (Halal pharmaceuticals drug information: concepts, sources, and potential in the industry) in which he wrote the general guidelines to establish the halal pharmacopeia and the halal SOPs for halal pharmaceuticals industry. He finished his master degree in Pharmaceutical Technology, from the same university.

As Halal pharmaceuticals and halal cosmetics scientist, his work and research focus on formulation adjustment – halal alternatives for mashbooh ingredients - halal critical chemicals analysis – halal enzymes and culture media solutions and halal drug information. He finished his post-doctoral research about halal pharmaceuticals standards at Süleyman Demirel Üniversitesi –Isparta- Turkey. He is an academic, researcher, Halal auditor, trainer and consultant.

Dr Mohammed Ali joined SMIIC in 2018 and he is the convener of the Porcine detection experts working group. (responsible for developing standards and analytical methods related to halal authenticity and porcine detection).

He is the technical assistance in TC1 (Halal food issues), TC2 (Halal cosmetics issues), TC15 (Terminology) and TC16 (Halal pharmaceuticals issues).
Part III

Islamic Finance and FINTECH
Financing the Consumption and the Role of Islamic Finance on Investment Financing

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\textbf{A B S T R A C T}

The main purpose of this study is to provide a new perspective in the face of long-term evaluation of partnership models, both to solve application problems and to develop effective interest-free instruments. In this context, a systematic analysis of the new generation of commercial activities is carried out. At the same time, recommendations are made by ensuring evaluations on the mathematical aspect of interest. The study interviewed managers from various national and international (operating in Turkey) companies related to the real sector, Islamic financial sector, and digital marketing. The common finding is that very short-term investment projects are carried out with hourly, daily, and weekly reporting in the real sector. Finally, our suggestion for the Islamic finance industry is to develop very short term mudarabah and musharakah solutions.

\textbf{1. Introduction}

Since the first major economic crisis, the role of financial intermediation in the economy has begun to change (Dinc, 2020). Noticeably, this transformation even altered the definition of financial intermediation. It is worthwhile to mention that the change took place gradually from 1929 to 1970. With this modification, the main function of the financial system has turned into retail finance. Indeed, the problematic nature of capitalism is the main reason behind the transformation.

Capitalism carries a systematic problem—i.e., disparities in the distribution of wealth and income generated. It can be said that capitalism has always ignored or sacrificed efficient income distribution for the sake of increasing production capacity; in other words, capitalism has aimed to provide sufficient investment to solve the scarcity problem even if the disparities increases. However, while investments were realizing and mass production was developing, fulfilling the demand could not be materialized due to the problem of the inefficient income distribution. Thus, capitalism began to experience demand crises, which ultimately made additional investments unnecessary (Tabakoglu, 2008).

Historically, it was determined at the very beginning that the main affair of capitalism was the fair distribution of income, as stated by classics like Ricardo. The classical economic approach was, therefore, inevitably and correctly supply-side. However, for more investment and sustained growth each time, efficient distribution has been pushed into the shadows forever within capitalism by demand-side economics.

The temporary solution to the disparities in income distribution was found in financing the consumption. There are two aspects to the financing of consumption. First, financing the consumption of existing investments—i.e., offering working capital for current investments. The second is the retail finance to compensate for the lack of purchasing power with illusion. Thus, financial intermediation somewhat lost the legitimacy it gained with the argument of investments financing.

Modern financial intermediation is more defined with retail finance, fund circulation, and payment systems instead of investments. It can be said that modernism is playing a crucial role on securing current market structure for financial intermediation by creating the need.

Under these circumstances, the modern economy also had to put the financial sector at the heart of the economy instead of the real sector. This is essentially what has been described as financial capitalism. Financial capitalism, along with wild capitalism, is the exploitation of the previous generation of capitalists. The phases of the capitalist era can be summarized as follows:

- first-generation capitalism can be described as “Soft Capitalism”. Soft capitalism converted the main purpose of investments into profit maximization from contributing to the wealth of the nation.
- the neoclassical period can be called “Capitalism”. Capitalist period ignored fair income distribution and engaged the interest with the economic system.
the Keynesian era should be seen as “Wild Capitalism”. Wild capitalism introduced the advertisement industry and fictitious inflation. Also, consumption financing started at this period.

- post-1970 (fourth generation) might be deemed as “Financial capitalism”. Financial capitalism centered the financial sector in the middle of the economic system. Retail finance has been wide-spread at this phase. The current era is still financial capitalism.

- finally, it is plausible to consider fifth and final generation capitalism as “Data Capitalism” (Figure 01). Data capitalism is the only way for capitalism to realize its monopoly, as mentioned by Schumpeter.

The generations of capitalism are motivated by the exploitation of the previous generation of capitalists. Thus, it can be said that the era of financial capitalism is exploiting services and industrial capitalism. It is foreseeable that data capitalism will exploit the whole system together with financial capitalism.

Financial capitalism can actually be evaluated as a successful reflection of competitive economic architecture. It has also nurtured the habit of manipulating demand with a monetary policy leftover from wild capitalism through loans. In the model, in which interest rates become the main argument, economies left into intolerable fluctuations. The global debt to GDP ratio has reached 324%.

Figure 1: Phases of Evolution of Capitalism
Source: Authors

However, as the world accelerates, a new era is opening up in which interest is pushed out of the system. This new period is built on risk-sharing instead of risk-transfer. It is also important to determine that change begins from developed economies. In addition, the need for at least one calendar day to account for the interest in an accelerating world shows its inefficiency. Although discounted credit models can be used, it can be considered that risk-sharing will come to the forefront.

Time flexibility in risk sharing is endless. Very short-term or long-term partnerships are possible; even instant partnerships can be established. Thus, it can be understood that Islamic finance already offers pioneering solutions.

Currently, Islamic finance is mostly financing consumption. Murabahah or tabarruq, applied in some economies, is largely used to finance the consumption of individuals or businesses. However, Islamic finance has investment financing modes such as mudarabah and musharakah, which are considered as the core financing modes of the participation finance industry. In the Islamic system, “there is a much tighter link between the rates of return in the real and financial sectors than in the capitalist system” (Khan & Mirakhor, 1994).

Table 1 shows that there are effective interest-free tools for investment financing. Islamic financial institutions can use these tools more effectively. Among the aforementioned modes of investment financing, the use of the Ijarah is seen as highly practised modes of finance among Islamic financial institutions. However, bank and customer-related problems are seen to be effective in the realm of mudarabah and musharakah mode of financing.

Short-term characteristics of collected funds, long-term preconception of investment financing—i.e., pre-accepted maturity mismatch in short—and transparency problems of customers are seen as the main problems from the literature. How limited the funds transferred to the investment can be seen in Figure 2 (only 5.2% of the funds are transferred directly to investment in Turkey case).

For this reason, this study aims to provide a new perspective in the face of long-term evaluation of partnership models, both to solve application problems and to develop effective instruments against interest. In this context, a systematic analysis of the classical and new generation of commercial activities is carried out. At the same time, recommendations are made by making evaluations on the mathematical aspect of interest.

It is worthwhile to notice that developing technology increases the need for very short-term partnership financing. Here, this study offers the infrastructure necessary for very short-term partnership financing. The development of effective communication tools has also been maintaining this need for some time. Business and investment opportunities are mostly developing instantaneously. Financial architecture remains inactive under these conditions.

Table 1: Categories of Main Islamic Financial Instruments

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murabahah</td>
<td>Ijarah</td>
</tr>
<tr>
<td>Tabarruq</td>
<td>Mudarabah</td>
</tr>
<tr>
<td>Wakalah</td>
<td>Musharakah</td>
</tr>
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</table>

Source: Authors

Table: Breakdown of Credits of Islamic Banks in Turkey (in % and TRL terms)
Source: Authors

The remainder of the study is organized as follows. Section II reviews previously conducted literature related to the theme of this study. Section III explain the method of the study. Section IV provides the findings of the study, and finally, section V concludes by providing necessary recommendations for further research.

2. Literature Review

The practice of partnership financing model in investment is very prevalent. In the financialization era, the partnership financing modes are being widely applied mostly based on the financial asset. There is a voluminous amount of studies that have been conducted based on the theme. However, most of the study considered the financial sector to analyze the theme. In other words, the consideration of the real sector is not as popular as the financial sector in those studies. On the other hand, the applied partnerships financing modes are predominantly for long-term. For this reason, this study
analyzes the investment financing mode based on partnership. Besides, it also provides a new perspective in the face of long-term evaluation of partnership models, both to solve application problems and to develop effective instruments against interest.

Few previously conducted literature related to the theme are summarized as follows:

Jais, Sofyan & Bacha (2020) worked to highlight practical problems in Mudharabah and Musharakah as an equity-based financing method and suggested possible solutions to reduce the problems that arise later and improve current practice. Asadov, Sori, Ramadilli, Anwer & Shamsudheen (2018) investigated functional problems in Musharakah Mutanaqisah (MM) financing and then suggested feasible solutions to alleviate the problems and how to improve the current practice of the mode of financing. Aggarwal & Yousef (2000) examined different financial instruments used by Islamic banks and found that most of them are not based on profit-loss sharing (equity); instead, they are similar to debt.

3. Methodology

The nature of this study is qualitative, and it is based on both primary and secondary sources. In this process, interviews were conducted with the managers of six (6) national and international qualified real sectors, Islamic financial sectors, and digital marketing companies operating in Turkey. The names of the companies are listed in Table 2.

Table 2: Companies Interviewed

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hepsiiburada.com</td>
</tr>
<tr>
<td>2</td>
<td>Hobi24.com</td>
</tr>
<tr>
<td>3</td>
<td>Beta Publishing</td>
</tr>
<tr>
<td>4</td>
<td>Leras Textile</td>
</tr>
<tr>
<td>5</td>
<td>Politem Recycling</td>
</tr>
<tr>
<td>6</td>
<td>Cizmeci Construction</td>
</tr>
</tbody>
</table>

Source: Authors

4. Findings and Analysis

The findings do not change much for businesses that use different marketing channels. Therefore, the common finding is that monthly, quarterly and annual reporting are evaluated for informational purposes, not functional purposes. Shorter reporting is seen to be used as functional inputs. It is understood from the findings that management of strategies is carried out with weekly, daily and hourly reporting. In short, it can be said that very short-term investment projects are carried out in the real sector.

During the study, the Islamic financial institutions from different parts of the world are interviewed to understand the supply side of the problem. First of all, it is seen that there are different approaches to Islamic finance. For instance, under Shari’ah compliance approach, the economies such as Turkey, Pakistan, Sudan, and Nigeria focuses on bringing the practice closer to theory. On the contrary, under the market share approach, economies such as the Gulf states and Malaysia focuses on bringing theory closer to practice. The relationship is presented in Table 3.

As part of this study, it may be possible to add a third dimension to the discussion—i.e., real sector compliance. Under this dimension, the main necessity can be seen as bringing the practice of Islamic finance closer to the practice of the real sector. The reason behind this claim is the real sector’s compliance nature with Shari’ah. This new approach is naturally in accordance with Shari’ah compliance approach. At the same time, compliance will no longer be a problem, since the practice of real sector will not allow financialization. On the other hand, it will be possible to ensure the efficiency of Islamic financial product.

Table 3: Approaches of Countries on Islamic Finance

<table>
<thead>
<tr>
<th>Countries</th>
<th>Approaches</th>
<th>Main Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey, Pakistan, Sudan,</td>
<td>Shari’ah</td>
<td>Practice needs to comply</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Compliance</td>
<td>with the theory</td>
</tr>
<tr>
<td>GCC, South Asia, North</td>
<td>Market share</td>
<td>Theory needs to comply</td>
</tr>
<tr>
<td>Africa</td>
<td></td>
<td>with the practice</td>
</tr>
<tr>
<td>N/A</td>
<td>Real sector</td>
<td>Islamic finance practice</td>
</tr>
<tr>
<td></td>
<td>compliance</td>
<td>needs to comply with real</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sector practice</td>
</tr>
</tbody>
</table>

Source: Developed from Dinc (2019)

5. Conclusion and Recommendation

The main purpose of this study is to provide a new perspective in the face of long-term evaluation of partnership models, both to solve application problems and to develop effective instruments against interest. During the study, executives from various national and international companies related to the real sector, Islamic financial sector, and the digital marketing sector are interviewed.

The findings can be combined with the inefficient nature of the basic principle of interest mathematics, which requires at least one calendar day to pass. In a digitized world, businesses will need interest-free methods of resource development for their strategies to invest in very short-term projects. Indeed, partnership finance can be used effectively to realize these very short-term investments. In this way, it will successfully be able to demonstrate the differentiation of Islamic finance through risk-sharing in both financial capitalism and data capitalism periods, which will ultimately galvanize the paradigm shift.

In summary, partnership financing should be aligned with the real sector. In order to make this alignment possible, a variety of products aimed at implementing partnership financing in a very short-term format must be developed. Islamic financial models are more flexible than interest-based ones. Islamic finance has the ability to develop very short, medium and long-term solutions. Indeed, this nature will bring Islamic finance to the forefront of the accelerating world.

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Assoc. Prof. Dinc, started his Islamic finance career at Albaraka Turk Participation Bank in 2007. He joined Duke University Law School in 2014. In the next year he graduated with PhD degree from Marmara University. Dinc, worked for Trakya University as faculty member from 2016 to 2017. He has been working for Istanbul Sabahattin Zaim University at Islamic Economics and Finance Department since 2017. Dinc is the director of IZU Management, Entrepreneurship, and Leadership Research Center.

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The Integration Between the Halal Economy and Islamic Finance: Growth and Opportunities

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ABSTRACT

The World before Covid-19 will be different from the world after this pandemic. Islamic Economics and finance will not be isolated from this influence. Thousands of small and medium enterprises (SMEs) have shut down, leaving countless numbers of people unemployed with little hope to acquire new jobs. This paper in the beginning has discussed the growth of Islamic economics and finance in the latest years, and how could halal economy and Islamic finance integrate with each other’s in order to have more opportunities and growth in this industry. Lastly, this paper argue that the Covid-19 pandemic will create new opportunities for Islamic finance Industry by accelerating trends such as socially responsible investing, sustainability and digitalization.

1. Introduction

It was narrated by the prophet Muhammad PBUH that “what is halal is clear and what is haram is clear. Midway between them there are things which many people do not know whether they are halal or haram. He who keeps away from them will protect his religion and will be saved. He who approaches them will be very near to haram, like a herdsman wandering near him (the place set by the king to be used by his cattle only), who could soon fall into this protected area. Surely for every king there is such a protected area and God's is what He declared forbidden” (Hadith. Al-Bukhári. Sahíh Bukhári. Bab Fadl Man Istibra li Diníhi. #52. p.23). This hadith indicate that it is very important for Muslims to know what is Halal (allowed) and what is Haram (prohibited) in their daily life, including their eating, drinking, and financial transactions in the first place.

This paper discussed the concept of Halal economy and Islamic finance which is playing an increasing role in the financial markets in the recent period. Moreover, this paper discussed the effects of Covid-19 pandemic to the global Islamic economics system in different industries. Lastly, we conclude the paper by discussing the opportunities for Islamic finance after the pandemic and how this pandemic could create new opportunities for Islamic finance Industry by accelerating trends such as socially responsible investing, sustainability and digitalization.

2. Global Halal Economy

Global halal economy or global Islamic economy have the same meaning, as both of them comprises businesses whose operations comply with the principles of Shariah. The global halal products and services ecosystem encompasses various inter related industries that may be clustered into four major groups, namely: food, travel, lifestyle and finance.

The main feature of the halal market is not only thriving in Muslim majority countries, but also in non-Muslim majority countries like the United States, United Kingdom, Japan and China which give this market global expansion. In spite of the word halal being associated with the religion of Islam, a halal economy ultimately benefits the entire global community.

These Islamic values have a universal appeal making many halal products and services equally attractive to non-Muslim consumers, particularly in the light of current global sentiments where the demand for ethical and socially-conscious product offerings are on the rise.

Based on the latest numbers from “the global halal market - Statistics & Facts | Statista” the global halal industry is estimated to be worth around USD2.3 trillion (excluding Islamic finance). Growing at an estimated annual rate of 20%, the industry is valued at about USD560 billion a year.

Of course, this growth is driven by many factors from demand and supply side of the economy, for example from the demand side we have the increasing numbers of Muslim population whose most of them young. In addition to the Islamic values which driving the lifestyle practices, also we have many of the values underpinning the Islamic economy sectors are universal and appeal to ethical consumers. A global study by Nielsen indicated that 66% of consumers are willing to pay more for ethical/sustainable products.
On the other hand, on the supply side drivers we have the government regulations which support this industry like the Halal certificate in many Muslims countries. And we have the Intra-OIC trade growth which is continuously growing. In addition to the fact that the Islamic economy space has attracted the attention of top global brands creating innovative products and services across sectors.

All these supply and demand side has played important roles in increasing the market share of this global Halal industry in different places around the world.

3. Islamic Finance

Islamic finance is part of Islamic economy, which is all about the transactions and business based on Shariah guidelines and principles.

Islamic finance has become a very fast-growing element of global business system in the last twenty years. Neither any turbulences in the Middle East nor economic crises do prevent Islamic banks accessing to new markets and new companies. There is a great interest toward Islamic banking, Islamic Insurance (Takaful) and Islamic Capital Market not only by those adopted Islamic law but in the global scale. The global Islamic economic report 2020 estimates that the value of Islamic finance assets increased by 13.9% in 2019 from $2.52 trillion to $2.88 trillion. In addition to the previous sectors, Sukuk have become one of the most prominent Islamic finance funding mechanisms utilized in recent years which have proven popular in infrastructure development to offset the possibility of corruption in public tenders.

4. The Global Halal Economy open new opportunities for Islamic Finance

In order to achieve full Shariah compliant transactions in the halal economy, it is essential to ensure that Shariah compliance prevails in the entire products and services supply chain of an organization for the brand integrity and Islamic investing purposes.

In this regard, Islamic financial institutions have an opportunity to encourage these Halal companies whose dealing with halal food or services to utilize Islamic financing facilities and achieve a wholly Shariah-compliant status. Companies in the halal industry, like any other business, have various financial needs including trade finance, risk management, hedging products, capital expenditure funds, liquidity management, working capital needs, and other corporate financial solutions. Therefore, the relationship is mutually beneficial, as for the Halal companies they will finance their daily activities by using the Islamic finance instruments like Murabaha, Ijarah, Salam or other methods. On the other hand, the Islamic financial institutions like Islamic banks can find in these halal companies good opportunity to invest in. the industry had witnessed some progress in recent years where Islamic finance has been utilized to meet the various financing needs of the companies in the halal industry and the other way around.

Figure 1. Sectors under the global halal industry

Ref: Adapted from Halal Industry Development Corporation (2013)

5. Covid-19 in the World

The IMF describes the Covid-19 crisis as “a crisis like no other.” Both the IMF and the EIU project global economy to contract by about 5% percent in 2020, much worse than during the 2008–09 Global Financial Crisis (GFC) and the steepest decline since 1946.

In May 2020, the Asian Development Bank announced that COVID-19 could cost the global economy between $5.8 and $8.8 trillion. So, it is well known that these crises hit different industries in all over the world in different effects and levels of losses. Therefore, this pandemic not only triggered a global health crisis, but also created a financial emergency which has caused the whole world to suffer severe negative economic impacts. Thousands of small and medium enterprises (SMEs) have shut down, leaving countless numbers of people unemployed with little hope to acquire new jobs.


Same as the other industries, Islamic economics and finance sectors has been affected a lot with this crisis, the Covid-19 pandemic is forecasted to result in an 8% decrease in Muslim spending between 2019 and 2020 in the Islamic economics sectors.

Likewise, Muslim expenditure on the travel sector is estimated to be severely impacted. It is expected to fall from $194 billion in 2019 to $58 billion in 2020. S&P Global Ratings Report indicates that the global Islamic finance industry will grow at a slower pace as Sukuk volumes shrink and core markets grapple with economic slowdowns caused by Covid-19 pandemic.

Various measures have already been taken by governments in OIC countries to reduce the economic impact of the crisis caused by this pandemic. Some countries, predominantly emerging markets, are turning to debt, which was already prevalent among OIC countries pre-COVID crisis. The total external debt of
the OIC countries increased by 139.5% from 2005 to 2019 and 58.5% from 2010 to 2019 (SESRIC).

This had led to major supply chain disruptions in various Islamic economics sectors in different places in the world.

7. Conclusion and the Way Forward

We had agreed and saw the bad and negative effects of this pandemic for our financial systems, but at the same time we believe that the Islamic finance instruments could be a part of the integrated pandemic response plan including Waqf, Zakat and Sukuk in order to help the communities to recover fast from this pandemic.

At the same time, it was indicated by many scholars and experts that this Covid-19 pandemic will create new opportunities for Islamic finance industry by accelerating trends such as socially responsible investing, sustainability and digitalization. As it will offers an opportunity for more integrated and transformative growth with a higher degree of standardization. Stronger focus on the industry's social role and meaningful adoption of financial technology Fintech as it will enhance the Industry's resilience “Standard & Poor's”. Therefore, Islamic financial institutions (IFIs) should focus more on impact investing, green and sustainable Sukuk as it shows their importance in the current crises. In addition to the FinTech elements like smart contracts, digital banking, and crowdfunding platform as they will facilitate more Islamic finance which serve the social needs.

At the end, we know that there are still many challenges going on, and we have to work hard each one from his side in order to flourish this industry as required. Until that time, there is much to do and no moment to lose.

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Dr. Tawfik works as an Assistant Professor at Social Science University of Ankara (ASBU), Faculty of Islamic Studies. Early in his career, he worked at the International Shariah Research Academy for Islamic Finance (ISRA) for two years, and did a practical training in Shari’ah department at Asian Finance Bank.

He had published several articles and research papers dealing with various issues related to Islamic banking and finance, both in Arabic and English languages.
The Role of Islamic FinTech in Financial Inclusion

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ARTICLE INFO

Keywords:
Fintech
Financial Inclusion
Literature review
Islamic finance

ABSTRACT

The research study will review the literature on the role of Islamic fintech in financial inclusion and present the future direction as the financial inclusion have gained significant attention especially after global financial crisis (Philippon, 2016). Rabbani et al. (2020) explained that the prospect for Islamic fintech is really bright in Islamic world and among the Muslim users of financial services as it provides opportunities for innovation and can provide financial services at affordable cost. The study will also discourse practitioners’ and research scholars’ views on Islamic fintech and financial inclusion perspective. Although, the fintech as an emerging industry have certain hurdles but still contributing to greater financial inclusion, expansion of financial services to non-financial sectors, and the expansion of basic services to individuals since nearly 50% of people in the developing world already own a mobile phone (World Bank, 2014), especially in Muslim countries and generally overall in the world. An analysis of the use of and access to financial services by adults and firms also shows that most Muslim countries lag behind other emerging economies in both respects, with a rate of financial inclusion of only 27% (Zulkhibri, 2016). Fintech solutions are more cost-effective in providing the financial services as compare to traditional banking and finance. Islamic Fintech will emerge as a lifeline for the Islamic banking and finance institution because of its cost effectiveness and the reach to the communities. Islamic Fintech can easily gain the confidence of Muslim communities as well as the non-Muslim communities primarily because of its transparency and sustainability (Rabbani et al., 2020). In today’s dynamic economic environment, innovation is commonly perceived as one of the critical mechanisms for businesses in attaining sustained competitive advantage. Moving alongside other sectors, banks and financial institutions also produce innovative products and services (Hilmi, 2018). Responsible financial innovation is critical for ensuring the survival and profitability of financial institutions as well as promoting financial development and broadening financial inclusion (Masino and Niño-Zarazúa, 2014), through Islamic fintech. The inadequate research had been taken on the role of Islamic fintech in financial inclusion. The research study will highlight essential issues on financial inclusion. The need of long-term sustainability is a non-compromising aspect of the economy. Therefore, Islamic financial institutions must adopt Islamic fintech solutions to achieve the goal of financial inclusion for maintenance of sustainability in the economies. It will has important research implications for researchers, policy makers and practitioners to draft the effective strategy for financial inclusion by Islamic fintech.

Introduction: Islamic Finance Industry Overview:
- Total 1500+ Islamic Financial Institutions working in 125+ Countries.
- Notable Investment in Islamic FinTech. During 2015-2020
- Islamic Finance now becoming Emerging not only in Muslim Countries rather non-Muslim Countries
- Islamic Finance as Alternative Financial System with Viability and Sustainability
- Global Development & Geographic Spread.

Why Islamic Finance & Islamic Fintech?
- Prohibition of Riba.
- Financial Inclusion.
- Asset Based Financing.
- Impact.

What is Islamic FinTech?
Currently there is not a universally accepted definition of the term “Islamic FinTech”. FinTech is to combine financial services with modern and innovative technologies.


Islamic FinTech Features
- Convenience and User Friendly
- Improved, efficient and Secured Payment System
- Speed with accuracy, Efficient Time Management
- Innovative way to address the Financial data mining issues, Activity Reports, etc.
- Technology-based financial solution is more convenient, more accessible and more cost effective
Global FinTech Industry Landscape

Financial Inclusion Statistics

➢ Two Billion people are unbanked
➢ More than 50% of adults in the poorest households are unbanked

Sustainable Development Goals and Financial Inclusion

➢ Majority of them are Muslims.
➢ 46% Microfinance Clients Reside in Muslim World.
➢ 72% Muslim Population in the world are financially excluded
Conclusion

Shariah Compliant FinTech Initiatives are demanding in Muslim Countries and non-Muslim countries as well. It is newly introduced, rapidly growing sector. Comprehensive and suitable regulation framework are needed. FinTech in Islamic Microfinance and Islamic Agricultural Finance has huge potential to grow. More initiatives are required to set up FinTech institutions. Financial Inclusion among poor and unbanked population should be enhanced.

References


Mr. Muhammad Zubair is graduated in Islamic Banking and Finance and offering advisory and consultancy services in different countries of the world as Global CEO of AlHuda Center of Islamic Banking and Economics (CIBE) from last 15 years. He is a passionate and hardworking individual with a strategic vision in Capacity Building of Islamic Banking, Finance and Islamic Microfinance.
Sustainable Halal Ecosystem and the Roles of Islamic Finance

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ARTICLE INFO

Keywords:
- Halal Economy
- Halal Ecosystem
- Islamic Finance
- OIC Countries
- Sustainability

ABSTRACT

As of today, Islamic or halal economy is becoming an integral component of the development agenda of Muslim economies. Over the years, a slew of initiatives through macro and micro policy formulation are implemented to promote halal economy and to ensure the sustainable growth of Muslim economies. Among many, the development of Islamic finance ecosystem through banking, capital market, takaful and social finance. Also, the continuous efforts to meet the demand for halal food not only in Muslim countries but also globally. Apart from that, significant resources are channelled to support the growth of halal tourism, modest fashion, media & recreation, and pharma & cosmetics.

A cursory glance at the statistics of the Muslim countries shows the parallel of their economy and the growth of the halal economy. The top 10 nations on the halal economy chart are almost similar to the top 10 largest Muslim economies. For instance, Malaysia is not only having one of the highest GDP per capita among the Muslim countries but also topping the chart the largest halal economy. The point is, halal industries including Islamic finance can and will be the driver of growth, hence contributing to the development agenda of the Muslim countries. Thus, there is a need not only to understand how the ecosystem of the Islamic economy operates but more importantly ensuring the sustainable economic growth with low systematic risk and inclusive development. Therefore, this paper will present some of the important pillars to support the growth agenda of the Islamic economy, focusing on issues such as environmental sustainability, small and medium enterprise, financial inclusion and talent development. Although the list is not exhaustive, these are some on the important discussions that are taking place in the space of sustainable growth which is pertinent to the Islamic economy. Environment sustainability affects the Muslim economy in many ways. Among many, climate risk will pose a significant impact on the living condition of the populace in many of the Muslim countries. The continuous rising in global temperature will make certain geographical locations inhabitable for masses, some areas will be underwater and in some, the hot weather will be too extreme. Meaning, some places will either have too much water or too less, causing misery to affected inhabitants. Eventually, a great migration is required to place the misplaced and this will be a very costly endeavour. Fortunately, the world has recognized climate risk as one of the greatest challenges that endangering the continuity of human life. As such, the world is witnessing plenty of innovative solutions to mitigate the impact of climate risk. As Islamic finance promotes impact-based investment and financing, then it is natural for Islamic finance to promote initiatives related to environmental sustainability.

Small and Medium Enterprises (SMEs) are an integral part of any economy. In fact, in many countries, SMEs are contributing approximately 40 to 50 per cent of the Gross Domestic Product (GDP). SMEs are an integral component to support the growth of the halal economy. Apart from Islamic finance which is mainly driven by large institutions other sectors such as food, media and tourism are mostly supported by SMEs. As such, there is a need to promote the growth of SMEs in the context of the rapid acceleration of the digital economy and industrial revolution 4.0. Financial inclusion is another important agenda to continually support the growth of the Islamic economy. There is a need to ensure that the malaise of capitalism is not being manifested in the Muslim economy too. As such, financial inclusion and economic empowerment agenda should be the centre of policy formulation. The mechanism and instruments should be continually enhanced and improved to accelerate the inclusion agenda. The fact there are still plenty of Muslims living below the poverty line on OIC countries reflect the urgency of the matter.

Dr. Mohamed Eskandar Shah Mohd Rasid holds a PhD in Finance from University of Nottingham, United Kingdom. Prior to joining INCEIF, he was an Assistant Professor at Department of Finance, Kulliyah of Economics and Management Sciences, IUUM. During his doctoral studies, he worked as a part time tutor at University of Nottingham and Nottingham Trent International College.

His main research interests are in the area of asset pricing, portfolio theory, capital structure and international finance. He currently serves as Associate Dean for School of Graduate & Professional Studies (SGPS).
Digital Financial Inclusion, Islamic Banking Stability and Sustainable Economic Growth

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\textbf{ARTICLE INFO}

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\textbf{ABSTRACT}

Financial inclusion has gone beyond the rhetoric surrounding social development and financial stability, but also expanding into pathways of arbitrage benefits made from cheap retail deposits by large banks and banks from technologically developed regions. This study investigates whether a higher degree of fintech-based financial inclusion (FFI) intensifies banks’ risk taking. We considered data from 428 conventional banks, 99 Islamic banks, 4 cooperative banks and 3 savings banks from 24 OIC countries. These countries and banks are generally characterized by a varying degree of FFI, large investment in Islamic banks that controls banks’ excessive risk-taking, and large population size. The study employed a mixture of proxies on inclusion, risk measures, bank- and country-specific characteristics, and tested the models using several Panel OLS, 2SLS-IV and quantile regression techniques. The results indicate that higher degree of fintech-based financial inclusion controls bank’s risk-taking behaviour. The coefficient of FFI index on bank risk-taking suggests that an increase in one standard deviation of the FFI index (SD 0.17) is associated with a decline in the default risk and leverage risk of 13.09% and a decline in the portfolio risk of 8.33%. Our results are robust after controlling for several proxies for types of risks and fintech-based financial inclusion. We also forward that the connection turns stronger over the years, especially in the post-industrial revolution 4.0. We discuss how competition surrounding investing in fintech may expose the banks towards severe uncertainty.

Digital financial inclusion (DFI) is not far different from the notion of financial inclusion (FI); rather it is the extension phase of FI where advanced technology is being entertained. Technology changes the conventional behaviour of the financial sector by providing easy access to various financial services in profound ways. Over the years, all countries in the world have been trying to find a proper way to implement the latest technology in the financial sector. In this regard, in recent years, DFI is seen as a changing agent that can bring a revolutionary development in the overall financial sector of the world (Ozili, 2018). Besides, the recent Covid-19 pandemic has put forward of thinking the implementation of digital financial services (DFS) to accelerate and enhance FI, amid social distancing and containment measures. DFI, basically, refers to those financial services that can be enjoyed through electronic devices in a cashless manner without much pain by which both the service providers and receivers can be benefitted (Klapper, 2017).

Reckoning the undeniable impact and importance of DFI, the prominent Islamic banking sector, one of the well-known dominating sectors of the world economy (Ahmed et al., 2015), is also in its way of implementing DFS (e.g., Fintech, E-wallet and other cashless transactions) in a full pledge. Many Islamic banks globally have launched digital finance services since wider inclusion of easily accessible financial services which can help banks to attain stability (Ahamed & Mallick, 2019), push for financial advancement (Demirguc-Kunt et al., 2015), and advance the global financial sector (Iqbal & Llewellyn, 2002). DFS are more efficient, productive, faster and cheaper than any other conventional methods of financial services. Therefore, Islamic banking sector is considering the inclusion of DFS as it ensures banking stability which conveys the message of the economic stability of any country and consequently leads towards the sustainable development goals (SDGs) by 2030 (Banna et al., 2020). And one of the prime focused areas of the SDGs is to have sustainable economic growth that can be attained through banking sector.

Attainment of the SDGs becomes impossible without filling a huge investment gap. There is a $2.5 trillion investment gap to achieve the SDGs by 2030 (Wilson, 2016, July) which can be reduced by the banking sector.
along with other financial institutions (Niculescu, 2017). To meet this huge investment gap for attaining the SDGs, scholars, including Islamic financial scholars, foresee the prospects of DFI through a wider lens as DFI is the extension of FI that was seen successful after the 2007-09 global financial crisis (GFC) which caused 15 trillion USD loss from the global financial sector (Ahmed et al., 2015). In this current situation of the pandemic, the implementation of DFI is seen timelier since the unexpected Covid-19 pandemic has created unexplainable burden on the global financial market as most of the countries have announced stimulus packages to boost their economy which will ultimately put pressure on the banking sector. Hence, it is expected that DFI plays a crucial role during crisis period to retain the banking stability (Ahamed & Mallick, 2019), particularly the stability of the Islamic banking sector (Ahmed et al., 2015) that has been proven more stable as compared to their counterpart during and after the crisis.

Studies show that FI already have played a significant positive role to promote banking stability (e.g., Ahamed & Mallick, 2019) by keeping the economy alive in spite of lockdowns, quarantines, travel restrictions, and other social distancing measures because of Covid-19 crisis. However, DFI, in turn, may also affect financial stability with excessive financial innovations (Mani, 2016), for instance, due to the rapid increase of DFS by both bank and non-bank financial institutions. DFS may suffer from short-sighted regulatory and supervisory activities, confidential data may leak by cyberattacks, money laundering and financing in terrorism may increase. However, both the negative and positive effects of FI and DFI bring the question of whether the proper implementation of digital finance in the Islamic banking sector can be a possible solution for attaining inclusive economic growth or not. Hence, this study tends to, in the context of the Islamic banking industry, investigate how DFI promotes sustainable economic growth through ensuring banking stability.

Despite realising the unavoidable importance of the implementation of DFI, studies are very rarely found except a few like Ahamed and Mallick (2019) who show the impact of FI (not DFI) in general on bank stability, Ozili (2018) and Koh et al. (2018) who draw the framework for digital financial transformation. Therefore, a very few studies have attempted to investigate the link between digital financial inclusion and bank stability which are mostly theoretical in nature mainly focusing on the conventional rather than Islamic banking sector. However, our study aims to empirically investigate the impact of DFI on Islamic banking stability that consequently leads to achieve inclusive economic growth. Hence, this empirical study is expected to contribute to the existing literature by showing how the proper application of DFI ensures Islamic banking stability that leads to sustainable economic growth and subsequently helps attain the SDGs.

In this regard, the study has used the data of 183 banks of 22 countries from the year 2011 to 2018 from Orbis bank-focus, Global Findex and financial access survey (FAS) databases by deploying panel corrected standard errors and two-stage least square-instrument variable techniques. This study provides empirical evidence that greater DFI is positively associated with Islamic banking stability. The results suggest that DFI leads to inclusive economic growth and an integrated inclusion of digital finance by Islamic banks is not only a phenomenon for attaining the SDGs, rather it brings the financial stability of the bank itself. The findings also show that the interaction effect of DFI with GDP which denotes the robustness of the above results and suggest that accelerating digital finance in the sample countries through Islamic banks is considered as one of the significant means for the banking sector stability that subsequently leads to sustainable economic growth. Hence, governments, policymakers, and regulatory bodies can implement the following policies.

First, people should be provided with digital financial literacy and uninterrupted internet connection. Then, time tested and time demanding DFS (e.g., Fintech using artificial intelligence and machine learning) should be launched that will enhance banking stability and efficiency which will spur inclusive economic growth of the country.

In addition, the Islamic economy in conjunction with Islamic banks can enjoy the blessing of DFI by launching Zakat App since Zakat is an effective fiscal tool of any Islamic economy. Through this Zakat App, Zakat collection and distribution will be smoother and safer. Moreover, Islamic banks, in order to tackle hacking, cloning of ATM cards, debit card, credit card, and other technological threats, should implement updated software and database so that hackers cannot breach the data. A proficient and unbiased regulatory body should be formed who can supervise all the activities in terms of DFI to minimise risks (Ketterer, 2017) and adopt innovative and time-tested policies to make it a successful journey.

References
5. Demirguc-Kunt, A., Klapper, L., Singer, D., & Van
Professor Dr. Mohammad Kabir Hassan is Professor of Finance in the Department of Economics and Finance in the University of New Orleans. He currently holds three endowed Chairs-Hibernia Professor of Economics and Finance, Hancock Whitney Chair Professor in Business, and Bank One Professor in Business- in the University of New Orleans. Professor Hassan is the winner of the 2016 Islamic Development Bank (IDB) Prize in Islamic Banking and Finance. He received his BA in Economics and Mathematics from Gustavus Adolphus College, Minnesota, USA, and M.A. in Economics and Ph.D. in Finance from the University of Nebraska-Lincoln, USA respectively. Dr. Hassan stood first in combined merit list in the Secondary School Certificate (SSC, equivalent to O level) in 1978 from Comilla Zilla School, Comilla, Bangladesh in 1978 and Higher Secondary Certificate (HSC, equivalent to A level) in 1980 from Comilla Victoria Government College, Comilla, Bangladesh in 1980.

Professor Hassan is a financial economist with consulting, research and teaching experiences in development finance, money and capital markets, Islamic finance, corporate finance, investments, monetary economics, macroeconomics, Islamic banking and finance, and international trade and finance. Professor Hassan has done consulting work for the World Bank, International Monetary Fund, African Development Bank, Transparency International-Bangladesh (TIB), Islamic Development Bank, United Nations Development Program (UNDP), the Bangladesh Bank, the Saudi Arabian Monetary Authority (SAMA), Government of Turkey and many private organizations. Professor Hassan has been elected a Board Member of Ethics and Governance Committee and Education Board of the Accounting and Auditing Organization for the Islamic Financial Institutions (AAOIFI). Professor Hassan has recently been appointed as the Distinguished Visiting Professor at the National University of Malaysia (UKM). Dr. Hassan has recently been elected to the Advisory Council of the World Zakat Forum (WZF), 2021-2023. Professor has also been selected to be a member of Oxford University Said Business School faith-based investing initiative advisory board Member, 2021.
Part IV

Halal Lifestyle
Anti-Halal Movements in Europe

Barbara Ruiz-Bejarano

Introduction

As the Islamic economy continues to develop, grow and gain visibility, does islamophobia, particularly in the form of anti-halal movements.

This paper aims at raising awareness about the threats to the halal lifestyle (particularly to the concept of halal applied to the different expressions of daily life) and to present strategies to counter them. Main anti-halal movements appear at all levels of citizenship: from consumers, associations and political organizations. The core elements of the attack are mainly meat consumption, non-stun slaughtering, labelling, alleged imposition of a lifestyle, funding of terrorist activities, extremism. The advances of anti-halal movements occur in different arenas: in the European Parliament, in European courts, in the Academia, at the level of associations, at the level of consumers, and in social networks.

The lack of dialogue between the European Union and the Organization of Islamic Cooperation is paving the way for the growth of such movements, which deny Islam any possibility of belonging in Europe, despite its approximate 50 million Muslim citizens, or to be on equal terms with other faiths and beliefs. This paper will present a strategy for improving cultural and economic relations between EU and OIC countries and organizations. Dialogue should be fostered based on humanist values, shared by most peoples in the world, and on mutual respect, much necessary at the present time.

Lastly, anti-Halal and anti-Islam movements have an impact on people and on the economy. Some examples will explain further this particular. For now, “halal” falls roughly under the protection of the Fundamental Rights Charter, but it is losing ground in small details that can lead to increased marginalization and eradication.

Anti-halal movements are a specific form of islamophobia targeting Muslims, particularly where they are a minority, which could threaten Islamic lifestyle and full integration in these societies. This is a sub-theme of the known “clash of civilizations”, still used by xenophobe movements, particularly in the so-called “the West”.

1. European Muslims

Europe's Muslim population is very diverse. It encompasses Muslims born in Europe or coming from a wide variety of non-European countries. It includes Muslims from the 8 madhahib [1] and different political currents imported from their countries of origin or affiliation; in other cases, they might be citizens fleeing from particular political or religious interpretations. Levels of religious commitment and belief vary among Europe's Muslim populations[2]. Their sensitivity towards “halal” is, therefore, also very varied. Another relevant point to be noted is the lack of organization or lobbying power (in contrast with Jewish communities, able to defend “kosher” and other religious-linked rights in the European institutions).

Most European countries have Muslim-minorities and in most cases these citizens come from countries having a previous history of colonization by a European power. This asymmetric relation imposes on Muslim migrants the sense of inferiority that might permeate in their behaviour as citizens/consumers.

As European citizens they live in a secular environment and their commitment to Islam varies tremendously. Those Muslims who uphold their values, however, may refer to several European legislation pieces in order to protect their faith when under questioning, denial or attack:

The right to freedom of thought, conscience, religion or belief, more commonly referred to as the right to freedom of religion or belief (FoRB) is a
fundamental right of every human being. Freedom of religion or belief is enshrined in Articles 18 of both the Universal Declaration of Human Rights (UDHR) (link is external) and of the International Covenant on Civil and Political Rights (ICCPR) (link is external), which should be read in the light of the UN Human Rights Committee's General Comment n°22.

Universal Declaration of Human Rights Article 18. Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

International Covenant on Civil and Political Rights. Article 18:
1. Everyone shall have the right to freedom of thought, conscience and religion. This right shall include freedom to have or to adopt a religion or belief of his choice, and freedom, either individually or in community with others and in public or private, to manifest his religion or belief in worship, observance, practice and teaching.
2. No one shall be subject to coercion which would impair his freedom to have or to adopt a religion or belief of his choice.
3. Freedom to manifest one's religion or beliefs may be subject only to such limitations as are prescribed by law and are necessary to protect public safety, order, health, or morals or the fundamental rights and freedoms of others.
4. The States Parties to the present Covenant undertake to have respect for the liberty of parents and, when applicable, legal guardians to ensure the religious and moral education of their children in conformity with their own convictions.

UN HRC General Comment 22, Points 4, 9 and 10:
4. The freedom to manifest religion or belief may be exercised "either individually or in community with others and in public or private". The freedom to manifest religion or belief in worship, observance, practice and teaching encompasses a broad range of acts. The concept of worship extends to ritual and ceremonial acts giving direct expression to belief, as well as various practices integral to such acts, including the building of places of worship, the use of ritual formulae and objects, the display of symbols, and the observance of holidays and days of rest. The observance and practice of religion or belief may include not only ceremonial acts but also such customs as the observance of dietary regulations, the wearing of distinctive clothing or head coverings, participation in rituals associated with certain stages of life, and the use of a particular language customarily spoken by a group. In addition, the practice and teaching of religion or belief includes acts integral to the conduct by religious groups of their basic affairs, such as the freedom to choose their religious leaders, priests and teachers, the freedom to establish seminaries or religious schools and the freedom to prepare and distribute religious texts or publications.
9. The fact that a religion is recognized as a state religion or that it is established as official or traditional or that its followers comprise the majority of the population, shall not result in any impairment of the enjoyment of any of the rights under the Covenant, including articles 18 and 27, nor in any discrimination against adherents to other religions or non-believers.

10. If a set of beliefs is treated as official ideology in constitutions, statutes, proclamations of ruling parties, etc., or in actual practice, this shall not result in any impairment of the freedoms under article 18 or any other rights recognized under the Covenant nor in any discrimination against persons who do not accept the official ideology or who oppose it.

In Europe, freedom of religion or belief (FoRB) is notably protected by Article 9 of the European Convention on Human Rights and Article 10 of the EU Charter of Fundamental Rights. European Convention on Human Rights
9. Freedom of religion or belief is enshrined in Articles 18 of both the Universal Declaration of Human Rights (UDHR) and of the International Covenant on Civil and Political Rights (ICCPR), which should be read in the light of the UN Human Rights Committee's General Comment n°22.

Under international law, FoRB has two components:
(a) the freedom to have or not to have or adopt (which includes the right to change) a religion or belief of one's choice, and
(b) the freedom to manifest one's religion or belief, individually or in community with others, in public or private, through worship, observance, practice and teaching.

EU Charter of Fundamental Rights. Article 10
Freedom of thought, conscience and religion
1. Everyone has the right to freedom of thought, conscience and religion. This right includes freedom to change religion or belief and freedom, either alone or in community with others and in public or private, to manifest religion or belief, in worship, teaching, practice and observance.
2. The right to conscientious objection is recognised, in accordance with the national laws governing the exercise of this right.

It must be noted that Europe places greater importance on legal texts as well as on the implementation of mechanisms to ensure they are enforced.

However, as Muslim minorities grow in number, and gain visibility, they are more and more perceived as a threat to the interests of particular groups. We will analyse this later.

2. The development of the halal market in Europe.

A global market based on the needs and preferences of 1.6 billion Muslims worldwide has emerged as a powerful commercial arena, often referred to as “Islamic Economy” or “Halal Economy”. By 2050 Muslims will represent about 25% of the world, therefore, due to their increased purchase power, it is expected that they will have a relevant impact on the mainstream economies, particularly in their demand on how specific products are manufactured and sold, and to the ethics or manner in which services are rendered.
Today, middle class consumers spend $21 trillion a year. By 2030, that figure could rise to $51 trillion. Today, the Islamic Economy is valued at $3 trillion⁴ (about 3.7% of the Global Wealth), but it can double in the coming decade, as more Islamic countries shift from consumers to consumer-producers.

If we consider the ration between the Muslim Global Population (25% of the total) versus the alleged share of the world’s wealth (3.7%), we can see that either Muslims have not been too demanding in the Islamic ethical profile of the producers from which they buy goods or services, or that there is indeed a large portion of the global wealth to be gained.

Also, the world’s middle classes will be displaced towards Asia⁵ (in 2030 it will comprise 66% of the world’s middle class), with Europe’s will be reduced to 14%. Asia is now home to 60% of the world’s Muslim population, mostly in Emerging Economies, including non-Islamic countries with Muslim minorities, like China (20 million) or India (200 million).

Another factor to be considered is the emergence of a large cohort of millennial Muslims (Generation M) in most Muslim countries⁶. This means the “halal moment” will be sustained in time during the lifespan of this group. The proportion of millennials in country populations varies considerably, but nearly nine in every 10 millennials live in emerging economies. Iran has the highest proportion at 32.2 per cent. In China, it is 25.2 per cent. In advanced economies, the proportion of millennials is much lower, because of the combined effect of low birth rate and the large portion of the population above 45 years old. By 2020 millennials are forecast to make up 35 per cent of the global workforce. Lastly, the World Data Lab forecasts that the global spending power of millennials will soon be greater than any other generation. As the principal consumer generation, they are set to shape the direction of the world’s economy in the years ahead⁷.

Halal food was not a mainstream economic topic 20 years ago, but globalization, economic inter-dependence and industrial food manufacturing practices have led to specific production models which collide with some Islamic prescriptions. Also, migration, the increase of diversity and the growth and visibility of Muslim communities have changed the way “halal” is connected with everyday activities.

3. **A look at the economic value of halal in Europe**

    The development of the F&B halal sector in Europe⁸ (500,000 jobs in the last decade, and estimated value of 40 to 100m Euro for the F&B segment only) offers opportunities for SMEs wishing to gain a competitive edge in this area. The paradox is that while most OIC countries are consumers of halal products, most of the halal production is located in non-OIC countries for different reasons, at this particular moment (however, this scenario is slowly changing). This flow of exports from non-OIC countries is dominated by the “big players”, multinationals such as Nestlé, Unilever, Danone, Mondelez, Friesland, etc.

    Accessing the halal value chain requires applying a unique set of knowledge and skills. To fully develop the European potential there are several factors that need to be addressed, be it from a European Union perspective or a national one. First, we have to consider regulatory frameworks in most destinations importing halal-certified products, and the lack of regulation in Europe, which leads to unprofessional and unethical practice. Second, secularism and islamophobia are movements that can spark hatred and enmity against the development of the halal sectors in Europe, compromising jobs and socio-cultural integration of European Muslims. In the third place, training and developing knowledge on halal consumer trends and on good production technologies are not yet available to a large majority of the smaller players in the Food and Beverage industry in the EU. European stakeholders must consider all these factors, not only from the economic perspective, but also from the social and cultural one, and try to deploy a framework policy to address the opportunities represented by the demand of halal-certified products in the global world.

4. **The impact of “halal” development on Europe**

    The relationship between Europe and Halal Products and Services is manifold:

    1) **European Muslims**

        There are approximately 40 to 50 million Muslims living in Europe, excluding Turkey and Bosnia-Herzegovina (in accession process to the EU). By 2050 it is projected to be somewhere between 11.2% and 14% (58 to 75 million Europeans). Most Muslims arrived in Europe via migration or asylum, many are not yet citizens but most are already European passport holders. As citizens and consumers, they are protected by law and entitled to access halal food, beverages and any other products and services, if they so desire. However, in practice, this might not be the case.

        The size of the European Halal Market is estimated in $30 billion in annual sales.

    2) **SMEs and Corporations producing halal-certified products for exports**

        It is difficult to calculate the size of the European halal market for exports, but several sources give figures near 1,500 billion USD of halal food are produced outside the OIC.

    3) **Legislation on halal certification and slaughtering**

        • There is no legislation in the EU on halal certification. The practice falls outside legal or regulatory frameworks. As mentioned above, the EU does not consider this practice as part of their mandate.

        • Ritual slaughter in the EU legislation


                In the case of animals subject to particular methods of slaughter prescribed by religious rites, the requirements of paragraph 1 shall not apply provided that the slaughter takes place in a slaughterhouse.

                b. Regulation (EC) No 1099/2009, Article 4 (1) I. Animals shall only be killed after stunning in accordance with the methods and specific
requirements related to the application of those methods set out in Annex I. The loss of consciousness and sensibility shall be maintained until the death of the animal.

The methods referred to in Annex I which do not result in instantaneous death (hereinafter referred to as simple stunning) shall be followed as quickly as possible by a procedure ensuring death such as bleeding, pithing, electrocution or prolonged exposure to anoxia.

4) International and European laws on freedom of religion or belief.

5. The regulation of OIC halal markets

OIC countries are the major importers of halal-certified food and drink, many due to their lack of national production and many because their national production does not match their population needs.

Regulation started some 20 years ago in order to control the quality of their food imports, rather than their halal status. But soon, food quality and safety were joined by halal issues.

The current halal regulatory frameworks include:
- OIC countries implementing SMIIAC International Halal standards (19)
- OIC countries implementing regional or national standards (4) – Qatar, Saudi Arabia, United Arab Emirates, Malaysia
- OIC countries implementing regulations (1) – Indonesia,
- Non-OIC countries implementing national standards (1) – Thailand
- Non-OIC countries implementing regulations (2) – Singapore, South Korea

The current trends are:
- Towards harmonization (led by OIC-SMIIC)
- Towards higher regulation (Algeria, Kyrgyzstan, Pakistan, Maldives and others implementing new regulations in the last 2 years)

A good deal of criticism and complain comes from EU producers when it comes to Halal regulatory frameworks, notably (1) the lack of a harmonized Halal Quality Framework, similar to others used to ensure the quality of products; (2) the lack of a harmonized Halal Standard (the current diversity corresponds to the intrinsic intra-Islam diversity and the different interpretations proposed by the madhahib; the only serious effort for harmonization coming from OIC-SMIIC, which resorts to OIC-IIFA to ensure all sensitivities are represented and respected in the standards), (3) the abuse, corruption and bribery imposed by some individuals, organizations and, even, governments and (4) the lack of professionality of many Halal Certification Bodies operating nowadays in the world (there have been some initiatives in this sense, intended to guarantee more solid and professional HCBs, without much success to date).

Other questions to be considered, that might strengthen the consolidation of a global halal trade would be the inclusion of producers and consumers in representative and operational forums.

6. Issues regarding the current legislation in the European Union

“Animal welfare” appeared as a concern for the wellbeing of farm animals in European countries in the mid-20th century in response to intensive breeding systems and has been gaining momentum ever since.

Animal welfare is an ambiguous concept, difficult to define from a scientific point of view, as it derives from an ethical concern of both social and religious origin. Article 13 of the Treaty on the Functioning of the European Union recognises animals as “sentient beings” and requires that “full regard be given to the welfare requirements of animals while formulating and enforcing some EU policies”. From the Islamic perspective, the humane slaughter of animals is strongly supported in the Islamic tradition as the Prophet Mohammad said. “He said: ‘Allah has prescribed proficiency in all things, so if you kill, kill well, and if you slaughter, slaughter well. Let one of you sharpen his blade and spare suffering to the animal he slaughters’.

The current European legislation (Regulation (EC) 1099/2009) regulates religious slaughter under article 4.4. One of the main points of controversy is the application (or not) of stunning before (and occasionally) after slaughtering. From the scientific field, the same controversy is also presented according to the sources consulted. Thus, Schulze et al. defend halal slaughter as a method compatible with animal welfare in their comparative study between different methods of slaughter (without and with stunning). In the same way Pouillaude-Bardon concludes that non-stunning slaughter is the most natural and less traumatic method.

A definition of animal welfare is that of the UK Farm Animal Welfare Council: “The welfare of an animal includes its physical and mental state and we consider that good animal welfare implies both fitness and a sense of well-being. Any animal kept by man, must at least, be protected from unnecessary suffering”.

The Five Freedoms listed by the organisation include:
1. Freedom from Hunger and Thirst - by ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from Discomfort - by providing an appropriate environment including shelter and a comfortable resting area.
3. Freedom from Pain, Injury or Disease - by prevention or rapid diagnosis and treatment.
4. Freedom to Express Normal Behaviour - by providing sufficient space, proper facilities and company of the animal's own kind.
5. Freedom from Fear and Distress - by ensuring conditions and treatment which avoid mental suffering.

The animal welfare is a global concept which starts with the birth of the animal, farming time, transportation process and concludes with the slaughtering process.

Animal welfare in Islam is shown in the compassion to animals as mentioned in the holy Quran and the Sunnah. The story of the Prophet Noah talks about animal lives’ preservation: “We said, “Carry on board two of every kind, and thy family. [...]” (Q,11:40).
Five Surat in the Qur’an bear animals’ names and many passages refer to animals:

- as social beings: “There is no creature that crawls upon the earth, nor bird that flies upon its wings, but that they are communities like yourselves […]” (Q, 6:38),
- as providers of comfort and sustenance for human beings: “And cattle has He created for you, in which there is warmth and [other] uses, and whereof you eat” (Q, 16:5);
- assisting in labour and transport: “And they bear your burdens to a land you would never reach, save with great hardship to yourselves […]” (Q, 16:7), “And [He has created] horses, mules, and asses, that you may ride them, and as adornment […]” (Q, 16:8).

The Qur’an also warns against mistreating animals: “[…] they will slit the ears of cattle; […] they will alter God’s creation.” […] (Q 4:119).

Not only the Qur’an gives explicit directions for animal welfare, but also Halal Standards include several instructions on this regard: OIC-SMIIC 1. “5.2.1 Requirements of the animals to be slaughtered” and “5.2.6 Slaughtering procedure” indicates that animals must be healthy, clean, alive, rested, handled in a way so as to avoid pain and by using “humane methods”, also animals must be prevented from seeing the actual slaughtering of other animals. The slaughtering procedure itself includes: authorised Muslim slaughterer, invocation of the name of Allah, sharp and clean knife, swift cut of the jugular veins, carotid arteries, trachea, and oesophagus, allow for complete bleeding.

The question of stunning.

The question of stunning seems to be the great divide and matter of controversy. This question can be addressed from different perspectives: ethical, religious, social, economic, scientific, environmental, etc. In this analysis, we will focus on three of these aspects.

The social perspective

A study13 commissioned by the European Commission Directorate General for Health and Food Safety in 2015 states (our Italics):

“Regulation (EC) No 1099/2009 on the protection of animals at the time of killing became applicable from January, 2013. As a general rule, this legislation requires that animals are rendered unconscious (stunned) prior to slaughter. However, it allows slaughter without stunning for particular methods of slaughter prescribed by religious rites, provided that it takes place in a slaughterhouse. In practice, the derogation is used in the case of slaughter under the Jewish rite (for Kosher meat) and under the Muslim rite (Halal meat)”. 

This consideration about stunning14 is designed to respect freedom of religion and the right to manifest religion or belief in worship, teaching, practice and observance, as enshrined in Article 10 of the Charter of Fundamental Rights of the European Union.

“Concerns have been raised that, mainly for economic reasons, animals are slaughtered without pre-stunning in excessive numbers. Part of this production may be then released on the secular market where it may be purchased unwillingly by consumers, some of them possibly preferring to avoid such meat15”.

Two things are noticeable in this introduction to the study: (1) the “derogation from stunning” and (2) the assumption that there are concerns that “this production may be then released on the secular market” and may be “purchased unwillingly” by consumers.

What is noticeable about (1) is the chosen language. “Derogation” implies that religious slaughtering is given an exceptional character; while the alternative phrasing we propose “Slaughtering according to Article 4.4.” is less biased and implies that religious slaughtering is done according to EC regulation 1099/2009.

In the case of (2) there are four issues: Who has raised this concern? Is it true that religious slaughter (without stunning) is less expensive than slaughtering with stunning? How do we know that some consumers might possibly prefer to avoid animals slaughtered without pre-stunning? What is the “secular” market?

The results of the study somehow contradict these assumptions (bold characters are ours):

a) “The main purchase criteria used are aspects of quality, mainly presentation and durability (66%) and price, mainly in unit terms (16%). Only 2% of meat purchases cited production method as the most important purchase criterion, 1% religious consideration and 1% general animal welfare considerations; no respondents spontaneously mentioned animal welfare at slaughter as a purchase criterion.”

b) “Our conclusion is that for most consumers information on pre-slaughter stunning is not an important issue unless brought to their attention. […] It is by no means clear that consumers would actually act on this information if it were to be available. […] Our clear conclusion is that there is little accurate consumer understanding of the slaughter process.”

c) “If there is little expressed use of animal welfare as a purchase criterion, little understanding of the slaughter process and an inability to distinguish between different methods of stun, providing information on the different methods used would not appear to aid a consumer decision. Our conclusion here is therefore that information on the method of stun is not relevant to the vast majority of consumers in terms of providing a purchase decision criterion. However, to a minority of religious stakeholders providing information on all methods of stun would be seen as equal treatment should labelling of non-stunned meat become compulsory.”17

To answer our previous questions, therefore, we might argue:

- Who has raised this concern? If 0% of “respondents spontaneously mentioned animal welfare at slaughter as a purchase criterion”, the question was not posed by consumers. We might argue that there are other groups with interests in this matter: veterinarians18 and activists19.
- Is it true that religious slaughter (without
stunning? Non-stunning slaughter is more expensive, as the handling of animals requires more time-consuming and slows down the slaughter process.

- How do we know that some consumers might possibly prefer to avoid animals slaughtered without pre-stunning? What is the “secular” market? To these questions, in view of the results of the study, one might conclude that there are pressures from some activists (anti-Islam movements mainly) interested in jeopardizing halal consumption in Europe (maybe ignoring that they would also be affecting international exports from Europe). Regarding the “secularity” of the market, this is only a construct that implies that anti-Islamic movements are reluctant to consume “halal” for various reasons.

Continuing with this study, there are other questions yet raised: should meat be labelled indicating whether it has been stunned? And are stunning methods devoid of pain for the animals? If they are not, would we (as consumers) want to know?

Labelling meat according to two parameters can have harmful consequences for Muslims and Jews, in the first place, and for meat producers, in the second. In the case of halal, 25% of the world’s population is the potential market, so the consequences, should they succeed, can be disastrous for the whole sector.

Regarding the question of labelling meat according to whether it has been stunned previous to slaughtering, the study found that (our italics) “labelling fresh meat from both stunned and unstunned animals would not provide consumers with more choice at retail level. Only labelling meat from unstunned animals would inform consumers who are specifically interested in this information. However, such labelling would carry a high risk of stigmatising religious communities especially in the present political context and given the findings above that consumers have little understanding of the slaughter process.”

To understand this, we need to have a look at the authorised method of stunning allowed in the EU as per Regulation 1099/2009 (Annex I):

Table 1 — Mechanical methods (excerpt)

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>non-penetrative captive bolt device</td>
<td>Severe damage of the brain by the shock of a captive bolt without penetration. Simple stunning.</td>
</tr>
<tr>
<td>2</td>
<td>Percussive blow to the head</td>
<td>Firm and accurate blow to the head provoking severe damage to the brain.</td>
</tr>
</tbody>
</table>

The question of whether the stunning causes animals unnecessary suffering remains controversial. Studies are not conclusive because of the difficulty of conceptualising and scientifically measuring “pain”.

Previously, in this section, we had emphasized this extract from the Study: “to a minority of religious stakeholders providing information on all methods of stun would be seen as equal treatment should labelling of non-stunned meat become compulsory”. We can imagine that Muslims consumers will have no objection to a label indicating “non-stunned” meat. How would other consumer groups react to labels indicating “Stunned by percussive blow to the head” or “Stunned by electrical water bath” (and would they know exactly what this means?).

7. The situation of halal slaughter in in Europe

Despite the current legislation allowing for halal slaughtering without stunning, there is, however, a provision that allows the UE member states to derogate such provision.

Figure 1: Legal restrictions on Religious Slaughter in Europe (The Library of Congress, 2018).

“Several European countries do not allow derogations from the general requirement of prior stunning. These include Sweden, Norway, Iceland, Denmark, and Slovenia. Switzerland and Lichtenstein require prior stunning except for poultry. Finland requires concurrent sedation; legislation is pending that would require prior stunning. At the subnational level, two of the three regions of Belgium have recently enacted laws requiring prior stunning, which will become effective in 2019 unless overturned by litigation pending in Belgium’s constitutional court.

Table 2 — Electrical methods (excerpt)

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head only electrical stunning</td>
<td>Exposure of the brain to a current generating a general epileptic form on the electro-encephalogram (EEG). Simple stunning.</td>
</tr>
<tr>
<td>2</td>
<td>Head to body electrical stunning</td>
<td>Exposure of the body to a current generating at the same time a generalised epileptic form on the electro-encephalogram (EEG) and the fibrillation or stopping the heart. Simple stunning in case of slaughter.</td>
</tr>
<tr>
<td>3</td>
<td>Electrical water bath</td>
<td>Exposure of the entire body to a current generating a generalised epileptic form on the electro-encephalogram (EEG) and possibly the fibrillation or the stopping of the heart through a water bath. Simple stunning except where frequency is equal to or less than 50 Hz.</td>
</tr>
</tbody>
</table>
Legal Restrictions on Religious Slaughter

**Countries that allow religious slaughter**

**Countries that require prior stunning**

**Countries that require post-cut stunning**

**Countries that require concurrent sedation**

**Countries not in study**

*Source & Note:* Created by Francisco Masias of the Law Library of Congress based on information provided in this report. *Note that Switzerland and Liechtenstein generally require prior stunning, but make exceptions for poultry.*
Some countries mandate post-cut stunning, including Austria, Estonia, Greece, and Latvia.22

In 2019, the European Court of Justice ruled that meat from animals slaughtered without stunning cannot bear the EU’s logo for organic products because that logo implies the use of processes that minimize the suffering of animals being slaughtered.23

Recently, the Spanish Food Safety Agency presented a draft to the stakeholders trying to impose several restrictions on halal slaughtering according to the current European legislation. Stakeholders are at this very moment preparing a Technical Committee on “Halal Animal Welfare”, to uphold the current legislation and guarantee humane slaughtering of animals, while preserving the industry and related jobs.

Similar moves are seen in other European countries, and others such as Australia, New Zealand (both major exporters of halal) and Canada.

The clear trend observed in Europe is towards limiting or hindering non-stun halal slaughtering (which also has an impact on kosher slaughtering), and fundamental rights of citizens, such as freedom of religion or belief are being displaced by non-fundamental rights or other political agendas, such as animal welfare concerns.

To conclude this section, we will argue that there are several campaigns at the moment targeting halal meat production for several reasons and that OIC countries, particularly importers from Europe, should pay attention to these movements.

Issues of controversy regarding the Right to Freedom of Religion or Belief (FoRB)

8. The current anti-halal movements in Europe

The consideration of Islam in mainstream Europe

Although, as mentioned, the European institutions are non-confessional by denomination, and they are careful not to cause offence to believers of a particular religion or faith, not so much can be said for mainstream citizenship. Their opinions are biased when it comes to Islam (and any concepts related to Islam, such as “halal”), mainly due to the phenomenon of the so-called “Islamic” or “Jihadist” terrorism. The general perception of Islam in Europe is Orientalism.

“Orientalism”, the much-acclaimed work by Edward Said,24 sets out several assumptions from which Europe/ans (and “The West” in general) have constructed their relationship with Islam:

Orientalism is not a colonial stance on Islam, but a very contemporary heir of the colonial attitudes.

“I shall be calling Orientalism, a way of coming to terms with the Orient that is based on the Orient’s special place in European Western experience. The Orient is not only adjacent to Europe; it is also the place of Europe’s greatest and richest and oldest colonies, the source of its civilizations and languages, its cultural contestant, and one of its deepest and most recurring images of the Other.” [11]

“On the one hand there are Westerners, and on the other there are Arab-Orientals; the former are (in no particular order) rational, peaceful, liberal, logical, capable of holding real values, without natural suspicion; the latter are none of these things”. P49

“Systems of thought like Orientalism, discourses of power, ideological fictions—mind-forged manacles—are all too easily made, applied, and guarded” 328

“Since the struggle for control over territory is part of that history, so too is the struggle over historical and social meaning”. 332 – 333

Secular movements

Secular movements in Europe have been advancing slowly, after political changes that implied the loss of “official religions” in some countries (the most paradigmatic example being France; the least the United Kingdom, where the Church of England is the official religion, and the Monarch, the Supreme Governor of the Church).

However, the theoretical debate on whether Europe should be “secular” or go back to its alleged “Judaic-Christian roots”25 is surpassed by the debate on whether Islam is capable of “integration” in the European idiosyncrasy.

This paragraph summarizes the main points of the anti-Islam discourse in Europe:

“What makes ‘the immigrant question’ particularly thorny in Europe, and inextricably entwined with ‘the Turkish question’, is the fact that in Europe immigration and Islam are almost synonymous. This entails a superimposition of different dimensions of ‘otherness’ that exacerbates issues of boundaries, accommodation and incorporation. The immigrant, the religious, the racial, and the socio-economic unprivileged ‘other’ all tend to coincide. Moreover, all those dimensions of ‘otherness’ now become superimposed upon Islam, so that Islam becomes the utterly ‘other’. Anti-immigrant xenophobic nativism, the conservative defence of Christian culture and civilization, secularist anti-religious prejudices, liberal-feminist critiques of Muslim patriarchal fundamentalism, and the fear of Islamist terrorist networks, are being fused indiscriminately throughout Europe into a uniform anti-Muslim discourse which practically precludes the kind of mutual accommodation between immigrant groups and host societies that is necessary for successful immigrant incorporation.” 26

White supremacism, fascist groups, far right, identitarians and related movements

There is little doubt about the views on Islam and the deformed propaganda presented by these groups, as their discourse is openly verbalised by their members.

Associated movements publicly attacking halal and halal slaughtering include the Q-Society’s project “Boycott halal” which originated in Australia and has now mirror social media in many other regions (United Kingdom or Switzerland).

Vegans and animal-welfare organisations

As discussed in the first part of the paper, vegans have a clear agenda to ban meat consumption (in general) from Europe in the coming decades. And one way to gain followers is by demonizing animal slaughtering, and particularly halal slaughtering.
9. Conclusion

There are numerous movements that try to ban or attacking halal (particularly halal slaughtering, as it is one of the most visible elements and non-Muslims tend to associate it with the word “halal” itself) in Europe and other non-Muslim regions in the world. These assaults come from different sources and agendas, and might not be coordinated, but they have a direct and negative impact in the lives of Muslims in these regions.

These movements have also the power to affect halal trade, particularly from exporters in non-Muslim countries to OIC members.

Little research has been carried out to properly identify and measure this phenomenon, but the lack of dialogue (both formal and institutional and also more informal, promoted by civil society) is contributing to reinforcing the “otherness” of Islam, Muslims and halal in Europe.

Urgent dialogue is needed between the EU and the OIC, not only on halal matters, but about culture, politics, society and inclusiveness. That is to say, bringing people together.

halal slaughter is “allowed” without previous stunning. This reading implies that “halal slaughter” is integral part of the directive, and not an exception to it.

16 FCEC, Study on Information to Consumers..., vii.

17 Ibid., x.

18 “FVE is of the opinion that from an animal welfare point of view, and out of respect for an animal as a sentient being, the practice of slaughtering animals without prior stunning is unacceptable under any circumstances”: Federation of Veterinarians of Europe. Official website. Position paper. Available at: https://fve.org/cms/wp-content/uploads/fve_02_104_slaughter_prior_stunning.pdf (Accessed 19th February 2021). In contrast, see the Advocate General’s Opinion in Case C-497/17. PRESS RELEASE No 136/18. (Luxembourg: Court of Justice of the European Union, 2018).


25 Nathan N, Topolski , A. 2016 Is there a Judeo-Christian Tradition?: A European Perspective (Berlin:De Gruyter)

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The Role of Halal Food in Healthy Lifestyle

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\textbf{ABSTRACT}

Today, healthy life and healthy aging are concepts that have become much more important than ever. Especially the covid-19 pandemic, has made this much more pronounced. Nutrition and life habits are important for a healthy life. Increasing industrialization and technological developments in the 20th century have caused many radical changes especially in food and nutrition areas. These changes have increased the importance of halal food which creates a very important protective and safe area in nutrition. Although the food is suitable for the concept of halal food, they can also have harmful effects for the health in the short and long term if their naturelness are partially or completely degraded. Especially the increase in chronic diseases related to nutrition causes an increase of the sick and elderly population in the world. Besides, this puts a huge financial burden on countries. It is extremely important to make production planning in a way that the food will have positive effects on human health in the processes from production to consumption by furthering the concept of halal food. In this context, it will be very beneficial for humanity to explain the concept of halal food to the whole world as a global health policy by carrying it beyond a religious requirement.

1. Introduction

Healthy life has always been the primary goal of human beings. Especially today, healthy life and healthy aging are more important concepts for the whole world than ever before. The covid-19 pandemic \cite{1}, in which all countries of the world have been fighting together for the last year, has made this much more pronounced. Therefore, people's awareness of personal health has increased and they have become more sensitive \cite{2, 3}.

The populations of the countries are aging rapidly all over the world. The world population is predicted to be about ten billion by 2050 according to data Fig.2 \cite{4}.

The number of people aged sixty five and over will be 1.548,900,000 in the world population by 2050 according to United Nations’s World Population Prospects 2019 report Fig.3 \cite{5}.

Fig. 2. World population projections.

Fig. 3. World Population Prospects 2019, Volume II: Demographic Profiles.
Therefore, as this data shows that in 2050, at least one fifth of the world's population will probably be people aged sixty-five and over. This means that the aging rate is quite high in the world. At the same time, the statistical projections show that chronic diseases such as diabetes will be increasing considerably in the following years.

Diabetes is one of the worrying health problems of the 21. century. According to data, the number of adults living with diabetes has tripled in the past 20 years [6]. International Diabetes Federation (IDF) estimates that there will be 578 million adults with diabetes by 2030, and 700 million by 2045 Fig.4. [6].

It is predicted that health expenditures will increase as a result of rapid aging and rapid increase in chronic diseases in the world Fig.5 [6].

Due to all these alarming changes in the world, The World Health Organization has declared between 2020 and 2030 as the “Decade of Healthy Aging”. A preliminary report for that was presented to the World Health Assembly in May 2020 [7].

2. Healthy Living and Healthy Aging

Aging is a multifactorial concept and there is no “Typical” elderly. The changes that occur in the body during aging are individual. It is possible to age in a healthy way by controlling the individual and environmental factors affecting body health and improving these changes in the body. Implementing the global strategy and action plans on ageing and health will undoubtedly contribute to the realisation of the goals for the present and the future generations all over the world.

From this point of view, the Decade of Healthy Aging (2020-2030) is actually an opportunity for all countries in the world. The United Nations offers a very comprehensive infrastructure that brings together governments, professionals, academia, media, civil society, international institutions, and the private sector, both within itself and in interaction with other countries. In this context, I was also invited as a speaker for a meeting on “The Year of Healthy Aging 2019” at the United Nations in Geneva in July, 2019. (Fig.6. , Fig.7.)

In addition to my active participation to these meetings, I have written two books about healthy living and healthy aging which focus on the similar issues. We apply integrative medicine for healthy living and in the treatment of diseases in our clinic. In other words, we are making very important and effective changes in nutrition and life style of our patients to maintain healthy life and for curing disease.

It is a fact that we can clearly see from research results and my own clinical experience that a healthy life is the first step of healthy aging. For this reason, to achieve a healthy life in all aspects should be the primary goal.

3. Healthy Nutrition for Healthy Living

There are two crucial factors for a healthy life and healthy aging. The first one is a healthy nutrition and the other one is healthy life style. For healthy aging, we need to be able to manage these two indispensable factors carefully.

Healthy nutrition and healthy life habits are very crucial for healthy life and preventive medicine. Because as Hippocrates who is called the father of medicine said “Food is medicine”. In addition, in the history of Islamic medicine, Al Razi who is one of the most respected scientists in medicine also mentioned the importance of nutrition for a healthy life in his works. In
The importance of Halal food in food safety and healthy preventive and integrative medicine, and also on healthy aging is often determinant criterion for the life of Muslims. In addition to the change related health problems. It is very clear that as somebody want both to be healthy and to age healthy Fig.8 [11].

There are many studies on the importance of nutrition, especially in the treatment of chronic diseases. Especially in the last two decades, we can see an increase in studies on preventive medicine and integrative medicine Fig.8 [9-10]. Because most people want both to be healthy and to age healthy Fig.8 [11].

Although there are many other sub factors, changing the diet allows us to get very effective results in the body for the treatment of diseases. We can see this very clearly in our own clinical studies. Here I want to share one of my patient’s results Fig.9. [8]. He had overweight problem and other related health problems. It is very clear that as somebody change his/her diet, their health conditions get much better even in a very short time.

5. Looking to the Future with Halal Food Concept from Production to Consumption

In the 20th century, as a result of industrial and technological developments, food and nutrition areas were also affected. Food production patterns have changed and production processes have become more and more complex. There have been fundamental changes in agriculture and farming. In addition that many food additives began to be used in nutrition and food production. Today, the use of a large number and variety of food additives in food production has gradually been increased.

Of course, the important results of these changes have been seen all over the world. With these radical changes in food and food processing diet related chronic diseases also increased especially in the last two decades. Because the partial or complete deterioration of the naturalness of food can lead to negative consequences for human health in both short and long terms.

Today with all these changes, the importance of the concept of halal food has increased even more. When we look at again all these data, we need to think beyond the concept of halal food for a healthy life and healthy aging. Our first and basic measure in nutrition is halal food. But is this halal food concept of halal food has also been a very important factor in healthy aging in Muslim societies for centuries. After all these information, we can clearly see that the halal food is very closely related to all these factors such as healthy nutrition, healthy life style, preventive medicine, integrative medicine and healthy aging.

### 4. The Importance of Halal Food in Food Safety and Healthy Nutrition

A basic definition is made in the Quran with the concept of halal which means lawful, permitted as the main determinant criterion for the life of Muslims. In addition to the concept of halal, the concept of tayyib, which means clean, pure and safe, is often emphasized together. When we look at the nutrition in this context, the concept of halal food creates a very safe, clean and protective area in nutrition.

“O people! Eat of the lawful and pure things in the earth and follow not in the footsteps of Satan. For surely he is your open enemy;” Al-Quran, Surat Al-Baqarah (2:168) [12].

Naturalness and cleanliness of the foods in nutrition is strongly emphasized in terms of both health and psychological consequences in Islam. The concept of “Halalan tayyiban” indicates that food should not only be halal, but also clean and safe at all stages from production to consumption. The implementation of the concept of halal food has already been going on for centuries in Muslim populations.

As a result of the implementation of halal food concept, first of all, it has provided a healthy nutrition and also has significantly protected communities from infectious diseases to a certain extent for the Muslim societies. For this reason, halal food has also been a very important factor in healthy aging in Muslim societies for centuries. After all these information, we can clearly see that the halal food is very closely related to all these factors such as healthy nutrition, healthy life style, preventive medicine, integrative medicine and healthy aging.

#### Fig. 8. Graphics show that increasing in the studies on preventive and integrative medicine, and also on healthy aging according to Pubmed data.

#### Table 1: Results of a 40-day study on healthy aging

<table>
<thead>
<tr>
<th>18 years old, male, height 175 cm.</th>
<th>Day 1</th>
<th>Day 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>Waist measurement (cm)</td>
<td>118</td>
<td>85</td>
</tr>
<tr>
<td>WHR (World Health Organization)</td>
<td>0.67</td>
<td>0.48</td>
</tr>
<tr>
<td>HOMA-IR (Homeostasis Model Assessment-Insulin Resistance)</td>
<td>3.14</td>
<td>1.8</td>
</tr>
<tr>
<td>Insulin (µU/mL)</td>
<td>16.3</td>
<td>8.8</td>
</tr>
<tr>
<td>CRP (C-Reactive Protein) (mg/dL)</td>
<td>0.6</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

#### Fig.9. Patient’s results during the treatment.
significantly prevent chronic diseases that increase in Muslim societies and therefore in the world population. The successes achieved with the measures taken and action plans in this regard will also be able to set an effective and positive example for countries experiencing socio-economic problems with increasing chronic diseases.

6. Conclusion

In the last two decades, awareness of healthy nutrition and healthy living has increased significantly due to increasing chronic diseases, rapid aging and especially the Covid-19 pandemic. In order to prevent diseases and strengthen the concept of healthy life, effective measures have begun to be taken in many countries, especially on healthy nutrition. It is very important to explain the concept of halal food, which is already applied in Muslim societies, to the rest of the world in terms of the healthy and safe food area it creates.

In the context of all these data, it is extremely important to make food production planning in a way that will have positive effects on human health by preserving the naturalness of food from production to consumption by furthering the concept of halal food.

With the process regulations to be made in this regard, the concept of halal food will not only be a religious requirement, but it will also provide effective results as a clean and healthy diet in accordance with the new age functional medicine understanding. At the same time, making it an extremely important health policy for a healthy life will be beneficial for the whole world and all humanity in socio-economic aspects.

References


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Why the World Needs Halal Foods & Consumer Goods Now?

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ABSTRACT

The world is suffering an unexpected and unprecedented pandemic of extraordinary proportions with severe economic and health consequences as a result of Covid-19. This challenge, however, is the perfect opportunity for the world to see what the Halal industry can do to heal the planet and its people, which will no doubt have positive effects on the global economy, as well. This paper discusses how the Halal consumer market can shine light on the health benefits of halal and tayyib foods and consumer goods through its enhanced focus on hygiene, traceability of food and ingredient origins and the transparent nature of the halal certification and verification process. It also aims to provide solutions for the halal industry players to implement and market programs that will effectively provide halal consumer goods to the mass consumer market.

1. Introduction

The world population and the global economy are suffering an unexpected and unprecedented pandemic of extraordinary proportions with severe health consequences and changes in lifestyle that may never return to pre-Covid times. Supply chains throughout the world were disrupted, leaving many countries vulnerable to their dependence on outside sources for food and other necessary consumables, exposing the perilous lack of food security. Surges in food prices, loss of revenues from exports and bans on exports are but a few of the effects seen almost immediately in countries already vulnerable to external shocks.

This crisis, however challenging, is a unique opportunity for the world to see what the Halal industry can do to heal the planet and its people. It appears a most appropriate time to reach into the vault of Islamic knowledge and pull out the hikma (wisdom) that has been imparted upon us in the Holy Qur’an. This is most aptly stated in Surah Al-hikma when Allah swt commands us directly and succinctly, “Oh, you people, eat from the earth what is halal and tayyib, and follow not the footsteps of the Shaytan”. Halal meaning permissible and tayyib meaning wholesome or pure, this powerful combination is mentioned several times throughout the Qur’an, a reinforcement from our Creator of the severity of this command. In modern day applicable terms, Halal is considered the subject, while Tayyib the process of bringing Halal foods and goods to the marketplace. As a result of inserting effective marketing and branding strategies there can be incredibly positive economic and social impacts globally, going beyond the halal market to reach the masses.

2. Why Halal & Tayyib is the Answer

Throughout the Muslim community it is common knowledge that our body has rights over us and is often referred to as an amana, or a trust. We are also given prescriptions on the various foods mentioned in the Holy Qur’an and in the Sunnah or Ahadith (sayings of the Prophet Muhammad ﷺ) which are described as having numerous blessings and virtues for human health as well as those thought to restore wellness after contagion. In these difficult times of global pandemic, halal options for food and goods are a welcome option for conscious consumers who see the transparency of the process for packaged products as a saving grace in that traceability of meats and other ingredients is not only possible, but verified. To that end, Halal is a rahmat (mercy) on mankind.

Islam is a holistic religion in that the believer is given precepts for guidance in all matters of life. That said, for the constructs of this paper, the concept of Halal (permissible) and Tayyib (pure) within the area of food and consumables finds itself a framework already created simply by adopting the Islamic lifestyle. For example, measures for food safety are part and parcel of the process of certifying products as Halal by way of what is laid out in the Qur’an and Sunnah. Essentially, this is a farm to fork process in which everything from animal feed to animal welfare to the way in which the dhabiba sacrifice takes place and gets processed and packaged is essentially monitored, verified and authenticated before it ever reaches the consumer’s mouth.

Although this is a belief in the Divine in which scholars have long recognized the similarities between Quranic food prescriptions and Jewish and Christian guidelines, science has in recent years confirmed many of the concepts that are part of an Islamic lifestyle to have positive effects on human health, animal welfare and the environment. Examples abound in the area of personal hygiene (i.e., wudu), fasting, and even the cleanliness of ritual slaughter (dhabiba). Sunnah foods and advice on public health (i.e., Quarantine during a contagion) abound in the Medicine of the Prophet ﷺ by Ibn Qayyim Al-Jawziyya. It states, “treatment of illness by the Prophet was of three types: (1) with natural medicines; (2) with divine medicines; and (3) with a combination of the two.

Modern day perceptions on health and wellness have been slightly changing in recent years with the explosion of advice on the internet for home remedies and getting back to nature for more cost-effective and natural ways to treat
growing health concerns, food allergies, weight loss and more. The trend towards a desire for organic, natural products has grown so much that labelling of such products has increased for European retailers significantly. According to Mintel senior analyst, Global Food Science, Emma Schofield, “Today’s consumer associates clean label attributes and naturalness to health.” She goes on to say that “The clean label trend is evolving. Tomorrow’s consumers will not just seek out clean labels, but will want to buy from brands with a ‘clean conscience’.”

With tremendous challenges facing the Muslim community at present, such as the recent ban in European courts on Halal and kosher meats without stunning and the suggestion of gas stunning as an alternative, there is much important work to be done to educate the public about the Islamic perspective on the humane treatment of animals and why they are superior methods of sacrifice for both animal welfare and human health.

Aside from the actual products created or provided, a Halal business is one that operates without riba (interest) and is beholden to honest and fair dealings at all levels, lest the operator fear the punishment of Allah SWT in this life and the next. This provides the perfect opportunity for halal brands, innovators and businesses to step up to the plate and provide better than ever before, to raise the standard of halal on a global level and to market these qualities to the world like never before.

3. Covid-19 Changed Everything

Ironically, this trend towards conscience labelling has occurred at a time when the outbreak of the Covid-19 pandemic began to expose many holes in the supply chain of food and consumer goods across the world, particularly in countries already vulnerable to external shocks. Many began to look inward and rely more on local sources for food and other consumer goods.

Although much has been researched in recent years about the increasing demand by the new Halal consumer for eco-conscious products, there are also significant upticks in demand for organic products, particularly fresh produce have also been increasing and are now the ‘organic food market’ is estimated to be worth $272.18 Billion by 2027, according to Meticulous Market Research, Ltd. Consumers are still asking the most popular question: “What’s in my food?” and have become increasingly aware of ingredients deemed or perceived as harmful (i.e. chemical preservatives, synthetic ingredients, artificial ingredients, GMOs, questionable animal parts, etc.). The way to circumvent these questions is to seek out brands with labelling that assures them of the transparency, ‘cleanness’ and origin of what they consume. To this end, the opportunity to direct the masses of consumers to halal and tayyib products extends beyond the actual Halal consumer.

Mainstream consumer confidence is boosted by way of clear and concise labelling, honest (i.e., transparent) business practices, most of which is effectively communicated on social media, company websites and simple to understand marketing and branding of their products. To that end, the halal brands already in place have an enormous opportunity to increase and intensify the marketing of aligned values-those which conscious consumers are desirous with that which is already made available through halal food and other product options, due to the Islamic framework with which they have been created. The need for increasing quality not only to meet the demands of the conscious consumer, but to reach the level of truly Tayyib (pure, organic, wholesome) will take a more concerted, unified effort among halal industry players, upcoming innovators, governments and industry leaders to make this happen. If and when it does, however, the results could be incredibly satisfying not only to the halal consumers and industry, but more so to the broader world beyond the Muslim ummah where the real impact of what is truly halal can leave lifelong positive impacts to people and planet. Insha‘Allah.

4. Post Covid-19 Solutions

The global Halal industry has a unique opportunity to rise to the challenge of enhancing the quality of Halal to align with what is not only permissible, but with what is also Tayyib, or pure. That will take unified efforts among key industry players to produce those high-quality standards and adhere to them in as many global halal markets as possible. The enforcement of the Halal mark should remain in the hands of certifiers, not in the hands of any particular government that does not fully understand or fully comply with the above-mentioned parameters of halal themselves. Beyond certification, verification should follow to ensure a seamless transition to the global marketplace.

Once standards are agreed upon and implemented, the virtues of Halal and Tayyib must be marketed through effective public educational and or PR campaigns, marketing campaigns and brand strategies that clearly communicate the values aligning with the needs and demands of mass market conscious consumers, including halal consumers yet going beyond this focus. For example, most consumers are unaware of why not only food, but packaging is monitored for Halal-compliance, yet if and when this information is communicated to the general public, the average consumer is grateful for the information and interested enough to change their purchasing habits to conform to Halal when readily available.

4.1. Opportunities for improvement within the Halal industry and areas of education to be implemented lie in the following sectors:

4.1.1. Firstly, a Halal standard that is not only on par with healthy and organic, but also serves to promote small and local producers of Halal products and ingredients would do wonders for local communities. Local players of halal (i.e. organic halal farms and slaughterhouses that ensure compliance with a halal and organic environment for animals where their food comes from. “Think globally, act locally” can make a huge impact. The very successful Willowbrook Farm run by a Muslim family outside of Oxfordshire, UK are a great example of how locally-sourced, high quality halal and tayyib animal products can be reared and sold in alignment with nature and hence, the conscience consumer, not just the Muslim one. Biologically-appropriate animal feed, proper medication and vaccinations of animals, if and when needed and humane treatment of livestock from birth to sacrifice are elements of the holistic, farm to fork process that consumers care about and desire to know and have assurances of before consuming. The Islamic way of the Halal and Tayyib process ensures such things.

Medicine and pharmaceutical products, including antibiotics and vaccines, particularly the newly-emerging Covid-19 vaccines are increasingly important to consumers,
yet they know very little about the ingredient make-up of such important consumables. The information is confusing and cumbersome and many do not even know to question what is in food products, let alone medicine. This is a great opportunity to educate and inform all consumers about why these types of consumables are halal and what that does to protect their health and their choices of consumption.

4.1.2. Next, following health and wellness is the natural progress towards cuisine. The health benefits of a non-inflammatory Halal Mediterranean Diet, plant-based diets with Muslim-world origin (a nod to Islamic heritage foods and culinary history), are all wonderful places to start public relations campaigns, culinary tours, Islamic heritage experiences and the like that will educate the public on the beauty, naturalness, and benefit of trying some new and delicious, yet also a way to incorporate healthy ingredients and food products (also eventually halal-certified) into their diets. Halal food brands and certifiers can align with larger food companies such as Whole Foods Market, Eden Foods, Stonyfield Farms, and the like to reach the broader segment of organic consumers and retailers in leading markets such as North America with the highest purchasing power and where the largest number of manufacturers are located.

Modern technology must be implemented and constantly innovated, including the leveraging of Halal supply chain system in order to ensure traceability and curtail fraud, which has been unfortunately prevalent in the current Halal supply chain. This will help to boost consumer confidence in industry capability and intention, aligning with the concepts of ‘clean’ labelling mentioned above.

5. Conclusion
Halal and Tayyib is a concept shared by Muslims around the world as part and parcel of the Islamic lifestyle, but it is also the ummah’s best kept secret in that it holds the keys to so much good that is yet to be properly and effectively explained to the rest of the world. Hence it must be taken beyond the Muslim community and offered to the world as a clean, transparent, superior method of producing ingredients and providing an honest supply chain of ingredients whereby any type of global cuisine can be created to nourish humanity. This can only be done with the collective notion of upholding the integrity of halal, on a unified front, from the very best minds in the Halal food industry.

References

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Halal in All Aspects, from Production to Consumption: Global Halal Lifestyle

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ABSTRACT

The speech given by Dato' Seri Mohd Rizal, Executive Chairman of Euro Jasmine Holding, Malaysia.

1. Introduction

“Lifestyle” refers to our everyday way of life that incorporates the different principles, values and standards of living which we have delineated for our lives. It is what we prefer and adopt in life for ourselves through choice, assimilation or imitation, and to a lesser degree and by imposition. It is, nonetheless, a fact of life that circumstances, culture and living conditions often determine the type of lifestyle we adopt for ourselves.

During this pandemic period the lifestyle of peoples had changed tremendously. The new normal of lifestyle had begun and every people cares and concern about hygiene and safety. If we widen the scope of halal (permissible and lawful) by transcending the halal-needs and reflects on every other aspect of our lives, than we shall soon realize the prime value halal have add to our lives including travelling, daily wear, consumption and medical care.

New norm of lifestyle takes a full swing and change where Halal become very important. Halal had everything in it and this had made that everything in Halal meet the needs and requirement of a person’s everyday way of life. This incorporates different standards, values and principles that we follow on a daily basis and should be permissible according to the Islamic religion.

At this pandemic period The Muslim and Non-Muslim are emphasizing the important of whatever they consume and Halal became one of the most trusted brands used by the people around the world. Positive level of consumers accepting Halal is very high because Halal had proved that any products with halal verification had been one of the most safe and hygiene.

There is a strong demand for Halal products from non-Muslim countries for both Muslim and non-Muslim consumers since Halal products are also growing in popularity due to the corona virus period

In addition, during the pandemic period, HALAL certified food and beverages had been having a high volume of market request as consumers knows very well that anything with HALAL certification is strongly safe and healthy to consume.

2. Halal Lifestyle Aspects

2.1. Halal food

The halal marketplace is emerging as one of the most profitable and influential market in the world food business today. The halal food market has grown strongly over the past decade and now during this pandemic period which had increased the awareness of people, it is expected increase in demand for food and others HALAL related products daily and believed the future demand for halal food is growing strong.

Many food economists are confidence for the increase in the halal food industry and it will become a major market force in the near future based on the current trends and this pandemic had proved it is right. Everyone is now are looking for health and hygiene food which HALAL have the complete system to offer.

There is a tremendous rising of halal consumable products as the market force with growth of the Muslim population and greater awareness among Muslims and Non-Muslims on the need and necessity to consume halal food especially during this pandemic period and also future. A good example of such increasing is the rapid rise in sales of halal food throughout the world and the growing demand for halal products from the last few months sales in year 2020.

With the awareness of consumers on the safety of their lifestyle, the providers also taking all the necessary steps to accommodate the needs and requirement of the consumers with standard operating procedure (SOP) which help and gain the confidence of consumers. This will give a big relief for consumer to spend on their food which they know it’s safe and hygiene.

2.2. Halal Pharmaceutical & Health Products

Pharmaceutical and health products had a large growth in the global halal industry during this pandemic period. Demand for halal pharmaceutical, wellness and
healthcare products are increasing day by day in whole world today. It expected to continue increase more in the future to come due to the awareness of the people all around the world. After what people been exposed that the corona virus started from animals, it really gave a wakeup call to Muslim and Non-Muslim that the best way to consume or to use any pharmaceuticals products must be with HALAL certification

2.3. Halal Clothes & Wears
During this pandemic period, people also are concern on the clothing lifestyle too. Suddenly people change the way of dressing every day. In halal lifestyle, daily wear also playing a major role for Muslims. The most important thing is the cleanliness and hygiene must be always a priority of everyone now days. If Muslim women wearing a face cover but now even non-Muslim and also the man have to cover their face with mask from infected of virus.

2.4. Eco Muslim Friendly Travelling
Due to the pandemic period, most of the travel and tourism was being changed from international to local and its had given a big impact to the travel industry. Most airways companies had grounded as most of the countries had also closed their borders.
- The upcoming travel market will give a big impact again to the world after the pandemic over.
- This time all the travelers will be looking more towards safe travel, safe lodging and save foods.

There is a need to develop and customizes halal eco adventure products, services, facilities and infrastructures to cater the Muslim tourist to this sector. Because the Muslims and Nom Muslims will definitely be looking for cross border travelling and vacation. And of course, the Muslim friendly travelling packages will be the one to be choose by these travelers.

Holiday Packages that compliance with the Halal and Shariah will play the main role for Muslim and Non-Muslim travelers who emphasize safety and cleanliness around them either during the pandemic period or in future

2.5. Online E-Commerce
This pandemic had changed the behavior of people all around the world in their life and one of the most practiced by people are the ecommerce online purchasing. Now most people are depending on the digital platforms and one of the most popular platforms is related to Halal.

The business thru ecommerce and online purchase had increased tremendously during this pandemic period. The increase of the online purchase during this pandemic period shows the awareness towards the health and safety issues. This new norm will continue to be one of the main important awareness for the present and future.

This is the time for the HALAL manufacturer and business provider to promote more aggressively to reach the consumer around the world to check on all the updates thru the media social which is the most powerful promotions platform at this moment and believe that it will be continue to be there for future.

Adopting a halal lifestyle during and after the pandemic period is important for Muslims and also for non-Muslims. It implies that the lifestyle we adopt and choose for ourselves is a considered one. It is a lifestyle that we are going to accept and comfortable with. Halal affords one the self-awareness of hygiene and health; safety and security; independence and self-determination. It is simply wholesome and awesome!

Our halal lifestyle is an ethical one. It was a choice of lifestyle that was without force, discrimination, bias or prejudice. A halal lifestyle guarantees and manages the morality of whatever we do, say or become involved in.

HALAL pay a major role during this pandemic and had proved to the whole world that anything related to HALAL is always safe to practice and consume and it will be a very important things look by the Muslims and Non-Muslims

3. Conclusions
As a conclusion, maintaining a halal lifestyle offers us nothing else except, modesty, sustainability, safety and stability in our lives. In essence, halal is a right of every Muslim, but it is indeed a privilege for every non-Muslim.

It will be the best time now for all the Halal practice to put more efforts to promote the Halal concepts thru the digital platform or any way as this pandemic period had made many people to accept the exist and role of HALAL in there. as it is believed that in near future with this new norm all the industries especially Halal will be the priority for the consumers

Datuk Seri Mohd Rizal bin Mohd Yusuf is the Group Executive Chairman of Euro Jasmine Holding Sdn Bhd Group of Companies in Malaysia and Overseas. He has various experience and involvement in business related to training, entrepreneur’s development, global halal development, it and solutions, constructions, consultations, manufacturing and many more.

He also is the president of organization named the standard of Islamic international e-trade association (Malaysia). He played a role as a speaker on global halal development in international organization event, international countries government halal event, and international education institution.
Part V

Halal Tourism
GoTürkiye Experiences, New Product Development and Safe Tourism by TGA

Elif Balcı Fisunoğlu,*

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ABSTRACT

The speech given by Mrs. Elif Balcı Fisunoğlu, Deputy General Manager - Business Events and Tourism Product Development, Turkey Tourism Promotion and Development Agency (TGA).

1. Introduction

About Türkiye Tourism Promotion and Development Agency (TGA)

TGA is founded on July 15, 2019 and subject to private law provisions. Its missions;

• to deliver Türkiye As a Brand in Both Domestic and International Tourism Markets
• Discover, Develop and Promote Tourism and Cultural Assets
• Boost the Tourism Capacity of Türkiye
• Increase the Rate of Tourism Investments in The National Economy and to raise The Quality of Service with Short, Medium and Long-Term Communication And Marketing Activities.

2. GoTürkiye Digital Experience Platform

Our country emphasizes experiencing its 81 cities in 7 regions with your 5 senses. Thanks to advanced modern design and technological infrastructure, Türkiye stands above the competition. Türkiye presents tourists who want to explore this country and know more about it, along with its cultural and touristic elements, all under one roof. Content is shown to the user based on their profile and their user-generated data.

3. What to Expect on A Muslim-friendly Holiday in Türkiye As a Muslim Traveller

Türkiye is a multicultural country with a population of 82 million. It is officially a secular state with 99% of the population being Muslim. Folk Islam in Türkiye has derived many of its popular practices from Sufism. Veneration of saints (both male and female) and pilgrimages to their shrines and graves represent important aspects of popular Islam in the country.

A casual observer on the street will see a spectrum from very secular to very conservative Muslims. Türkiye protects the freedom to worship and does not impose religious observance. Turkey’s beach resorts and hotels welcome tourists from all cultures and countries.

Türkiye has a rich tradition of hospitality and visitors, which locals prefer to call their “guests.” Visitors will be overwhelmed by the kindness of locals. Even the smallest village has a mosque, so wherever you choose to visit, you will find no difficulty in finding a mosque to pray. There are more than 80,000 mosques in Türkiye with more than 3,000 in Istanbul alone. Turkish people love children and will make children feel welcome wherever you go—Türkiye is an ideal destination to visit as a family.

4. Muslim-Friendly Hotels in Türkiye

Some of the world's best hotels with a halal concept are located in Türkiye. Especially hotels in Istanbul, Antalya, Izmir, and Aydın are in great demand year-round. These hotels meet the expectations of Muslim tourists with accommodation facilities following the concept of halal tourism at the highest level. In addition to offering halal service in food and beverages, the hotels offer unique services such as Ramadan service; rooms with Qibla directional carpets and/or prayer rugs; separate fitness areas for men and women; family-friendly entertainment venues; separate spas, pools, and beach areas for men and women; appropriate staff clothing; and television without adult channels.

Türkiye has a great climate, with the season for beach holidays lasting from April to the end of October. Winters on Türkiye’s Mediterranean coast are mild, and the region of Antalya is popular year-round.

5. Halal Food

The tasty Turkish cuisine is sure to be a highlight of your holiday in Türkiye. The majority of establishments serve halal food. This means that any meat you eat in Türkiye has been processed and prepared in accordance with halal requirements. Furthermore, in Türkiye, all international fast-food chains serve exclusively halal meat products.
There are a few establishments, catering primarily to tourists and usually in tourist resorts, that serve meals such as “English breakfast” which may contain non-halal meat products. There are absolutely no restaurants serving Turkish cuisine that serve non-halal meat. If you are not sure, you can always ask. Turkish people are very friendly and they never mind answering any questions.

Although some restaurants do serve alcohol, it is possible to find establishments in any city or hotel which are alcohol-free. Traditional kebab and chicken restaurants generally do not serve alcohol, and neither do establishments that serve pide and lahmacun. A feature of any town is the traditional tea garden or çay bahçesi, which will typically be alcohol-free. It’s a great place to enjoy a glass of Turkish tea or a refreshing soda in a family-friendly atmosphere.

6. Ramadan and Ramadan Feasts in Türkiye

Ramadan is celebrated as a month of faith and cultural effervescence. A festive atmosphere can be felt throughout the month with temporary booths selling religious books and paraphernalia.

The fasting period from sunset to sunrise still regulates most people’s schedules during the holy month as nights are more animated than usual. People are more likely to attend the five daily prayers at their local mosque as well as the evening Tarawih. In the middle of the night, drummers circulate through the towns and villages to wake the faithful up to prepare sahur, the large, early-morning meal to be eaten before the fast begins again at sunrise.

The Bayram, the Turkish version of Eid al-Fitr which marks the end of the fast, is a four-day national holiday. Many people wake up early on the first day of the Ramadan Feast and they put on their best clothes, called bayramlık, which they often buy specifically for the occasion, and have a large breakfast. This symbolizes the end of the fasting period. It is customary to visit one’s relatives, especially the elder ones, and kiss their hand as a sign of respect. Children may go door-to-door, kissing the hands of grown-ups and receiving sweets, and/or small amounts of pocket money in return.

7. Arrival to Türkiye: Turkish Airlines and the new İstanbul Airport

Turkish Airlines provides an unrivalled catering service to meet the requirements of passengers who request special meal services for health, religious, and nutrition purposes, or for infants and children.

İstanbul Airport features prayer rooms which can be freely used by all visitors. There are 44 prayer rooms in total, with half of them serving men and the other half serving women. The airport provides facilities for 6,230 people to worship at the same time. There are also various halal food outlets, cafés, and restaurants at the airport.

Elif Balci Fisunoglu appointed as the Deputy General Manager of TGA in charge with business events and tourism and product development of Turkey. Fisunoglu began her career in the communications field, spending 20 years in various positions in the media, advertising, meeting and hospitality industries in Turkey and in Europe. Before joining TGA, Fisunoglu served as the Regional Director Europe for ICCA - International Congress and Convention Association (ICCA) headquartered in Netherlands and in this role the focus has been to develop the regional meetings strategy.

Between 2001 and 2014 she also worked at the Istanbul Convention and Visitors Bureau, where she held senior sales and marketing positions before serving for over three years as General Manager. Academically he holds a Master’s in Advertising and Promotion. Elif is currently continuing her academic career, and is writing her PhD thesis about the role strategic communications plays in building a destination’s image.
OIC/SMIIC 9:2019, Halal Tourism Services
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ABSTRACT

The speech given by Mr. Yasin Zülfikaroğlu, Secretary of SMIIC Standardization Management Council.


Global Challenges in Halal Tourism

As different Halal certification and standardization schemes are in practice across different countries, majority of Muslim travellers are in a difficult position to recognize different Halal logos and certificates issued by different institutions.

Reliability of Halal certification and standardization practices related with Halal Tourism products and services seen in different OIC member countries.

With the raising awareness there is need to define the Halal Tourism Services and categorization of the Accommodation premises as per the Halal Tourism Services.

2. Strategic Roadmap for Development of Halal Tourism in OIC Member Countries

Adopted during 10th Islamic Council of Tourism Ministers (ICTM) in Feb. 2018

The Standards and Metrology Institute for Islamic Countries (SMIIC) plays a leading role to develop Islamic tourism guidelines and identify requirements to obtain Halal certificate on various Islamic tourism products and services. It harmonizes different standardization and certification practices across OIC countries with a view to come up with a unique "OIC standards" that will be recognized by all member countries.

OIC gives following tasks to SMIIC to:

- Develop unique "OIC/SMIIC standards" that can be implemented internationally in order to prevent different standardization and certification practices across OIC countries.
- Organize workshops and meetings to unify the Islamic tourism standards among OIC countries.

3. Technical Committee on Tourism

SMIIC TC 5: Tourism and Related Issues

Standardization in the field of tourism comprising the terminology and specifications of the services offered by tourism industry respecting Islamic principles, to provide stakeholders (buyers, providers, consumers...) with objective criteria for making informed decisions.

19 P. MEMBERS: (Algeria (IANOR), Cameroon (ANOR), Gambia (TGSB), Iran (ISIRI), Malaysia (DSM), Morocco (IMANOR), Pakistan (PSQCA), Senegal (ASN), Somalia (SOMALIA), Sudan (SSMO), Tunisia (INNORPI), Turkey (TSE), UZBEKISTAN…ETC. and 3 observers which are Thailand, Bosnia, Palestine, Russia and Mauritania.)

OIC/SMIIC Standards are produced by the SMIIC Technical Committees according to the internationally accepted procedures. SMIIC Member States are represented through their national standardization bodies at the technical committee level.


1) SCOPE
2) NORMATIVE REFERENCES
3) CLASSIFICATION OF HALAL TOURISM SERVICES AND FACILITIES
4) REQUIREMENTS
4.1. General
4.2. Halal requirements
4.2.1 Food and beverages
4.2.2 Accommodation
4.2.3 Other Facilities
4.3. Tour services
4.3.1. Tour package
4.3.2. Ground transfers
4.4. Tourist guide
5) MANAGEMENT RESPONSIBILITY
6) PERSONNEL AND RESPONSIBILITY
6.1. General
6.2. Requirements for personnel
6.3. HTS management system
Scope:
It defines the requirements for tourism industry players in setting up an assurance system to preserve the integrity of products and services provided for Muslim travellers.

It is a guideline for managing halal tourism facilities, products and services for travellers in accommodation premises, tour packages, tourist guides and other tourist services.

It is applicable to all organizations and individuals managing halal tourism products and services within the specified areas in the standard.

Normative References:
1) OIC/SMIIC 1, General Requirements for Halal Food
2) OIC/SMIIC 4, Halal Cosmetics – General Requirements

Terms and Definitions:
Relevant terms used in the standard such as halal tourism services, private areas, qibla, ...etc are given here.

Halal Tourism Services (HTS): products or services in the travel and tourism industry guided by Islamic rules that cater to or provide facilities suitable for Muslim travellers.

Terms and definitions given in normative ref. are also applies.

Classification:
Halal Tourism services and facilities are categorized in this standard as follows:

Accommodation
1) Category A: Accommodation Premises with Halal Tourism Advanced Scale Services
2) Category B: Accommodation Premises with Halal Tourism Medium Scale Services
3) Category C: Accommodation Premises with Halal Tourism Basic Scale Service

Tour packages
Tourist guide services
Other services and facilities (catering, restaurants, wellness and Spa, Health care ...etc.)

Requirements:
General Requirements states the obligation for any organization to comply with national or international legislation. Halal Requirements states the basic rules that relates to the Halal issues for Halal Tourism Services providers such as:
1) Food and Beverages, (referring OIC/SMIIC 1)
2) Cleansing materials (referring OIC/SMIIC 4)
3) Specific rules for accommodation premises

- Requirements for rooms: such as qibla indicator, sajjada, washroom with hand shower or no alcoholic beverages in the refrigerator…etc.
- Separate spaces or time for men and women in the recreational facilities (pools etc.)
- Provide guests privacy

Requirements specific for Tour Services and Tourist guides are also given in the standard such as:

- Ensuring that food and beverages included in the tour package are halal
- Ensuring that the selected tourism products have the appropriate facilities i.e. prayer room, washroom, etc. or easy access to the facilities.

The licensed tourist guide providing HTS to the customers
1) having basic knowledge on the requirements for Muslim travellers,
2) keep the guests informed on their prayer time,
3) facilitate ample time and place for guests to perform their prayer…etc.

Management Responsibilities:
The top management shall demonstrate leadership and commitment with respect to (HTS) by:

- ensuring that the HTS policy and objectives are established
- directing and supporting persons to contribute to the effectiveness of the HTS management system.

The top management shall appoint a trained Muslim officer, irrespective of other responsibilities, shall have responsibilities and be authorized to ensure effective implementation of the HTS management systems.

The top management shall be responsible to ensure participation and commitments of staff at all levels within the organization towards compliance of HTS.

Conclusion
This standard is unique that with it can be used in:
- Non-OIC countries with limited Halal Tourism Services
- OIC Countries with moderate Halal Tourism Services
- OIC Countries with advanced Halal Tourism Services.
Mr. Yasin Zülfikaroğlu graduated from Sakarya University, Mechanical Engineering Department, Sakarya, Turkey, in July 2004. He holds M.Sc. degree from Gebze Institute of High Technology Design and Manufacturing Engineering Department. He worked as a Design Engineer in Gunes Hydraulics, Istanbul-Turkey for a year. Then he joined to Turkish Standards Institution (TSE) as a mechanical engineer in Inspection and Surveillance Department.

He is currently working at the General Secretariat of the Standards and Metrology Institute for Islamic Countries (SMIIC), as a specialist where he took his term of office in November 2011. He is presently the secretary of the SMIIC Standardization Management Council (SMC) and follows up the technical work of the SMIIC Technical Committees.
Dear Distinguished Guests,

When halal tourism is mentioned in our country, it comes to mind; The concept of non-alcoholic family hotel with a separate pool of, male and female is coming. I want to share my ideas with you related to the common expectations of those who vacation in this concept, the reasons why some conservatives turn to non-conservative options, the options that are not preferred because they are not trusted by a segment of the Halal or Islamic concept, and most importantly, the necessity of offering alternatives to the consumer by evaluating Halal Tourism in a wider perspective.

We see that a large segment of people who do not trust Islamic concept hotels have turned their route to alcoholic hotels due to the fact that the prices of Islamic ones are much higher than others. In order to prevent this, the price range should not be so different between the hotels that meet the same standards and that do not meet the Islamic conditions. Of course, we know that the implementation of halal conditions is more economically than other hotels, but considering that there is a serious alcohol cost in other hotels, this wide difference affects the choices when we look at the balance of trust.

In our work in the field and on social media; The negative comments following the conservative community’s use of their preferences in halal concept hotels show us that the concept of halal should be considered much more than today's practice in the tourism sector. It is a wrong point of view to perceive the concept of halal as only food and drink and being separated from men and women.

For example, food waste in hotels is very irritating to visitors. At this point, it should be made mandatory to carry out studies, to prevent waste, to utilize food waste in certain areas and to direct the necessary part to animal shelters. It is an important issue to apply the same sensitivity to the evaluation of recyclable materials. At this point, although guidance and sanctions should be in every hotel, it is very important to evaluate the Halal concept in terms of the fact that the holiday is halal.

In terms of halal consumption, it is important that personal care materials such as shampoo, cream and cleaning products used in hotels, spas and bathrooms are also halal.

The presence of an image showing that all substances such as food and cosmetics are also halal in a non-alcoholic hotel can affect the consumer positively. From the drinks in the minibar to the fun snacks in the children's playgrounds, halal certified options should be used and these should be presented to the consumer in a transparent way.

Another expectation is that family and child activities should be placed with a certain sensitivity. Of course, it is very difficult to put Islamic sensibilities into a mold and to meet everyone's expectations at the same level. This work has a dimension of taqwa; The Islamic sensitivity rate is maximum, which is almost impossible to meet with the understanding of halal tourism. Standards trying to be laid down in the principles of halal tourism management can only create the minimum criteria, namely the fatwa in the term of theology. Improvements can be made at this point, even if it is of a minimum size, better quality content can be offered and holidays can be matured.

In some of the conservative hotel concepts, the lack of privacy in the women's and men's common pool and sea part, the concern that women-only areas are visible are also not preferred or are another factor in terms of expectations. Here, the reports to be given to the hotels as a result of periodic inspections through a reliable and single institution will relax the visitor and increase the trust.

It is also important to eliminate the concerns I mentioned up to this point in tourism related areas such as transportation and restaurants. Especially the clean content of the food offered during the travel processes; It is important to be sensitive to the creams, fats and colorants used rather than just halal meat. Emphasis on halal should be included in all processes of the holiday,
Halal Concepts Hotels

Halal concept hotels should not only come out of formats such as sea and spa. They can attract foreign Muslim and conservative non-Muslim tourists to our country by combining them with historical and cultural trips. The same practice is the common expectation of travel-loving Muslims of the world from all tourism countries. Today, it is possible to attract people who do not want to travel thousands of kilometres just to swim, by combining extra travel practices such as gastronomy and history with halal hotel holidays.

Especially in our country, not reducing halal tourism to the Mediterranean, where conservative hotels are located, must be the biggest investment to be made in halal tourism. Rather than pulling the tourist population coming from Turkey, Europe and the Middle East to the Mediterranean for only three months of the year, it should be evaluated jointly with the four-season tourism arguments and to the South East in terms of gastronomy, to the Black Sea and Cappadocia in terms of nature tourism, to Bursa and Erzurum in terms of history and cultural tourism, routes and tours should be created and combined with hotel tourism.

Here, the main expectation of travellers and travel lovers is to travel but not to worry about food. I do not want to put a lot of food in my luggage during my abroad travels. In this sense, I think that initiatives that will increase trust should be made and I also care about being the country that spreads this globally.

I think it is particularly evident that an overall sensitivity of production in Turkey, but labelling is the key point to increase transparency which will ease consumer concerns. Therefore, we need to increase the incentives to producers in order to expand the halal certificate. At the same time, in order to increase our global share in Halal Tourism; I find it necessary to make green stars by evaluating the hotels, holiday villages and restaurants serving under conservative, Islamic and non-alcoholic titles in terms of their contents.

The licensing of entrepreneurs who can put titles and labels such as conservative, Islamic, halal, alcohol-free in front of their names should also be done by the same institutions so that some malicious entrepreneurs cannot open hotels with different names every year, abuse the conservative people and run away.

Halal Reservations

With filtering methods, as in the case of halal reservations, on sites where holiday reservations are made; Choices such as non-alcoholic hotels, halal in all food should be made and hotels with sought-after features should be listed. In this way, the consumer will encounter a clearer picture and will be able to make reservations safely. Some sites have this application, but unfortunately it does not work correctly. Many times, when confirming by phone, we come across with the fact that the hotel is not alcohol-free. It will be an important study in order to avoid such a picture for guests, especially those coming from long distances. The same applies to restaurants... In this sense, a comprehensive site does not already exist. I try to write in my own block as much as I can, but deceptive information on restaurant-specific apps and sites is unfortunately too much.

At the point of deception; When restaurants add pork and pork additives to their menus, they have to specify it in the menu, but they do not have to indicate this in their subscription to food sales applications. It is possible to see examples of this in many restaurants in Istanbul. The non-alcoholic or alcoholic option, as well as the option of pork and pork additives, will affect the consumer going to that restaurant or making their choices more carefully when they go.

In our world, where 25% of the population is Muslim, we see that the perception of Halal Tourism is based on the recent past. Although today's tourism professionals are turning to this point, I believe that this is very sensitive that cannot be left to the conscience of hoteliers and agencies, and I find it necessary to have one-stop labelling, green starring and accreditation.

The contribution of Muslim tourists to the world economy is expected to reach $ 220 billion by 2021, and given that Islam is the fastest growing religion in the world, Muslim tourists will definitely be among the most important customers in the travel market. Where security concerns and basic halal requirements are met, Muslim tourism will continue to grow rapidly.

I would like to express my gratitude to the Islamic Trade Development Center (ICDT) and the Institute of Standards and Metrology for Islamic Countries (SMIIC), which brought us together on a platform where everyone's common concern is Islam and halal.

Best regards...
Hacer Sucuoglu Adiguzel; After graduating from Beykent University Textile Department, she worked as a vocational teacher and head of the department. Subsequently, she switched to commercial life and operated Türk Telekom Dealerships. Simultaneously, she took part in the hijab clothing sector with the brand name Tesettur Yakasi and in the costume sector with the Rengarenk Costume brand.

Considering the difficulties experienced in commercial and social life in particular, in order to reduce the problems and deficiencies experienced by women in hijab and conservative families in their social lives to some extent, she created the blog page of tesetturyakasi.net in 2013. And she has published articles on hijab clothing, Islamic holidays, halal food, halal cosmetics to guide women.

At the same time, she continues to provide special trainings and workshops for women by establishing an academy that provides online entrepreneurship and social media training.
The Muslim Travel Market: A Force for Good
Soumaya T. Hamdi

ABSTRACT
Supporting local businesses has become increasingly important in a post-Covid world, where many companies will rely heavily on support from governmental institutions, debt providers or alternative sources of income for the foreseeable future. Our research shows that Muslims are keen to support local businesses when they travel, presenting a valuable opportunity for private travel companies and governmental tourism boards alike. However, there is an overall lack of guidance and framework for how to do this in the Muslim travel market. While the number of travel services tailored to Muslims continues to grow, few Muslims are able to successfully connect with local businesses during the trip planning process. This is tied in closely with the desire amongst Muslim travellers, particularly professional, salary-earning millennials, to connect with the locals and have an authentic experience. This paper will explore how the Muslim travel market can and should lead the way in responsible travel and be a force for good, both for the Muslim Ummah and the world at large.

1. Introduction
Over the last two decades there has been a notable increase in awareness over the impact of business and corporate activities on the environment and the communities that they serve. Corporate Social Responsibility (CSR) has become an increasingly important dimension not only in approaches to business and investment, but also Public Relations, branding, marketing and communications. Sustainable and ethical business practices are becoming key dynamics in consumer decision-making both in terms of the products they purchase and the companies they purchase from.

The disruption in 2020 caused by the Covid-19 pandemic has forced us all to slow down and reconsider what it is that we value and consider important to live a purposeful, fulfilled life. Consumers are holding companies to account and forcing brands to place more emphasis on their CSR - not just from the perspective of the goods and services they produce - but right into their core company values.

Yet while the conventional market players continue to draw up guidelines for responsible business practices, the halal economy already has an extensive theoretical framework in place that by its very definition provides the starting point for more responsible business.

The current pause placed on travel due to Covid-19 has provided tourism stakeholders a unique opportunity to reassess business practices. For halal tourism, this means an opportunity to reflect on how to avoid making the same mistakes that the global travel and tourism market is now recognizing need to be resolved. Over-tourism, undervalued package holidays, disruption and damage to local communities and natural environments; these are just some of the negative side-effects caused by tourism practices and strategies over the last few decades. As a relatively nascent sub-segment of the global travel market, halal tourism stakeholders are in the unique position of being able to learn from these mistakes and carve out a new way to grow the travel industry that is both sustainable and responsible.

This paper will explore how adopting a holistic approach to creating products and services for the Muslim travel market can increase stakeholders’ competitive edge and produce long-term, sustainable results for destinations.

2. The Future of The Halal Economy: Responsible Business
While business is often presented in matters of profit and loss limited almost entirely to the individual, Islam adopts a more expansive and communal approach with regards to rules, guidelines and considerations in local economies. Abu Hanifa is known to have asserted that businesses should consider the welfare of the local community in setting market prices that reflect fair value of goods, while also considering the individual circumstances of customers. An example includes his refusal to buy a silk garment being sold for a fifth of its true value by a struggling trader and insisting he would only pay its true price.

At the same time, it is reported that he sold a garment for far less its value to a struggling elderly customer on the basis that he had made a profit on other garments and therefore could afford to reduce the price. The essence reflected here is that the primary consideration in the business transactions of Abu Hanifa indicate a focus on sustainability and benefit to the local community, which contrary to commonly held views...
today did not negatively impact Abu Hanifa’s commercial success.

These concepts do not just apply between consumer and the company providing the service. It applies even in partnerships between two companies working together to provide an effective service. As Covid-19 has ravaged economies worldwide, there is a risk that the desperation of some operators in countries where government assistance has been lacking or even non-existent, will result in them severely under-pricing and undervaluing their products and services in the hope of attracting customers. This is a dangerous practice and can be sustained only for a short period of time, with damaging effects on the local economy. These are some of the considerations with regards to sustainability and facilitating the development of local economies that stakeholders in the halal travel market will need to consider as the world emerges out of the Covid-19 period.

3. Rising Consumer Interest in Responsible Business

The Muslim population is one of the youngest in the world, with a higher proportion of young people under 30 that any other religious group. As Muslim Millennials and Generation Z become an increasingly powerful segment of this market they are also more interested in the values and principles behind companies and brands. This powerful market segment increasingly wants to see companies and brands adopting a holistic approach to responsible business. Companies operating within the halal economy are therefore already, in theory, at an advantage since Islam already provides the theoretical framework within which to conduct responsible business.

While there is much to be celebrated in the growth of halal tourism over the last decade, there is still a huge potential for growth in the provision of responsible travel experiences. For the purposes of this paper, responsible travel is defined as that which makes ‘better places for people to live in and better places for people to visit’. One of the key features of this type of travel is creating an environment in which travellers can build authentic connections with the local community, heritage and natural environment.

4. A New Framework for Developing Halal Tourism Products and Services

Since the Islamic economic framework already provides a starting point from which to develop responsible business practices, the question is how then this can be applied to products and services in halal tourism in a way that adds value to the consumer?

Research conducted by Halal Travel Guide has resulted in the creation of a novel four-pronged approach (Figure 1) that stakeholders and key decision-makers including Tourism Boards, Destination Marketing Organizations and tour developers can use to design responsible halal tourism products and services. This model highlights the 4 key elements of (1) Faith, (2) Community, (3) Sustainability and (4) Digital, as essential features of the new post-2020 halal tourism product. This framework has been designed with the largest growing segment of the halal travel market in mind - Millennials and Generation Z - providing a long-term, sustainable approach to developing new halal tourism products and services that will appeal to a key segment of this market.

I. Faith

While the halal travel market has rightly focused on growing provision of the key elements of halal food and prayer facilities, this no longer provides a competitive edge in and of itself for service providers. Increased competition in the market requires destinations to differentiate themselves with unique offerings to catch the attention of consumers. Research conducted by Halal Travel Guide has identified connecting travellers with their Islamic heritage as a powerful differentiating feature that destinations can utilize to increase their competitive advantage. As the situation currently stands, the halal travel market is lacking in quality products that enable Muslims to connect with their Islamic heritage. However, there is clear evidence that Muslims will travel to feel a sense of connection to their Islamic identity. In 2018 our primary research showed that the powerful storytelling in the Turkish series, Dirilis: Ertugrul, signalled a new opportunity in halal tourism. Our research showed that over 95% of survey respondents were keen to connect with Islamic heritage through travel and felt inspired to visit Turkey, as a direct result of watching this drama. Less than a year later, the small town of Sogut was recording ten times the number of tourists they had seen in recent years due to the town’s historical importance as the first capital of the Ottoman Empire and home to the burial site of Ertugrul Gazi. This town did not exist on Turkey’s tourism map and it was only recently that it has been recognized by local stakeholders as an attractive destination to Muslim travellers. Should Sogut receive sufficient investment in branding, marketing and new tourism product design, it has the potential to become an internationally-renowned destination for Muslim travellers, bringing many benefits to the community and local economy.

II. Community & (III) Sustainability

The impact of Covid-19 on people’s ability to feel connected will continue to be felt in 2021. This craving for connection is something that our research has identified as an important element of travelling amongst Muslim travellers. When respondents were asked whether they liked to connect with the local community when travelling, a total of 83% answered yes. Connecting with local communities provides an opportunity to build bridges between people from different destinations, cultures and backgrounds. This is currently an underserved aspect of the halal travel market and presents a growth area for Tourism Boards and Destination Marketing Organizations. Muslim travellers – women in particular – are keen to feel able to access and explore local history and culture on their travels. For halal tourism product development this is a key element that creates authenticity within a travel experience. By working with locals to produce these authentic experiences it becomes possible to develop new halal tourism products that bring direct benefit to the local community, local economy and support the preservation of local intangible heritage and culture.
This is a crucial step in the development of new halal tourism products to ensure that growth in the halal travel market is sustainable and supports responsible business practices.

III. Digital

The democratization of information brought about by the internet and proliferation of smart devices has made it easier than ever for businesses to send direct messages to their target market, and this is particularly true for the halal travel market. It is estimated that over 60% of the global Muslim population is under 30 years old, which means the majority of consumers in the halal travel market have grown up obtaining information and purchasing goods/services using the internet. Social media in particular is becoming increasingly powerful not just for marketing purposes but also for purchases, as apps such as Instagram increasingly grow their e-commerce capabilities. For halal tourism, social media can be leveraged to engage Muslim audiences through the use of storytelling to share authentic experiences that viewers can relate to or empathize with. This is particularly important for Millennials and Generation Z, who come across new brands on social media and use social platforms to connect with their values and interests. Digital accessibility forms an essential part of halal tourism product development and includes:

- Beginning the travel journey with inspiration on social media. Short form videos and authentic storytelling will grow increasingly important as seen in the rise of TikTok and adoption of ‘Reels’ by Instagram;
- Enabling digital trip planning through websites, microsites and blogs with dedicated content designed with Muslims in mind.
- Seamless booking experience from start to finish.

Islam already provides the theoretical framework for how to conduct responsible business, and Figure 1 is a model based on research conducted by Halal Travel Guide that creates a new approach to tourism for halal travel stakeholders. The point at which Islam, digital accessibility, community and sustainability all intersect is where new tourism products and services are created that give value both to the traveller and the destination.
5. Conclusion

The Covid-19 pandemic, while reaping widespread havoc on the industry, has offered an exceedingly rare window of reflection over the current practices and the necessity for more sustainable development of the halal travel market. While the market is set to continue growing at an impressive rate, there is still a lack of focus on the sustainability of this growth in the longer term. A holistic view into how Islam provides the framework for how to conduct responsible business provides the starting point from which halal economy stakeholders can begin. For halal tourism, our research has shown that not only is adopting responsible business practices the right thing to do for the benefit of destinations, it’s also in line with Muslim traveller preferences. The point at which Islam, digital accessibility, community, and sustainability all intersect is where new tourism products and services are created that give value both to the traveller and the destination. Should this model be adopted by destinations in the development of new halal travel products and services, this will undoubtably bring benefits both to local economies and travellers. In the long term, this could even improve the overall competitiveness of the halal travel market within the wider global travel industry.

References


Soumaya Hamdi is the Director and Founder of Halal Travel Guide, a travel company that connects people through immersive travel experiences. Based in London, Soumaya founded Halal Travel Guide in 2015 after returning from East Asia, where she discovered a lack of practical information online for Muslim travellers exploring the region. From sharing free travel guides and advice online, Halal Travel Guide began offering boutique experiences to Bosnia in 2018, adding Uzbekistan in 2019 and now Cappadocia in 2020.

Soumaya’s success with Halal Travel Guide has led the company to receive international media coverage in various media outlets, including The Guardian Observer and New York Times. Her passion for providing culturally-immersive travel experiences has led her on explorative trips in numerous destinations, such as meeting the Tatar Muslim community in Kazan and the Bajan Muslim population of Barbados.

Soumaya is now working on producing the first report into British Muslim travel preferences, with a special focus on millennials, Generation Z and the influence of Muslim women in decision-making. Part of her research was published by The Standards and Metrology Institute for Islamic Countries in 2018, in an essay titled ‘Emulating the Success of Ertugrul: Does this Television series signal a new opportunity in halal tourism?’.
The Caribbean: A New Opportunity for Halal Tourism

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ABSTRACT

The Caribbean archipelago encompasses more than 7,000 individual islands in a region of approximately 1 million square miles and benefits from a tropical climate with year-round beach-vacation temperatures, making it one of the most coveted tourist destinations in the world. As posited by Soumaya Hamdi at the 2018 World Halal Summit “The Muslim travel market is predicted to reach 156 million travellers and be worth $200bn by 2020, according to industry specialist CrescentRating. Over the last ten years, the leaders in this market have primarily been Muslim-majority countries that are already able to service the basic needs of Muslim travellers. This market-dominance has however started to shift, with more non-OIC destinations beginning to provide competition.” Today, Muslims are an integral part of the development of the Caribbean region. Tourism is one of the Caribbean's major economic sectors and is often described as, "the most tourism-dependent region in the world". The increasing of availability of halal food; hijab-friendly amenities; prayer facilities; family friendly activities and a focused effort coupled with more investment in the ‘halal brand’, will make it easier and more enjoyable for Muslims to travel for business and leisure to the region. This paper will explore why The Caribbean is among non-OIC destinations with opportunities for Halal Tourism.

1. Introduction

The Caribbean archipelago stretches from the islands of the Bahamas in the north to Trinidad in the south, the entire region, often referred to as the West Indies.

For some, Islam and Muslims are a recent phenomenon in the Caribbean. For many travellers they aren’t even aware of the presence of Muslims in this undisputed breath-taking part of the world. The reality however is that the presence of Muslim stretches far back, much further than many would imagine. Dr. Abdullah Hakim Quick in his book “Deeper Roots” makes the point “…the history of Islam and Muslim peoples in the Caribbean stretches back over one thousand years, pre-dating European contact by over six centuries…”. Today, Muslim communities are found on all of the major islands.

Tourism is one of the Caribbean's major economic sectors, with 30 million visitors contributing $59 billion towards the area's gross domestic product in 2019, which represented 14% of its total GDP. It is often described as, "the most tourism-dependent region in the world".

The infrastructure of Caribbean countries is set up almost exclusively to service the needs of visitors and tourists. That solid infrastructure, combined with the increasing of availability of halal food; hijab-friendly amenities; prayer facilities; family friendly activities and a focused effort coupled with more investment in the ‘halal brand’, will make it easier and more enjoyable for Muslims to travel to the region.

2. Findings and Experience

Soumaya Hamdi at the 2018 World Halal Summit stated: “The Muslim travel market is predicted to reach 156 million travellers and be worth $200bn by 2020, according to industry specialist CrescentRating. Over the last ten years, the leaders in this market have primarily been Muslim-majority countries that are already able to service the basic needs of Muslim travellers. This market-dominance has however started to shift, with more non-OIC destinations beginning to provide competition.”

Our findings in the Caribbean region has been exactly as was predicted. Prior to the Covid pandemic in early 2020 the Caribbean have been receiving increasing numbers of queries regarding the availability of the halal products and services for the Muslim tourist. This significant increase in requests prompted the start of our company the Barbados Halal Experience on the island of Barbados a few year ago.

This company is the first of its kind in Barbados and the Caribbean region as a whole. With our presence via website and Instagram on the world-wide web we experienced a manifold increase in requests from Muslim travellers who wanted to visit Barbados and/or the region as tourists.
Many of the requests that came in indicated that they were not aware of the presence of Muslims in this part of the world and were surprised and happy to learn that Muslims live here and halal tourism services are available.

Our findings also reveal that many of the requests were coming from travellers who already visited several of the well-known halal tourism destinations in OIC countries and were looking for different experiences in new places but wanted it all to be halal.

In responding to the increasing demand for halal tourism services we had to sensitize the tourism sector to the potential for halal tourism and also to what was necessary to be done to cater to the Muslim tourist.

We met with several of the tourism agencies, governmental and non-governmental and we organized and participated in training sessions to help build the halal brand in Barbados and the region.

Our work helped create greater awareness of the halal tourism opportunities and opened the door for us to be part of the tourism discussion and developmental plans for the country and for the Caribbean.

In the current Covid-19 Pandemic Caribbean tourism has almost been totally decimated. But the recovery signs are extremely heartening post Covid-19. And ‘halal tourism’ for this region can be considered as one of those extremely successful and favoured champions for recovering lost revenue.

3. Opportunities

3.1. Caribbean Unspoilt Beauty and Attractiveness

This reality is the main reason why millions of travellers from all parts of the world have the region on their ‘bucket-list’ of places to visit. Many visitors will visit the region every year. This beauty and experience can be shared with Muslim tourists who wish the halal services.

3.2. Tourism Infrastructure

Tourism is the main source of the income for most of the countries in the Caribbean. Therefore, the infrastructure of Caribbean countries is set up almost exclusively to service the needs of visitors and tourists. Governments invest heavily in the tourism sector and rely heavily on the returns on income that is derived from visitors and travellers. The region is experienced with many years of success in tourism. Adding halal tourism to the region’s developmental plans will augur well and contribute in a significant way to increasing financial returns from this sector.

3.3. Muslim Friendly and Enabling Environment

The Caribbean has a long history of Islam and Muslims in this region. There is an estimated 500,000 Muslims and over 400 mosques in the Caribbean. Several communities are highly developed with the necessary institutions that cater to Muslims. Muslims enjoy freedom of practice of their faith and do no face any discrimination. Halal foods are easily available in most islands and access to halal services are also readily available. Along with the beauty of the region, year-round sunshine, white sands and blue sea, the Islamic heritage in this part of the world is rich and the stories are many that can lend positively to the experience of Muslim visitors. Heritage tourism, eco-tourism, sports tourism is all part of the offerings that Muslim’s travellers can benefit from in choosing this region to visit.

3.4. Investment Possibilities

The Caribbean’s tourism sector post Covid will have significant potential for investment. The opportunity for investing in Halal tourism in this region will be one of those areas that can be rewarded handsomely. The demand is there and what is required is the ability to meet this increased demand with the required halal services. Governments are extremely favourable to investments in the tourism sector that brings positive returns not only to the investors but also to the country and its people. Tourism income benefits
those directly involved or employed in the sector as well as those that are not directly involved as tourist spend permeates the entire society.

3.5. Benefit to Caribbean Muslim Communities

Building halal tourism in the Caribbean will significantly benefit Muslims of this region. It will be bringing more demand for halal foods and services which ultimately can be sourced from Muslim-owned businesses and individuals in that field. Additionally, halal tourism can build the profile of Muslim communities in the region who will be contributing in the development and enhancement of the respective country’s income and progress.

4. Conclusion

The increased financial empowerment amongst generations of Muslims travellers is enabling them to travel more, and to expect more from the travel market. Being able to see and connect with the world online – particularly through social media – has exposed Muslim travellers to the opportunity to explore the world more widely. The provision of halal food, prayer facilities, family-friendly activities have been gamechangers in the travel market over the last decade and certainly so in the Caribbean region. With support from halal travel service providers, this could be the phase that sees Muslim-friendly travel to the Caribbean progress rapidly. The Caribbean can be the next major opportunity for the halal tourism market.

References


Suleiman Bulbulia is the co-founder and Director of Barbados Halal Experience (BHE), a halal tourism service provider on the island of Barbados and consultancy for halal tourism related products and services in the Caribbean.

Suleiman advises Governmental and private organizations on matters relating to halal tourism and is an advocate for the promotion of halal services and products in the region. Suleiman has conducted training programs on halal tourism for the Barbados Tourism Product Authority among the tourism sectors key players.

He is the Muslim community’s representative to the Barbados Government on national issues and the Regional Director of the Organization for Islam in Latin America and the Caribbean which has affiliates in over 40 Caribbean and Latin American countries. He is a graduate in Management Studies from the University of the West Indies, Cave Hill Campus.
Part VI

Recent Developments in Halal Technology
Impact of the Artificial Intelligence on Halal Food Inspection and Certification

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Abstract

The concept of halal products is now gaining worldwide interest and popularity. This situation affects the global halal industry and leads to an increase in demand of food and consumer supplies and the other services with Halal Certification. Halal inspection and certification is the process of examining and evaluating the products or services that meet the halal requirements in accordance with Islamic law. It is of great importance that the Halal Certification process raises awareness of Halal products and helps make sure that all Muslims could be confident that the products they consume are truly Halal. In recent years, studies on Halal food inspection and certification which use Artificial Intelligence (AI) techniques that have played an essential role in the recent developments in science and technology, have shown great interest. It is predicted that machine learning and artificial intelligence techniques will have a dramatic increase and importance in the Halal accreditation field in coming years. For example, Natural Language Processing (NLP) can detect the label of contents and classify the Halal products. Computer Vision (CV) can be used to detect objects and can differentiate Halal contents and the products. Machine Learning (ML) algorithms can predict the Halal Food Market and the Halal Food Customers' behaviour and help reduce the cost and waste. ML algorithms can analyse previous data and find anomalies and fix errors, reduce expenses, increase the profit and make projections for the investors. Trained machine learning algorithms can be used in developing mobile applications to assist Muslims in recognizing various forms of Halal logos on food packaging materials. Consequently, the purpose of this work was to explore the current and potential contribution of AI techniques in halal food inspection and certification processes.

Introduction

Halal is an Arabic word which means lawful or permitted. Halal foods are the foods that are allowed according to Islamic dietary laws [1]. True Muslims must ensure to search, find and consume halal foods and avoid from prohibited counterparts. As stated by the rules gathered from the Qur’an and Hadith, halal foods are those that are free from any component that are prohibited from consuming. According to Islamic law, it is also mandatory to find the food that processed, produced, and stored by using different utensils, appliances, and machinery or that have been cleansed properly to meet the Islamic rules [2].

Halal is one of the essential foundations of a Muslim's daily life. Muslim consumers must choose the products that comply with the process, procedure and the content defined by Islamic dietary law. However, considering the huge variety of products and their ingredients, this process has become quite challenging today. For this reason, Muslims need a service for a products that they will consume or use to be certified by a dependable agency, guaranteeing the process’ reliability for the product that is produced and stored in accordance with Islamic rules [3].

Halal certificate is an approved document given by a trustworthy, competent and/or impartial institution given to the manufacturer to confirm that their product or production system is carried out comply the approved halal standards. The halal certification process consists of several phases: application, examination and evaluation of the products or services that meet the halal requirements according to Islamic law, and then certification and monitoring processes are applied. As a summary, the halal certificate ensures the consumable product is produced for the Muslim consumers. This system is same as for the other services that take place according to Islamic requirements [2].

It has been well known that Artificial Intelligence (AI) plays a significant role in the developments of science and technology in recent years. Artificial intelligence can be defined as a computer’s ability to learn and perform specific tasks that commonly associated with intelligent beings [4]. The term is frequently used to describe developing systems that mimic the cognitive functions associated with humans, such as the ability to reason, discover meaning, problem-solving, or learning. Today, AI-based methods in many research fields performing the tasks better than state-of-the-art classical methods and even humans.
So, the latest studies conducted on Halal food inspection and certification area using AI techniques have attracted great attention due to its impeccable performance in any business alternatives. Again, it is predicted that AI techniques will be increasing its importance in this field in the upcoming years. This paper discusses the current applications of AI-based techniques in the Halal area, and how AI can effectively improve the practices in the application of Halal food inspection and certification processes with the presence of technological development. That is, we aimed to explore the current research in AI techniques and their potential contribution to halal food inspection, certification, and monitoring processes.

1. **AI Applications in Halal Food Inspection and Certification**

In recent years, the use of AI techniques in Halal food inspection and certification has increased. This section reviews the current and cutting-edge of AI-based methods in the various Halal food business fields and their practical contributions to that field to identify current limitations and indicate new research directions as well.

1.1. **The Applications of AI in Halal Food Production Systems**

The halal certification process covers all the production stages of the consumer goods, starting from the raw material to final product packaging or even labelling and marketing stage. One of the most critical stages of the halal certification process is to verify whether the raw materials, ingredients, additives, and production system complies with Islamic law or not. For this reason, one of the research areas where AI is applied in the halal food sector is the real-time inspection of the food and drinks at their production stage.

In a related research, Muhammad et al. have developed the Syariah Compliance Automated Chicken Processing System (SYCUT) that auditing the slaughtered chicken production line's halalness in a slaughterhouse [5]. This system is developed to ensure the trachea and oesophagus of the slaughtered chicken is wholly cut to meet the halal prerequisites in Islamic law. Researchers have developed their systems over the years by proposing new techniques using different computer vision inspection technologies to detect and classify whether the slaughtered chicken comply with the halal standards or not.

Again, Yusof et al. proposed a method as part of SYCUT that implements the Viola and Jones algorithm, which is a widely used mechanism for object detection, to discover the slaughtered chicken's oesophagus [6]. According to Islamic law, primary halal slaughtering procedures is cutting the trachea, oesophagus, carotid arteries, and jugular veins to accelerate the chicken's bleeding and death which makes the slaughtering procedure Halal in terms of animal welfare. In this method, the images of slaughtered chickens are processed to determine whether the oesophagus is detected. If the severed oesophagus is not detected, then the chicken is not considered halal and might be marked or marketed with a non-halal label.

In another study, Elfakharany et al. proposed a Siamese neural network-based solution called HalalNet to classify if a given image is of a halal slaughtered chicken or not [7]. HalalNet architecture consists of twin convolutional neural networks, the two networks are fed with images, and each network outputs the features representations of its input image. Then, feature representations are passed through a series of fully connected layers, and one sigmoid activated neuron computes the probability of the two input images are of the same class. According to the experimental results, it achieved approximately 95% classification accuracy.

The above system might be applied in any animal slaughtering system in Halal food production organization. Again, the Internet of Things (IoT) is defined as the network of devices that gather information via internet connected to the processing line and convey information to the recipients set previously. For example, IoT facilitates food companies to ensure superior levels of traceability, food safety and therefore, accountability all through the farm-to-plate supplies chain operations that are important in Halal services and production. The implementation of the IoT in the food and drink industry has considerable potential to diminish the risk of food frauds in terms of not only epidemic illness but also Halal fraudulences [8], [9]. We believe that especially, AI integrated IoT technology will usher in a new epoch in the Halal food production and monitoring system in the field since the machine vision systems will be on tirelessly 24/7, without fatigue.

1.2. **The Applications of AI in Halal Food Inspection and Controlling**

For this purpose, a robust framework for halal monitor system is proposed for the halal certification process [10]. This study aimed to improve the PCR method and HS-GS-FID1 method to implement genetic algorithms and neural network system. The proposed AI-based framework halal monitoring consists of three testing elements: halal testing, safety testing and nutritional testing. Machine learning systems will be able to perform the best of the human’s ability and would do them consistently for 24h a day and 7 days a week. Again, there will be no variation in the accuracy with which the AI model will look at something and provide a prediction in any concerned case [11].

For the food inspection purposes, if we have a human over there and inspecting the products, their decision is influenced from a lot of variables that subject to change in any case. For instance, what they think might be a defective piece of food material once they decide, it might be all right for a piece the next time. However, machines will perform that task at the best human’s ability with consistently and precisely 24/7 without failing. Because it is important to run the task of inspection and to monitor any imperfections that may harm the Halal status of the food and drinks in the compliance of Islamic law and/or halal standards.

These systems will be even bigger push into discovering the new capabilities of AI in food

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1 Head-space Gas Chromatography with Flame-Ionization Detection
inspection applications in case of the recent coronavirus pandemics that makes it more difficult for the Halal or regular food processors to operate with the traditional working procedure or operation environment in the industry.

1.3. The Applications of AI in Halal Food Certification and Monitoring

Similar statements could be pronounced for the Halal food certification and monitoring system. Halal integrity is depending on the Halal food supply chain, and it is of paramount importance to ensure that Halal food products remain Halal till consumption even if they undergo various processing activities within the supply or production chain. All participants in the supply chain must protect the Halal food products from intentional or unintentional cross-contamination with non-halal materials. Therefore, it is important to find better approaches to secure this initiative as a venerated quality that needs the utmost protection.

For example, a promising new technology is being emerged is blockchain technology (BC) that allows users to evaluate all transactions simultaneously and in real-time with increasing transparency, security, authenticity and audibility. Blockchain, along with other technologies such as IoT and AI, will permit the stakeholders to get the high-quality information needed to make more informed choices.

For the above purpose, blockchain technology seemed to be the best choice. BC is the technology that sustains digital currencies like Bitcoin, Litecoin, Etherium etc., and it allows the digital information to be distributed and constantly reconciled into the database, that is stored in multiple locations with an instant updating system. Again, blockchain technology allows users to evaluate all transactions simultaneously in real-time with increasing transparency and security, and BC, together with the IoT and AI will allow the people having an interest or share in a commercial/business undertaking to get the high-quality or credible information to convince.

In a paper [12], it has been analysed how BC technology can be a strong transformative force that increases halal regulation status. The study demonstrated that the BC technology could find solutions to the challenges in the Halal Food industry by offering a unique ecosystem where decentralized applications provide product data for the public, which reduce the possibility of artificial tampering and facilitating further audits and/or compliance.

Some other researchers have also discussed utilizing BC technology to enhance halal integrity as a part of a large project on implementing blockchain technology to halal food, cosmetic and pharmaceutical supply chains [13]. In the study, halal problem scenarios in halal supply chains, the BC system's role in each scenario, the halal supply chain parameters for the BC, the halal supply chain separation and communication requirements in Muslim and non-Muslim countries are discussed. According to the study, Halal issues can be divided into three major problem areas: undesirable contamination, non-compliance and perception. Authors suggested using BC technology to provide all relevant information needed to manage halal issues while dealing with contamination and non-compliance situations. Perceptions may also be altered considering the systematically security of the BC technology.

However, these studies are mainly theoretical and do not provide a practical framework based on BC technology in real-life application for the Halal certification system. This situation is an important limitation of these studies, as they provide no empirical evidence that the proposed solutions are applicable in real-life Halal supply chains [14]. Again, some other researcher expanded past studies exploring BC solutions for the Halal supply chains to improve halal food traceability from farm to fork concept [15]. In this study, a conceptual framework for using BC with a smart contract is proposed. The paper expands previous studies by introducing a model based on real-life BC implementation.

Halal food identification and verification have been significant issues in the Muslim community. On the other hand, identifying and verifying halal food is a time-consuming and challenging process due to multi-facial aspects of the subject. Therefore, it is necessary to develop an appropriate verification strategy and tool to ensure that halal products are genuine that available on the market. Some researchers proposed a model that makes use of Radio Frequency Identification (RFID) technology together with neural networks [16]. In the proposed model, food products are supposed to have RFID passive tags that contain all necessary information such as manufacturing date, expiry date, packaging and ingredients detail. These features are extracted from the tags using RFID readers and then used to feed to a trained neural network with multiple inputs and single outputs whose output is halal and haram. Finally, the neural network determines whether the product is halal or haram.

1.4. The Applications of AI in Examination of Halal Packaging Systems

In the last decade, mobile phones transformed from a simple communication device into an essential part of our daily lives. With the massive growth of smartphone use, mobile applications have also become easily accessible tools by the users. This situation has led to the widespread use of mobile device and applications, which brought many changes in different sectors. In recent years, studies have also been carried out to develop mobile applications that use AI techniques to help Muslims recognize various forms of Halal logos and/or ingredients given on the food packaging systems. For example, the halal logo(s) issued by some international authorities tend to confuse consumers as they have greatly lacked information about the authenticity of their certificate and the processes followed [17].

For this purpose, a mobile Halal product verification application named MyMobiHalal, which scans barcodes on food packaging and shows the information provided, is proposed [18]. In this application, the consumer sends the barcode images to the recognition system. Then, the recognition module recognizes the barcode images and sends them to the Halal database. Finally, the Halal product database is searched the barcode numbers; if a match is found and then it will
return the product matching information to the consumer who requested that.

One way to analyse the food packaging to determine whether the content is halal, of course, is to examine the listed ingredients. For this purpose, Fadhilah et al. proposed a mobile computer vision system to detect non-Halal ingredients on food packaging material using Convolutional Neural Networks (CNN) [19]. CNN is a deep learning algorithm which can take an input image, that will be able to differentiate one image from another. In this technique, their non-Halal ingredients detection system consists of three steps; character segmentation, character recognition and combining characters into a text and search the text within a list of materials that not Halal or genuine. In the study, first, lines, words are segmented, and then all characters are cropped. In the next step, each character is recognized by using a CNN. Finally, the characters are combined to form the name of materials, and detected materials are searched in a non-halal materials database [19]. Another neural network approach is also proposed to recognize authentic and recognized Halal logos on products [20]. In this work, a dataset of available and recognized Halal logo images worldwide has been created. In the study, they trained a neural network by using created dataset to identify and recognize Halal logo images from ten different countries.

1.5. Halal Business, Information Technology and Social Media

Social media is a collective term for the websites and applications that make sharing ideas, pictures, documents and allow the user for easy communication, interaction, content-sharing, and collaboration through building social networks within the communities. With the rise of social media utilization over the last decade, the internet has become a vibrant tool and living place where billions of individuals from all over the world interact, share, communicate and post their material every day for all day long. Social media allows users to be connected and interact with anywhere and anytime. With this way, social media users produce a huge amount of data, enabling researchers to observe human behaviour on an unmatched scale with a new lens. This process provides a great opportunity to understand human behaviours in different aspects, e.g., marketing guidance [21].

From this point of view, social media data can be an essential source of insights to observe consumer behaviours that can be used to understand people's opinion about halal food and services.

For example, in a study, Mostafa analyzed a random sample of 100,000 tweets dealing with halal food usage with an expert-predefined lexicon of seed adjectives [22]. In this work, a geo-located Twitter opinion polarity analysis is conducted with a web-mining search to harvest information from social media users. The detailed analysis of the data in this study revealed that consumers have a generally positive sentiment toward halal food and services. The author expanded his work by investigating halal food sentiments expressed on social media by analysing a random sample of 3,919 halal food tweets [23]. A descriptive statistical analysis was conducted in this work that detects a generally positive sentiment toward halal products. This work also indicated that it is possible to cluster halal food consumers into four distinct segments: Spiritualists, Habitualists, Welfarists and Concerned. Again, this research disclosed that the halal food consumers represent a highly heterogeneous group, divisible by the level of religiosity, self-identity, animal welfare attitudes and food authenticity concerns.

Another study investigated the structure, dynamics, and sentiments of Halal food tweets by making use of text mining and social network analysis techniques [24]. In this study, researcher analysed Halal food discourse in a random sample of 11,720 Twitter posts in a 4-year period. The results of this study indicated that the tweets show a generally positive sentiment but also a general concern about the animal welfare.

Again, Feizollah et al. presented a study that focuses on the tweets related to halal tourism and halal cosmetics for over a 10-year span in English and Malay languages [25]. The researchers analysed the tweets' sentiment by making use of convolutional neural networks (CNN), recurrent neural networks (RNN), and long-short term networks (LSTM). The results showed that the consumers' sentiment was positive toward halal tourism and halal cosmetics. According to the experimental results, Halal cosmetics' sentiment score was higher than that of halal tourism, which means that the consumer is more interested in this field.

In another study, the authors expanded the study by examining those samples of 19,449 tweets (2008 to 2018) related to halal cosmetics in English and Malay languages [26]. This work exposed that halal cosmetics began to gain popularity in 2014 and the countries where the tweets about halal cosmetics were posted the most in Indonesia, Malaysia, and the United Kingdom. Their study also determined the top twenty-five halal cosmetics brands and products tweeted in this social media group.

Hence these studies showed how computer and AI-assisted tools are able to collect thousands of data and analyse them to determine customer opinion and promote food safety practices in marketing halal and healthy products in industrial point of view.

Future Directions in Halal Market and Technology

The number of studies on Halal food inspection and certification using AI techniques has seemingly increased in recent years. However, considering the significance of AI techniques in the recent developments in science and technology, the amount of AI-related research conducted in the field of Halal food business is still limited. We believe that the importance of ML and AI techniques will have a great potential to increase dramatically in the field of Halal food and services in coming years.

For example, AI can help Halal food companies make their business operations more efficient, streamlined, cost-effective and better to be able to cope with changing market needs. Machine Learning (ML) algorithms can be used to predict the Halal Food Market and the Halal Food Customers' behaviour and help reduce the cost and waste. ML algorithms can also
Analyse previous data, find anomalies, fix errors, reduce expenses, increase profit, and make projections for investors. It also helps to strengthen the food halal authenticity and eliminate safety concerns.

As stated before, with the massive growth of smartphone usage and mobile applications have also become easily accessible by users. This has led to cause a widespread production of computer applications in all the area including the food authentication. In the halal food sector, ML algorithms can be used to assist consumers in making a conscious decision when searching and shopping for Halal products with the proper mobile applications. ML and AI-based techniques with the mobile applications can especially be useful to assist Muslims in recognizing various forms of Halal logos on food packaging materials. Moreover, Natural Language Processing (NLP) can also detect the label of contents and classify the Halal products.

One of the research areas where AI can be applied in the halal food sector is the real-time inspection of the food and drinks during the production stage. For instance, AI-based computer vision techniques can be used to inspect food production processes and detect transactions that do not comply with Islamic dietary laws or halal standards. We believe that AI integrated IoT technology will usher in a new epoch in the Halal food production and monitoring system in the field since the computer vision systems will be on 24/7 without failure and/or fatigue.

AI also has the potential to transform the way we approach halal travel. It is necessary to find AI-based solutions that meet halal tourism behavioural patterns to provide tourism services and experiences tailored to the needs of the special tourists [27]. AI-based solutions such as Augmented Reality, Human-Computer interaction, Remote Control Tourist will have a significant impact on the future of halal tourism. To the best of our knowledge, there is no academic research that examines the role of AI in halal tourism. Therefore, applications of AI in halal tourism is an area that has not yet been explored.

**Conclusion**

The concept of halal products has been recently gaining increasing interest and popularity around the world. This is affecting the global halal sector and increasing the demand for food and consumer supplies and other Halal Certified services as well. In recent years, again there has been an increasing interest to study on Halal food inspection and certification, in which Artificial Intelligence (AI) techniques might play an important role. With employing the latest developments in science and technology, this are will gain more advancement to solve the current problems that is frequently encountered. This paper reviews AI-based Halal food inspection and certification methods and discusses the open research subjects that gives directions to the future studies on how AI techniques will be applied and promoted in the area of Halal sector. Again, the paper might also shed lights how AI or computer assisted techniques can enhance the developments and applications in the Halal food production, examination, and certification area.

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Professor Hasan Yetim, is currently director of Halal Food Research Centre and chair of Food Engineering Department at Istanbul Sabahattin Zaim University in Turkey. He completed his higher education in the field of Food Science and Technology in Erzurum Turkey and PhD in the field of Meat Science at the Ohio State University in USA. He started his academic career as a Research Assistant, and he was co-chair at the Department of Food Engineering, Head of the Department, Vice President at Erciyes and Istanbul Gelisim Universities. He has been working as Professor in different Turkish Universities since 2002. He served in an Academical Council of TSE Halal Certification Committee, Consultant at the TUBITAK–TEYDEB–TOVAG Research Project Consultation Committee, Food & Nutrition Committee of Turkish National Academy of Science (TUBA).

He has a number of national and international indexed articles published in various national and international journals. Professor Yetim was deemed worthy of many awards in Turkey and abroad. He has made significant contributions to the establishment, development of departments, laboratory and other infrastructures of the Food Engineering Departments at different universities and initiated the Bachelor, Master and Doctorate programs where he has worked.

He is currently working as a member of University Senate, Director of Halal Food R&D Centre, Department Chair of Food Engineering and a member of Executive Board of Faculty of Engineering at Istanbul Sabahattin Zaim University since 2018.
Management of Extraordinary Events: Remote Assessment and Audits in the Field of Halal

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ABSTRACT

Assessment of the physical location or virtual site of a conformity assessment body using electronic means is called Remote Assessment. During the extraordinary events (COVID19 pandemic for example) it is the best option to do the audit processes. This article defines the remote assessment and highlight its pros and cons in the halal auditing sector.

1. Extraordinary Event (EE):

Definition: Extraordinary event is an occurrence beyond the control of the organization, commonly referred to as an “act of God” or “Force Majeure”.

Examples for EE’s as Natural Disasters;
- Earthquakes,
- Tsunami,
- Hurricane, Flooding,
- Volcanic eruption,
- Pandemic, etc.

Examples for Man-made Disasters;
- War,
- Strike,
- Riot,
- Political instability,
- Geopolitical tension,
- Terrorism,
- Malicious computer hacking, etc.

2. The Conductance of Assessment/Audit

Option 1: Normally: If AB/CB ensures that the assessment team faces no travel or health related restrictions, and that a safe travel route was arranged.

Option 2: Remotely: If the AB/CB can accommodate to have a remote assessment however a remote witness may not be practicable for some scopes (e.g. field testing or inspection, or witnessing at the client site), the witness activity may be postponed to later date or next assessments as decided by AB/CB.

Option 3: Postpone: If it is not possible or technically practicable to have a remote assessment (e.g. for IT issues or if the employees cannot access their offices), the Halal Audit/assessment will be postponed for period determined by AB/CB and the situation revisited before the end of the decided period.

3. Remote Assessment

Definition: Assessment of the physical location or virtual site of a conformity assessment body, using electronic means. A virtual site is an online environment allowing persons to execute processes.

Why Conduct Remote Assessment?

When an extraordinary event or situation arises, which doesn’t allow or prevents conductance of an onsite assessment. It is possible that the remote assessment becomes a norm after the current situation cannot be ruled out.

- Travel restrictions
- Travel Time
- Extraordinary Event(s)
- Visa restriction
- Travel Cost
- Type of CAB
- Assessors Availability

4. Remote Audit/Assessments Methods: Are New?


Remote assessments are referenced in IAF ID 12:2015 Principles on Remote Assessment which is used for AB assessment of CABs.

Further defined in IAF MD 4:2018 The Use of Information and Communication Technology (ICT) for Auditing/Assessment Purposes, which is applicable for its use in relation to ISO/IEC 17021-1 and ISO/IEC 17065 based schemes.

Remote Audit/Assessments:

Remote Audit/Assessment could be a good solution to acclimatize with the constraints linked to the closing of borders, travel restrictions, social isolation and quarantine measures imposed by the governmental authorities of different countries to combat extraordinary event e.g. Pandemic.

But this must be done by taking into consideration the specificity of the Halal certification/accreditation which beyond the technical aspect linked to health and safety, involves a very important aspect which is the close link with Islamic Religion.
5. Information and Communication Technology (ICT)

ICT is the use of technology for gathering, storing, retrieving, processing, analyzing and transmitting information. It includes software like:

- Yahoo,
- Gmail,
- MS Office,
- Zoom,
- MS Teams,
- Google Meets etc.

and hardware such as:

- smartphones,
- handheld devices,
- laptop computers,
- desktop computers,
- drones, video cameras,
- wearable technology,
- artificial intelligence etc.

The use of ICT may be appropriate for Halal auditing/assessment both locally and remotely. The information and communication technology (ICT) have excelled and become part of one’s daily life. As (ICT) becomes more sophisticated, it is important to be able to use ICT to optimize Halal audit/assessment effectiveness and efficiency. ICT can support and maintain the integrity of the Halal audit/assessment process particularly during the unforeseen situation/extraordinary event or even in a normal process.

Examples of the use of ICT during audits/assessments may include but are not limited to:

- Meetings; by means of teleconference facilities, including audio, video and data sharing
- Audit/assessment of documents and records by means of remote access, either synchronously (in real time) or asynchronously (when applicable)
- Recording of information and evidence by means of still picture, still video, video or audio recordings
- Providing visual/audio access to remote or potentially hazardous locations

Usage of ICT in Remote Assessment/Audits:

Pros:
- Electronic failures, disruptions, poor connectivity,
- Assessors/experts not use to it – mind compatibility
- Some activities cannot be witnessed
- No face-to-face physical interaction
- Parallel witnessing may not be possible as that of physical onsite assessment
- Different time zone

Cons:
- Increased safety for personnel (in particular for assessment team),
- Cost effective for CABs
- Free of logistical obligations (travelling, visa, accommodation, transportation)
- Some auditees at better level of comfort and confidence

Effective Application of ICT in Remote Assessment/Audits:

- To provide a methodology for the use of ICT that is sufficiently flexible and non-prescriptive in nature to optimize the conventional Halal audit/assessment process
- To ensure that adequate controls are in place to avoid abuses that could compromise the integrity of the Halal audit/assessment process
- To support the principles of safety and sustainability Measures shall also be taken to ensure that security and confidentiality is maintained throughout audit/assessment activities.

Virtual Site or Location

Virtual Site Virtual location where a client organization performs work or provides a service using an on-line environment allowing persons irrespective of physical locations to execute processes.

A virtual site cannot be considered where the processes must be executed in a physical environment, e.g., warehousing, manufacturing, physical testing laboratories, installation or repairs to physical products.

6. REQUIREMENTS of Remote Audit/Assessment: Security and Confidentiality

The security and confidentiality of electronic or electronically-transmitted information is particularly important when using ICT for Halal audit/assessment purposes.

The use of ICT for Halal audit/assessment purposes shall be mutually agreed upon by the body being audited/assessed and the body performing the audit/assessment in accordance with information security and data protection measures and regulations before ICT is used for audit/assessment purposes.

In the case of non-fulfilment of these measures or non-agreement of information security and data protection measures, the body performing the Halal audit/assessment activities shall use other methods to conduct the audit/assessment. When no agreement is reached for the use of ICT for audit/assessment, other methods shall be used to fulfil audit/assessment objectives.

Process Requirements

The body shall identify and document the risks and opportunities that may impact Halal audit/assessment effectiveness for each use of ICT under the same conditions, including the selection of the technologies, and how they are managed.

When ICT is proposed for the Halal audit/assessment activities, the application review shall include a check the necessary infrastructure to support the use of the ICT proposed.

Considering the risks and opportunities identified in previous, the audit/assessment plan shall identify how ICT will be utilized and the extent to which ICT will be used for audit/assessment purposes to optimize audit/assessment effectiveness and efficiency while maintaining the integrity of the Halal audit/assessment process.

When using ICT, auditors/assessors and other involved persons (e.g. drone pilots, technical experts) shall have the competency and ability to understand and utilize the information and communication technologies employed to achieve the desired results of Halal audit(s)/assessment(s).

The auditor/assessor shall also be aware of the risks and opportunities of the ICT used and the impacts that they may have on the validity and objectivity of the information gathered.
If ICT is used for audit/assessment purposes, it contributes to the total audit/assessment time as additional planning may be necessary which may impact Halal audit/assessment duration.

**Remote Audit or Assessment Eligibility**

Two options where audits/assessment are due at certified or accredited sites:

1. Follow the process to perform the Remote Audit.
2. Allow the halal certificate to lapse.

When an on-site audit is due and the organization didn’t accept to be remotely audited, the HCB or HAB shall apply the certification suspension and withdrawal procedure.

In the context of Halal certification, Remote Audit is allowed only when extraordinary events occurred preventing the performing of the due on-site audit.

**Risk Assessment**

In case of extraordinary events, a risk assessment is required to determine the risk of continuing certification.

The risk assessment shall include the ability of the organization to receive a Remote Audit, including:

- To what extent has operations been affected? Whether the organization remains operational. In the case an organization is not operational, a Remote Audit is not an option;
- Availability of staff for Remote Audit activities during the "extraordinary event";
- Will the organization need to use alternative manufacturing and/or distribution sites? If so,
- Are there issues around supply of raw materials, including packaging materials,
- Ensure remote interviews can be conducted in critical areas/ departments.
- Availability of documentation and records in electronic form;
- Activities needed to verify implementation of Halal Assurance systems, i.e., audit, inspection, product testing etc.;
- Access to IT system that both will be able to use;
- Capability of organization staff to utilize technologies used in Remote Audit techniques.

The risk assessment can also inform the parts of the organization’s systems which should be monitored to have confidence in the continuing compliance of the system. In a food safety context these could include:

1) Whether the organization is operating to the scope of certification;
2) Review of HAS compliance;
3) Key changes since the last audit e.g. HACCP plans, product recalls and significant complaint levels;
4) Status with regard to objectives and key process performance, management review and internal audits.
5) It is expected that certified organizations increase the frequency of internal audits in support of the HAS/FSMS and to ensure halal compliance;
6) Pending compliance activities / legal proceedings;
7) Halal Critical Control Points and HACCP systems implementation and verification, in particular the outcomes of verification activities;
8) Raw material procurement, including supplier assurance programmes;
9) Validation processes where raw materials supply has been significantly affected;
10) Handling of emergencies, incidents and extraordinary event and their impact on the supply chain of the organization and the potential impact on resources and food safety;
11) Handling of potentially unsafe products (nonconforming products);
12) Management system related requirements that are indicators of an organizations control e.g. internal audit and management review, corrections and corrective actions etc.
13) Any changes to processes or services outsourced following the extraordinary event.

**Which ICT to be used in Remote Audit?**

- Use adequate ICT solutions as agreed by its clients;
- The selected ICT should to be tested prior to the audit or assessment between the client and the Audit Team;
- Prior to the Remote Audit, risk assessment is done for information security and data privacy;
- The HCB needs to establish a policy on recording the Remote Audit in accordance with the local law on personal information privacy.

**Which ICT to be used in Remote Audit?**

The HCB will use adequate ICT solutions as agreed by its clients. There may be different types of ICT that may be more applicable to some industry sectors. These may include:

- **Seasonal Production** e.g., drones for farm audits. Such remote access could complement an on-site audit to confirm continued implementation of GAP or GFP;
- **Smart phones or wearable video technology for manufacturing processes.** This can allow confirmation of continued implementation of GHP or PRPs and allow observation of practices;
- For audit of documentation and records meetings held using video conferencing and online meeting platforms which are easily accessible and most often utilized. The selected ICT should to be tested prior to the audit between the client and the Audit Team; Prior to the Remote Audit, risk assessment is done for information security and data privacy; The HCB needs to establish a policy on recording the Remote Audit in accordance with the local law on personal information privacy. When allowed by law, The HCB shall record (documented records of the audit) the outcomes of the Remote Audit and retain a copy in the client file for at least the current certification cycle plus one full certification cycle.

7. **Which Audits/Assessments can be done Remotely?**

- Stage 1 audits;
- Surveillance audits;
- Recertification audits;
- Follow-up audits.

This doesn’t mean that HCBs will not accept new applications or scope extension requests. Indeed, new applications and scope extension requests can be accepted and Stage 1 audit can be done remotely except for applications in categories C, D, E, F, L, M and N which shall be done on-site, and if the new client is ready for Stage 2 audit, an on-site audit will be scheduled later on when the conditions are appropriate to do so.
8. Which Audits/Assessments can’t be done Remotely?

The Remote Audit cannot definitely be performed for halal certification of meat (Category C), which require, the presence of supervisors belonging to the HCB to supervise the whole manufacturing process from:
• Animals,
• Receiving,
• Slaughtering,
• Cutting,
• Packaging,
• Labelling and
• Storing final products in order to check its halal compliance.

9. Halal Audit/Assessment: A Huge Responsibility

The responsibility of the effective application of Remote Halal Audit or Assessment methods for any given Halal audit/assessment is with the Halal AB or HCB planning the audit and the Halal lead auditor/assessor.

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Is this Halal Certificate Genuine? Verification and Authenticity of Halal Certificates

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ABSTRACT

Certification conveys to consumers and the marketplace, as well as key stakeholders, that a sector business has successfully met the requirements of a national or internationally recognized best practice approach. When certification is by an objective 3rd party, it can be invaluable to any business as it signifies good governance and corporate responsibility. With heightened awareness stemming from recent high-profile cases, consumers are demanding an increase in standards throughout the global supply chain. There is an ample need for a reliable and simple verification and authenticity of certificates, especially Halal certificates.

Introduction

With a strong, predominantly young consumer base that is growing twice the size of global average, the Muslims worldwide are indeed a lucrative captive market. Muslim population is 23% of the world’s total [1] and for this reason has a major impact on economics. Multinationals down to small enterprises and start-ups, all are eager to tap into Muslim market. The halal industry is beyond the food sector, it includes pharmaceutics, cosmetics, healthcare, hygiene and medicine as well as services sectors such as tourism, logistics, marketing, print and electronic media, packaging, branding, and financing. The 1.4 trillion dollars halal-food industry [2] heavily relies on meat imported from non-Muslim majority countries.

1. Food Fraud, A Major Worldwide Issue

A recent study that was conducted by Bristol University in United Kingdom into the Halal meat market attained responses from 250 Muslims into their buying behaviours as well as their Halal meat and poultry preferences. The report outlined that chicken was the most consumed meat in United Kingdom, and that over 90% of Muslims consume meat at least once a week. Among the respondents 46% said they were unsure of the Halal status of the meat they consume. [3]

The adulteration and mislabelling of meat and other food products is not a new phenomenon. Within the European Union (EU), there are stringent measures in place to protect and promote foods that are traditional specialities and have geographical indications such as Protected Geographical Indication (PGI), Protected Designation of Origin (PDO) and Traditional Specialities Guaranteed (TSG) and the European law protects these. Relevant EU food safety and labelling legislation also seeks to prevent the adulteration and production of foods that may pose a public health risk, as well as the misrepresentation through mislabelling of food in order to deceive consumers. The accurate labelling, presentation and advertisement of foodstuffs within the EU must comply with Article 2 of Council Directive 2000/13/EC which specifically makes it an offence for the labelling of any food product to mislead consumers regarding the characteristics, identity, constituents, quantity, method of manufacture, durability and geographical origin of the product. [4]

Often the lack of verification procedures augments the possibilities of fraud as witnessed recently in Johor, Malaysia with a meat cartel selling repackaged fake-Halal frozen meats [5]. Fake logo was used to pass non-Halal meats as if it were genuinely Halal.

A survey of International Food Safety Authorities Network (INFOSAN) members regarding food fraud prevention, management, education, and information sharing included 166 WHO member states that resulted in 175 responses. The respondents engage in food fraud prevention (70%) or are responsible for food fraud incident response (74%). Nearly all respondents acknowledged a desire for more guidance and information on best practices in managing the full range of “food safety events involving food fraud” (97%), but also for prevention of such events (97%), indicating a need to provide technical support beyond acute incident response. [6]

2. Authenticity of Halal Certificate

The multiplicity of Halal Certification Bodies (HCBs) has resulted in many problems with verification of authenticity of Halal certificates, including forgery by fraudsters through falsification of certificates. Halal
Certifiers are now present all over the World in a globalised market. Eight of the 10 largest suppliers of global halal meat are non-Muslim majority countries, with Brazil, Australia and India at the top. [7] Muslims to be at ease with what they consume, the products they consume must be Halal certified.

Taking into consideration the current complexity of modern food supply chain, cases of fraud Halal certification and physical contamination of Halal food products by non-Halal ones, and the fact that major Halal food exporters are from non-Muslim countries, the understanding of Halal as a stand-alone indication of permissibility is no longer sufficient. Muslims must, therefore, ensure that their food intake is Halal and often they are completely unsure. The tendency of market is for traceability for all food products by giving the consumers the capacity to verify and check the authenticity of a food product and check on other health and dietary conditions.

Besides the verification of Halal certificates, one of the solutions is the usage of labels with printed hologram. They have the advantage that cannot be duplicated and are a very cost-effective method that evades counterfeiters and that can be tailor made in various forms, shapes and sizes to manufacturing requirements.

To address specially the authenticity of Halal certificates a viable and implementable easy solution is the usage of QR-code on Halal certificate. QR means “Quick Read” that points to a web page that is dynamically generated through a token or not, presenting a short information of the Halal certificate, and a link for further information such as the Halal Certificate itself. QR codes are now used in a much broader context, including both commercial tracking applications and convenience-oriented applications aimed at mobile-phone users, known as mobile tagging.[8] Without QR-code the only way to connect to online content of a Halal certificate is by using a URL. Typing URL is time-consuming and inconvenient on a mobile screen and one is likely to make errors while typing. Compared to this, scanning a QR Code is a much faster and error-free process and convenient.

3. QR-Code on a Halal Certificate

The use of QR-code in Halal Certificates is not new. Some reputed HCBs such as Halal Certification Authority of Australia, Instituto Halal of Spain use QR-code in their certificates that basically points towards their website folder containing the Halal certificate in PDF format. EU Halal in Portugal uses database driven system that generates a unique dynamic webpage with basic information of the issued Halal certificate and link that shows the original certificate. To add to the safety, EU Halal's PDF format certificate is also digitally signed. Halal Food Authority of UK has adopted the same system as of EU Halal with QR-code on certificate that seems to work the same way.

The usage of Internet is a cheap solution to the problem of identifying the genuinity of a Halal certificate. Given the wide availability of broadband worldwide, content published on Internet pointed by the QR-code is immediately available to a global audience anywhere in the world. Internet is a very cost-effective medium to publish information to be available to any consumers worldwide. One does not need to wait until resources are available to conduct business on Internet. From a consumer's perspective as well as a provider's business can be consummated at any time through Internet with content publication. An important fact is that the Internet is operational at all times, and it is relatively inexpensive to publish information on it.

In late 2018, EU Halal in Portugal started a new project, named HalalDMS (Document Management System) aiming for management of digital documents, track, manage and store same and reduce paper usage. Under HalalDMS project, a system was developed, that is open-source MIT license database driven Halal QR-Code System. now in version 2.0. In fact it was thought to be first project to enhance integrity of Certificates through validation by QR Code, innovating because the information shown is dynamically produced, that is it does not exist on the website as a webpage and has unique identification number (UUID) to protect the data on issued certificates avoiding data-mining or data-scraping. The whole project is run in a Kanban board inside HalalDMS’ website, that can be accessed in read-only mode with download links for latest version of Halal QR-Code System. Kanban boards visually depict work at various stages of a process using cards to represent work items and columns to represent each stage of the process. A discussion board Halal DMS on Telegram supports the interested parties with technical and related issues discussion. Besides EU Halal of Portugal, NAHA of Japan and HAKQ of Azerbaijan have implemented the QR-code system as designed offered under HalalDMS project. Several HCBs have shown interest, but have stayed out of “Installed” column of Kanban board, an anonymous poll was carried in July 2019 for 45 members of HalalDMS group, 23 members showed interest in installing the QR-code system and 1 member voted to be not interested.

4. Beyond QR-Code on Halal Certificate

QR-code on Halal certificate is a sure way to avoid the question often asked among HCBs “Is this Halal certificate genuine?”, although QR-Codes can be used effectively and beyond on Halal certified products. QR-codes are now seen in advertising campaigns such as on COVID-19, in medicines, in beauty products and also in food among many other creative usages, Emart, South Korea’s largest retailer, created a shadow QR code that was only became visible when the sun was at the correct angle in the sky between midday and 1pm. [9]. Enhancing restaurant transparency, Dubai Food Safety Department is giving to restaurants from A to E based on the inspection results of their hygiene, food safety, and any violations found. Once the rating has been given to the restaurant, it is mandatory for the establishment to display the QR-code whether on the table, door, menu, etc. that is convenient for customers to see and scan.[10]
Conclusion

If a producer wants to capture the domestic or global Halal market of 1.6 billion Muslim consumers, it will need to obtain Halal certification and surely show to be trustworthy through verification and authenticity of certificates and why not Halal certified products. It is in commercial interest of HCBs to be transparent on Halal certificates they issue and they can be ahead of competition by making it easy to any layman to verify if a certificate is genuine by the QR-code in it that points to HCB’s website. It is time high HABs (Halal Accreditation Bodies) in Muslim countries make it obligatory upon accredited HCBs to show QR-code on their Halal certificates to stop frauds and to bring accountability.

References


[9] ECONSULTANCY.COM website Six QR code campaigns that actually worked (Available at: https://econsultancy.com/six-qr-code-campaigns-that-actually-worked/; Last accessed 7th December 2020)


Mr. Tayeb Habib is electronics engineer with industrial processing experience, and has been involved in Islamic matters since young age. He promotes and technically supports "ODIGOS Ritual Fixation System" which solves the problems of wing breakages of poultry in stun-free method of Halal slaughter, and avoids other damages.

He highly interested in transparency in Halal in practical terms, having actively introduced innovative technical solutions, such as "Halal QR-Code System" for traceability of Halal certificates. He runs on Telegram platform, among other chats, “HUN - Halal Unity News”, a 24x7 AI-driven news channel and "TSH - Technical Solutions for Halal", a discussion group on practical technical solutions in Halal. He is 66 years old, has 3 children and 5 grandchildren.
Food Traceability in Agri & Halal: Towards the Platform of the Future

Ziyaad Davids, Diana Sabrain

Abstract

Halal supply chains are vulnerable and have inherent flaws namely; (1) lack of trust and traceability; DNA testing at multiple stages of processing, halal certification verification and authenticity and farm-to-fork traceability and promotion of informed food choice for consumers, (2) halal requirements of transportation and warehousing compliance downstream the supply chain, (3) end-to-end halal integrity via an unbroken chain from source to consumer, (4) transparency of different systems and interpretations of the respective madhhab in different halal markets, (5) lack of integration of information technology systems, (6) diversification of sourcing, vulnerable to global pandemics and (7) food safety and security via fraudulent halal products. [1] The Covid-19 pandemic has driven radical digital transformation in the global food system, years of change taking place within months. What has been realised as a result of this global pandemic is that the global food system benefits from more robust and better-connected supply chains that are more resilient and adaptable to global disruptions. The global halal food system and halal trade is predicated on maintaining trust and integrity thus halal supply chains should adopt digital transformational technologies that help address vulnerabilities and flaws in its systems and processes. Covid-19 has stressed the urgent need for the halal food system to drastically transform and advance in order to better serve the global Muslim population and future generations. The purpose of this article is to set out the reasons supporting OneAgrix’s global digital halal ecosystem as the essential determinant of maintaining integrity and sustainability in halal supply chains. A digital global halal ecosystem platform of the future that promotes interoperability and interconnectivity of all its halal stakeholders under one global halal standard and promotes a standardised, globally accepted system for halal trade.

Introduction

The halal market is complex and fragmented, there is no clear set of defined parameters. No system exists to track cross-border trade in halal certified products. Moreover, certification in and of itself is not the defining parameter; rather it is a confirmation of compliance. It is one thing for a product to be halal, but it is another for it to be officially recognized as halal within the marketplace. [1]

Regulatory frameworks vary from region to region and contribute to a complex regulatory landscape. Much of the motivation behind halal development is being driven by stakeholders who work independently and who have national, corporate or regional interests. These dynamics have made halal certification from farm-to-fork an increasingly significant and challenging aspect to address.

Halal manufacturers and halal certification bodies still operate in self-regulating independent silos with little to no global regulatory oversight unless required due to cross-border trade. This results in halal manufacturers needing multiple halal certificates for different destination markets, increasing costs and complexities. The difficulty is partly due to the lack of clarity about to whom industry players must appeal. As there is no central authority for halal, manufacturers have to deal with a complex series of unilateral discussions with different authorities – some official, some not – to try and work out the best approach. [2]

It is difficult for the global halal industry to grow from these isolated interactions. Development of the global halal market is more so reliant on coordinating the resources needed through synergies and collaboration between governments, Islamic Finance institutions, halal certification bodies, global regulatory bodies, food manufacturers and consumers, who should all prioritize a global interest. There is a need for an overarching global halal regulatory body that can play a fully impartial and broad-based role to provide an enabling environment for an inclusive global halal framework.

Opportunities and challenges need to be addressed using a common platform to spur further growth and expansion of the global halal ecosystem. The future of global halal trade, and the participation of small and medium-sized enterprises (SMEs) and other food manufacturers that supply the market, is dependent on clear and clarified guidelines and a halal framework, easy to access and free to trade certified halal products. This is predicated on having a fully functional halal ecosystem where power is in the hands of the consumer to make informed choices based on transparent,
traceable and verifiable data across multiple halal supply chains in one connected global ecosystem.

OneAgrix’s end-to-end food traceability platform provides the solution for a sustainable and viable digital global halal ecosystem that will serve the worlds Muslim population and all future generations.

1. The Fourth Industrial Revolution and the Case for Digital Transformation

The world is currently experiencing the Fourth Industrial Revolution (4IR). The 4IR is a fusion of advances in AI, robotics, the Internet of Things (IoT), quantum computing and technologies such as blockchain. It focuses heavily on interconnectivity, automation, machine learning and real-time data to improve business operations. The need for connectedness, collaboration and access to real time insights across processes, partners, sourcing, products and people have resulted in industries merging physical manufacturing processes with smart digital technology in order to create more robust and better-connected supply chains and digital ecosystems.

Digital transformation refers to the integration of digital technology into all areas of a business, fundamentally changing how a business operates and delivers value. [3] It can be described as the merging of technology and business models to ultimately improve core business processes.

Consumers are now demanding increasingly transparent information about their purchases. Whether driven by greater social consciousness or medical conditions, they need to know all of the ingredients in the foods they purchase. This level of market-driven transparency is unprecedented, and requires digital systems to track the necessary information. [4] The European Union’s ‘Green Deal’ stresses the importance of farm-to-fork traceability and the sustainability thereof and represents a paradigm shift for the global food system to become more transparent at the regulatory compliance level. The need for transparency at a regulatory compliance level is no longer limited to the halal industry alone and is fast becoming the new global standard for food.

Industry 4.0 refers to a new phase in the Industrial Revolution and is the digital transformation of manufacturing/production and related industries and value creation processes. Industry 4.0 represents a new stage in the organization and control of the industrial value chain. It can be described as the advent of “cyber-physical systems” involving entirely new capabilities for supply chains and digital ecosystems. [5]

2. Supply Chain Digitization and Digitalization

As the enabler, digitization converts manual processes and information into a digital format. This process generates a large amount of data that can be used to optimize processes, identify risks, and improve quality in real time. [4]

In business, digitalization most often refers to enabling, improving and/or transforming business operations and/or business functions and/or business models/processes and/or activities, by leveraging digital technologies and a broader use and context of digitized data, turned into intelligence and actionable knowledge, with a specific benefit in mind. [6]

Digitizing the supply chain is the movement toward a completely integrated sequence of planning and production solutions that work in tandem to create a more visible supply stream across each touch point of the value chain. The end result is a more responsive, agile, and transparent supply network that can readily adapt to a host of industry-wide unknown variables such as inventory shortages or overages, modifications to orders, and availability of resources. [7]

Digitizing the supply chain provides significant operational benefits, enabling supply chains to become more adaptable to market conditions, satisfy the market’s need for transparency, and simplifying regulatory compliance. Connected and automated supply chains enable producers to focus on larger issues, such as improving competitiveness, enhancing the customer experience, and driving profitability [4].

End-to-end transparency is the ultimate goal for a number of supply chain operators, being the crucial component to achieving significant efficiency gains. In a system with end-to-end transparency, every member of every step along the supply chain network will have access to all data. Digitizing processes can enable improved visibility and provide real-time insights into the supply chain, giving people along the chain full control. [8] In the case of halal supply chains, digitization also enables interoperability, interconnectivity and maintaining trust and integrity via readily available, transparent and verifiable halal data, used in combination with the establishment of one globally accepted regulatory halal standard.

The value proposition of a digitized supply chain in large part resides in the breaking down of cross-organization silos and collaboration barriers — two key obstacles manufacturing companies must overcome when dealing with a multitude of partners, suppliers, and production hubs or facilities in disparate parts of the world. In addition, the rise of Big Data, cloud-computing, and other data storage and management platforms, means companies will have greater data gathering, reporting, and analytics capabilities. This means companies can review and share large amounts of data in real-time to create better demand planning strategies. [7]

Additional value in digitizing lies in the holistic integration of supply chain solutions. [7] In the case of halal ecosystems and blockchain technology, all participants within the broader halal market contribute via a self-reinforcing cycle of trust that enables the sustainability and integrity of the halal ecosystem. The strategic strength in holistic integration lies in new cooperative models and partnerships within the halal system and through this holistic integration lies the solution to a well-functioning halal ecosystem.

Similarly, digitization results in the connection of data sources and outlets. The Internet of Things (IoT) has become a force in supply chain management in recent years as a way of not only connecting systems and solutions, but also fostering more accurate, responsive, and accessible data management and
analytics. Via the IoT, digitizing the supply chain connects various methods of collecting, sorting, and evaluating data. [7]

Digitizing the supply chain is a critical move toward eliminating communication silos across an organization and a broader network of suppliers and participants. This means major players within the supply stream will have a greater capacity to share data, collaborate on important initiatives, and work in conjunction to ensure smooth workflows free of bottlenecks, disruptions, or breakdowns. A digitized supply chain is based in part on a central hub of data storage with multiple access points resulting in improved communication and sharing of data. [7]

In the case of halal supply chains, a marriage between IoT technology, blockchain and farm-to-fork supply chain traceability solutions which are embedded within OneAgrix’s global halal ecosystem can bring order and transparency as food and halal data moves seamlessly through the system, all the while maintaining end-to-end visibility and integrity. Increased interconnectivity and interoperability through digitization transform halal supply chain processes into smart workflows that shift from the pursuit of an organisational optimum to a network optimum, in this case, a halal ecosystem optimum. Achieving this optimum contributes to increased integrity, sustainability, traceability and transparency within the entire ecosystem.

3. Towards A Sustainable and Functioning Digital Halal Economy of The Future

The global halal market serves the growing needs and preferences of 1.8 billion Muslims. The continued development and expansion of the halal food market represents a vast opportunity for all halal participants. Some countries belonging to the Organisation of Islamic Cooperation (OIC) are major food importers whilst others are significant food exporters. Increasing trade volumes within OIC countries thus offers a mutually beneficial outcome, addressing food security concerns on one hand and stimulating economic growth prospects in the other. [2]

Varying interpretations resulting in different halal standards and certification requirements add to a complex regulatory landscape that is constantly evolving. With an emphasis on farm-to-fork halal compliance, maintaining and demonstrating halal integrity throughout increasingly complex supply chains necessitates an ever more sophisticated approach to halal compliance. With global trade growing, the issues of end-to-end halal integrity are increasingly significant to halal trade and it is essential that they are addressed now more than ever.

A major challenge in developing a regulatory framework for the halal market is to bring the halal F&B sectors up to the same levels of regulatory compliance as exist for safety and quality in the mainstream food sectors. A more coordinated approach towards harmonizing halal standards led by international bodies such as the Standards and Metrology Institute for Islamic Countries (SMIIC) will benefit the sector by increasing transparency and cooperation among different national bodies. Increasing transparency and clarity in the regulatory framework is key to gaining the confidence of all stakeholders and to give a boost to the growth of the halal sector. [2]

The rise of the digital economy has brought about increased connectivity and access through the advent of digital marketplaces and platforms that have a global audience. This will be a significant determinant of how the global halal market develops in future. The impact of social media and online networking among halal market customers should not be overlooked or underestimated. Consumer preference can have a powerful influence on any market. Consumer awareness and preference has driven greater transparency requirements at a regulatory compliance level for the mainstream food and agriculture market and has led to the EU’s farm-to-fork strategy. As halal touches the lives of most of the Muslim world, the build-up of consumer and the ability of manufacturers to have direct contact with their customers – and vice versa – are likely to play an increasingly important role over the next phase of market growth. And while the dollar value of the digital realm of the halal sectors is still small, the next decade will probably see a profound shift towards the digital halal economy. [2]

Technology has played a fundamental role in advancing agriculture and the food industry, giving rise to new sciences of biotechnology and food technology. This has led to technological advances and increases in processed foods and created the need for the halal sector to expand its standards and certification beyond slaughtering and into the realms of food processing, micro ingredients and additives. Shared production lines introduce a significant need to do DNA testing for impermissible ingredients in products that are classified as halal. Halal trade logistics, the need for dedicated and separate storage, handling and transport facilities is also a factor that contributes to the complexity of maintaining halal integrity throughout the supply chain. [2] Track and trace technology, embedded into the OneAgrix ecosystem, is a consequence of the need to demonstrate and maintain halal integrity throughout the supply chain. OneAgrix has a strategic partnership with SwissDeCode and the DNA test kit, supported by EIT Food, which in turn is supported by the EIT, a body of the European Union, is available to all ecosystem participants and works in combination with DNA traceability technology embedded in the ecosystem.

The International Trade Centre (ITC) has recognized that the halal food sector offers a new horizon of opportunity to build the capacity of small and medium-sized enterprises (SMEs) to diversify and gain a competitive edge. ITC has committed to working with stakeholders in the halal market, resulting in a partnership with OneAgrix to facilitate Africa’s small and medium-sized enterprises (SME) and farmers access to market and connectivity to global supply chains. About 80% of global trade takes place within value chains and roughly 60% involves intermediate goods. This makes integration into existing value chains a very important means of access into global trade, especially for SMEs and even micro-enterprises.
in rural economies. If they can have access to the gaps and opportunities in these value chains, they can look for ways to position themselves as integral components of these markets. With its integrated modular approach, ITC’s SME competitiveness development programmes are readily adaptable for the halal market and can provide help in many of the areas where these enterprises need assistance. [2]

The International Trade Centre (ITC) has contributed to shedding light on some of the issues faced by the global halal market, including capturing halal standards in the ITC Standards Map [2]. OneAgrix and ITC are working on integrating the ITC Halal Standards Map into the OneAgrix halal ecosystem and are working on an approach to synergize mutual outcomes from ITC’s SME competitiveness development programmes and OneAgrix’s halal ecosystem. Increasing efforts in the halal space between OneAgrix and the International Trade Centre (ITC) will continue into 2021 with a specific collaboration in Guinea under the aforementioned ITC programme. OneAgrix’s collaborations with the two largest African economies will also soon be announced in early 2021.

In 2019, the report for The Standing Committee for Economic and Commercial Cooperation of the Organization of the Islamic Cooperation (COMCEC), titled “Increasing the Resilience of the Food Systems in Islamic States in Face of Future Food Crises” and developed for the Islamic Organisation for Food Security (IOFS), identified OneAgrix as a potential commercial partner for “evaluation and implementation for establishing an OIC-wide food provenance system.”

To this end, OneAgrix has and is advancing its halal ecosystem to continuously meet the same levels of regulatory compliance that exist for safety and quality in the mainstream food sectors. This impacts OneAgrix ecosystem halal participants in that there is crossover potential into the mainstream and other eco-ethical markets. The qualities, values and sustainability aspects in the eco-ethical market are all inherently contained within the ‘halal and tayyib’ requirements of the halal market. The growing awareness and consciousness of consumers to support sustainable agriculture and food production will result in a convergence between the halal sector and mainstream. Ethically aware consumers thus present an additional market for halal products and will contribute a significant amount to the development and growth of the halal sector in the future. [2]

At the same time, OneAgrix is focusing on its digital ecosystem and has built a platform with an end-to-end solution from halal certification authenticity and verification to supply chain management to logistics and to cross border payments. The anticipated establishment of one global halal framework can assuredly be implemented, integrated and enabled within the OneAgrix digital halal ecosystem, the result of which will be a better functioning global halal system for the world. OneAgrix is establishing itself as the halal platform solution and a beneficial force towards the development and sustainability of the future digital halal economy.

4. Leveraging Digital Technology for The Future Digital Halal Economy

Halal supply chains are vulnerable and have inherent flaws namely; (1) lack of trust and traceability; DNA testing at multiple stages of processing, halal certification verification and authenticity and farm-to-fork traceability and promotion of informed food choice for consumers, (2) halal requirements of transportation and warehousing compliance downstream the supply chain, (3) end-to-end halal integrity via an unbroken chain from source to consumer, (4) transparency of different systems and interpretations of the respective madh’habs in different halal markets, (5) lack of integration of information technology systems, (6) diversification of sourcing, vulnerable to global pandemics and (7) food safety and security via fraudulent halal products. These vulnerabilities make halal supply chains complex to design, manage and optimise. [1]

What exactly is blockchain and how can it digitally transform the entire halal industry? Angel Versetti, CEO at Ambrosus, a blockchain and IoT platform for quality assurance in goods and pharmaceutical supply chains, explains that a public blockchain serves as a neutral arbiter of trust, capable of integrating data from different stakeholders into a single unmodified chain of information. A public blockchain refers to a distributed network of operators whereby data can be collected and verified by any party with access to the network. In turn, this data remains visible to all third parties involved or merely spectating. What this provides, unlike a database and other information technologies, is a way for multiple parties to build trust around the information they are sharing, by permanently writing such data into a publicly visible ledger. Blockchain is a foundational technology that can create a self-reinforcing cycle of trust, transparency, and positive business practices for the halal supply chain. [9]

In the food industry, this allows for proof of origin, end-to-end traceability, and even quality assurance of products. For the halal food market, this would mean that the origin, quality-controls, and supply chain journey of all halal products could be integrated into a single coherent data flow. From the butcher, to the transportation company, through customs controls, and up until the retailer, the various stakeholders can each, individually, upload data to the blockchain from their portion of the supply chain, communicating their role and activity in the process. Once the product reaches the consumer, all of the data can be integrated into a single application or web address that can be easily accessed and verified by scanning a QR code with a smartphone. [9]

Blockchain assignment of unique digital identifiers to food products would make them traceable through supply chains, along with their growth conditions, batch numbers and expiry dates. This would help to prevent food waste, allow consumers to work out the ecological footprint of their food, and guide the distribution of surplus food to those who need it. This shared and immutable register of foods and transactions would prevent fraud and enable source identification of
food-borne illness. And as digital technologies are increasingly used to manage farms, blockchain will promote sharing of on-farm data. [9]

Once stored on the blockchain, this information can be synthesized and externally configured in the form of a web and mobile application. A solution for import controls on halal products can be designed to improve regulatory compliance; customer reviews of products, and new marketplaces for suppliers can additionally be created. Data, once integrated onto the blockchain from halal supply chains, can be further used for legal, tax, insurance, and consumer purposes so as to unlock hidden value and improve business to business (B2B) or business to consumer (B2C) relations by building trust and credibility in the authenticity of the produce. [9] In their 2019 blockchain deployment toolkit, the World Economic Forum mentions OneAgrix’s blockchain ecosystem as a minimum viable ecosystem redesigning trust in a digital marketplace. OneAgrix uses the highly reputable, cost-effective and scalable nOS, powered by the OriginTrail protocol developed by Trace Labs. The data saved on the nOS blockchain system is backed by GS1 standards which is crucial as GS1 is the data standard for food supply chains. [10]

![Figure 1. How blockchain is integrated to verify halal certificates](image)

The nOS system was the first to be awarded Walmart's Food Safety Innovation Spark Award in 2017 and Trace Labs is a top player cited alongside IBM, Microsoft and SAP SE in the ‘Global Blockchain in Agriculture Industry 2018 Market Research Report’. OriginTrail was also mentioned as a trusted solution in the World Economic Forum's white paper entitled: ‘Inclusive Deployment of Blockchain for Supply Chains’. [10]

OneAgrix has also partnered with Inexto SA, an industry leader in cloud based global tracking systems and brand protection solutions in order to ‘police’ their halal ecosystem. Through digital traceability solutions that addresses issues in the halal industry such as secure serialization, Track & Trace for end-to-end visibility in halal trade and anti-counterfeiting technology to prevent fraudulent halal certification and tampering.

OneAgrix with its strategic partnership with OriginTrail did a proof of concept with Perutnina Ptuj, a 110-year-old international group of companies from Slovenia, to track and trace halal poultry. OneAgrix’s Agricultural and Halal e-commerce platform verifies the authenticity of a manufacturer's halal certificate before potential buyers make their purchases. Data is vetted and secured via blockchain technology that assists with combating food fraud and counterfeiting in the Halal sector. OneAgrix has made a call for all halal certification bodies, laboratories, blockchain food traceability providers, abattoirs, farms, manufacturers and distributors to be involved and collaborate in the decentralised sharing of data, for the mutual benefit of all in the global halal industry. The OneAgrix halal ecosystem is built around the principles of "neutrality-interoperability-synergy, with no competitors, only collaborators", with the analogy of OneAgrix as a hotel with rooms for any halal stakeholder to enter and be a part of. With a healthier halal ecosystem in mind and increased halal integrity throughout, OneAgrix’s cross-border online B2B trading platform can ensure safe movement of genuine, non-counterfeit food ingredients, raw agricultural products and halal end products into the global halal market. [10]

![Figure 2. Perutnina Ptuj on the OneAgrix Agriculture and Halal e-commerce platform](image)

In the pursuit of a functioning digital halal economy, OneAgrix has brought on large suppliers such as Nestle Malaysia, Cape Karoo International – the largest ostrich supplier in the world and an example of a sustainable agricultural producer in the eco-ethical market and SwitzGroup – which is the main supplier of frozen bakery products to Emirates Airline. OneAgrix has also verified products listed from suppliers in countries including Europe, Turkey, Jordan, India, Indonesia, China and South Africa. OneAgrix is continuously collaborating with halal certification bodies to participate and contribute to the halal assurance within the OneAgrix digital halal ecosystem.
trust and authenticity for halal food, cosmetics, home care, and pharmaceuticals. Halal certifying bodies continuously contribute to the halal assurance system via participation with local and/or international halal certification, easy auditing of halal supply chains and faster support for industries in the ecosystem. [1]

Conclusion
It is clear that advanced technologies in IoT, blockchain, supply-chain and other digital transformation technologies provide clear advantages to advance halal supply chains and the broader halal industry. Movement towards a digital halal economy will require a foundational solution that is enabled by the increased trust and traceability within a blockchain based ecosystem. The OneAgrix Agricultural and Halal e-commerce platform is the realisation of a digital ecosystem that can better serve the global halal market. Through collaborative efforts with all halal stakeholders, its mission is to transform the global halal market into a sustainable digital halal economy for the benefit of all participants.

References
Diana has more than a decade under her belt starting, executing and growth hacking companies. She started first business at 17 years old determined to help her family get out of poverty weathering the Asian financial crisis. She has led in B2B2G negotiations to facilitate large scale tendered projects and billion-dollar developments in agri-food, hard commodities and infrastructure. This gave her experience in cross-border trade including payment, regulations and logistics. A dealmaker who understands the time-sensitive nature of physical commodities trading, she negotiates deals at a high level with decision makers, mine owners and operators directly, bypassing the middlemen.

She was the youngest nominated Youth Chairperson for SPBWA (Singapore Professional and Business Women Association) (2008) and mentioned in a speech by Singapore’s minister at the Istana, presidential palace as a young entrepreneur whom demonstrated "Community excellence". She also appeared in national newspapers, magazines in "Wonder Women", "Next Big thing" segments on topics of entrepreneurship.

Diana is an authority figure on topics of global trade, geo-economics and technology focusing on solving Agri-food and Halal food supply-chain, food security and food safety challenges. She is an established speaker, often invited to conferences and think-tanks around the globe, joining hundreds of World leaders from more than 70 countries, representing business, government, academia and civil society.
Abstract

Halal food has drawn remarkable attention of many consumers around the world. Considering the case of Turkey, the Standards and Metrology Institute for Islamic Countries (SMIIC) and Turkey’s Independent Industrialists’ and Businessmen’s Association (MUSIAD) has signed two agreements to improve the halal standardisation capacity and awareness in the region. One of the agreements aims to create a monitoring and traceability system for halal conformity assessment activities. The halal food concept does not limit to the quality and safety of the food, but also the sources, process control, packaging, storage, and delivery to the end consumers. Consumers not only concerns about the ingredients, either it is halal or not but also the information of all the activities involved in the halal food supply chain. However, it has widely recognised that a flooding of fraud in halal products and counterfeit certification has brought a demand for more transparency in the segment. However, since trust in the quality of a product is very important, there is a gaining demand to integrate Blockchain into Halal traceability systems as it provides solutions to transparency, process-safe bending, and accountability of data. Consumers will able to know the entire supply chain, and this will elevate the confidence level in the halal status of the products. This study aims to investigate the feasibility in Turkey’s Market for the implementation of Halal traceability via Blockchain through a united model such as Halal orientation strategy and diffusion of innovation theory. Based on the study, Turkey’s current market has a positive relation to the Halal Orientation Strategy. However, for diffusion of innovation theory, due to the absence of the Blockchain Sandbox, the research unable to culminate diffusion of Blockchain in current environment. Nonetheless, the research suggests for a more empirical study to be done. The research also suggests another study once the Sandbox has been published.

Introduction

Food is a substance consisting essentially of nutrients that required in the body of an organism to sustain growth and vital processes and to furnish life energy (Britannica, n.d.). In Islamic law, for the food to be edible, one critically important element is that it must be Halal. Halal is an Arabic term which means permissible or lawful in Islam. About food, it is the Islamic dietary standard, as prescribed in the Shari’ah (Islamic Law) (HMC, n.d.). In general, foods are considered halal except for pork and its by-products, the animals that improperly slaughtered or has been dead before slaughtering, animals slaughtered in the name of anyone but Allah, carnivorous animals, birds of prey, the animals without external ears (some birds and reptiles), blood, alcohol, and foods contaminated with any of these. All seafood is halal (El-Zibdeh, 2009). Every Muslims has developed a self-conscious ability to drilled the ingredient listing of every processed food. Originate from multiple sources, such as gelatin, emulsifiers, and enzymes, necessitate the Muslim consumer has to research on the Halal status, nevertheless, in Muslim majority countries such as Turkey, a specific agency responsible for the Halal certification such as GIMDES. Certified food is considered Halal, and Muslims can consume with ease of mind. The Muslim food expenditure increased by 3.1% in 2019 to $1.17 trillion from $1.13 trillion in 2018 (DinarStandard, 2020). In order to cater for Halal food demand, company such as Symrise (German flavours producer), established a creativity centre in Egypt. Local subsidiary of Japan’s Sanichi Technology investing a gross development value of up to is $320 million to develop Malaysia and ASEAN’s first halal gelatin plant (DinarStandard, 2020). The food, however, may not be produced within the countries hence may bypass the local authorities and hit the market. The Halal counterfeit certification has increased the demand for traceability from farm to fork (Whitehead, 2019).

Amidst the pandemic, multiple signals of opportunities emerge, and one of it is in the area of Blockchain, and IoT enabled traceability. More initiatives are underway to improve halal certification processes and traceability. In France, for example, digitising of the entire French food chain has begun, this includes its halal food production and exports in a four-stages of $3.3 million program by Num-Alim (Geeky, 2020). PT Belfoods (poultry) is working with McDonald’s Indonesia to introduce blockchain-based food traceability tools in the fast-food giant’s restaurants.
(Winosa, 2020). While in South Korea, KT, the largest telecom firm collaborate with B-square, in planning for digitally systemise and simplify halal certification and authentication (Sae-jin, 2019).

There is potential for halal to expand its relevance as a more pure, healthier food type. Safe, hygienic, and healthy food is now a global concern (DinarStandard, 2020). Halal food, which by its nature is subject to more compliance and traceability, can provide greater assurance to consumers of its safety and purity. COVID-19 has made consumers more particular about food safety and hygiene. Traceability achieved through Blockchain can be a differentiator for businesses in the halal industry. By working with governments, investors can effect real change in the industry. However, without detailed, concrete data to create an accurate picture of halal food manufacturing and consumption, any improvement plans are only half measures from source to consumption. There is little concrete data in the halal industry, hampering understanding of supply and demand while also preventing traceability efforts. Governments must partner with public and private entities to gather the required data. Risk: Holding off digitising the food chain limits the industry from achieving its full potential and reduces trust in the system (DinarStandard, 2020).

In determining the feasibility of Halal traceability via Blockchain in Turkey, this research will look into two perspective. The first being the overall operational readiness which will be tested using Halal Orientation Strategy (HOS). The other side of the research is on the Blockchain technology acceptance and readiness by using diffusion of innovation theory (DIT).

1. Literature Review

1.1. Halal Orientation Strategy

Halal Orientation Strategy (HOS) introduced in Malaysia and Conceptualised by (Zailani S. K., 2015) based upon the standard that serves as an essential requirement for preparing and handling Halal food and beverage products in Malaysia (Department of Standards Malaysia, 2004, MS1500:2004). It represents the operational strategy practised by the Halal food and beverage manufacturers in implementing Halal principles (Zailani S. I., 2019). HOS has chosen due to the reputation of Malaysia as the Halal leader (Theleaders-Online, 2019).

HOS contains four main elements, namely the materials, production process, staffing and storage and transportation. HOS encompasses the food supply chain starting from the sources until the end goods reached the consumer. It is starting from Halal materials, which is essential to the final products. Production process is playing a significant role, as this involves the tools and equipment used for the preparation of the final products. In handling the products, the staff or employee must be equipped with relevant knowledge on Halal requirements in order to avoid any non-Halal element involves. The next step in the supply chain is the storage. Storage has to be kept within Halal perimeters and avoid cross-contamination, and this continues during the transportation and distribution of the end goods for consumption (Zailani et al., 2015, 2019). According to (Talib, 2018), these four dimensions showed the effectiveness of the operational performance on staffing, materials, production process, and storage and transportation. HOS will determine positive operational performance in the long run.

1.2. Diffusion of Innovation Theory

Diffusion is defined as the adoption process of an innovation which is transferred through the communication channels within a social system (Rogers, 1995). It hypothesised that to achieve a successful innovation adoption and ultimate diffusion. Essential characteristic of the theory needs to observe, such as compatibility, complexity, relative advantage, observability and trialability (Lai, 2016). However, according to Hwang, only the first three were associated with adoption decisions (Hwang, 2016). Compatibility and complexity are defined as “the degree to which an innovation is consistent with existing business processes, practices and value systems” and “the degree to which an innovation is difficult to use” (Wamba, 2016). At the same time, Relative advantage is defined as the perceived advancement of an innovation in comparison to the incumbent technology (Wang, 2016).

These technological characteristics constitute a cognitive-based attitude towards innovation after the potential adopters have carefully evaluated each of the characteristics (Alsaad, 2019). In other words, the potential adopter will perceive the innovation being evaluated as a desirable choice. Based on this notion, this study conceptualises the diffusion of innovation theory as perceived desirability (Alsaad, 2019). It will determine the desirability of a potential adopter to participate in the blockchain network.

Yeloglu has conducted a research based on diffusion of innovation theory for e-government in Turkey. The critical findings on the adoption of new technology are the usability and the complexity of the technology. The former has a direct relation with the technology adoption, while the latter has an indirect relationship (Yeloglu, 2009).

1.3. Turkey’s Consumer Toward Halal Food

Ali, in his research, has investigated the determinants of halal meat consumption within a Turkish Muslim migration population in German. The consumption of halal meat has a positive personal attitude. The motivation of compliance with the opinion of important persons and institutions and the perceived control over consuming halal meat predict the intention to eat halal meat among Muslims (Ali, 2018).

Akın, in his recent research on the consumer attitude toward halal food in Turkey, has identified the important the behavioural component of the attitude playing an essential role in shaping the positive attitudes towards halal food products. Therefore, in order to increase the positive attitude, the conformity of the halal food need to be there, i.e. having halal certificates (Akın & Okumus, 2020). It is crucial for Muslims that the food consumed has to be Halal and is not restricted by Islam. In the contemporary world, it is crucial to understand the Halal concept by consumers, manufacturers, suppliers and whole industry players (Mat et al., 2018).
1.4. Feasibility of Blockchain in Turkey

Blockchain was first introduced by Satoshi Nakamoto in October 2008, for Bitcoin, a peer-to-peer software for transfer of digital cash without any financial intermediaries. Based on blockchain technology, Bitcoin was produced in 2009 as first cryptocurrencies and the first currencies that have distributed ledger (Ismail Erol, 2020). Blockchain technology has emerged in various industries, among others are logistics and supply chain, finance, agriculture and food, pharmaceutical, health and energy industries. It is due to its flexibility and adaptability nature toward multiple discipline of industries (Ismail Erol, 2020).

In research by (Sheel, 2019) on how blockchain technology can improve supply chain adaptability, alignment and agility in turn influences firm performance. The research has gathered data from 397 supply chain practitioners in India. The result shown that blockchain technology can improve supply chain adaptability, alignment, agility which lead to competitive advantage, hence better firm performance. Besides, trust generated through blockchain use also increases firm performance.

In a recent study by Ismail, based on fuzzy multicriteria decision aid was applied to the problem of identifying the feasibility of blockchain projects in Turkish industries. The findings suggest that logistics and supply chain, finance and health industries are the most feasible industries for blockchain projects. The study evaluated in terms of various technical, managerial, organisational, cultural and financial indicators using the subjective opinion of several experts. The study has ranked logistics and supply chain most feasible while food and agriculture rank fourth (Ismail Erol, 2020).

2. Methodology

The research will use qualitative method to determine the feasibility of Halal Traceability via Blockchain in Turkey. The dependent variable will be Turkey's Halal Operation Readiness and Blockchain Acceptance and Readiness. Both of these variables will be tested against the independent variable, which is from both Halal Orientation Strategy and Diffusion of Innovation Theory. Diagram 1 illustrates the Research Model.

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Research Questions/Indicators</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOS1</td>
<td>Materials</td>
<td>Materials must be genuinely halal and from supplier with valid Halal Certification.</td>
<td>(Zailani S. K., 2015)</td>
</tr>
<tr>
<td>HOS2</td>
<td>Staffing</td>
<td>Employee must have adequate training in order to understand the process according to Halal requirement in carrying out the jobs.</td>
<td>(Zailani S. K., 2015)</td>
</tr>
<tr>
<td>HOS3</td>
<td>Production Process</td>
<td>Ensure the equipment and machinery are hygienic, sanitised, clean, avoid cross-contamination and according to halal concept.</td>
<td>(Zailani S. K., 2015)</td>
</tr>
<tr>
<td>HOS3</td>
<td>Storage and Transportation</td>
<td>Ensure reliable and hygienic transportation and infrastructure.</td>
<td>(Zailani S. K., 2015)</td>
</tr>
</tbody>
</table>

Table 1: Halal Orientation Strategy Research Questions/Indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Research Questions/Indicators</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIT1</td>
<td>Compatibility</td>
<td>Blockchain Halal traceability is compatible with existing equipment, work practices and organisation values.</td>
<td>(Lee, 2017)</td>
</tr>
<tr>
<td>DIT2</td>
<td>Complexity</td>
<td>Blockchain Halal traceability easy to implement, use and put into practice</td>
<td>(Wamba, 2016)</td>
</tr>
<tr>
<td>DIT3</td>
<td>Relative advantage</td>
<td>Blockchain Halal traceability could enhance the traceability, integrity and transparency.</td>
<td>(Wamba, 2016)</td>
</tr>
</tbody>
</table>

Table 1: Diffusion of Innovation Strategy

The research questions or indicators for the independent variable is detailed out based on previous research.
3. Analysis and Discussion

Spending on halal products is increasing annually. Turks spent $135 billion on halal goods in 2018 (Salaam Gateway, 2019). Turkey also has aims to become a key player in the global halal food market (Anadolu Agency, 2017). In late May 2017, Halal Accreditation Authority was legalised under law no 7060 published in the Official Gazette on 18 November 2017, to regulate the methods of establishment, organisation and authorisation of the Halal Accreditation Authority (HAK) (Karabina, 2017). Several organisations provide the private sector with halal certification and inspection as a halal compliance evaluation institution in Turkey, such as GIMDES, HEDEM and HELALDER. Some of them can also issue halal certificates in compliance with the requirements of other countries under the authorisation of the Halal Accreditation Authority of that country. These organisations are likely to remain certification providers under the current accreditation body in the future (Karabina, 2017).

The Turkish Standards Institution (TSE), the sole approved standardisation body in Turkey, launched the Halal Food Certification in 2011 for the establishment of Halal Standards in Turkey. It was initiated with the foundation of the Standards and Metrology Institute for the Islamic Countries (SMIIC), of which the Turkish Standards Institution is a founder (Karabina, 2017). Halal Accreditation Agency (HAK) was established to operate in the field of halal accreditation in Turkey and globally. As the only authorised institution to accredit halal conformity assessment bodies in Turkey, HAK aims to represent Turkey in international platforms as regards to halal accreditation and to act as a pioneer in this sphere (HAK, n.d.).

The fundamental duties of HAK are to provide halal accreditation services to the halal conformity assessment bodies located both in Turkey and abroad, to determine and apply the criteria and measures related to halal accreditation. It also represents Turkey either in regional or international accreditation unions and organisations. To conduct international relations in halal accreditation field and to sign bilateral or multilateral mutual recognition agreements. To create awareness about halal concept and certification, to conduct researches, trainings, international congresses, conventions and seminars. Consequently, the operations of the HAK are designated to result in the reduction of existing barriers to halal trade, thereby revealing halal trade's true potential (HAK, n.d.).

On 18 September, the Turkish Ministry of Industry and Technology unveiled its "Strategy 2023" economic roadmap in a tech (Yun, 2019). As part of digital strategy for 2023, Turkey plans for a "National Blockchain Infrastructure" among cloud computing, Internet of Things (IoT), and open-source initiatives. The government will build this infrastructure on encouraging innovation and implementing Blockchain in the public sector. The initiative includes a testing environment for pilots and a regulatory sandbox to allow projects to grow. Turkey's official document points out the success of South Korea's use of Blockchain, including livestock traceability. The planned test environment will be available to a "set of participants" yet to be established. However, Turkey suggests multiple pilot applications such as supply chain. On September 2019, Turkish bank Takasbank announced a blockchain trading platform for gold. Turkcell, the country’s largest mobile provider, launched its blockchain-based identity management service in early 2019 (Wood, 2019). According to the survey, Blockchain is one of the fastest tech industries to expand, its growth rate accounting for 101.5% globally (Yun, 2019).

3.1. Halal Orientation Strategy

HOS1 and HOS3

The Standards and Metrology Institute for Islamic Countries (SMIIC) has developed the General Requirements for Halal Food (OIC/SMIIC 1:2019). This standard defines the requirements and general requirements that shall be followed at any stage of the food chain (SMIIC, 2019). The General Requirement encompasses of (SALAMA, 2019):

- Rules of slaughtering
- Specific rules for food products and services (Meat and meat products, egg and egg products, milk and dairy products, beverages, GMF, food services and premises)
- Food processing
- Machinery, utensils, production lines
- Storage, display, service and transport
- Hygiene, sanitation and food safety
- Validation and verification
- Identification and traceability
- Presentation for the market (packaging and labelling)
- Legal requirements

HOS2

SMIIC has several Training programs aimed to encourage the harmonisation of Halal Standards used in the OIC and internationally by aiding in the adoption and use of the OIC/SMIIC Halal Standards (SMIIC, n.d.).

HOS4

The halal supply chain links the producers of products, goods or cargo with consumers. The pipeline assures that products, goods or cargo delivered from one custodian to another is per halal requirements. It will preserve the halal integrity of the products. The halal supply chain standards requirements encompass of the following (SMIIC, 2020):

- Halal supply chain management system – Part 1: Transportation – General requirements (OIC/SMIIC 17-1:2020)
- Halal supply chain management system – Part 3: Retailing- General requirements (OIC/SMIIC 17-3:2020)

3.2. Diffusion of innovation Theory

DIT1, DIT2 and DIT3

Until the date this article was written, (December 2020) the Sandbox is not published yet by Turkey's government. It may impact the indicators DIT1 and DIT2 as the Sandbox will be the preliminary
determination if its compatible with current practices and organisation values as well as how easy to implement and put into practice of the requirement within the Sandbox. For DT3, it is well known the advantages of Blockchain in enhancing the traceability, integrity and transparency. Participants in the supply-chains Blockchain can have recorded price, date, location of goods, quality, certification and other relevant information in order to manage the supply chain more effectively. The availability of this information within the Blockchain can increase traceability of material supply chain, lower losses from any counterfeit and grey market while improving visibility and compliance over outsourced contract manufacturing, and potentially enhance an organisation’s position as a leader in responsible manufacturing (Deloitte, 2017).

4. Result

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Indicator Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey’s Halal Operation Readiness</td>
<td>YES</td>
<td>Turkey has developed a robust Halal regulation system to control the Halal Operation.</td>
</tr>
<tr>
<td>Blockchain Acceptance and Readiness</td>
<td>Not Yet Ready</td>
<td>Very much dependent on Blockchain Sandbox which is not established yet</td>
</tr>
</tbody>
</table>

5. Conclusion

This research has analysed the possibility of Halal Traceability via the Blockchain. Two primary objectives of this study are to determine Turkey’s Halal Operation Readiness and Blockchain acceptance and readiness in order to implement the Halal Traceability via the Blockchain. Based on the study, Turkey’s Halal Operation Readiness has been tested using Halal Orientation Strategy (HOS), four variables have been tested in current Turkey halal food market and operations. The result shows that Turkey's current Halal market, especially the regulatory framework, has reached the level that complied with all independent variable in HOS. It is due to the top-down approach by Tukey government. This approach is most suitable when it comes to the implementation of the holistic approach on Halal implementation. On the Blockchain acceptance and readiness, Diffusion of Innovation Theory (DIT) has been used. Even though based on previous literature, the food and supply chain are one of the identified industries that feasible to be developed in the Blockchain. However, the preliminary determination is not present yet. The implementation of Blockchain has to wait for Sandbox to be ready before it can be further deliberate and study. Blockchain required participation from food producer; hence a robust Sandbox based of FCA’s blueprint must be developed in order to cater the feasible industries and according to (Ismail Erol, 2020) supply chain is rank first and food and agriculture rank fourth.

6. Limitation and Further Research

Although the objective of this study was accomplished, its limitations should be considered before generalising the results. First, the HOS and DIT is tested from the qualitative and descriptive method. Future studies should be done based on quantitative data which may represent a more empirical finding. More exciting results could obtain by collecting and comparing data from different food industries and segment. Secondly, another study needs to be conducted after Turkey's government has released the Blockchain Sandbox. It is vital to examine the Sandbox against the current environment of Blockchain in Turkey.

References


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Part VII
Halal Food
Properties of Kombucha Tea and Its Halal Status

Busra Yagci, Sebahat Sisman, Suzan Tireki, Bilal Cakir, Hasan Yetim

Abstract

Kombucha tea is defined as a fermented beverage with a slightly sour-sweet taste and flavour. In the production, aerobic fermentation takes place with some fungus with a symbiotic combination of various bacteria and yeasts. Kombucha is a Chinese origin beverage and generally produced with black or green tea and sugar. However, it is possible to prepare kombucha with many different substrates and other sugar sources. Kombucha has functional properties with a high nutritional value, and these properties are probably due to the cultivation of kombucha culture with the infusion of black or green tea and sugar sources. Not many studies found about the halalness of this beverage, and there is very limited publication in the literature. It has been well known that in a sugary beverage produced under aerobic conditions, vinegar occurs with alcoholic fermentation. As the level of alcohol rises above 1%, the food becomes suspicious according to Islamic Fiqh as is the case of kombucha. In this study, two different Kombucha beverages were prepared with (1) black tea and sucrose and (2) hibiscus and honey combination. In the results, kombucha beverages produced with black tea and sucrose had 0.0814 % (v/v) ethyl alcohol with no methyl alcohol content. On the other hand, neither ethyl alcohol nor methyl alcohol was detected in the kombucha samples prepared with hibiscus and honey. According to these results, honey and hibiscus might be a good potential combination for the production of non-alcoholic kombucha beverages in terms of halalness.

1. Introduction

Kombucha is a beverage produced by fermentation in aerobic conditions after adding a symbiotic culture of bacteria and yeast to the solution prepared with tea and sugar, and this symbiotic culture is called ‘scoby’ [1]. There are many sources of substrate consumed for therapeutic purposes in the world, with the addition of tea fungus, which may increase their medicinal benefits and sensory properties [2]. This Chinese origin beverage is generally consumed as a fermented beverage produced with green and black tea [3]. Kombucha is no single organism, it is a colony of several bacteria and yeasts. This symbiotic colony of the culture makes the kombucha to be a complicated system [4]. With tea and sugar, an infusion is prepared for the production of kombucha. Scoby (also known as tea fungus, kombucha culture or kombucha mother) is a symbiotic association between acetic acid bacteria and yeasts. It is directly placed into the freshly prepared infusion and that starts the fermentation and oxidation. Actually, the main process in the kombucha tea is a common fermentation. Kombucha tea is formed about 3-60 days (depending on the initial culture) after placing the tea fungus into the sugared tea for fermentation [5]. It has been indicated that kombucha tea has medicinal properties and high nutritional value, and these properties are occurred by cultivation of kombucha culture with the infusion of black or green tea and sugar sources. Sucrose is generally used to sweeten kombucha tea beverages.

Today, Kombucha is consumed worldwide as a slightly acidic refreshing beverage [5]. In the past, Kombucha beverage was used as a traditional medicine for the treatment of many diseases, and today that is accepted as a household medicament. It has been speculated that the health properties are related to the acidic composition of Kombucha. Also, the acidic components of Kombucha plays a preventive role for the fungal growth [6]. Again, kombucha contains many bioactive components such as vitamin B1, B2, vitamin C, d-saccharic acid-1,4-lactone and catechins. Also, Kombucha tea contains a number of antioxidants, probiotic acids, active enzymes, vitamins, amino acids etc. Kombucha tea contains polyphenols too because of the tea [7]. As a result of these studies, it has been observed that Kombucha is a strong source of antioxidants because that has radical scavenging activity and it is also effective on diseases caused by oxidative stress [7].

Kombucha tea does not have a certain or standard chemical composition due to the variety of substrates used in production. Also, the same substrates show different structures depending on conditions such as climatic conditions and harvesting. That shows that the Kombucha has no specific chemical composition. In addition, the parameters determined during fermentation influence the compositional structure of the Kombucha [5].

Because of the fermentation step in the kombucha tea production, some alcohol may occur depending on the conditions, and as the level of alcohol rises above 1%,
the food becomes suspicious in terms of halalness according to Islamic Fiqh. But not much study has been done to alter the alcoholic content of the kombucha though it is considered as a medicine.

According to the studies in literature, sucrose sweetened black or green tea extract is used as a traditional substrate for the kombucha culture to produce the drinks. In this study, two different kombucha beverages were prepared: (a) with tea and sucrose and (b) with hibiscus and honey combinations. People are generally concerned about alcohol contents hence halalness of kombucha beverages. Hence, ethyl alcohol and methyl alcohol contents of beverages were analyzed to comment on the halalness of the kombucha samples. In addition, comparison with similar commercial products were done in terms of some other quality parameters such as pH and brix.

2. Materials and Methods

2.1. Materials
Black tea (Çaykur Rize Tourist Tea, Rize, Turkey) obtained from a local supermarket and dried hibiscus supplied from a local herbalist shop in Istanbul were used as the substrates for the experiments, and for the carbon sources crystal sugar (Torku, Konya, Turkey) and honey (Balparmak, Istanbul, Turkey) were purchased from a local supermarket (Figure 1). Crystal sugar was combined with black tea and honey was combined with hibiscus for the sample preparation.

2.2. Sample preparation
Sample preparation was done as shown in Figure 2. Black tea-crytal sugar and hibiscus-honey kombuchas were produced with the same procedure at the same time period. Infusion is the first step in kombucha preparation. For this purpose, black tea leaves or hibiscus leaves were added to boiled water and brewed for 10 minutes. After the brewing period, crystal sugar or honey was added. After sugar or honey was dissolved, the prepared green beverage was left to cool to the room temperature. Afterwards, either sample was poured into a wide-mouthed clean container to ensure necessary aerobic conditions (Figure 3). Then, 150 ml of previously prepared kombucha (a commercial scoby) was added, and the top of the container was covered with a clean cloth. Then, the sample was kept at room temperature (22±5°C) for 4 days. Finally, the ripe beverage was filtered with cheese-cloth and stored at 4°C in a capped glass bottle.
2.3. Analyses
Following analyses were conducted as below.

2.3.1. pH analysis: pH meter was used for the analysis of kombucha samples. pH value was determined by averaging the results recorded in both readings.

2.3.2. Titratable acidity: In each experiment, 100 ml of kombucha tea were taken and titrated with 0.1 mol/L NaOH. Titration was carried out until the pH value was 7. The titratable acidity was calculated as the volume consumed in mL of 0.1 mol/L NaOH per 100 ml sample [6].

2.3.3. Sugar content: Abbe refractometer was used to measure the sugar content of samples in terms of °Brix.

2.3.4. Alcohol measurements: 9.5 mL beverage sample was transferred into an amber vial. 500 µL internal standard (n-propanol) was added onto the sample. After vortexing for 30 seconds, it was ready for injection to GC. 2 ml amber vial was taken and placed into the autosampler system of the GC-FID device. Oven temperature was programmed according to the parameters given in Table 1 with 225°C injection temperature, 300°C detector temperature. Flow rate of carrier gas, i.e. Helium, was 3 ml/min, injection volume was 1 µL and split ratio was 20:1. Gas chromatography column was DB-WAX with 30 m x 0.530 mm x 1 µm and high purity hydrogen (purity ≥ 99.9%, no organic compounds) and high purity dry air (no organic compounds) were used as auxiliary gases.

Table 1. GC-FID device parameters.

<table>
<thead>
<tr>
<th></th>
<th>Rate (°C/min)</th>
<th>45</th>
<th>1</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Initial)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ramp 1</td>
<td>10</td>
<td>90</td>
<td>0</td>
<td>5.50</td>
</tr>
<tr>
<td>Ramp 2</td>
<td>45</td>
<td>130</td>
<td>0</td>
<td>6.39</td>
</tr>
</tbody>
</table>

3. Results and Discussion

3.1. pH of kombucha beverages
As it is known, pH value of a system decreases with increasing acidity [7]. pH analyses were performed on the kombucha samples whose fermentation was completed after 4 days and the commercial products as well for the comparison (Figure 4). pH values for commercial black tea and prepared black tea kombucha samples were measured as 3.05 and 3.10, respectively. As a result of literature research, in a study, the value of black tea kombucha sample whose pH value was measured at the end of fermentation was 3.2 [8], which was in accordance with the result of this study. According to another study, the pH value of black tea kombucha fermentation was measured as 2.63 [9], which was more acidic compared to our result. pH values for commercial hibiscus and prepared hibiscus kombucha samples, was measured as 2.85 and 2.55, respectively. According to Tarhan's study [10], pH value of kombucha prepared with hibiscus and sucrose was measured as 2.86 at the end of the 4th day, which was similar to our study. It was also seen that the results of the laboratory samples were very close to the ones of the commercially purchased products. It was also observed that pH of the hibiscus kombucha beverage was lower than that of the black tea sample. The reason for this result may be that the carbon source is honey, which is a complex mix of sugars mainly in invert form of fructose and glucose, on the other hand crystal sugar (sucrose) is disaccharide with having inversion possibility. pH value required for human consumption should be between 2.5 and 4.2. A pH value below 2.5 means an increase in acetic acid concentration and might be risky for human health. On the other hand, pH value is expected to be less than 4.2 is desirable for microbial safety of the beverage [8].

Figure 4. Kombucha samples (a) commercial (b) laboratory. 1: hibiscus, 2: black tea

3.2. Acidity of kombucha beverages
Antimicrobial effect of Kombucha tea depends on organic acid content [11]. The titratable acidity of the samples can be given in gram weights of some organic acids. Calculations were made in terms of lactic acid and acetic acid. Acidity in terms of lactic acid was measured as 0.426 g/L for black tea kombucha sample and as 0.497 g/L for commercial black tea product. Commercial products had slightly more acid than that of the
laboratory sample, which might be due to the formulation differences and laboratory sample was rather fresher than that of the commercial one. For the samples with hibiscus, acidity values were 0.453 g/L and 0.382 g/L as lactic acid for laboratory samples prepared with honey and commercial products, respectively. Acidity was also measured in terms of acetic acid, as such black tea kombucha samples had 0.284 g/L, whereas it was 0.331 g/L for the commercial beverage. Similarly, acidity of hibiscus samples was also measured in terms of acetic acid as 0.302 g/L and 0.254 g/L for laboratory sample and commercial product, respectively. On the other hand, in literature it was reported that kombucha samples prepared with sucrose and tea leaves had 7 g acetic acid/L [11], which was much higher than that of our study.

3.3. Sugar content of kombucha beverages

Brix value of kombucha prepared with combination of black tea with sucrose was measured as 14.1 °Brix and that of the sample prepared with hibiscus and honey was measured as 13.75 °Brix. The values were expected and similar as the amount of the sucrose and honey added to the samples were the same as 14 grams/100 ml beverage. However, brix of commercial products was measured as 3.9°Brix and 1.5°Brix for black tea and hibiscus, respectively, which was significantly lower than that of the laboratory samples. It might be due to the formulation differences and time of measurement as the commercial samples were not very fresh. Also, we could not identify how many days they were ripened.

3.4. Alcohol contents of kombucha beverages

It has been well known that in a sugary beverage produced under aerobic conditions, vinegar occurs with alcoholic fermentation. As the level of alcohol rises above 1%, the food becomes suspicious according to Islamic Fiqh as is the case of kombucha tea. Hence, alcohol contents of kombucha samples were measured in terms of both ethyl and methyl alcohol. Kombucha beverages produced with black tea and sucrose had 0.0814 % (v/v) ethyl alcohol with no methyl alcohol content. On the other hand, in this research, neither ethyl alcohol nor methyl alcohol was detected in the kombucha samples prepared with hibiscus and honey (Figure 5). According to our results, honey and hibiscus might be a good potential combination for the production of non-alcoholic kombucha beverages in terms of halalness. Again, bioactive properties of the honey and hibiscus containing samples need to be studied whether its biological value was changed.

4. Conclusion

Although kombucha products have functional benefits and began to attract health-conscious consumers, not many studies and publications are found about halalness of these beverages, and therefore industrial kombuchas have currently been started to be introduced to the beverage market globally. Hence there is a great research need in this area. Hibiscus and honey might be a good starting combination for the kombucha beverages as neither ethyl alcohol nor methyl alcohol was detected in the laboratory samples prepared with hibiscus and honey according to our study. The kombucha studies with different combinations need to be encouraged to satisfy health and belief concerning consumers.

Figure 5. GC-FID results for kombucha samples of (a) black tea and sucrose combination (b) hibiscus and honey combination.

References
Professor Hasan Yetim, is currently director of Halal Food Res. Center and chair of the Food Engineering Department at Istanbul Sabahattin Zaim University in Turkey. He completed his higher education in the field of Food Science and Technology in Erzurum Turkey and PhD in the field of Meat Science at the Ohio State University in USA. He started his academic career as a Research Assistant, and he was co-chair at the Department of Food Engineering, Head of the Department, Vice President at Erciyes and Ist. Gelisim Universities. He has been working as Professor in different Turkish Universities since 2002. He served in an Academical Council of TSE Halal Certification Committee, Consultant at the TUBITAK–TEYDEB–TOVAG Research Project Consultation Committee, Food & Nutrition Committee of Turkish National Academy of Science (TUBA).

Professor Yetim was deemed worthy of many awards in Turkey and abroad. He has made significant contributions to the establishment, development of departments, laboratory and other infrastructures of the Food Engineering Departments at different universities and initiated the Bachelor, Master and Doctorate programs where he has worked.

He is currently working as a member of University Senate, Director of Halal Food R&D Center, Department Chair of Food Engineering and a member of Executive Board of Faculty of Engineering at Istanbul Sabahattin Zaim University since 2018. He has a number of national and international indexed articles published in various national and international journals.
Examination of Halal Status of Sports Supplements
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Sport Nutrition

ABSTRACT

The importance of the research: In the study, it is important to determine the halal status of sports supplements and to make an awareness in halal sports supplements consumers.

Purpose of the research: This study's purpose was to examine the ingredients contained in sports supplements and halal certification status.

Method of the research: In the study, the necessary literature study on the subject has been carried out. Halal certification status of sports supplements products sold on internet websites and markets has been investigated. The study includes only companies that sell online sport supplements in Turkey.

Findings of the research: 68% of the companies selling sports supplements (On the website no mention about Halal or not), 24% (Has figure no pork item included), 1% (Halal logo included but no halal certification) and 1% (Company has own product and halal certification). Some online retailers have stated that they received the Republic of Turkey Ministry of Agriculture approved the document. However, this document is used to mean that the product is not halal, but does not contain any substances harmful to human health. Four different major online shopping companies engaged in online sales in Turkey and when we search under the name of halal sports supplement on the website, it has been found only two companies selling halal sports supplements products. Sports nutrition supplements topics also examined in academic theses in Turkey; 90% of the professional athletes stated that they use sports nutrition supplements products, 55% of them know their content and 70% of them use it according to their own wishes. In sports nutritional supplements, protein powder, vitamins and amino acids are the most preferred products.

Result of the research: It is understood that consumers who use sports nutrition supplements do not pay much attention to the halal status of the products. There is very little information about the halal status of the products in online shopping sites. 99% of sports nutrition products consist of imported products. There are no logos and information about the halal status of Sports supplements. Consumers who are sensitive to the halal status are recommended to be more careful in sports supplements.

1. Introduction

The halal sector continues to grow rapidly around the world. One of the most important issues in the halal sector is halal food. Recently, conscious consumers prefer foods with halal food certificate. However, they want to learn the ingredients of the food. In the sports industry, sports support products are used by professional, amateur athletes and other people doing sports for health.

The concept of halal, which is strongly emphasized by Muslims, has started to be emphasized more frequently, especially recently. The concept in question has been studied from different aspects in recent years [32]. In order for animal products to be presented to the consumption of Muslims as halal, it is important in terms of halalness to comply with fiqh rules, hygiene and cleanliness at every stage from the feeding stage to the consumer's table [2,24].

The concept of halal, which is interpreted as "in accordance with the law" as a word meaning, in the context of food products, from the field to the table, the food products are allowed in a clean and healthy environment [22,29]. Foods accepted as halal according to the Quran: Milk (provided that they originate from cattle, sheep, camel, goat), honey, fish, non-toxic plants, fresh fruits and vegetables, dried legumes, shelled seeds (nuts, peanuts, walnuts), meat and products (cattle, sheep, camels, non-hunter birds, fish, goats, horses) [24,27]. Includes production. On the other hand, the haram element, which means "illegal" and "prohibited", prohibits the consumption of alcohol, pork, blood, and dead meat.

1. "Halal food means the food allowed under Islamic law and must meet the following conditions:

2. It must not consist of or contain anything considered prohibited under Islamic Law;

3. It should not be prepared, processed, transported or stored using any device or facility prohibited under Islamic Law.

4. During preparation, processing, transportation or storage, there should be no direct contact with any food that does not meet the above conditions.
5. Although the above conditions are reserved, halal foods can be produced, processed or stored in different sections and cabins in the same buildings where non-halal foods are produced, provided that necessary measures are taken to prevent any contact between halal and non-halal foods.

6. Halal food can be produced, processed, transported and stored using facilities that provide appropriate cleaning procedures previously used for non-halal food; It is also observed according to the requirements of Islam [9].

The availability and use of supplements as ergogenic aids have risen dramatically in the past decade. Despite over 50 years of research, the field of sports nutrition continues to grow at a rapid rate. Some surveys have indicated that approximately 50% of the general population, 76% of college athletes, and 100% of bodybuilders take supplements. New products appear on the market every week. But evidence about their effects on performance is limited or not clear [21].

Although the energy needs of athletes vary according to age, gender, physical activity level and the amount of energy consumed, the basic elements that all athletes should pay attention to in their diet are;

- To ensure adequate consumption of energy and nutrients for the continuity of health and performance,
- Creating continuity in body fat and lean mass percentage specific to the branch,
- Optimal recovery after training and
- It is to maintain the fluid balance [27].

Athletes spend most of their time training to improve their performance. Indeed, great efforts are made to train, correct nutrition is of great importance in order not to waste these efforts and to provide high-level efficiency in training [27].

In addition, the use of ergogenic aids has become widespread in recent years among athletes of different levels to increase performance and achieve success more easily [25]. The use of some materials, methods and materials other than natural ability and training to increase sportive performance is called ergogenic assistance.

This study's purpose was to examine the ingredients contained in sports supplements and halal certification status.

2. Sports ergogenic aids

Ergogenic aids are used to continuously increase strength, endurance, speed and skill [21]. Ergogenic aid as a sport term; are practices or techniques that increase performance capacity, work efficiency, and allow easy recovery after exercises or easy adaptation to challenging training. Nutritional support strategies before and during exercise are thought to replenish building block stores, maintain fluid balance, and facilitate regeneration between competitions. The use of ergogenic support may provide an advantage in terms of sportive performance by increasing intermittent high-intensity activity and / or the ability to perform motor skills [6]. The primary purpose of nutritional sports supplements is to increase performance, balance body fat ratio and activate protein synthesis [21].

2.1. Whey Protein

Protein powders are powdered forms of protein that come from plants (soybeans, peas, rice, potatoes, or hemp), eggs, or milk (casein or whey protein). The powders may include other ingredients such as added sugars, artificial flavouring, thickeners, vitamins, and minerals. The amount of protein per scoop can vary from 10 to 30 grams. Supplements used for building muscle contain relatively more protein, and supplements used for weight loss contain relatively less [11]. Whey protein is a mixture of proteins isolated from whey; the liquid material created as a by-product of cheese production. The proteins consist of α-lactalbumin, β-lactoglobulin, serum albumin and immunoglobulins [8].

Whey protein is commonly marketed as a dietary supplement, and various health claims have been attributed to it. A review published in 2010 in the European Food Safety Authority Journal concluded that the provided literature did not adequately support the proposed claims [7]. For muscle growth, whey protein has been shown to be slightly better compared to other types of protein, such as casein or soy [31].

2.2. Amino Acids

Amino acids are small molecules that are the building blocks of proteins. Proteins serve as structural support inside the cell and they perform many vital chemical reactions. Each protein is a molecule made up of different combinations of 20 types of smaller, simpler amino acids. Protein molecules are long chains of amino acids that are folded into a three-dimensional shape. Chemically, an amino acid is a molecule that has a carboxylic acid group and an amine group that are each attached to a carbon atom called the α carbon. Each of the 20 amino acids has a specific side chain, known as an R group, that is also attached to the α carbon. The R groups have a variety of shapes, sizes, charges, and relativities. This allows amino acids to be grouped according to the chemical properties of their side chains. For example, some amino acids have polar side chains that are soluble in water; examples include serine, threonine, and asparagine. Other amino acids avoid water and are called hydrophobic, such as isoleucine, phenylalanine, and valine. The amino acid cysteine has a chemically reactive side chain that can form bonds with another cysteine. Amino acids can also be basic, like lysine, or acidic, like glutamic acid. The sequence and interactions between the side chains of these different amino acids allow each protein to fold into a specific three-dimensional shape and perform biological functions [26].

2.3. L-Carnitine

L-carnitine is a nutrient and dietary supplement. It plays a crucial role in the production of energy by transporting fatty acids into your cells’ mitochondria. The mitochondria act as engines within your cells, burning these fats to create usable energy. Your body can produce L-carnitine out of the amino acids lysine and methionine. For your body to produce it in sufficient amounts, you also need plenty of vitamin C.

In addition to the L-carnitine produced in your body, you can also obtain small amounts by eating animal products like meat or fish. Vegans or people with certain genetic issues may be unable to produce or obtain
enough. This makes L- carnitine a conditionally essential nutrient. [14].

2.4. BCAA

There are 20 different amino acids that make up the thousands of different proteins in the human body. Nine of the 20 are considered essential amino acids, meaning they cannot be made by your body and must be obtained through your diet. Of the nine essential amino acids, three are the branched-chain amino acids (BCAAs): leucine, isoleucine and valine. “Branched-chain” refers to the chemical structure of BCAAs, which are found in protein-rich foods such as eggs, meat and dairy products. They are also a popular dietary supplement sold primarily in powder form.

One of the most popular uses of BCAAs is to increase muscle growth. Some research suggests BCAAs can help decrease muscle soreness after a workout. It’s not uncommon to feel sore a day or two after a workout, especially if your exercise routine is new.

This soreness is called delayed onset muscle soreness (DOMS), which develops 12 to 24 hours after exercise and can last up to 72 hours. While the exact cause of DOMS is not clearly understood, researchers believe it’s the result of tiny tears in the muscles after exercise.

BCAAs have been shown to decrease muscle damage, which may help reduce the length and severity of DOMS. The BCAA leucine activates a certain pathway in the body that stimulates muscle protein synthesis, which is the process of making muscle. Just as BCAAs may help decrease muscle soreness from exercise, they may also help reduce exercise-induced fatigue. Everyone experiences fatigue and exhaustion from exercise at some point. How quickly you tire depends on several factors, including exercise intensity and duration, environmental conditions and your nutrition and fitness level.

BCAAs can help prevent muscle wasting or breakdown. Muscle proteins are constantly broken down and rebuilt (synthesized). The balance between muscle protein breakdown and synthesis determines the amount of protein in muscle. Muscle wasting or breakdown occurs when protein breakdown exceeds muscle protein synthesis.

BCAAs may improve health in people with cirrhosis, a chronic disease in which the liver does not function properly. It’s estimated that 50% of people with cirrhosis will develop hepatic encephalopathy, which is the loss of brain function that occurs when the liver is unable to remove toxins from the blood [12].

2.5. CLA

CLA is a type of omega-6 fatty acid. While it is technically a trans-fat, it’s very different from the industrial trans fats that harm your health. Some of them are simply used for energy, while others have powerful health effects. Conjugated linoleic acid (CLA) is a fatty acid found in meat and dairy that is believed to have various health benefits (1Trusted Source).

It is also a popular weight loss supplement. This article examines CLA’s effect on your weight and overall health. Linoleic acid is the most common omega-6 fatty acid, found in large amounts in vegetable oils but also in various other foods in smaller amounts. The “conjugated” prefix has to do with the arrangement of the double bonds in the fatty acid molecule. There are 28 different forms of CLA.

The difference between these forms is that their double bonds are arranged in various ways. It’s important to keep in mind that something as minuscule as this can make a world of difference to our cells. CLA is essentially a type of polyunsaturated, omega-6 fatty acid. In other words, it’s technically a trans-fat — but a natural type of trans fat that occurs in many healthy foods. Numerous studies show that industrial trans fats — which are different from natural trans fats like CLA — are harmful when consumed in high amounts [15].

2.6. Caffeine

Caffeine is a natural stimulant most commonly found in tea, coffee, and cacao plants. It works by stimulating the brain and central nervous system, helping you stay alert and prevent the onset of tiredness. Once consumed, caffeine is quickly absorbed from the gut into the bloodstream. From there, it travels to the liver and is broken down into compounds that can affect the function of various organs. That said, caffeine’s main effect is on the brain. It functions by blocking the effects of adenosine, which is a neurotransmitter that relaxes the brain and makes you feel tired. Normally, adenosine levels build up over the day, making you increasingly more tired and causing you to want to go to sleep. Caffeine helps you stay awake by connecting to adenosine receptors in the brain without activating them. This blocks the effects of adenosine, leading to reduced tiredness.

It may also increase blood adrenaline levels and increase brain activity of the neurotransmitters dopamine and norepinephrine. This combination further stimulates the brain and promotes a state of arousal, alertness, and focus. Because it affects your brain, caffeine is often referred to as a psychoactive drug [13].

2.7. Nitric oxide

Nitric oxide is a molecule that’s produced naturally by your body, and it’s important for many aspects of your health. Its most important function is vasodilation, meaning it relaxes the inner muscles of the blood vessels, causing them to widen and increase circulation. Nitric oxide production is essential for overall health because it allows blood, nutrients and oxygen to travel to every part of your body effectively and efficiently. In fact, a limited capacity to produce nitric oxide is associated with heart disease, diabetes and erectile dysfunction. Fortunately, there are many ways to maintain optimal levels of nitric oxide in your body.

In fact, several analyses have shown that eating nitrate-rich vegetables can lower blood pressure as much as some blood pressure medications. Strong evidence favours nitrates, especially from beetroot, for improving exercise performance in athletes. Despite the effects that nitrates have on nitric oxide production in your body, some people avoid them for fear they are harmful and contribute to cancer.

However, vegetables, which account for more than 80 percent of nitrate intake, contain antioxidants like vitamin C, which help prevent the formation of N-nitroso compounds. Therefore, nitrates from vegetables are harmless, whereas nitrates in processed meats can be troublesome to health, particularly when consumed in excess over long periods [16].
2.8. Steroids
Steroids are a man-made version of chemicals, known as hormones, that are made naturally in the human body. Steroids are designed to act like these hormones to reduce inflammation. They’re also known as corticosteroids, and are different to anabolic steroids used by bodybuilders and athletes. Steroids won’t cure your condition, but they’re very good at reducing inflammation and will ease symptoms such as swelling, pain and stiffness. Usually inflammation is the body’s natural reaction to infection or bacteria. Your immune system produces extra fluid to fight infections or bacteria, which causes swelling, redness and heat in the affected area. You might have noticed this if you have had a cut or wound on your skin.

In some conditions, such as rheumatoid arthritis, the immune system produces inflammation in the joints or other parts of the body by mistake, which can cause permanent damage if left untreated. Steroids can be used to reduce this immune reaction [17].

2.9. Creatine
Creatine; Especially in recent years, it has been used by many professional or amateur athletes at different levels as an ergogenic aid to improve training and competition performance. The fact that creatine is not included in the list of doping drugs by the International Doping Committee is another reason why it is widely used [30].

Creatine; It is used in the formation of ATP by the breakdown of creatine phosphate in short-term exercises under 15 seconds with high intensity. Excessive consumption of creatine causes more muscle storage and creatine is converted into phosphate. When energy is needed, creatine phosphate combines phosphate with ADP to form ATP and energize the muscles, thus delaying the occurrence of fatigue in maximal exercises.

There are studies showing that creatine increases anaerobic capacity, muscle strength, and lean muscle mass [33].

It is claimed that creatine loading creates an ergogenic effect by filling the intramuscular creatine and creatine phosphate stores. In many studies; It has been found that short and long-term creatine loading increase strength, muscle strength, endurance and sprint performance [30].

2.10. Glutamine
Glutamine is the most abundant amino acid in blood and muscle cells. It covers 60% of the amino acids in its tissues. In addition, it is the most nitrogen-rich amino acid and contains 35% of the nitrogen used by the muscle in protein synthesis. The body can synthesize glutamine itself, as well as in cases where there is a demand for glutamine that exceeds the body's glutamine stores (strenuous intense exercises, diseases and disabilities), glutamine may become "essential". In addition, it helps the positive nitrogen balance in muscle tissue, triggers protein synthesis and prevents the breakdown of proteins, which is very important for muscle development [18].

2.11. Arginine
Arginine is used by bodybuilding athletes with the idea that it is important both in revealing the pump effect (nitric oxide) needed during training, increasing the rate of growth hormone (GH) during sleep and, most importantly, in maintaining sperm and erection quality in men [18].

3. Material and Method
This study; it was applied on websites that sell sports supplements products on the internet between 1-20 May 2020. In the study only Turkish Sports supplements markets were researched. In the research, the status of websites to sell halal sports supplements products was examined. The necessary literature study for the study was carried out and the frequency and percentage distributions of the data obtained were shown in the tables.

4. Result
In this section, the frequency and percentage distributions of the data obtained are shown in the tables.

Table 1. Halal product status of sports supplement sales sites on the Internet

<table>
<thead>
<tr>
<th>Online sales company</th>
<th>Halal Status</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the website no mention about Halal or not</td>
<td>17</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Has figure no pork item included</td>
<td>6</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Halal logo included but no halal certification</td>
<td>1</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Company has own product and halal certification</td>
<td>1</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

In Table 1 examines the halal status of websites that sell 25 different online sports supplements products. In the study, 68% of online sites "no mention halal or not", 24% of online sites "has figure no pork item included", 0.4% of online sites "Halal logo included but no halal certification" and "Company has own product and halal certification".

Table 2. Distribution of search results titled halal sport supplement on 4 major internet sales sites

<table>
<thead>
<tr>
<th>Internet Sales Sites</th>
<th>Halal product</th>
<th>Halal Certification</th>
<th>Halal Logo</th>
<th>It is written on the product that it is halal</th>
</tr>
</thead>
<tbody>
<tr>
<td>N11</td>
<td>1 (Protein Powder HARDLİNE)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Gittigidiyor</td>
<td>1 (Protein Powder HARDLİNE)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Hepsiburada</td>
<td>1 (Protein Powder HARDLİNE)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Trendyol</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In Table 2, the search results are made in the title of halal sports supplements products in 4 major internet sales sites that support online sales in Turkey are given. In the study, only protein powder product produced by HARDLİNE company was reached. When HARDLİNE firm is examined on its corporate website, it is seen that...
the firm has received a halal certificate. However, there is no halal logo on the products. There are statements explaining that it is a halal product only in the ingredients section.

Table 3. Status of Using sport supplements and Rate of using sports supplements products

<table>
<thead>
<tr>
<th>Status of Using sport supplements</th>
<th>92%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of using sport supplements products</td>
<td>%</td>
</tr>
<tr>
<td>Protein powder (whey)</td>
<td>100</td>
</tr>
<tr>
<td>0-50 g. (% 33.7)</td>
<td></td>
</tr>
<tr>
<td>50-100 g. (% 64.1)</td>
<td></td>
</tr>
<tr>
<td>100-150 g. (% 2.2)</td>
<td></td>
</tr>
<tr>
<td>Amino acid</td>
<td>31.5</td>
</tr>
<tr>
<td>Glutamine</td>
<td>17.4</td>
</tr>
<tr>
<td>L-carnitine</td>
<td>15.2</td>
</tr>
<tr>
<td>BCAA</td>
<td>13.0</td>
</tr>
<tr>
<td>CLA</td>
<td>8.7</td>
</tr>
<tr>
<td>Caffeine</td>
<td>7.6</td>
</tr>
<tr>
<td>Nitric oxide</td>
<td>6.5</td>
</tr>
<tr>
<td>Arginine</td>
<td>4.3</td>
</tr>
<tr>
<td>Creatine</td>
<td>3.3</td>
</tr>
<tr>
<td>Steroid and similar product</td>
<td>3.3</td>
</tr>
</tbody>
</table>


Table 4. Distribution of sports supplements sales companies' website

<table>
<thead>
<tr>
<th>Internet Sales Sports Supplements Website</th>
<th>On the website mention only no pork product included</th>
<th>Halal Certification</th>
<th>On the website didn’t mention halal</th>
<th>Halal logo, but no halal certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplementer</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fitbull</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Besinmarket</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrishop</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powerlife</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snasports</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aminocu</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Fit Shop</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultimate Nutrition</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein7</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bayvitamin</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gym-Market</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein34</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aloprotein</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalspor</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Besindestek</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Provitanya ✓
Proteinmarket ✓
Proteinkapida ✓
Aloprotein ✓
Fonksiyonel ✓
Eforsis ✓
Goprotein ✓
Koza Protein ✓
Proteinchubs ✓

In table 4, according to study 18 sports supplements website sales companies were mention “On the website didn’t mention halal”, according to study 7 sports supplements website sales companies were mention “On the website mention only no pork product included”, according to study 1 only sports supplements website sales company had “Halal certification” and only 1 sports supplements website sales company had “Halal logo, but no halal certification”. According to study 1 sports supplements website sales company was mention “approved from Republic of Turkey Agriculture Ministry”.

Table 5. List of sports supplements sales in Turkey

List of sports foods sales in Turkey

<table>
<thead>
<tr>
<th>Protein Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sportlife.com Whey Protein 2000 Gr</td>
</tr>
<tr>
<td>Weider Premium Whey Protein Powder 2300 Gr</td>
</tr>
<tr>
<td>Reflex Native Whey Protein 1800 Gr</td>
</tr>
<tr>
<td>Sci-Mx Ultra Whey Protein 908 Gr</td>
</tr>
<tr>
<td>Multipower %100 Pure Whey Protein 2000 Gr</td>
</tr>
<tr>
<td>Big Joy Big Whey Classic Whey Protein 2376 Gr</td>
</tr>
<tr>
<td>BSN Whey Protein 1870 Gr</td>
</tr>
<tr>
<td>Weider Gold Whey 2300 Gr</td>
</tr>
<tr>
<td>Optimum Whey Green Line Protein powder 2000 Gr</td>
</tr>
<tr>
<td>ESN Tasty Whey Protein 1000 Gr</td>
</tr>
<tr>
<td>On Light Digest Whey Protein 500 Gr</td>
</tr>
<tr>
<td>Muscletech Nitrotech %100 Whey Gold Protein 2270 Gr</td>
</tr>
<tr>
<td>Isopure Zero Carb Whey Protein 2000 Gr</td>
</tr>
<tr>
<td>Nutrend Whey Isolate 1800 Gr</td>
</tr>
<tr>
<td>Nutrever Whey Isolate Protein 900 Gr</td>
</tr>
<tr>
<td>Muscletech Essential Series Platinum %100 Iso-Whey 812 Gr</td>
</tr>
<tr>
<td>Olimp Pure Whey Protein Isolate 2240 Gr</td>
</tr>
<tr>
<td>Ironmaxx 100% Whey Isolate 2000 Gr</td>
</tr>
<tr>
<td>Muscledads Carnivior 50 Gr Protein Shots 1 each</td>
</tr>
<tr>
<td>Isolate</td>
</tr>
</tbody>
</table>

In table 5, according to study show that lists of the sports supplements sales in Turkey. Almost 100% of the sports supplements imported from U.S.A, Germany, Poland and other countries.

5. Discussion and Conclusion

According to the study of Bozkurt (2001), 44.3% of the athletes stated that they used support while 52.1% did not use. In Öztürk (2006) study, it was found that 45% of athletes regularly use supportive vitamin-mineral products, 12.5% sometimes use them, and 42.5% never use them. In the study of Akıl (2007) reported that 76.4% of the athletes participating in the study used support products, 6.6% did not used, and 17% sometimes used these products. In the study of Karabudak et al. (2008), only 8.8% of the athletes do not
use any support product, while 92.2% use at least one or more products. Users, on the other hand, stated that their coaches recommended these products the most (39%). This is followed by the doctor (26.8%), the athlete himself (15.9%) and the dietician (1.2%), respectively. The rate of those who use sports support products increases over the years.

Çetin et al. (2008) in their study; It was determined that the ergogenic aid and doping knowledge levels of Gazi University School of Physical Education, (Turkey) and Sports students were quite insufficient. Other participants stated that 88% of the supplement use did not get support from any specialist. In this study, it is understood that the athletes do not have information about the ergogenic aids and doping they use.

Yarar (2010) investigated the use of nutritional supplements in elite athletes at professional level in the study named "use of nutritional supplements in elite athletes and evaluation of awareness". As a result of the practice applied to 334 elite athletes of randomly selected elite levels in 18 different Olympic branches including basketball, volleyball, football, handball, athletics, fencing, weightlifting, tennis, wrestling, taekwondo, judo, swimming, boxing, gymnastics, badminton, pentathlon, skiing, archery. It has been revealed that most of the athletes (55.7%) used nutritional supplements. The most preferred products are; They are protein powders and amino acids. When asked about the purpose of using nutritional supplements to athletes, the first three places were to increase performance, increase muscle mass and fitness. According to this study, 55% of professional athletes are observed to use athlete sports supplement products.

Göktas (2010) in his study; 49.4% of the athletes take 500-1000 mL of fluid after the competition, 71.5% use at least one nutritional support product. The most frequently used nutritional supplements in the study were protein powder (22.5%), vitamin (23.1%), amino acid (13.8%), respectively. 62.4% of athletes using nutritional supplements use these products for performance enhancement and 19.5% for muscle building purposes. 86.5% of the athletes stated that they benefited from these products. 41.9% of the athletes spend 100-300 TL annually on these products and 58.8% of them buy these products from stores.

In the study conducted by Yüksel (2013); It is seen that 44.4% of amateur football players and 77.8% of professional football players regularly use sports supplements products. A significant difference was found between the groups in the use of sports supplements (Yüksel, 2013). 50.0% of amateur football players use magnesium as a sports supplement’s product, 35% multivitamin and 10% protein powder. It is observed that 57.1% of professional football players use multivitamin, 25.7% magnesium and 14% protein powder. In another study conducted in 2013, it is seen that professional football players use 77.9%.

In the study of Koç (2010); 26.1% of the wrestlers use nutritional support products. Almost half of those who use nutritional supplements do so of their own free to choose. According to this study, they stated that the athletes used nutritional supplements as their choice.

Bora (2014) in his work; 92% of sports coaches use athlete support products. Athletes stated that they used; 100% of the athletes who use sports supplements are protein powder, 31.5% amino acid, 17.4% glutamine, 15.2% L-carnitine, 13% BCAA, 8.7% CLA, 7.6% caffeine, 6.5% nitric oxide, 4.3% arginine, 3.3% creatine, 3.3% steroid and similar products. According to the results of the study of Bora (2014), it is seen that 69% of the participants do sports 5-6 days a week, 27% every day, and 4% 3-4 days a week. The daily protein powder consumption amount of 33.7% of the cases consuming whey protein powder is 0-50 g, 64.1% 50-100 g and 2.2% 100-150 g. According to the results of the study of Bora (2014), as seen in the study, 88% of the participants stated that they preferred the use of nutrition / supplements, while 10% received support from a dietician and 2% stated that they did not receive support from anyone. In this study conducted in 2014, the rate of use of sports support products and the type of products used were clearly stated.

Yücel (2017) in his study; asked about the participants' use of supportive products, "Do you use supportive products regularly?" 28 (21.5%) of the participants answered yes, and 102 (78.5%) answered no to the question. According to this; The rate of athletes using supportive products is around one fifth. In addition, as a result of the analysis, these products; It was determined that 9 (32.1%) of those using supportive products used muscle building, 17 (60.7%) used performance enhancement and 2 (7.1%) used it for other purposes.

Ince (2017) stated that 74.5% of professional basketball players regularly use performance support products; 45% of the professional basketball players who buy supportive products are used by the conditioner, 30% by the nutritionist, and 15% by the recommendation of the coach athletes.

In academic studies in Turkey, athlete’s nutrients appear to be high usage. Considering the studies, 80% of professional athletes use athlete nutritional supplements. The primary purpose of athletes in using nutritional supplements is to increase their sports performance. However, athletes do not know much about the content of nutrients. Athletes' nutrients generally consist of products produced abroad. In this study, only one sports supplements producing company in Turkey is seen to have the halal certification.

In Turkey, more sports supplements producing company should be established. These companies are recommended to take part in the sports supplements products sector by producing the substances in the sports supplements products in accordance with the halal standards. It is recommended to reduce the dependence of the sports supplements products sector to abroad.

It is understood that consumers who use sports nutrition supplements do not pay much attention to the halal status of the products. There is very little information about the halal status of the products in online shopping sites. 99% of sports nutrition products consist of imported products. There are no logos and information about the halal status of Sports supplements. Consumers who are sensitive to the halal status are recommended to be more careful in sports supplements.
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Analysis of E-Coded Food Additives in Delicatessen Product Labels Within the Status of Halal Food
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ABSTRACT

The increasing need for food due to the rapid increase of the world population, have increased the use of food additives. Halal food refers to foods that are allowed to be eaten and drunk in Islamic Jurisprudence. The Standards and Metrology Institute for the Islamic Countries (SMIIC), the affiliated institution to the Organization of Islamic Cooperation (OIC), have released General Requirements for Food Additives and Other Added Chemicals to Halal Food. The aim of this study is to identify those suspected to be halal among E-coded additives on meat product labels. Within the scope of the study the label information of the meat products on sale in 5 different markets in the city centre of Sanliurfa were examined. Food labels of 122 products from different brands were examined. We identified 12 different doubtful food additives on the labels of meat products, and 11 labels included food additives defined as non-halal according to the standard. As a result of the research, food scientists and religious authorities should do more scientific work on the standardization of halal additives.

1. Introduction

The increasing need for food due to the rapid increase of the world population, and the increase in the tendency of people to ready and long-lasting foods with the change of food demand have increased the use of food additives. Food additives are defined by the Codex Alimentarius Commission as follows: "which is not used as food alone, whether it has nutritive value or not, is added to foods for technological purposes in manufacturing, processing, preparation, application, packaging, transportation, storage, or which become a direct or indirect component of foods or the characteristics of foods [1].

The sources of food additives and the way they are obtained are questioned by people primarily for religious reasons [2,3]. Muslim societies do not consume certain foods and additives added to them due to their religious beliefs [4]. The uncertainty of which raw materials the food is produced from poses an important problem for consumers with religious sensitivity [5]. Especially the food additives should be checked religiously [6].

The word halal is an Arabic origin word which means not contrary to the rules of religion, not prohibited in terms of religion' in the dictionary of the Turkish Language Association [7]. Halal food refers to foods that are allowed to be eaten and drunk in Islamic Jurisprudence. The purpose of these restrictions on nutrition brought by the Quran to Muslims is to protect people's health. Consumption of food products that will endanger people's health is considered as haram according to Islamic religious rules [8] The Halal and Haram are understandable and in among two of them are doubtful [9]. Food additives are considered halal as long as they do not affect human health negatively, as long as they are herbal or if they are obtained from animals that are halal to be eaten in accordance with religious rules, according to Islamic methods. It must not have been obtained from the prohibited substances mentioned in the Quran and Hadith-i Sharifs and must not be genetically modified [2, 10]. The word halal on food additives and foods has become a reason of preference for non-Muslim consumers in terms of hygiene and health [11]. For all these reasons, it is very important to have Halal certification, to inspect food companies by an impartial institution, to confirm that they are produced in accordance with halal standards and to provide a certificate of halal [12]. The official international standards body Standards and Metrology Institute for the Islamic Countries (SMIIC), the affiliated institution to the Organization of Islamic Cooperation (OIC), have released General Requirements for Food Additives and Other Added Chemicals to Halal Food [12]. The halal status of some food additives was determined in this published general requirement standard. The aim of this study is to identify those suspected to be halal among E-coded additives on meat product labels.

2. Material and Method

This research is an observational descriptive study. In the study, the food group to be included in the research was determined, the labels of the products in the determined food group were examined, the E-codes on the food labels were listed and whether these E-coded additives are halal or not are classified. Within the scope of the study the label information of the meat products on sale in 5 different markets in the city center of Sanliurfa were examined. Food labels of 122 products
from different brands were examined. The names of the brands whose labels are examined were not included in the study due to the ethical principles. In Figure 1, the number of products evaluated within the scope of the examined product groups are indicated.

![Figure 1. Distribution of samples by product groups.](image1)

![Figure 2. The distribution of doubtful E-codes according to the product groups.](image2)

![Figure 3. Number of Products with Doubtful E-Codes.](image3)

3. Results

The distribution of E-codes, which are considered as doubtful in the labels examined in our research, according to the product groups is given in Table 2. The most common sodium nitrite coded E-250 in our study (n:85) is widely used as a preservative in meat products. Because it combines with the myoglobin in the meat and provides the formation of a bright pink-red color specific to the processed meats and the protection of this color. It also prevents the growth of Clostridium botulinum bacteria, which is very dangerous for human health. Besides these, it also has functions to prevent spoilage and stabilize the structure of the product. Unfortunately, many scientific studies have been carried out on its carcinogenic effect and its use has been prohibited in many countries [13]. Ascorbic acid with the code E-300, which is the most common in beef meat, is used as an acidity regulator in meat products. But synthetically produced ascorbic acid is dangerous for human health. E-160c (paprika extract) is the most common additive in seafood and it is obtained from the kernels and seeds of red peppers and can be mixed with gelatin; for this reason, its use as a food additive is prohibited in Australia. E-301, the sodium salt of ascorbic acid, also prevents nitrosamine formation in meat and is also used as an antioxidant, but its synthetic production is risky for public health. E-120 (Carmine) food additive, which is frequently used in meat and delicatessen products, is a controversial substance. Carmine derived from insects is a food additive of animal origin since it is produced. It is free to use in Turkish food legislation and is considered non-halal according to the Standards and Metrology Institute for Islamic Countries (SMIIC). This additive is stated on the halal Malaysia site to be non-halal only for those in the Hanafi fiqah, and doubtful for others [12, 14].

4. Conclusion

The use of food additives, which may adversely affect human health as a result of the analysis of international food organizations and reliable laboratories, should be prohibited by the governments. This should be done for the purpose of protecting public health and not just for religious reasons. Food additive lists of various institutions and organizations that issue halal certification around the world should be uniform. To this end, food scientists and religious authorities should do more scientific work on the standardization of halal additives. Using systems such as listing and coding companies with halal food certification by the certification institutions whether the manufacturers have this certificate should be made clearly visible to the consumers. Because halal food is necessary not only for Muslims but also for all humanity in terms of health.
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Traditionally Fermented Coffees and Their Halal Status: Kopi Luwak and Black Ivory

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ABSTRACT

Coffee is a widely consumed beverage all over the world because of its stimulating and bioactive properties. Coffee is one of the world's most valuable agricultural products, and the leading production region is Brazil. Today there are more than 100 coffee plant types belonging to the Coffea family, but Arabica (Coffea arabica) and Robusta coffees (Coffea canephora) have the largest commercial share. However, these coffees are endangered plant species by droughts and/or excessive rainfall in the world. And coffee producers and the World Coffee Research Centre are trying to find alternatives like crossing non-Robusta and non-Arabica coffee trees in Ethiopia to increase the production. Fermentation and different drying techniques are developed to improve coffee quality and their market value. In the sensory analysis of fermented coffee, significant changes have been detected in the taste and aroma profile. World-renowned Kopi Luwak (Civet Coffee) and Black Ivory are the leading coffee types among the traditionally fermented coffees. For instance, Kopi Luwak coffee is produced in Indonesia by using the gastrointestinal tract of a musk cat (Paradoxurus hermaphroditus) to subject the coffee beans for fermentation, while Black Ivory coffee is subjected to the same process in the elephants in Thailand. The acidic and enzymatic fermentation conditions in the gastrointestinal tract of these animals cannot be controlled, and some undesirable by-products may be formed in those coffee seeds. The coffee obtained from the faeces of animals may give a disgusting feeling to the consumers with a tremendous hygienic concern. The aim of this study is to evaluate different traditional coffee production techniques and their fermentation processes, again to discuss the ethical concerns and halalness of these local coffees that sourced from the live animal gastrointestinal tract.

1. Introduction

Coffee is one of the most appreciated non-alcoholic drinks consumed in the world. Again, it is considered the most important processed product after petroleum with an annual turnover of US $ 362.6 million [1].

Coffee is an important agricultural product in the world with 950 million tons production per annum. The coffee is grown in a plant which is a woody, perennial, evergreen shrub-type tree belonging to the Rubiaceae family, also known as the coffee family, with 611 genera and 13000 species [2]. Among those, Coffea arabica (Arabica coffee) and Coffea canephora var. robusta (Robusta coffee) species constitutes the largest part of the world's coffee production. Coffea arabica is grown in high altitude regions and has a sweet fruity aroma compared to the other coffee types. This coffee plant is native to areas higher than sea level, like in the southwestern part of Ethiopia, southern Sudan, and Kenya. C. canephora coffee plant, on the other hand, is generally grown in flat and swampy areas, and its fruits have cocoa-like flavor. Although the region where C. canephora grows is mostly known as West Africa, it has a genetic diversity spreading from Liberia to Sudan, Uganda, and The Republic of Congo [3].

Today, Brazil is the leading producer and exporter of Coffea arabica. It is followed by Colombia, Paraguay, Venezuela, Indonesia, Ethiopia, India, Mexico and 40 other countries [4]. However, it has also been reported that the coffee is being produced in nearly 70 countries around the world [5].

The word "coffee" comes from the Ethiopian language “Kaffa”. Coffee beans brought to Arabia from Ethiopia which were roasted and brewed there for the first time around the 15th century. Hence coffee has been an important beverage since the 15th century in the Arab world with the name of “gahwah- چهاره”. In the 16th century, coffee spread from the Yemen region to Egypt and from there into the other Ottoman lands. After that it has been rapidly spread to the Western Europe and began to be consumed in the places known as coffeehouses (cafes) throughout Europe [6][7][8].

Surprisingly, coffee consumption continues to increase all over the world with different production and processing systems. Among these, fermentation and some drying techniques are developed to improve the quality and market value of the coffees. For example, world-renowned Kopi Luwak (Civet coffee) and Black Ivory (Elephant dung coffee) are accepted as prime quality coffee types among the traditionally fermented
coffees. Kopi Luwak is produced in Indonesia by using the gastrointestinal tract of a musk cat while Black Ivory is subjected to same process in the elephants’ alimentary tract in Thailand. In this article, we aimed to evaluate the fermented coffee production with a special emphasis on the ethical and halal status of the local coffee types fermented in the gastrointestinal tract of some animals.

2. Coffee Bean Processing

Arabica coffee (Coffea arabica) accounts for approximately 60% of the world’s coffee production, while Robusta coffee accounts for approximately 40% of the total production. Coffea liberica, on the other hand, is another type of coffee that is used commercially, but its place in the coffee market is less than 1% [9].

Coffee production techniques are classified by the methods used to separate the outer layers surrounding the coffee bean [10]. In order to obtain green coffee beans, coffee fruits are first subjected to pulping and then drying stages. The green coffee beans are then subjected to a ripening process which is up to a total of 12 weeks [7].

The coffee beans are separated mechanically or manually, according to their size, and then roasted in a cooking chamber. Then the roasted beans are ground to the desired size [9].

The dry process known as "natural coffee" production system in which the drying of coffee fruits takes place under the sun after they are picked. In the wet process known as "washed coffee", the beans go through the stages of pulping, fermentation and sun drying. In the semi-dry process, which is an alternative to other two processes, the dried fruits are subjected to peeling process (Table 1) after the pulping stage [10]. The beans of Brazilian Arabica coffee (Coffea arabica) and West African Robusta coffee (Coffea canephora) are generally processed in a dry process [11].

In the dry process, coffee beans of various maturity grades are collected and are spread in thin layers and left to dry for about 20 days. At this stage, pulp and mucilage layers of coffee beans undergo fermentation [11]. The dry process stage is the oldest but the easiest method. At the end of this process, unwashed coffee beans are also called “natural coffee”. This method is generally applied in sunny countries with a little rainfall [7].

The water content of the coffee fruits is as high as 52%, And with the drying process, water content of the coffee beans decreases up to 12% after the drying, regardless of the technique (wet, dry or semi-dry) is used [12].

Once harvested, the coffee beans are referred to as 'green coffee beans' because of their colour that appears during the drying (Figure 1). Immature seeds create a bitter taste in the final product. For this reason, after the coffee beans are harvested, immature beans are removed and then the coffee beans are classified according to their size. This classification step also determines the quality of the coffee [8].

Before the grinding stage, the coffee beans are roasted and reclassified as light, medium, full and well roasted according to the desired end product feature in the roasting process [13].

The coffee beans can be stored either by grinding or without grinding. During the roasting process in industry, a heating up to 280-290 °C temperature is applied to the coffee beans in a constantly moving manner to prevent from burning. This process, called pyrolysis, is the main step of the aroma and taste formation mechanism in the coffee beans. After the roasting process, the coffee beans are transformed into brown colour, by then they are cooled and subjected to grinding in different sizes according to the brewing [8].

![Figure 1. The peeled green coffee beans. (Photo: Dr. Louis Ban-Kofi)](image)

<table>
<thead>
<tr>
<th>Dry fermentation process</th>
<th>Wet fermentation process</th>
<th>Semi-dry fermentation process</th>
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<tr>
<td>Sun drying (fermentation)</td>
<td>Mechanical pulp removal</td>
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<tr>
<td>Dry beans</td>
<td>Fermentation: mezocarp removal</td>
<td>Removing mucilage by washing</td>
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<tr>
<td>Pulp removal</td>
<td>Washing</td>
<td>Dry beans (endocarp)</td>
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<td>Dry beans (endocarp)</td>
<td>Drying</td>
<td>Dry beans (endocarp)</td>
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Table 1. Coffee beans fermentation and processing stages [7].
3. Biochemical reaction in coffee beans

The chemical composition of coffee beans varies according to the type and variety, maturity level, agricultural practices, weather conditions in which they are grown and storage conditions.

Coffee beans have a variety of phenolic compounds. The most important of these compounds is chlorogenic acids, which are formed as a result of esterification of quinic acid and trans-cinnamic acids. In addition, caffeoylquinic acid, dicaffeoylquinic acid, p-coumaroylquinic acid (CoQA), caffeoyl-feruloylquinic acid and feruloylquinic acid (FQA) and their isomers are also formed by the effects of above conditions. Again, roasting the coffee beans turns the phenolic substances into minor volatile components, CO₂ and some polymeric substances, respectively. These components give the end product some spicy, roasted, burnt, bitter flavour and the other coffee characteristics [14].

Caffeine, the main stimulant component of coffee, is a powerful, addictive and active ingredient. Its concentration in coffee pulp and shell (on dry matter basis) is around 1.3% [15]. Trigonelin is another important coffee alkaloid and with the degradation of this some other components are produced and become responsible for the strong coffee odours such as pyridine and pyroles. Thermal degradation of some polysaccharides and simple sugars during the roasting is responsible for the formation of caramelization products. The aroma of coffee comes also from Maillard reactions, caramelization and some other thermal reactions [16].

One of the important biochemical reactions that take place during the fermentation of the coffee beans is the degradation of the mucilage by some microorganisms. The fermentation is a natural process that occurs spontaneously after the harvesting and during the processing, regardless of the process method applied [11].

4. Coffee bean microbiota

As in other agricultural products, the microbiota of coffee fruits consists of various bacteria, yeasts and moulds. During fermentation, the microbiota of coffee beans may vary depending on the moisture level of the plant and the bean harvested, again enzyme capacity and antimicrobial activities of microorganisms, substrate component, process method and environmental factors are also affecting factors. In a research, it was stated that the number of microorganisms involved in fermentation is between 10⁴ and 10⁸ cfu/seed. The variety of this flora consists 43.8% of bacteria, 40.1% of yeasts and 16.1% of moulds [17][18].

For example, Klebsiella ozaenae, Erwinia herbicola, Hafnia spp., Enterobacter aerogenes, Leuconostoc mesenteroides and Lactobacillus brevis are important bacteria isolated during the fermentation of coffee beans. A large number of lactic acid bacteria have also been isolated from coffee pulp, especially Lactobacillus plantarum. Additionally, different Candida species and Saccharomyces cerevisiae, Debaryomyces Hansenii, Pichia kluyveri, Torulaspora delbrueckii and Rhodotorula mucilaginosa are among the yeast species diagnosed in the microbiota of fermented coffee beans [19].

Fermentation has a great role in the formation and development of aroma and flavour as well as removing mucilage. In addition, it is known that the formation of some unwanted yeast species and mycotoxigenic moulds is prevented by natural microflora of coffee beans [7].

Besides the studies on the microbial diversity of coffee beans indicated that the microbial composition and their influence on the fermented beans have not been fully explored. Hence these researches are expected to focus on the selection of starter culture specific to the fermentation process of the coffee beans. Due to the recent consumer interest in naturally produced foods, the processes of fermented coffee beans with selected cultures may open new doors to bring new flavours to the coffee. These techniques are also considered to be promising advancement in new product development studies.

5. Coffee bean fermentation

There are various fermentation methods that support the formation of aroma in coffees as in some foods and beverages. One of these methods is bioprocess with the digestive system of some animals. The most known bioprocess coffees are Kopi Luwak and Black Ivory coffees that are produced by using live animals.

Kopi Luwak is an indigenous and limited type of coffee, originating from Indonesia's islands of Java, produced by the Civet cats (Paradoxurus hermaphroditus) excreting the coffee beans after consumption. The coffee beans consumed by the animal cannot be digested in the alimentary tract, but they acquire a unique taste and aroma as a result of the various reactions in the intestinal system. It has been reported that the fermentation processes carried out by the hydrolysis of proteins in the digestive system which reduce bitterness in the beans and create a more aromatic coffee with low acidity [20].

Another type of coffee produced with the help of the digestive system is Black Ivory (about half a kilogram for $1000), known as the world's most expensive coffee, made from elephant dung. Coffee beans undergo enzymatic and acidic reactions by the microflora in the digestive system of Asian elephants that are grown in Thailand [21].

As with Kopi Luwak, in Black Ivory, the coffee beans that leave the gastrointestinal tract of those animals are separated from the faeces, and then cleaned and roasted after drying. As a result of these processes, the bitterness of the beans is reduced and a unique coffee flavour with the desired properties is obtained [16].

Other than the ethical and hygienical concerns that have been highly controversial, it is not easy to control the fermentation naturally takes place in the gastrointestinal tract of the animals. Again, it is possible to determine the end point and to follow the secondary metabolites formed inside the living animal. To avoid these disadvantages, modern or scientific alternative methods should be investigated to control the fermentation and new fermented coffee production methods should be developed with the use of appropriate starter culture.

Apart from these, there are studies in which the coffee beans are fermented under controlled conditions by using starter culture and the taste and aroma properties of the final product can be improved positively [15][16][22].

Further research and analysis are needed regarding the fermentation process and the aromatic products formed in
these coffees by the bioprocess. It is considered that using selected microorganisms with proven fermentative properties as a starter culture would be a safer way to improve coffee aroma in similar manner.

6. Halal and ethical status of coffees originating from the digestive system

In Islam, there are some rules to regulate edible and drinkable matters for the Muslim consumers. For example, the words halal and haram are the Islamic terminology used in the Quran to designate the categories of lawful and unlawful affairs or things. Hence it has been clearly known that local coffees fermented by using the digestive system of some animals such as Kopi Luwak and Black Ivory is being questioned in terms of food safety and hygienic aspects. Especially for Muslim consumers, a food or drink produced under these conditions brings great concerns in terms of Islamic dietary rules.

Muslims are one of the belief groups that have the widest dietary rules in the light of the Qur'an and Hadith. Food and drinks that come from a non-halal source or that are produced by adding haram ingredients are religiously considered as haram [23][24].

Any contamination of something that is impure according to Islamic rules makes the clean thing questionable. Human and animal feces are considered heavily impure or filthy, other than feces, substances that are described as filthy are the other body wastes such as saliva, nasal mucus, purulent matter, urine, etc. [25][26]. In the verses 168 and 172 of the Surah al-Baqara in Quran, Allah commands us to choose the ones that are pure and clean (Tayyib) from the sustenance that Allah created. Bismillahirrahmanirrahim; “O people! Eat of the lawful and pure things in the earth and follow not in the footsteps of Satan. For surely, he is your open enemy” (al-Baqara, 168). And in the 172 Allah (c.c) commands us, “Believers! Eat of the pure things wherewith We have provided you for sustenance and give thanks to Allah if it is Him that you serve.”

Another fact is that a food is clean does not mean that the food is completely halal in Islamic rules. For example, many plant materials known to be poisonous have been made haram even though they are clean. In addition, in Islamic sources, "Halal and Haram are obvious", there are some suspicious things between the two that are not exactly halal or haram. There is a hadith about that says, "Both halal and haram things are obvious, and in between them there are doubtful (suspicious). So, whoever forsakes those doubtful things lest he may commit a sin, will definitely avoid what is clearly illegal; and whoever indulges in these doubtful (suspicious) things bravely, is likely to commit what is clearly illegal.” (Müslim, Mûsâkât, 107). Therefore, the believers should also avoid suspicious food, drink and behavior to secure their faith [24].

The microorganisms found in fermented foods can be isolated from different sources (soil, water, plant, milk, skin, feces, etc.). In case of encountering a non-halal application in any of the stages of the fermentation process or in the media where microorganisms grow, problems may arise regarding the halalness of the final product. At the same time, if one or more of the production stages of a food have scientifically proven negative effects on human health, the consumption of this food is also against the Islamic rules [27]. These negative effects can seriously impact people's spirituality and their body as well. The inconvenience of eating wild animals whose meat is forbidden and avoiding the unclean things based on the idea that wildness and filth can negatively affect the moral values of human beings, who are regarded as perfect [28].

In the light of the information given here, it cannot be said that the coffees such as Kopi Luwak and Black Ivory coffee, harvested from animal feces are strictly halal or haram, but they are doubtful. Again, it is known that they are produced using the digestive system of some wild live animals, although they are cleaned before consumption, it doesn’t make those coffee beans completely safe to consume by Muslims. Although "Kopi Luwak is declared to be 'halal' after passing through a washing process, reported by Maruf Amien, acting head of the Indonesian Ulema Council, stated that producing, selling and drinking of that coffee is allowed." [29].

In addition to all those mentioned above, these fecal coffees bring many other questions. For example, the authenticity and certification of the products recently sold under the name Kopi Luwak (Civet coffee) is controversial. It is also known 80% of these coffees sold in the market are imitated. Another issue regarding certified Kopi Luwak coffees, which are considered to be original, is that civet cats are exposed to living in conditions that may violate animal rights by coffee producers. Although the manufacturers claim that coffee beans are obtained as a result of consumption and defection in the natural environment where the animals live, a study conducted by the BBC in Indonesia in 2013 revealed that this was not the case and that the animals were kept in cages and fed under poor conditions [30][31].

The production of these coffees is considered unethical since these wild animals are captured, detained in a cage separating from their ecosystem and forced to eat only coffee beans. Again, it is important to discuss and evaluate these issues in ethics committees.

In addition to hygiene and ethical concerns, the coffee obtained from the feces of animals may give consumers a feeling of disgust. A food product produced by passing through the digestive system of livestock will not be preferred by consumers, alternative fermented coffee production techniques should be researched and developed.

7. Conclusion

Kopi Luwak and Black Ivory coffees may be a valuable commodity in many ways, but it is doubtful that they adequately meet the cleanliness (Tayyib) and halal conditions for the Muslim consumers. The fact that the coffee beans pass through the digestive system of livestock will not be preferred by consumers, alternative fermented coffee production techniques should be researched and developed.
gastrointestinal system of the animals. For this reason, new methods of fermented coffee production systems with the desired quality and high aroma content should be researched and healthier production techniques ought to be developed. New methods in fermented coffee production should be researched and sensitivity of the believers and ethical concerns need to be observed. Because those wild animals are captured, detained in a cage separating from their ecosystem and forced to eat only coffee beans is considered unethical. Hence imitation alternatives of these types of regional coffees might be produced to please Philo therians and Muslim coffee addicts.

8. References

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Food Additives in Halal Food Production
Mian N. Riaz, Nooran M. Riaz and Fariha Irshad

Abstract
Food additives are substances added to food for many purposes including preserving flavor or improving taste, texture and appearance. The term food additive applies broadly to chemicals, both natural and synthetic, that are added to food, either intentionally or indirectly, to facilitate processing, extend shelf life, improve, or maintain nutritional value, or enhance the food’s organoleptic qualities. Some products would not be possible to produce without additives. However, some of the food additives also have serious problems with respect to their Halal status. For the food industry to serve the Halal market properly, it is very important that they determine the Halal status (suitability) of these additives.

1. Introduction
The term food additive applies broadly to chemicals, both natural and synthetic, that are added to food, either intentionally or indirectly, to facilitate processing, extend shelf life, improve or maintain nutritional value, or enhance the food’s organoleptic qualities. Some products would not be possible to produce without additives. However, some of the food additives also have serious problems with respect to their halal status. For the food industry to serve the halal market properly, it is very important that they determine the halal status (suitability) of these additives. For centuries, ingredients have served useful functions in a variety of foods. Our ancestors used salt to preserve meats and fish, added herbs and spices to improve the flavour of foods, preserved fruit with sugar, and pickled cucumbers in a vinegar solution. Today, consumers demand and enjoy a food supply that is flavourful, nutritious, safe, convenient, colourful, and affordable (Branen and Haggerty, 2002). Food additives and advances in technology help make that possible. The European Commission defines food additive as "any substance not normally consumed as a food in itself and not normally used as a characteristic ingredient of food, whether or not it has nutritive value." Food additives have gained growing level of importance over the years owing to the diverse requirements of the food industry, end consumers, and regulatory bodies across the globe. Food additives are basically used for imparting specific desired properties to food products, enhancing food palatability in terms of food appearance & appeal, ensuring food safety through prevention of contamination, and through extended shelf-life of products (Branen and Haggerty, 2002).

2. Food Additives Market:
There is a growing demand for functional foods and beverages that help consumers improve their diet, health, and well-being. Consumers’ demand for healthy and natural ingredients are key factors driving food additive companies to develop a host of new additives including emulsifiers, hydrocolloids, sweeteners, vitamins and minerals, soya ingredients, probiotics, prebiotics, and plant stanol esters. According to Market Data Forecast, global food additive market size was worth USD 37.91 billion in 2020 and it is estimated to reach a valuation of USD 55.53 billion by the end of 2025 (Market Data Forecast Website, accessed Feb. 2021). However, the health hazards associated with the consumption of synthetic additives, growing consumer demand for “no additive” food products or products with natural additives, limited availability & high cost of naturally sourced additives, and the rising consumer shift to organic foods have resulted in restrained market growth since the past few years.

3. Consumers Concern Related to Food Additives:
There are thousands of ingredients used to make foods. The Food and Drug Administration (FDA) maintains a list of over 3000 ingredients in its data base “Everything Added to Food in the United States”, many of which we use at home every day (e.g., sugar, baking soda, salt, vanilla, yeast, spices, and colors). Still, some consumers have concerns about additives because they may see the long, unfamiliar names and think of them as complex chemical compounds. In fact, every food we eat - whether a just-picked blueberry or a homemade chocolate cookie - is made up of chemical compounds that determine flavour, colour, texture, and nutrient
value. The main groupings of food additives include acids, acidity regulators, anticaking agents, anti-foaming agents, antioxidants, bulking agents, food colourings, colour retention agents, emulsifiers, flavours, flavour enhancers, flour treatment agents, glazing agents, humectants, tracer gasses, preservatives, sequestrants, stabilizers, sweeteners, surface active agents and thickeners (Kansas State Research and Extension, 2010).

There are some other categories, but the above groupings include most of the food additives that are commonly used. Federal authorities and various international organizations carefully regulate all the food additives to ensure that foods are safe to eat and are accurately labelled. Food additives may be natural, nature identical or synthetic. Natural additives are substances found naturally in a foodstuff and are extracted from that food so that it can be used in another food. For example, beet root juice with its bright purple colour can be used to colour other foods such as sweets. However, if the beet root juice is further processed to isolate the colour compounds, then this material becomes an artificial colour when used with any product other than beets. Nature identical additives are man-made copies of substances that occur naturally. For example, benzoic acid is a substance that is found in nature, e.g., cranberries, but is made synthetically at much lower cost. It is widely used as a preservative. Artificial additives are substances made synthetically and are not found in nature. An example is azodicarbonamide, a flour improver, which is used to help bread dough hold together.

4. Halal Issues Related to Food Additives: Un fortunately, some of the common additives are derived from sources which are not Halal, for examples, pigs, other haram animals, and animals that are not slaughtered as Halal. Even if the food additive is listed in the ingredients statement, the source of the additive is usually not mentioned. Even if the processing aid is no longer found in the finished product, the product may still be haram. The presence of a non-halal processing aid should result in the rejection of the finished product by the halal certification agency (Anir et al., 2008). In fact, contact with any non-halal additive or processing aid with halal ingredients will result in a product that should not be acceptable for use in the halal market. Furthermore, food additives do not need to appear on the ingredients label statement, when used as carriers, processing aids and anti-caking agents. Because of how they are processed, some foods may become contaminated with unintentional food additives that are not Halal such as food grade equipment lubricants. There are several chemicals that may use some ingredients or enzymes from non-Halal source and that make them not suitable for Halal food production. The raw materials used for manufacturing packaging materials, their processing, and any coatings used with the packaging materials are of importance with foods for the halal market. It is important to note that the packaging used for halal foods is as important as the other ingredients that are used for halal foods. There are additives in packaging materials for improvement of its functionality and some of these are not acceptable for halal products, such as compounds from materials of animal origin. Even something as innocuous as the steel used to make the typical “tin” can or 55-gallon drums, which are widely used in the food industry, may have been coated with a protective coating that had in the past been made containing a pork ingredient (Riaz and Chaudry, 2004). In the U.S., the American steel industry understands this concern and has eliminated these materials. But again, as the food industry globalizes, the issue needs to be addressed in other countries. Plastics may contain chemicals that are meant to or may accidentally migrate to the food contact surfaces, that is, where the packaging touches the food product, making packaging material unacceptable for halal products. Glycerol mono-stearate and glycerol mono-oleate are used as releasing agents or lubricants for metal and plastic containers and for some films to keep the food product from “sticking” to the packaging. These may be of animal origin, so the use of these compounds must be checked to be sure they are acceptable, that is, from plant sources or from Halal-slaughtered animals. To make sure all aspects of the food’s production is Halal food companies need to be able to assure Halal consumers that all these food additives are Halal. This requires that a food company work closely with their Halal certifier and that the Halal certifier is knowledgeable about and checks the Halal status of all additives that are used in or come in contact with a food product (Noordin et al., 2014).

5. Conclusion At a minimum, segregation of halal and non-halal additives, processing aids, and packaging materials in receiving, storage, preparation, and scaling areas is recommended. It is important for a food company to work closely with its Halal certifying agency to be sure that all ingredients and packaging are suitable for Halal products (Riaz and Chaudry 2019). The Standards and Metrology Institute for Islamic Countries (SMIIC) recently released their general requirements for food additives and other added chemicals to Halal food in July 2020. The purpose of these SMIIC24: 2020 standard is to guide the food industries in selecting Halal food additives and other added chemicals for producing Halal foods. For those purposes, these requirements provide a detailed list that specifies whether this additive to be used is classified as doubtful or non-halal. It also serves as a useful reference for consumers to check if the food additive mentioned on the product label is doubtful or not.

References


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Fiqh’s View of Modern Food Biotechnology

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A R T I C L E I N F O

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A B S T R A C T

Modern biotechnology is a broad discipline in which basic biological sciences, engineering and information technologies are intertwined and applied together. Early modern biotechnology applications in health, agriculture, environment, industry is today increasingly found in food production. Thus, new food sources have been obtained by replacing traditional ones. Religious beliefs influence individual consumption preferences; therefore, consumers want to know what they are eating and make their preferences accordingly. As individuals and as a society, Muslims are responsible for producing, consuming and trading their food not according to their wishes, but within the halal boundaries established by Almighty Allah. Unveiling the benefits and harms of modern biotechnological foods, which require interdisciplinary study, is a necessity not only for Muslims, but for all humanity. For this reason, all aspects of these foods need to be surveyed and investigated by the related disciplines and understanding their Fiqh viewpoints especially for halal nutrition and halal lifestyle is of great benefit for all humanity in religious, legal, moral, and economic terms.

Introduction

Biotechnology is a branch of science that aims to produce products and services by combining technologies applied to living systems of plant, animal and microbial origin or to original structures consisting of these systems.[1] In other words, biotechnology is called as genetically modified foods, animals or microorganisms through genetical engineering methods by integrating foreign genes into their genetic structures (genome) and have a stable unified structure. [2,3]

In recent years, with the development of science and technology, combined with traditional breeding methods, mutation, protoplast culture, fattening environment, pollination and fertilization, embryo culture and gene technology are used.[4] Therefore, modern biotechnology applications have replaced traditional biotechnology today.[5] Modern biotechnology is a broad discipline in which basic biological sciences, engineering and information technologies are intertwined and used together[6]

Today, modern biotechnology applications used in health, agriculture, environment, industry are also used in food production. Thus, new food sources have been obtained by replacing traditional foods. As a result of the use of modern biotechnology and genetic engineering applications in food production, food science has quickly turned into food biotechnology, and the era of Biotechnology has begun to develop rapidly.[7]

In this context, it is known that a wide range of modern foods are produced as a result of the use of modern biotechnology applications and biotechnology engineering in food production.[8] However, in the past 20 years, the possible negative effects of plant varieties, developed with recombinant DNA or genetic engineering techniques and resistant to diseases and pests, are extensively discussed and their benefits are questioned from different perspectives.[9-11] In particular, using modern biotechnological methods and a growing proportion of the benefits of these foods are produced and available to the consumer, in contrast to human and animal health and the environment and particularly on biodiversity arising from this type of foods to protect from possible negative impacts, the issue of biosafety has been raised,[12] and even some legal regulations were made.[13]

On the other hand, one of the most fundamental factors affecting the food consumption of people who believe as individuals and as a society is their religious beliefs. Because religious beliefs influence individuals’ consumption preferences, [14] In this way, consumers want to know what they are eating and make their preferences accordingly. For example, some belief groups such as Muslims, Jews and Hindus want to stay
away from fruits and vegetables that contain insects and animal genes, and Muslims and Jews oppose to grains that contain pork gene, while some vegetarians oppose to fruits and vegetables containing animal genes. [15] Thus, the need of knowing the properties of the product consumed may be of great importance both religiously, morally and socio-economically. It is stated in this Qur’anic verse that human life is a test: “In fact, we created the mankind from a purely muddy essence, and we gave him hearing and seeing abilities so we could test him”[16] In this world of testing, Within this test logic, Allah has characterized the human behaviors as appropriate and halal and as inappropriate and haram.[17] Halal and Haram, especially within the framework of halal life, as a requirement of serving in the lives of Muslims [18] and as a means of testing, contain great benefits from the point of view of the individual and the order of society. For this reason, as individuals and as a society, Muslims are responsible for producing, consuming and trading their food not according to their own wishes, but within the halal boundaries established by Almighty Allah. In the context of this responsibility, as in the past, the demand for Muslim consumers to know about halal food and the content of the food they consume is increasing day by day. Currently, there are no strict Fiqh provisions related to modern biotechnological foods that have emerged with the development of science and technology. Unveiling the benefits and harms of modern biotechnological foods, which require interdisciplinary study, is a necessity not only for Muslims, but for all humanity. For this reason, all aspects of these foods need to be surveyed and investigated by the related disciplines and understanding their Fiqh viewpoints especially for halal nutrition and halal lifestyle is of great benefits for all humanity in religious, legal, moral, and economic terms.

1. An Overview of Modern Food Biotechnology

1.1. Application Areas of Modern Food Biotechnology

Modern food biotechnology is an interdisciplinary science whereby modern biotechnological products are obtained by application of modern biological techniques such as microorganism, cell or tissue cultures, microbial metabolits, microbiology, biochemistry engineering in food production and processing.[19] This requires an orderly integartion of multiple disciplines.[20] Food biotechnology has culminated in a branch of food science[21] in which modern biotechnological methods are applied and the genes of animals, plants and microorganisms are changed in or modified to improve, modify and obtain new species of production, marketing and nutrition characteristics that are desired.[22, 23] According to Aran, “Modern food technology covers microorganisms, living organisms such as plants and animals and metabolites isolated from these organisms (e.g. enzymes) and their use in manufacturing of new food products and additives, development of food processing techniques, assessment of of genetic modification in food safety and rapid food analysis techniques.”[24]

Increasing efficiency, durability and quality, genetic modification helps development of new products by providing various food substance, preservatives, mikrobiyalpolisakkarit, amino acids, organic acids, artificial sweeteners, flavorings and additives such as coloring agents, mikrobiyal proteins, as well as improvement of traditional products, evaluation of food and agricultural waste, development or purification of tolerable biological derivatives against non-tolerable product components such as lactose-free milk production, and starter culture production.[25]

Food biotechnology and bioprocess have continuously developed and been applied in all stages of food processing, preservation pre-consumption. Especially thanks to the innovations brought by nanotechnology, knowledge of the properties of microorganisms and their manipulation have brought important innovations in food bioprocesses and also have the potential to find an application area. However, nanosensors have been developed that can detect any pathogenic microorganisms, their toxins, or other undesirable substances that may be present in the body of foods or packaging materials. It is known that enzymes obtained and produced by biotechnological methods from microorganisms have largely replaced commercial enzymes of animal and plant origin. In addition, recombinant microorganisms obtained by changing the genetic structures of microorganisms allow the production of a number of food additives and components at high efficiency.[26]

As a result, we can say that modern biotechnological foods developed by genetic engineering techniques have found application in many sectors such as agriculture and food sector, especially livestock, industry, health.

1.2. Practical Aims of Modern Food Biotechnology

Modern food biotechnology can help to improve nutritional value, appearance, texture, flavor, shelf life, ease of processing and economic value and also to ensure the supply of food is by protecting crops and animals from diseases.[27]

In other words, this technology is used in a wide range from meeting food requirements, preparing high-quality, reliable and health-protecting foodstuffs, developing a production system that protects the environment and resources, and maintaining a competitive environment in the country and nutrition economy.[28, 29] For this reason, it is aimed to improve [30-34] product quality by changing the genetic structure of plant foods and by reducing agricultural production costs as well as improving the appearance, nutritional value, processing or preservation properties of the product to be obtained.[35-38] In addition to increasing meat yield by changing the genetic structure of animal foods, benefits such as increasing milk production in cows by transferring the gene that promotes growth hormone production, increasing the amount of casein for cheese production, or changing the milk content, such as weaning lactose for lactose-sensitive consumers, are targeted. It is also aimed to obtain low cholesterol egg-producing poultry and especially high meat growth of about twenty kinds of fish including carp, catfish, salmon, tile fish or to increas
body resistance to adverse climatic conditions. Besides the direct use of genetically modified plant and animal products, microorganisms such as genetically modified bacteria, yeasts and molds, bread, cheese, viticulture products, etc. are also used in various productions to obtain amino acid as enzyme and food additive. Therefore, the aim of contributing to industrial production is also driven by giving new properties to microorganisms used in areas such as fermentation technology, biodegradation processes, separation methods, or eliminating unwanted properties. [39, 40]

2. Fiqh’s View of Modern Food Biotechnology

As the pillars Islamic religion, halal and haram are in the field of unchanging provisions. The Qur’an also says; “O People! Eat from the halal and clean things on earth...” [41] The critical phrase here is “helâlen tayyiben”, and “halal” refers to the religion and faith, and tayyib” expresses quality, health, hygiene, cleanliness, nurturing and trust.[42] Therefore, the religion of Islam has released the consumption of all good and clean foods and banned the consumption of non-clean and harmful foods.[43]

In a hadith of the Prophet: “The halal is what Allah has termed licit in the book. Haram is what Allah has termed illicit in the book. Things that Allah has not made a statement about are permissible (mubah).” [44] Another hadith says, “By Allah, who has the soul of Muhammad, the likeness of a believer is like the likeness of a honeybee. He always eats good things, always produces good things. He’s everywhere, but he doesn’t spill, break, or break anything.” [45]

As can be seen from both the verse and the hadith, from the Fiqh point of view, all stages of both produced and consumed foods should be halal tayyiben in accordance with Islamic criteria, as well as in accordance with the needs and maslahat of man.

From the Fiqh viewpoint, observance of halal is imperative at all levels including elements contained in the composition of genetically modified foods, hygienic and sanitary conditions as well as nutritional qualities.[46]

In ensuring food security, halal and tayyib must be respected at every stage including materials and articles in contact with food products and hygienic properties and qualities, processing, processing of additives and auxiliary substances, packaging, labeling, storage, transport, sale, audit procedures and protection of consumer rights.

Another important point from a Fiqh point of view is the question of any uncertainty that may arise during the production phase of modern biotechnological foods, such as genetically modified foods, and whether this can be taken as a precaution. Otherwise, concern about foods produced by modern biotechnological methods, such as genetically modified foods, will remain on the agenda day by day, not only for Muslims, but for all of humanity.

2.1. Maslahah Principle in Modern Biotechnological Foods

Since there are no explicit provisions set out in the Qur’an and Sunnah regarding the modern biotechnological foods, the provisions needed can be obtained [47] on the basis of the basic principles in the Qur’an and Sunnah, Islamic law and scientific data, by considering the benefits for human (maslahah) and goals of the religion (maqasidus’s-sharia) [48]

Maslahah, aiming at “obtaining the beneficial and avoiding the harmful” (celb-i menfa’at def’i madarrat) [49-51] is in turn based on the principle of “protecting what is in the best interests of society and eliminating what is harmful.”[52, 53] The opposite of maslahah is mefsedet [54, 55] or madarrat, which means evil or disorder. Therefore, in the Islamic legal literature, maslahah is a method of obtaining material and spiritual benefits and eliminating damages.

This aim is known as mandatory maslahah or so called maqasidus-sharia [56] in Islamic law and targets the protection of and immunity for five principal values (zarûriyyât-1 hamse) [57-60] for humanity in all religions and legal systems. These five principal values are the life, reason, religion, generation and property, which are the highest in the tripartite separation of maslahah.

As with all foods, in modern biotechnological foods, maslahat can be defined as the obtaining of useful foods to ensure the halal nutrition of humans and the prohibition of harmful foods in order for people to achieve happiness in the world and the hereafter, to protect human and human health.

From perspective of Fiqh, the fact that consumers want to know what they eat and can make their preferences according to it also makes maslahahas, especially within the scope of zarùriyyat, important in modern biotechnological foods.

Labeling of the modern biotechnology foods is an imperative for people’s interest (maslahah) as it also eases the consumer choice though sometimes may be disliked by biotechnology companies. Both distributors and customers of halal products check whether the food is halal and prefer products with halal certification. Therefore, it is consumer interest or maslahah to know what is produced and how it is produced.

Indeed, the Prophet (pnh) said: “If a person has a defect in his property, it is not lawful (halal) for him to sell it without explanation.” [61] and in another hadith, “he who deceives us is not one of us.”[62, 63] As can be seen from these hadiths according to Islamic law, consumer protection is essential. [64] If the properties of a product are not fully known, this purchase act is a fatal and such a contract must be terminated. The customer is given some approval rights [65-68] such as conditioning, [69,70] sighting, [71] defect [72] guaranty and qualification [73] in shopping. Therefore, when a product bought by considering it was not genetically modified but later understood so, the buying transaction may be invalid due to this defect in the product. For this reason, according to the maslahah principle of Fiqh, the source gene must be specified in addition to the label information on the modern biotechnological foods that genetics has been changed.

Since the purpose of sending all Fiqh provisions is maslahah, [74-76] the purpose of the prohibitions [77] on food in the Qur’an is the protection of physical and mental health. This aim is known as mandatory maslahah or so called maqasidus-sharia in Fiqh and
targets the protection of and immunity for five principal values (zarûriyyât-ı hamse) for humanity in all religions and legal systems. These five principal values are the life, reason, religion, generation, and property, which are the highest in the tripartite separation of maslahah.[78-80] Everything that is intended to protect these five basic values is considered as beneficial (maslahah) while the things that eliminate them are considered as harmful (mefsedet). Therefore, any stages of these foods should not conflict with these five principals, which are the main purpose of religion. The production of these foods may be valid according to fiqh/Islamic law if they preserve these values for humanity.

From a Fiqh point of view, we can say that the purpose of observing maslahah in modern biotechnological foods is to protect the five integral values (life, mind, religion, generation, property), which make up the essential part of the person that religion aims to protect and maintain, especially by ensuring the halal nutrition of the person.

2.2. Conditions for Practicing Mürsel Maslahah in Modern Biotechnology Foods

In order to judge according to mürsel maslahah principle in the resolution of issues related to all modern biotechnological foods in the absence of religious-legal provisions in Fiqh, some of the conditions that must be followed are: a) The provision to be given should not be contrary to the original sources of fiqh science (the Qur’an and the Sunnah). b) In the provision to be given, the benefit/maslahah must be general. c) The provision that will be given must be qualified to ensure that the benefit/maslahah either protects something that is mandatory (necessary) or eliminates the difficulty. d) In the provision to be given, it is necessary to make sure that the benefit/maslahah exists. e) In the provision to be given, the benefit/maslahah must be reasonable. [81, 82]

According to the religion of Islam, the Qur’an says that the universe was created in a unique order and delicate balance; “Certainly we have created everything according to a measure.” [83] The creation of the universe in a unique order and a delicate balance is expressed in the Qur’an by the following verse: “Allah has raised the heavens and put the balance. Do not break the balance.”[84] The protection of this measure, balance and order has been in turn imposed on human beings as a duty. Therefore, the universe, which is a trust in the human hand, must be protected and developed within the natural balance created by Allah, and the benefits offered by Allah must be utilized in a way that will not disturb the balance.

What is important about the GMFs is our responsibility to protect our genetic code, which has been passed down from generation to generation as well as the trust of previous generations, as well as human health. The task of science is to search tirelessly for the clues of how the ecological balance, whereby the soil, the beetles and the plants are integral parts, will be affected by this universal biological experiment.[85] Otherwise, people will face negative consequences of what they do in the world and in the hereafter. In the Qur’an regarding this issue; “Because of the evil that people have committed themselves, corruption has occurred in land and sea. Allah will have them to taste some of the bad consequences of what they have so as to deter them from the wrongdoing.” [86] In the context of this verse, in order to be able to perform genetic engineering applications on bacteria and other microscopic creatures, plants and animals, Paçaçı[87] insists on the following conditions: the existence of a religiously valid benefit, avoidance of greater harm, no torture and torment on animals and no violation of ecological balance.

In this context, in the evaluation of safety of genetically modified food products, it is necessary to pay attention to the fact that DNA in the GMFs is a gene transfer to human and to its consequences for human health. In particular, it is necessary to think well about how the genes transferred to food products will be located in the human intestinal microflora and whether they will make a change in the genetic structure of the human. It is noted that the effects of these products on human health in the short and long term are not sufficiently known and it will be an irreversible process if they threaten genetic diversity. [88]

Besides whether the products produced with biotechnology are safe or not, it is also pointed out that this technology is open to the use of malevolent people, and it also carries the unknown that comes with innovations as a risk. For example, the possibility that the products obtained with this technology gain unwanted and unexpected qualities during genetic interventions and the difficulty in maintaining the genetic diversity within each species is considered as the main risks. Therefore, risk analysis and necessary precautions should be taken in GM food products that are likely to pose a risk in the long term. [89]

Therefore, since accurate scientific data on the potential harms of modern biotechnology applications cannot be revealed at the desired level today, it is essential to conduct risk analysis[90] and take the necessary measures in genetically modified foods that are likely to pose a risk in the long term, both for production and use purposes.[91] According to the principle of caution as the most advanced form of prevention, although there is no clear and clear evidence to show the causal relationship between the damage that may occur after the presence of risk has been detected and the situation shown as the cause, necessary measures should be taken to prevent the outcome from occurring. “A deliberative choice must be made between risk and caution and it must be in favor of caution.”[92]

Indeed, different views among countries are persistent on genetically modified foods and discussions continues in health, environmental, sociological, economic, and religious spheres.

The point of complete elimination of the unknowns about these foods, which can even be turned into a “biological threat” by genetically modifying them, is very important from the point of view of the general acceptance of these foods. For this reason, both in our country and all over the world, we can say that the view that a protectionist approach to production and consumption should continue until the potential harms of modern biotechnological foods are proven otherwise is quite accurate.[93]
On the other hand, it is stated that when there is a more general purpose, such as serving humanity, gene exchange can be allowed, and genetically modified food, whether animal or plant, will be halal if genes are obtained from a halal source and are not harmful to human health. [94]

In this context, genetically modified food or transferred gene, dead meat (meyte), flowing blood, pork, animals slaughtered in the name of someone other than Allah, hamr, wine, drugs, such as the religion of Islam should not be strictly haram/forsidden [95] substances. Therefore, from a Fiqh point of view, every product whose source is halal is halal, and products produced or produced from foods whose source is haram are forbidden and prohibited.

Considering its positive effects on agriculture, in promoting biotechnology and genetic engineering, food safety is a collective obligation (fardhu kifayah) for all humanity in general and Muslims in particular. [96] But the transfer of genes from insects to plants and from animals to animals, especially in genetically modified foods obtained by modern biotechnological applications, is seen as worrying situations. Although recent developments in the food industry have led scientists to design plants with genes that contain more nutritional value, for example, it is stated that the gene transferred from animals to plants will be considered halal if the source animal is halal.[97] In addition, “it is not enough for the contained product to meet the requirements of halalness, but the packaging in which it is put in should also comply with the Islamic religious principles. Especially the fact that most of the gelatin produced is from pig origin, the use of chitosan produced from shellfish, which is prohibited by some Islamic teachings, the use of shellac as a coating agent, the use of pig-based oils in paper packaging machines, the source of oils used in the production of plastic and metal boxes used in packaging. Also, the possibility that casing used in meat products such as sausage, ham, salami and sausages originated from swine are important, and they are Islamically questionable for packaging.”[98]

In addition, modern biotechnological foods should not be mixed with these prohibited substances.[99] For example, enzymes from modern biotechnological foods are used for many purposes, such as cooking, fruit and vegetable processing, cheese making, beverage and food production. Enzymes can also be taken from animals, plants and microorganisms. Depending on the source, they may be halal or haram. If the source is halal, the enzyme is considered halal if the animal is cut according to Islamic procedures. If the animal is not slaughtered in accordance with Islamic procedures, the enzyme will be forbidden because it will be suspicious.[100] Because in a hadith, the Prophet said, “lawful is clear, and forbidden is clear. And between them are suspicious things that most people do not know. And whosoever fears suspicious things, he protects his religion and his chastity. And whosoever falls for suspicious things, he is forbidden...” [101] that has decreed.

Generally, the benefit and harm in foods coexist and rarely one exists. Therefore, in order to conclude a plant is harmful, conditions such that the damage from the plant must have occurred rather than being likely, the damage must be continuous but not occasional, the damage must be greater than the benefit, and the damage must be clear, are sought. The approach to modern biotechnological foods should be within the framework of these conditions and accordingly be decided. Because according to Fiqh, it cannot be ruled [102, 103] in arbitrary cases that have not yet happened, uncertain to happen, even does happen, it is not persistence. This approach is expressed in Mecelle as “something known for sure does not disappear with suspicion.” [104]

According to Islamic law, the benefit-loss criterion is a means of determining whether the foods that do not have a definite religious-legal provision are halal or haram. [105] It is necessary to examine the GMFs in terms of benefit and harm and to determine the harm to human health clearly and precisely [106] Rather than the benefit of GMFs, the potential risk and harm are the first priority and concern as expressed by “def’i mefâsid celt-i menâf’iden evladr.” (elimination of the damage is prioritized to the benefit).”[107] Eliminating bad and harmful things is more important than achieving useful things. When benefit and harm conflict in a matter, it should be primarily based on the elimination of harm.

In this context, research priorities should be determined by taking into account the situation and needs of the countries. However, it is necessary to increase research capacity, train experienced personnel, increase and modernize the number of accredited laboratories by directing modern biotechnology applications. [108]

In order for the right decisions to be made on issues related to Modern biotechnological foods, it is necessary to first investigate and examine all aspects of the relevant events or issues very well, and to obtain information from the experts of the subject if necessary. In addition to the maslahah and concepts currently raised by the relevant issue, the impact and consequences of the short, medium and long term should be taken into account when making a decision according to maslahah. Both the benefit and the harm associated with modern biotechnological foods can coexist. In fact, the hadith of the Prophet (puh) “Lâ darara ve lâ dırâran (both harming and responding with harming are prohibited).” [109, 110]

A general rule of Islamic legal methodology in all disputes is that “loss is to be isolated, removed or eliminated” [111] Therefore, regarding the GMFs, if the benefit/maslahah and damage/mefsedet are mixed, it is necessary to make a comprehensive examination and decide according to the one which is dominant. Similarly, “of the two benefits the bigger one is to be preferred” and “of the two harms the smaller one is to be preferred” and “of the two benefits the general one is preferred to specific one”. According to these general rules, the benefit-loss balance of the GMFs must be clearly determined and eliminating the losses should be preferred to harvesting benefits [112]

Protecting biodiversity in the agricultural areas and nature is at least important as the global efforts to protect plants and animals in gene banks, botanical gardens and zoos. In this context, according to Islamic law, halal must be respected from the composing of elements to the production stages of the GMFs by especially satisfying
the Islamic measures for health, cleaning, and nutrition. [113]

In this context, organic agricultural products, which are more and more accepted and in demand in the world, have made significant improvements in recent years and most of the certified organic products produced are exported to developed countries, especially EU countries. In the coming years, in parallel with the increase in consumer awareness, the use of these products, hence their production and Sunday share both nationally and internationally, is thought to increase further.

However, in recent times, especially in developed countries, production and consumption are described in the form of a return to nature as a form of “eco-village” as a design system for creating sustainable human settlements, plants, animals, buildings, infrastructure, water, energy, and the mutual relationships between these elements and the idea of living in harmony with nature contains a “permaculture” approach, increasingly widespread use of both for our country and also for the whole world to be considered for future opportunities [114] and we believe that is due to the interests of humanity.

As a wisdom of Fiqh, whose priority is currently halal nutrition and life, an interdisciplinary study of modern biotechnologic foods is in the benefit of all humanity from religious, legal, moral and economic viewpoint.

3. Conclusion

Modern biotechnology applications have replaced traditional biotechnology today. Modern biotechnology is a broad discipline in which basic biological sciences, engineering and information technologies are intertwined and applied together. As a result of the use of modern biotechnology and genetic engineering applications in food production, food science has quickly turned into food biotechnology, and the era of biotechnology has begun to develop rapidly. Religious beliefs influence individual consumption preferences. In this way, consumers want to know what they are eating and make their preferences accordingly.

From the Fiqh’s perspective, foods produced with modern biotechnology and production of genetically modified foods produced foods to hold all the elements contained in the composition of each element in the composition of genetically modified foods in hygienic conditions and sanitary measures effects that may occur with a combination of the Islamic, humanitarian needs in terms of nutrition needs to carry the qualities that suit for lawful observance is imperative.

Since there are no explicit provisions set out in the Qur’an and Sunnah regarding the modern biotechnological foods, the provisions needed can be obtained on the basis of the basic principles in the Qur’an and Sunnah, Islamic law and scientific data, by considering the benefits for human (maslahah) and goals of the religion (maqasidu’s-sharia). Both in our country and all over the world, the protectionist approach to production and consumption should be maintained until the potential harms of modern biotechnological foods are proven otherwise. For the halalness of a product, it is not enough to meet the halal requirements only, but packing should also comply with the Islamic religious principles.

Protecting biodiversity in the agricultural areas and nature is at least important as the global efforts to protect plants and animals in gene banks, botanical gardens and zoos. In this context, according to Islamic law, halal must be respected from the composing elements to the production stages of the GMFs by especially satisfying the Islamic measures for health, cleaning, and nutrition.

However, in recent times, especially in developed countries, production and consumption are described in the form of a return to nature as a form of “eco-village” as a design system for creating sustainable human settlements, plants, animals, buildings, infrastructure, water, and energy. Further, the mutual relationships between these elements and the idea of living in harmony with nature, together known as “permaculture” approach, finds increasingly widespread use in both our country and in the world, which is to be considered as future opportunity for humanity as a maslahah principle.

As individuals and as a society, Muslims are therefore responsible for producing, consuming and trading their food not according to their own wishes, but within the halal boundaries established by Almighty Allah. Revealing the benefits and harms of modern biotechnological foods, which require interdisciplinary study, is a necessity not only for Muslims, but for all humanity.

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Part VIII

Halal Pharmaceuticals
Halal Pharmaceuticals: How Many Standards are Needed to Regulate the Many Different Types of Pharmaceuticals?

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\textbf{ABSTRACT}

The speech given by Dr Mohammed Ali Alsheikh Wace about the SMIIC TC16 halal pharmaceuticals issues future plan and the need to produce many different standards to regulate the halal pharmaceuticals industry in the OIC countries and around the world.

1. Questions we need to answer before:

The pharmaceutical industry is one of the highly regulated industries, with many rules and regulations enforced by governments to protect the health and well-being of the public. On the other side the halal pharmaceuticals sector still walking its first steps; SMIIC TC16 the halal pharmaceuticals issues just started to draft the new OIC/SMIIC 50 standard which will be the first international halal pharmaceuticals standard around the world. Before we answer the main question of this paper, we need to answer many questions to reach the right answer.

\textit{Who will take the medicine?}

Domesticated animals consume large quantities of vaccines and antibiotics, the veterinary drugs are regulated by the veterinary pharmacopoeia. TC16 makes the priority to regulate the human medicines before discussing the veterinary medicines.

\textit{Is it necessary?}

It is common discussion about priorities, Prescriptions medicines vs OTC (over the counter) drugs. Medicines vs dietary supplements and compulsory vaccines vs optional vaccines.

\textit{Is it food or medicine?}

On the other side a discussion about the definition of medicines vs dietary supplements and medicines vs Nutraceuticals. Which ministry will regulate and produce license? Is it ministry of health or ministry of trade? In SMIIC level shall the dietary supplements standard discussed in SMIIC TC1 halal food issues or TC16 halal pharmaceuticals issues?

\textit{How about these products?}

Products such as medical devices, medical gases, dressings, sutures and surgical sponges are under TC16 scope or not? Is it a priority in the halal pharmaceuticals sector?

From the previous questions we can estimate the big market of the halal pharmaceuticals and its many different types of products and services related with it.

2. Current situation:

Before discussing the halal pharmaceuticals regulating and number of standards needed, we should know \textit{if the pharmaceuticals regulations are unified around the world?} There are different organizations aimed to unified the pharmaceuticals standards around the world here are the most well-known of them:

1. \textit{The International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH)} is an initiative that brings together regulatory authorities and pharmaceutical industry to discuss scientific and technical aspects of pharmaceutical product development and registration. The history of this organization started in April 1990 but in 2015 its reformed and registered as non-profit association. The ICH topics are divided into four categories and ICH topic codes are assigned according to these categories:

   \begin{itemize}
   \item Q : Quality Guidelines
   \item S : Safety Guidelines
   \item E : Efficacy Guidelines
   \item M : Multidisciplinary Guidelines
   \end{itemize}

2. \textit{PIC/S Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme} that provides the pharmaceuticals GMP guidelines for industries. Mainly they provide guidelines for sterile pharmaceutical guidelines. They also provide quality assurance guidelines as the market complaint, product recalls etc.

3. \textit{The World Health Organization WHO}.

4. \textit{European Medicine Agency}.

5. \textit{US Pharmacopoeia and British Pharmacopoeia}.

\textit{How many ISO standards?}

ISO IDMP (Identification of Medicinal Products) is the dedicated ISO standards with for the pharmaceuticals industry (beside ISO9001 for the quality) The five standards in the IDMP series include:

1. Substances – ISO 11238


2. Pharmaceutical dose forms, units of presentation, routes of administration, and packaging – ISO 11239
3. Units of measurement – ISO 11240
4. Regulated medicinal product information – ISO 11615
5. Regulated pharmaceutical product information – ISO 11616

Halal critical pharmaceuticals
Among the different pharmaceutical categories these groups consider as highly halal critical:
1) Biological and biotechnology products
2) Blood and blood products
3) Dietary supplements
4) Excipients/other drug ingredients

Halal critical dosage forms
1) Creams
2) Capsules
3) Gels
4) Elixirs
5) Shampoos
6) Suppositories

Available regulations in OIC countries
4 Countries with halal pharmaceuticals standard
3 Countries with regulations about porcine in medicines
5 Countries with national pharmacopoeia
11 Countries with vaccine industry

3. TC 16 difficulties and problems
1) Pharmaceutical’s regulation body is different than SMIIC member body. To solve this problem SMIIC involved in different meetings with the drug regulators. For example SMIIC involvement in The First Meeting Of The Heads Of National Medicines Regulatory Authorities (NMRAs) of OIC Member Countries which held in Jakarta - October 2018 and the virtual workshop “Enhancing Collaboration in Research, Manufacturing, Management of Medicines and Vaccines in The OIC Member States” which organized virtually in December 2020.
2) Medicine manufacturers are not involved in the committee discussions. To solve this problem SMIIC encourage all member countries to establish a mirror committee where the expert from the industry can join the discussions and reflect their own point of views. SMIIC also encourage pharmaceuticals organizations to do liaison with SMIIC according to the SMIIC directives.
3) lack of expert and expertise. Actually, the technical committee need of both technical and Islamic fiqh experts and SMIIC just started the experts working groups which will help to solve this problem.

4. Conclusion: What is the answer?
Halal pharmaceuticals indeed need many standards to be regulated. There should be a plan and a strategy map to set priorities and the action timeline. SMIIC invites all members and related organizations to involve in developing these standards

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Ethanol: Halal Industrial Guidelines and the Acceptable Limit in Halal Products

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ABSTRACT

This paper intends to elaborate ethanol and its acceptable minimum level in halal industry by describing BAC, the factors which determine BAC, halal industrial guidelines and different thoughts from the classical Islamic Jurisprudence highlighting the viewpoint of Imam Abu Hanifa with respect to the sources of alcohol as a suggestion to the halal industry for the acceptable limit in the multiple food products. The full article shall contain short introduction about ethanol, its history, uses, viewpoints of different Schools of Fiqh, the fact that how intoxication happened and the definition of BAC, alternatives to ethanol, example of food additives and their solubility and residues of natural accrued ethanol in foods.

1. Introduction

Ethanol is a chemical compound, also called alcohol, ethyl alcohol and drinking alcohol. It is an organic natural product which is from the class of organic compounds known as alcohols. Other examples include methanol, propanol, iso-propanol, butanol etc. It is a flammable and colourless liquid with a slight characteristic odour. Ethanol is naturally produced by the fermentation of sugar by yeast and is most commonly consumed for recreation (Alzeer & Hadeed, 2016). It is the non-toxic alcohol; also, it is an antibacterial, anti-microbial, antifungal agent. In large quantities, it causes intoxication in humans. It is applied medically as an antiseptic and disinfectant. The compound is widely used as a chemical solvent, either for scientific chemical testing or in synthesis of other organic compounds, and is a vital substance utilized across many kinds of manufacturing industries. Industrially, ethanol is used for cleaning of equipment, extraction of natural flavours, colours, and as a base for flavour blends (Kawakami et al., 2013).

The origin of alcohol is still debatable among researchers and philosophers belonging to religion, sociology, chemistry, economy, medicine, and psychology, owing to its scattered historical records founded in ancient civilizations, such as, Mesopotamian, Egyptian, Chinese, American, Greek and Asian civilizations (Hamdan-Mansour, 2016). According to (Keller, 1979), if one had to debate its origin, he would need to study 50,000 years of history regarding its use and misuse. However, during Neolithic Era or New Stone Age, there came a great shift in human civilization, which had caused them to practice agriculture instead of gathering and hunting (Phillips, 2014). Resultantly various wild plant sources such as cereals and fruits became domesticated. Among cereal grains, barley and wheat were accredited toward production of beer while among fruits grapes, dates and palm were accredited toward wine production. Hames, (2014) categorized alcohol origins depending upon the available resources. Therefore, in Mesopotamian and Egyptian regions cereals grains were more prevalent amongst the others, so they became their principal source material of production of alcoholic drinks (beer) while in Chinese, Indian, and American regions, the wider availability of rice and millet, milkweed, and corn became their wine production sources, respectively.

During that time, there were no concept of ethanol as main ingredient of alcoholic beverages and were prepared following traditional fermentation methods that varied regionally. The discovery of ethanol being the principal ingredient in alcoholic beverages, was attributed to the process of distillation. Although, distillation process was practiced during ancient civilization, the production of distilled beverages, that had paved way toward alcohol and its association with ethanol, started near the end of 12th Century (Liebmann, 1953). At that time these distilled alcohols were produced in limited quantities and were mainly used by physicians to cure diseases and by chemist to do experiments (Matthee, 1995; Phillips, 2014). However, near the end of 16th Century, rapid industrialization and advancement in science and technology caused increased production of distilled alcoholic beverages (Kockmann, 2014). Such increased availability allowed people to consume distilled alcoholic beverages such as brandy (wine) and whiskey (beer) and resulted in more adverse consequences as compared to non-distilled ones. Therefore, in Late 19th Century disease concept of
alcoholic beverages was introduced by various physicians, socialist and religious groups. (Hamdan-Mansour, 2016). Resultantly, adverse effects of alcoholic beverages became a topic of interest among researchers belonging to medicine, sociology, psychology, and religion and is now considered as substance-related disorder according to American Psychiatric Association.

The description about improvements in the process of distillation would not be completed without describing the significant contribution by the great Muslim scientist of 8th century, Jabir Bin Hayyan, who not only introduced the process of distillation, but also made it simple and efficient by designing the distillation equipment known as alembic (Schlosser, 2011). Although he discovered inflammable vapours while distilling wine but, alcohol was discovered by another Muslim scientist Al-Razi who followed his footsteps.

As stated, ethanol can cause intoxication in humans which invokes prohibition in Islam, therefore it falls in the slant of prohibited matters in Islamic jurisprudence (Awan and Anjum, 2017). The four major Schools of Jurisprudence (Hanafi, Shafi, Maliki and Hanbali) have discoursed this subject and agreed in principle that intoxication causes prohibition, but they have slightly differing views when the matter is dealt in detail. According to the Hanafi School, ethyl alcohol meant for consumption is divided into two categories, Khamr and non Khamr. Khamr is said to be alcoholic beverage derived from dates and grapes while non-khamr is alcoholic beverage derived from the sources other than dates and grapes. Furthermore, they declare that even the most minuscule amount of Khamr is Haram for consumption regardless of the fact whether it intoxicates or not, and it is Najis for external use, whereas about the non-khamr alcohol they are of the view that prohibition shall be enforced at the content level of alcohol in food product from where a person normally starts getting intoxication and the amount less than that shall be allowed (Usmani, n.d.). This school further declares that non-khamr alcohol is not najis in any amount and allowed for external use. All the remaining schools are of the opinion that regardless of the source, every intoxicant is Khamr, hence barred for consumption in any amount. They further proclaim since every intoxicant is Khamr, therefore it is rendered najis for external use (Usmani, n.d.).

Jurisprudentially the matter is of great concern when it was observed that ethyl alcohol is used in the food industry as solvents in flavours, colours, and preservatives. Beside foods, ethyl alcohol is also used widely in cosmetics, pharmaceuticals, and other industrial products. Since Halal food industry is flourishing day-in and day-out, therefore one of the critical concerns in issuing Halal certificates was the level of permissible alcohol content in food, cosmetics and pharmaceutical products (Jamaluddin et al., 2016). This is because as elaborated; it is barred due to intoxication while on the contrary at numerous places in food, cosmetics, and pharmaceutical industries it is the essential part of processing. Hereafter it was held necessary for the halal industry players to unfold the confusion and answer the question. While resolving the issue for the food industry, unfortunately leading countries of the halal food market differed from each other regarding the level of permissible alcohol content in food products, hence the level of alcohol content has not been standardized in several standards and fatwa of Islamic Scholars. In the countries such as Malaysia, Indonesia and Thailand, the permissible alcohol content is stated at 1% whilst Singapore benchmarked the level at 0.5% (Najihah et al., 2010). In other cases, such as Brunei, United Arab Emirates and some of the other gulf countries alcohol is not allowed to be present in halal food products, whereas in Pakistan initially no clear guideline was given. Islamic Food and Nutrition Council of America (IFANCA), a leading halal certification body declared that grain alcohol or synthetic alcohol may be used in the production of food ingredients as long as it is evaporated to a final level of 0.5% in food ingredients and 0.1% in consumer products (Riaz & Chaudry, 2003). Both the levels were admired, and both are now being followed by the leading halal industry players in numerous parts of the world. All these benchmarks have been established and legitimatized since at these levels the tiny amount of alcohol present in the food ingredient or consumer product cannot be tasted, smelled, or even sensed, hence, it is considered absent.

As mentioned above Hanafi Scholars categorized alcoholic beverages as Khamr and non-khamr, whereas the other prominent schools are of the opinion that regardless of the source every ethyl alcoholic beverage is Khamr, the latter opinion did not exist as it was when the matter was dealt for Halal certification. From the mentioned prominent schools, the leading Halal industry players like Indonesia, Malaysia and Singapore state that “alcohol itself can be distinguished into alcohol from wine or khamar industry, and alcohol from other than wine or khamar industry. If the alcohol from the khamar industry, then, Muslim scholars agreed that it is unlawful, or prohibited and odious. While alcohol which does not come from khamar industry, if it is used as an adjuvant and it is not detectable in the final product, then it is allowed to be used and it is not unclean” (Ahmad, 2018). This statement clearly distinguishes alcohol into khamr (edible) and non-khamr (non-edible/industrial), hereafter the question arises that regardless of the surrounding components, what is the difference between ethanol/alcohol being produced during the production of khamr and the ethanol being produced for industrial purpose. The surrounding components in Khamr are juices, sugar, carbohydrates, natural flavours, antioxidants, natural colours, etc., whereas industrial ethanol is free from natural flavours, antioxidants, and natural colours, therefore it is pure and highly concentrated and supposed to be toxic for consumption. Since it has been revealed before that alcohol is disallowed in Islamic jurisprudence due to the capability of intoxication, which is found in both the alcohols, Khamr (edible) and non-khamr (industrial), hereafter the question stands firmly that why one is allowed for processing purposes while the other is disallowed. Furthermore, why these benchmarks which were mentioned earlier have been made mandatory, when alcohol from the Khamr industry is not allowed and the alcohol which is used in Halal industry for processing purpose is from non-khamr industry.
The paper intends to elaborate these issues in addition to describing alcoholic beverages with their halal status, various uses of ethanol with halal industrial guidelines and aims to put forth the viewpoint of Imam Abu Hanifa with respect to the sources of alcohol as a suggestion to the Halal industry.

2. Multiple uses of Ethanol
Ethanol is multiply used in food, cosmetics, pharmaceuticals and fuel etc. It is an agent that has various uses. Following are some of them.

Recreation
Ethanol is one of the most widely used recreational substances. It is present in alcoholic beverages and has been consumed since ancient times. Ethanol has been used by humans since prehistory as the intoxicating ingredient of alcoholic beverages. Dried residue on 9,000-year-old pottery found in China suggests that Neolithic people consumed alcoholic beverages (Hames, 2014).

Food Additives
As a food additive, ethanol can help evenly distribute food colouring, as well as enhance the flavour of food extracts. For example, vanilla extract, a common food flavouring, is made by curing and processing vanilla beans in a solution of ethanol and water. Moreover, it is used as base for flavour to solubilize solid flavour ingredients and liquid components (Gutierrez et al., 2009).

Personal Care Products
A clear colourless liquid with a sweet smell, ethanol is an ideal solvent in personal care applications. In addition to its solvency power, ethanol can be used as a preservative or an intermediate in personal care applications. Ethanol is a common ingredient in many cosmetics and beauty products. It acts as an astringent to help clean skin, in lotions as a preservative and to help ensure that lotion ingredients do not separate, and in hairsprays to help the spray adhere to hair. Since it is miscible with water and a good solvent, therefore it is found in paints and personal care products such as mouthwashes, perfumes and deodorants (Schenger et al., 1988).

To discourage the drinking of pure ethanol from personal care or cleaning products, a “denaturant,” such as a bitter flavouring, is usually added. Denaturants make alcohol unsuitable for human consumption but does not change the other properties of the substance.

Pharmaceuticals
Ethanol is used within medicine as an antiseptic, disinfectant, and antidote. By applying to the skin, it is used to disinfect skin prior to a needle stick and surgery. It is used both to disinfect the skin of the patient and the hands of the healthcare providers (Lachenmeier, 2008). Furthermore, it is also used in most of the commercially available mouth washes (Kuriakose et al., 2016). Because ethanol is effective in killing microorganisms like bacteria, fungi and viruses, it is a common ingredient in many hand sanitizers. Many cough and cold liquids and other OTC (over-the-counter) products contain some alcohol (Neo et al., 2017). In the formulation, alcohol helps to dissolve active ingredients or preserve the product.

For Cleaning
As a disinfectant, ethanol works by denaturing proteins and dissolving lipids, effectively destroying many types of bacterial and viral cells. It is ineffective against spores. Ethanol is typically used in concentration of 70 percent, because higher concentrations evaporate too quickly, and lower concentrations aren't as effective. In manufacturing facilities where fats, oils and other water insoluble and immiscible products are used in the production lines, it is not possible to wash sufficiently while using water and detergents/cleaning agents/sanitizing agents. Ethanol is often found to be the best solvent as it is both fat and water soluble, for effective cleaning of these lines (Elzain et al., 2019).

Fuel
Ethanol is believed to be the "fuel of the future". It is being used as engine fuel. Brazil relies heavily upon the use of ethanol as an engine fuel, due in part to its role as the globe's leading producer of ethanol (Reel, 2006). Ethanol has also been used as rocket fuel and is currently in lightweight rocket-powered racing aircraft (Brandenburg et al., 2012). More than 20% of Brazilian cars are able to use 100% ethanol as fuel, which includes ethanol-only engines and flex-fuel engines (Della-Bianca et al., 2013).

3. Production of Ethanol
There are two fundamental modes of producing ethanol, Petro-chemically through the hydration of ethylene and via biological processes, by fermenting sugars with yeast (Zabed et al., 2014). Ethanol produced Petro-chemically is often called synthetic while the latter is called bioethanol. Ethanol was first produced thousands of years ago by fermentation of carbohydrates and in some countries large volumes are still produced by this method. Synthetic ethanol was first produced industrially in the 1930s by indirect catalytic hydration of ethylene (Roozbehani et al., 2013).

Synthetic ethanol is mainly utilized for industrial purposes and is said to be industrial ethanol whereas bioethanol though used industrially but mainly it is used in beverages for recreation. Amongst the petrochemical and biological which process is more economical depends on prevailing prices of petroleum and grain feed stocks. In the 1970s most industrial ethanol in the United States was made as a petrochemical, but in the 1980s the United States introduced subsidies for corn-based ethanol and today it is almost all made from that source (Witcoff et al., 2004).

As natural occurrence ethanol can commonly be found in overripe fruit. Ethanol is so ubiquitous in all biological systems that even fresh fruits contain traces of alcohol. During extraction of essences from fruits, alcohol might get concentrated into the essences as such alcohol is naturally present and unavoidable (Riaz & Chaudry, 2003). Ripe and over-ripe fruits of the Neotropical palm Astrocaryum standleyanum contained ethanol within the pulp at concentrations averaging 0.9% and 4.5%, respectively. Fruit ripening was associated with significant changes in colour, puncture resistance, sugar, and ethanol content (Dudley, 2004).
4. Classification of Alcoholic Beverages

As narrated earlier bioethanol is mainly used in beverages for recreation called alcoholic beverages, mankind has been consuming it for thousands of years. These can mainly be classified in to distilled and non-distilled alcoholic beverages.

Non-Distilled Alcoholic Beverages

This class of beverages typically contains beers and wins and made of mere fermentation, no distillation process is applied to them. Beer is a beverage fermented from grain mash and is typically made from barley or a blend of several grains and flavoured with hops. It contains between 3% and 7% of ethanol and several compounds with antioxidant properties (Nardini et al., 2006). It is the most consumed alcoholic beverage worldwide, particularly in Europe, North America, Oceania, and several African countries (Alzeer & Hadeed, 2016)

Wine is an alcoholic beverage produced from grapes and sometimes other fruits. It needs a longer fermentation process than beer and a long aging process lasting for months or years. Its content of ethanol varies from 9% to 15%. Wine is consumed mainly in Europe and the Americas especially in Argentina, Uruguay, and Chile (Alzeer & Hadeed, 2016) If it is made from other than the grapes source, such as plums, cherries, or apples, it is called fruit wine. Sake and Champagne are the examples of such wines.

Distilled Alcoholic Beverages

Distillation is a process of separating the components or substances from a liquid mixture by using selective boiling and condensation. It may result in essentially complete separation or it may be a partial separation that increases the concentration of selected components in the mixture (Seeley, n.d.). Distilled liquor is an alcoholic drink produced by distilling ethanol produced by means of fermenting grain, fruit, or vegetables (Britannica, 2018). These are typically called spirits. These drinks contain between 35% and 50% of ethanol, although some reach even higher values, since they are obtained by distillation (Lachenmeier & Rehm, 2015). Spirits include whiskey, vodka, grappa, gin, and tequila, among others. Primarily these are consumed in Asia and Europe (Alzeer & Hadeed, 2016)

5. Islamic Jurisprudence and the Status of Ethanol

In the current famous industrial processing practices ethanol is individual in causing intoxication amongst the other members of alcohol family. Intoxication is referred to the impairment of senses and loss of control over intellect (Abideen, n.d.). Due to this character drinks contain ethanol fall in the slant of prohibited substances in Islam. As mentioned earlier it is produced Petrochemically and biologically and used industrially and for recreation. Following verse of Qur’an [Arabic text and English rendering by Pickthall (1994)] is the main source of prohibition for the beverages contain ethanol; all the juristic opinions evolved upon the basis of this verse.

“O ye who believe! Strong drink and games of chance and idols and divining arrows are only an infamy of Satan’s handiwork. Leave it aside in order that ye may succeed” (05:90)
not Najis, but it would be rendered Haram in a case if converted into beverage and added in a quantity which can cause intoxication.

**View of Imam Malik, Shafi‘i and Ahmad Bin Hanbal**

According to Imam Malik, Shafi‘i, and Hanbal the term khamar includes all the alcoholic drinks and there is no distinction between the alcoholic drinks derived from grapes and dates and the alcoholic beverages derived from the sources other than grapes and dates (Arif, 2018). They did not classify ethanol in to khamr and non-khamr depending upon the source. They deemed every intoxicated drink to be khamr. Moreover, they cemented their narrative with the following hadith. Every intoxicated is Khamr and every intoxicant is forbidden. (Book: Sahih Muslim, Hadith No: 2002).

They further added that ethanol derived from whatever source is Haram for internal use and Najis for external use, hence their sail and purchase shall also be deemed unlawful (Usmani, n.d.). As it has been learned that the ethanol is the intoxicating agent in alcoholic beverages, therefore, it will carry the same rulings as of alcoholic beverages.

**View of Imamiah School**

The majority of Shia Ulama say that all types of intoxicating agents which originally are liquid are both Haram and Najis, but if they are originally solid like opium, even if they are dissolved in any liquid, they are not Najis but still Haram. However, a few of them take Khamar as Najis based on linguistic meanings of Khamr and say the verse of Holy Quran only refer to wine from date and grape, therefore, these two are Najis as well as Haram, but the followers of such idea are low in numbers (Hasan, n, d.).

**Global Halal standards Guidelines**

1. Pakistan Halal Standard proclaims that alcohol derived from grapes and dates shall be deemed both Haram and Najis, whereas ethanol derived from other than these sources shall be rendered Haram for internal use but ritually pure for external use (PS: 3733-2019, part 2. (R)

2. The Malaysian Halal Standards for food production MS 1500: 2009, pharmaceuticals MS 2424: 2012, cosmetics MS 2200: Part 1: 2008 and potable water MS 2594: 2015 deemed bioethanol Haram and Najis, meaning that such ethanol is disallowed for both internal and external use. Whereas synthetic ethanol is declared ritually pure, hence it is allowed for external use without any limit and for the internal use with the limit. The distinction of bioethanol and synthetic ethanol that has been created in these standards has been derived from the Malaysian Standard of Halal Principles and Explanation of Definitions and Terminologies, MS 2393: 2013, whereas the limit for internal use has been deducted from the Fatwas issued by Department of Islamic Development Malaysia.

3. The UAE Halal Standards for food, UAE. S 2055-1: 2015 and cosmetics UAE. S 2055-4:2014 narrate that all the alcoholic beverages derived from whatever source are Haram.

4. Thailand Halal standard, THS 1435-1-2557, narrates that all the alcoholic beverages derived from whatever source are Haram and ritually impure.

5. Philippines national Halal standard, PNS/BAFS 101:2016, proclaims that all the alcoholic beverages derived from whatever source are Haram and ritually impure.

6. Singapore Halal Standard, MUIS-HC-S001 deems that ethanol derived from the intentional fermentation of carbohydrates is ritually impure and Haram.

7. Indonesian Halal Standard HAS 2300 narrates that ethanol produced by alcoholic beverage industry or the drinks containing ethanol as minimum as 1% is deemed as Khamr which is Haram and Najis. Drinks those are produced through fermentation process containing less than 1% ethanol is not categorized as khamr but is Haram for consumption, meaning that it is allowed for external use but disallowed for internal use. This standard further adds that ethanol produced by non khamr industry is ritually pure. Using of pure ethanol which is produced by non khamr industry is Mutah (allowed), if it is not detected in the finished product, Haram (prohibited) if it is detected in the finished product. Using of ethanol produced by khamr industry in food production is Haram.

8. The OIC-SMIIC Standard for Halal Foods, OIC/SMIIC 1: 2019, deems that all products or beverages containing alcohol are prohibited according to the Islamic rules even for cooking purposes or in filling in candies.

9. The OIC/SMIIC 24:2020 General Requirements for Food Additives and other Added Chemicals to Halal Food allows the use of alcohol in dissolving some food additives with 3 conditions.
   a. the food additives (usually colourants) and the other added chemicals cannot be dissolved in any other solvent which does not cause intoxication,
   b. alcohol shall be used in the minimum amount required to dissolve the chemical,
   c. the alcohol amount shall not cause euphoria to the person who consumes it (less than 0.05 BAC) this means that the alcohol limit shall not exceed the 0.5% w/v or w/w of the final product. The standard also notes that the source of alcohol shall not be derived from grapes or dates.

10. The GSO standard 2538:2017 - The maximum limits for residues of ethyl alcohol (ethanol) in food is a regional standard sets the maximum limits of the natural ethanol in different food and drinks categories. The same standard is under discussion now in SMIIC TC1 halal food issues with a research project conducted by SFDA to update the laboratory maximum results values.
6. **BAC (Blood Alcohol Concentration)**

Blood alcohol concentration (BAC) refers to the amount of alcohol present in the bloodstream. A BAC of 0.05% (point 0 five) means that there is 0.05 grams of alcohol in every 100 millilitres of blood. It can be measured within 30-70 minutes after drinking.

From Islamic point of view the first stage of getting intoxication is known as Alnashwa (النشوة) or Altrab (الطرب) (euphoria) and this word used by the Fiqh Scholars to decide when a person can drink a natural drink after storing for certain time. The storage condition and the drink type will affect the fermentation process therefore one can drink some drink after one night only or up to 3 nights sometimes.

There are different hadiths reported from the Prophet (PBUH) state that he allows to drink Nabeez (date s or resin infusion) for 1 night or 3 nights in different Hadiths.

“Dates were steeped for the Apostel of Allah (P.B.U.H.) in skin which was tied up at the top and had a mouth. What was steeped in the morning he would drink in the evening and what was steeped in the evening he would drink in the morning”. (Sunan Abi Dawud, 3711)

“Inn-e-Abbas reported that Nabidh was prepared for Allah’s Messenger (ﷺ) in the beginning of the night and he would drink it in the morning and the following night and the following day and the night after that up to the afternoon. If anything was left out of that he gave it to his servant or gave orders for it to be poured out”. (Sahih Muslim, 2004)

Another Hadith mentioned that the prophet BPUH warn people from storing these kinds of drinks in a bottle made from certain type of dried plant known as aldupaa (spp of bottle gourd) because this kind of bottle will not allow the person to notice the change in bottle size due to its rigidity which may cause him to drink an alcoholic drink by mistake.

The BAC change from person to another; Age, weight, sex, liver functions, type of food he takes with alcohol, time since he drinks...etc. all these factors make the effect of alcohol differ from one person to another. The factors which affect the BAC level are included in Widmark’s Formula.

\[
N = \frac{Wr(C_t + \beta)}{0.82 (\text{fl. oz. EtOH/drink})}
\]

Where:
- \(N\) = Number of drinks
- \(W\) = Body weight in ounces
- \(r\) = Widmark rho (L/Kg)
- \(C_t\) = BAC at time \((\text{kg/L})\)
- \(\beta\) = Elimination rate \((\text{Kg/L/hr})\)
- \(t\) = Time \((\text{hours from first drink})\)
- \(0.82\) = Density of ethanol (oz./fl.oz.)

In general, a person starts to notice physiological changes in his body when he reaches 0.02 BAC and this is the euphoria stage in the majority of people (average 70kg male). By using the istihlak rule and this BAC value we can do rough calculation for the limited amount of alcohol in food and drinks.

From the above calculation it is noticed that it is impossible for a person to become drunk if alcohol content in the drink is not more than 0.5%, because there is a limit that how much a person can drink in one time.
Is there any halal alternative for alcohol?

The most important functions of alcohol in food industry are:
1) dissolving the organic food additives and
2) extraction some food flavours.

It is extensively needed to do more research on the solubility and how to increase it without using alcohol, many researchers and even it is practice in industry now to use isopropyl alcohol as halal alternative with same efficacy of alcohol. The propylene glycol is the suggested halal alternative in term of food flavours extraction.

Conclusion

From the above calculation it can be concluded that it is impossible for a person to become drunk if alcohol content in the drink is not more than 0.5%, because there is a limit that how much a person can drink in one time. Moreover, further Research can be done to relax this limit even more.

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How Did We Forget Halal as a Universal Medicine?

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**Abstract**

The only fact that is certain that we will all die. So, we should start living. Lately, due to the well-known pandemic situation, we are often, if not too often, told how we should be living in the "new normal". Do we actually wonder what "new normal" mean? Does this mean that we need to take more care of our health and pay more attention to the transience of life and care for the elderly and needy? Do we ever question definition of normal as it was before this pandemic? While the whole world is waiting for the cure or vaccine for the COVID-19 which in reality would be made from a tiny fragment of the virus’s genetic code, inside our body, our immune system would recognize it as foreign and would start to attack. Therefore, the most important thing for our health is our immune system. Halal is a comprehensive system of all segments of human life. Its approach is based on preventive-proactive concept. It is halal that requires a proper diet that affects over 70% of human health, belief, hygiene, proper sleep, exercise, patience, fasting (autophagy) etc. which is actually affecting our health and immune system. This paper analyses how did we forget halal as a universal medicine.

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1. Introduction

Lately, due to the well-known pandemic situation, we are often, if not too often, told how we should be living in the "new normal". Do we actually wonder what "new normal" mean? Does this mean that we need to take more care of our health and pay more attention to the transience of life and care for the elderly and needy? Do we ever question definition of normal as it was before this pandemic? I believe that every human being has re-examined his life, its meaning and goals. Doesn't history teach us that man has gone through various adversities since his birth and that he has managed to adapt to them and get the best out of them?

For Muslims, all the answers could be found in its main source of Islam, the Holy Qur’an. As it was mentioned in verse/Surah (Al-Baqarah, 155).

„And We will surely test you with something of fear and hunger and a loss of wealth and lives and fruits, but give good tidings to the patient “[1]“

In fact, when we analyse Islamic regulations, and primarily the requirements and rulings regarding the term halal, we can say that most of them direct us to preserve our health and our life based on beliefs, prayers, patience, hygiene, fasting and food and nutrition etc. In this paper we analyse specified regulations.

2. Belief

Islam is a belief or devotion to one God. Faith is usually defined as the belief in the truth of an assertion without its verification. Therefore, it is a subjective spiritual interpretation of the outcome of perception, one’s own thinking, or communication.

Faith is very useful in practice because in everyday life we believe in more things than we actually know. People believe in messages, ideas, effectiveness, love, other people and intentions, as well as many other probable or unbelievable events, such as horoscopes.

Today, there is one fact hardly struggle to be proven and that is the mind can influence the body. For example, some people experience a "miraculous recovery" when they mistakenly believe they are receiving a specific cure/drug, well known as placebo in medicine. It has been proven that our belief, i.e. perception, whether it is true or false, affects the human body and behaviour.

We create our reality with our thoughts, which means that we can extremely influence it. Therefore, we need to think more optimistically because the cells in our body are controlled by the mind. Unfortunately, two-thirds of human thoughts are negative. Illness is something that constantly appears and accompanies human beings since its inception, and death is the only fact we can be sure of.

One of the foundations of Islam is the belief that a person can actually help himself the most through the power of belief, even when it comes to illness.

3. Prayer

One of the five pillars of Islam is prayer. Observing the prayer only through its physical requirements the worshiper makes an average of 25 different movements which is for his bones and muscles about 1 hour and 30 minutes of physical activity. Regular prayers boost a person’s sleep discipline. If a person gets up at the Sabah (morning prayer), he will go to bed earlier. We know that regular and proper sleep is extremely important for human health, i.e. sleep puts us into "repair mode”.

4. Patience- Sabhr

Patience is one of the most important and valued virtues at the human being. We are witnessing that we live in a time when we are afraid that we will miss something due to the fast flow of information, so we are extremely burdened by the constant use of mobile phones and other technological aids.
Everything in life requires patience, especially in making decisions and in the time of illness. The importance of patience is especially emphasized in the Holy Qur'an were patience is mentioned in more than seventy times.

5. Hygiene
Very often in the last few months there has been a lot of talk of personal hygiene, and especially hand washing and disinfection. Analysing the Qur'anic verses and the Prophet’s, Peace be upon him, recommendations, we can see that extremely great attention is paid to human hygiene.

If we only consider the basic rules of ablution which leads to both physical and spiritual purity as a condition for performing prayers and other acts of worship, we can conclude that during ablution the parts of the body that are most exposed to dirt are washed.

6. Fast
Fasting in the month of Ramadan also as one of the pillars of Islam has many blessings. One of the benefits is the health aspect of self-cleansing of the body from various toxic and unwanted substances. Although fasting stimulates the process of autophagy after only 12 hours, the world has discovered the same process in 2016, when Japanese scientist Yoshinori Ohsumi received the Nobel Prize.

7. Halal food and nutrition
Man's right to food is like his right to life. The production of a sufficient amount of food, safe for eating, is one of the most important human rights in order to meet the basic needs of man, strengthen the body and mind. A balanced diet is reflected in quality and quantity and is the same for all people on Earth regardless of their beliefs. The market supply of food, along with a dynamic lifestyle, significantly changes eating habits. In these eating habits, fats, carbohydrates as well as natural and technological contaminants are increasingly present, which consequently often leads to diseases such as diabetes mellitus, cardiovascular diseases, high blood pressure, etc. Therefore, the role of food is aimed at improving health, improving the physical and mental condition of the organism, and reducing the risk of disease.

The word halal in Islam does not only relates to food, it defines way of eating, proper time, place, amount of consumption, what should be done with the leftovers, but also denotes a specific relationship in all activities of human life. [2]

Halal diet is defined by Islamic regulations based on Qur'anic provisions in which 119 verses are dedicated to eating and drinking. Ninety verses are dedicated to permitted (halal) food and drink, and 29 verses of the Qur'an bring certain prohibitions regarding food and drink.

Halal diet includes the procedures of preparing meals, serving food, consumption, behaviour during meals, behaviour after meals, but also the requirements that must be met by food in order for the body to be healthy and able to work.

Halal food recommends and allows a variety in diets and foods of plant and animal origin.

Halal diet in its principles is in full accordance with modern principles of proper nutrition. The basic principle on which the modern diet is based is to eat often, in moderation and varied. The knowledge and experiences that precede and accompany the affairs surrounding the food, drink, and diet of Muslims make up the culture of Islamic nutrition.

By the culture of halal nutrition, we mean the rules and norms derived from Islam. So, it is defined as follows:
- What we eat?
- How we eat?
- When we eat?
- How much we eat?
- Who we eat with?
- Where we eat?
- How we treat the rest?

Halal diet and etiquette when eating and drinking has been examined and defined until the smallest detail and a lot can be said about each one because every detail is preventive in relation to human health. [3]

8. Conclusion
Halal is a comprehensive guide to human transient life. Therefore, analysing the basic elements of halal, we see how they are proactive-preventive in relation to human health and life. The disease and treatment must be viewed holistically as we analysed in this paper because there is no "magic pill" as a cure.

In the end I ask myself and you how did we forget halal as a universal medicine?

I end with the words of Muhammad, Peace be upon him, ‘‘Use this seed (black seed) regularly! Because it is a remedy (cure) for every disease except death.’’

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Dr. Aldin Dugonjic graduated on the University of applied health sciences, Zagreb, Department of Sanitary Engineering on the topic: "Halal standards and links with other standards." From 2011 to 2013 he did his master thesis on (Implementation of Halal Standard HRN BAS 1049:2010 in Herds' Slaughterhouses). From the beginning Dr. Dugonjic was involved in the process of establishing of a systematic way of halal certification in the Republic of Croatia. Since 2007. He became certified auditor for halal quality, and in 2009. the consultant for halal quality. Since 2009. he is employed at the Centre for Halal Quality Certification on the job CEO, trainer and the auditor of the Centre.

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Stakeholders’ Roles in Instilling Respect Towards Informed Decisions on Halal Pharmaceuticals

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ABSTRACT

Seeking medical treatment is prescribed in Islam. Abu al-Darda (r.a.) narrated that the Prophet said: “Allah has sent down both the disease and the cure, and He has appointed a cure for every disease, so treat yourselves medically, but use nothing unlawful.” (Sunan Abi Dawud, 3874). The Hadith also emphasised that medicines should be lawful, i.e., Halal. Thus, based on this premise, Halal Pharmaceuticals is being spearheaded.

One very pertinent concept in Halal Pharmaceuticals is “Informed Decisions”, i.e., choices made after considering the knowledge and information relating to the available options. This paper shall explore the importance of the Informed Decisions concept and how it should be grasped and understood by the Halal Pharmaceuticals industry stakeholders. It shall also discuss how pertinent it is for these stakeholders to be cognisant and appreciate how they have a significant role in their respective capacity. It will also highlight how their converged knowledge and expertise can facilitate “Instilling Respect towards Informed Decisions on Halal Pharmaceuticals”.

In the Name of Allah (s.w.t.) – The Most Gracious, The Most Merciful
“O, my Lord! Enhance Me in Knowledge.”
Surah Ta Ha (Chapter 20), verse:114 (excerpted)

1. Preamble
Just like how words like “Mentor” (Adviser), “Guru” (Teacher), “Sifu” (Master) and “Kaizen” (Improvement) became ingrained into the English language, “Halal” is another non-English origin word that has also gained prominence and often mentioned in that language worldwide. Its simple meaning is “Permissibl”.

However, the positive, upbeat vibes one can feel whenever any of the first three non-English words mentioned above are quoted is somehow amiss when the word “Halal” is cited. Instead, one can sense the mixed reactions each time “Halal” is first mentioned to a group of people: laymen or learned people, the general public or business community, Muslims from different ethnic and regions, what more non-Muslims from various backgrounds.

Such mixed reactions make it even harder to get the buy-in for Halal Pharmaceuticals.

In addition to those mentioned above, there is the extreme case of people not taking medications because it contains materials which may be forbidden (“Haram”). At the same time, a study has found a lackadaisical attitude on the consumption of Halal medicines. Such a mindset arises from the misinterpretation of the flexibility of the consumption of those containing non-Halal elements. I had shared this mixed, contrasting, imbalanced reactions towards Halal Pharmaceuticals in my paper, which I presented at the WHS in 2018. Unfortunately, two years down the road, this topic is being hotly discussed yet again amid the Covid-19 pandemic.

Figure 1. Reactions towards Halal Pharmaceuticals

Figure 1. Reactions towards Halal Pharmaceuticals

We need to go back to basics - to learn, unlearn, and relearn “Halal” and the related terminologies. Shall we come to a common understanding which would enable us to be on the same page to discuss this topic? Let’s together facilitate instilling respect towards Informed Decisions on Halal Pharmaceuticals.

“If you, as a manufacturer, want me, as a patient, to take your drugs long term, then respect me as a patient, respect my beliefs, and take into consideration that Halal is going to be a big part of my decision. It has to be mutual respect on both sides.”

Mr Leonard Ariff Abdul Shatar
Group Managing Director
Duopharma Biotech Berhad, 2020
2. Setting the Scene

"And how can you have patience in matters over which you do not have comprehensive knowledge?"

Surah al-Kahf (Chapter 18), verse: 68

With the current ongoing debates about the Halal status of Covid-19 vaccines, the above verse, and its subsequent narratives, are something of which we, as an individual and as a decision-maker, should ponder.

Hence, I wish to set the scene first by sharing my comprehension of some significant terminologies relating to Halal Pharmaceuticals. In Shaa Allah, it will lead us to have a common understanding, be on the same page, when I deliberate this topic further.

2.1. Halalan Toyyiban

“And consume of the lawful, good things which Allah has provided you as sustenance, and be careful of your duty to Allah in Whom you believe.”

Surah al-Ma’ idah (Chapter 5), verse: 88

Allah’s decree in the above verse is not only defining what is permissible but, if one looks deeper, He also outlines the whole Halal ecosystem:

2.1.1. Lawful. This is another well-known meaning of “Halal”.
2.1.2. Good. Toyyiban, the oft-connected word to Halal in the Quran. I had emphasised that it underpins the values of safe, effective, quality and hygienic in WHS 2018. Alhamdulillah, it is now a concept that has captured stakeholders’ interest and attention in the Halal ecosystem.
2.1.3. Consume. Even though the direct translation of the Arabic word in this verse means “eat”, I find “consume” to be a better interpretation because the meaning is further expanded to include “to drink”, “to use” and “to buy goods or services”.
2.1.4. Provide. To give something or to make available for use.
2.1.5. Sustenance. This word denotes that Allah’s decree encompasses beyond what we eat in terms of food and beverages (F&B). It covers all aspects that can make and keep us strong and healthy, not only through eating and drinking but also by ingesting any items into our bodies.

Wouldn’t you agree that the above interpretations augur well with the purpose of Maqasid Shariah?

2.2. Maqasid Shariah

It is the Objective of Islamic Laws and Ways of Life as prescribed by Allah s.w.t. Its specific aim is to preserve the five fundamentals essential for the well-being of humankind: faith, life, intellect, progeny/lineage and property/livelihood. A universal principle. Isn’t the preservation of life a common objective with that of pharmaceuticals?

2.3. Pharmaceuticals

It is connected with the science (discovers/develops), preparation and production of medicines, i.e., substances taken into the body to preserve health and prevent/treat disease or injury.

2.4. Industry

The people, companies and activities involved in one type of business that produces goods or offers services.

2.5. Stakeholder

It refers to a person involved in, or with, an organisation, industry, society, etc. Such a person, therefore, has responsibilities towards the entity and interest in its success. I had detailed these out in my WHS 2018 paper.

2.6. Ecosystem

It is a group of entities, together with their activities, which affect each other and, most importantly, work well together to provide products and services to end-users. Malaysia’s Halal Industry Master Plan 20309 has identified the components for the country’s Halal ecosystem.

2.7. Certification

The process of giving an official or a legal approval to a person, company, product, etc. that has reached a particular standard.

In determining the Halalan Toyyiban status of a product, three critical elements need to be considered and assessed – Subject, Source, and Process. The Halal certification procedure covers the supply chain starting from the Source’s origin, the Processing activities and ending with the Subject being made available to the consumer.

Let’s take bottled water as a simple Subject example – the primary Source itself, i.e., water, comes from many types of sources that Allah has created. Understandably, water would naturally be considered Halal. However, since human activities can expose natural sources to pollution, they need to be approved by relevant authorities to be fit for consumption. In some locations, manufacturers need to obtain authorisation to source water from there. The water will undergo some Processes before being bottled, and one of the steps is filtration. Many people were puzzled and had questioned why Malaysia goes all out to certify bottled water as Halal. Did you know that some elements used in the filtration process can be derived from animal sources?

This example had given me a tremendous unlearning experience, taking into context Surah al-Kahf: Verse 68.

I want to draw your attention back to Surah al-Ma’ idah: Verse 88 and note how Allah ended it, i.e., by telling us to be careful of our duty to Him. I have grasped this to be a decree for us to perform our duties with utmost integrity and excellence.

By now, I believe you would comprehend how this verse fittingly defines and outlines the true meaning of the Halalan Toyyiban Ecosystem and would understand my perspectives when writing this paper.

3. Halal Certified Pharmaceuticals – Really?

There are elements of the Halal certification process, which are part and parcel of the pharmaceutical industry, namely:
3.1. Highly Regulated

Amid this Covid-19 pandemic, we are now better-informed of this critical foundation of the industry. The public has become more discerning of the various stakeholders involved in, and responsible for, it. We have observed how the industry is subject to multiple laws and regulations that govern the products’ patenting, testing, safety, efficacy, and marketing. This highly regulated environment makes the various processes in the pharmaceuticals’ value chain rather arduous and time-consuming. More so, when they are exporting. Sound familiar?

3.2. Good Manufacturing Practices (GMP)

It is a system for ensuring that products are consistently produced and controlled according to quality standards.

3.3. Pharmaceutical Quality System (PQS)

The main principle is for the holder of a Manufacturing Authorisation to ensure that the medicines are fit for their intended use, comply with the marketing authorisation requirements, and do not place patients at risk due to inadequate safety, efficacy, and quality.

3.4. Alcohol

It is one of the most widely used materials in the pharmaceutical industry. It is also commonly interpreted to be the same as the intoxicating alcoholic beverages. Mind you; it is not only Muslims who misinterpret this word but also non-Muslims, such that it causes fatalities.

I have now unlearned this word, thanks to the study conducted by Prof. Dziulkifly Mat Hashim (Figure 2).

3.5. Pharmaceutical Quality by Design (QbD)

This is the latest concept adopted in the industry. It guides pharmaceutical development to facilitate the design of products and processes, maximising its efficacy and safety profile while enhancing product manufacturability. The latest revision to the Malaysian Standards (MS) for Halal has incorporated a similar terminology, described as “Halal Built-In”, a concept which was introduced by Prof. Zhari Ismail. It includes the involvement of all stakeholders within the ecosystem. It also involves the optimisation of both technical and technological advancement.

3.6. Pharmacopoeia

It is a publication/book containing directions identifying compound medicines and published by the authority of a government or a medical or pharmaceutical society. Halal Pharmacopoeia’s publication is a proposal advocated by Prof. Zhari Ismail to be incorporated into the Halal industry to further strengthen its integrity.

One interesting point which had surfaced quite recently during this Covid-19 pandemic is this question – Can something be Halal but not necessarily Halal certifiable?

Let me share with you an example which could shed some light. It relates to a substance which is also widely used in the pharmaceutical industry, i.e., vitamins, specifically the oil-based A, D, E and K.

Prof. Dr Azizi Ayob, an ex-colleague of mine, did an infographic analysis in 2008 (as seen in Figure 3) to explain a Halal critical concern which surfaced that year.

Halal certified pharmaceutical products uphold the tenets of Halalan Toyyiban. The certification provides double assurance to the consumers because two independent parties vouch for the compliance. In Malaysia, a pharmaceutical manufacturer must first obtain the verification of the Toyyiban aspects from the Ministry of Health before it can apply for Halal certification from JAKIM.

With the Halal certification fundamentals ingrained in the pharmaceutical industry, shouldn’t it be more straightforward for the players in this industry to understand and appreciate the Halalan Toyyiban concept?

Additionally, pharmaceutical industry players are mostly big corporations and multi-nationals. Most of them would adopt a continuous improvement methodology. Wouldn’t Halal be a good prospect for their value-added, Kaizen initiatives/projects?

If so, then why haven’t we observed a booming growth in this sector, be it in the pharmaceutical or Halal industry? I have been involved in both industries since 2005 – began when the company I worked with entrusted me to spearhead Halal Pharmaceuticals for them (and consequently, alongside like-minded people, Malaysia too). It is somewhat disappointing to observe the lack of its presence, unlike Halal F&B and the newbies - Halal/Islamic Tourism and Modest Fashion. Halal Pharmaceuticals seems more like a seasonal interest, creeping up only upon a major issue, such
as what we observe now – the highly debatable Halal status of Covid-19 vaccines.

4. Informed Decisions – Concept & Significance

Informed means having a lot of knowledge or information about something, whilst Decision is a choice one makes about something after considering several possibilities.

Thus, for an individual to make an Informed Decision, the fundamentals identified in Figure 4 should be comprehensively considered, especially when making life-saving decisions.

![Figure 4. Informed Decision Tree](image)

4.1. Availability of Choices

There should be adequate awareness regarding the availability of choices. However, one should not solely place the onus on the shoulders of those having to make the decisions. It has to be a pragmatic undertaking by all stakeholders. Industry players, for example, should responsibly promote such availability. Governments of Muslim-majority countries should play the critical role in propagating Halal Pharmaceuticals and facilitating the sufficient supply of such alternatives.

4.2. Experts’ Advice

“So, ask those who possess knowledge if you do not know.”

Surah an-Nahl (Chapter 16), verse:43 (excerpted)

Experts should be in the specific/specialised field relevant to the decision to be made. You would go to a heart specialist for your acute heart problem and not a general practitioner.

Advice sought should also include science and technology's perspectives in addition to Shariah's considerations. The decision-maker should seek advice about the possible impact on their livelihood too.

4.3. Maqasid Shariah

This universal principle should be applied vis-à-vis related rulings in the Quran, Hadith, and Fatwa in making the final decision after assessing the choices based on the experts' advice.

How many of us are familiar with this Informed Decisions concept, what more apply it in our daily lives? I stumbled upon it while researching materials for my first ever presentation about Halal Pharmaceuticals way back in 2008. I only learned of Maqasid Shariah a few years later.

The Informed Decisions concept can play a significant role in addressing the mixed, contrasting, imbalanced reactions towards Halal Pharmaceuticals which I had illustrated earlier in Figure 1. However, it is a long and time-consuming process. It requires strategic, creative, well-coordinated, ample, and multi-level efforts at national, regional, and global scales.

5. Way Forward

I had pondered whether an NGO would be able to address this imbalanced by propagating the Informed Decisions Concept in my WHS 2018 paper (Figure 5). My view then was that they could. If the members are mindful of, and appreciate, the fact that they each have a significant role to play based on their knowledge, expertise, experience, and position in Halal Pharmaceuticals then, In Shaa Allah, it can be done.

![Figure 5. Informed Decision Concept](image)

6. Figure 5. Informed Decision Concept

The convergence of minds – Shariah, Science, Technology and Business (Figure 6), is another initiative to be considered. You have to admit that from the learnings of this Covid-19 pandemic, Business is essential too – it is the source of income which have a domino effect on our livelihood.

![Figure 6. The Convergence of Minds](image)

Alhamdulillah, it is indeed admirable to note that the Malaysian Council of Rulers and the King had appointed scientists the National Fatwa Council. Prof Zhari Ismail is one of them. The المرحوم Prof Datuk Dr Yaakob Che Man and المرحوم Prof. Dzulkifly Mat Hashim were Royal appointed members of the Council too.
Unfortunately, to form an NGO from scratch to undertake such initiatives during this pressing time is not logical and would be an uphill struggle.

It must be an entity under the auspices of an established, credible, well-funded international organisation.

The entity should comprise of people who:

i. possess the right knowledge, expertise and experience;
ii. are of credible stature as influencers;
iii. have a common understanding of the Halalan Toyyiban concept;
iv. share the goal of instilling respect towards Muslims’ obligations to consume Halalan Toyyiban products;
v. have a sincere intention to benefit humankind.

As compared to a freshly formed NGO, an established organisation would be in a better position to select the members of this entity responsibly. Such an organisation would already have the affiliation, network, and database of subject matter experts from all over the world who would swiftly undertake the roles that can provide professional yet practical solutions to the situations at hand.

The convergence of minds through this set-up would expedite the implementation of initiatives such as:

a. the publication of Halal Pharmacopoeia. With the SMIIIC standard for Halal Pharmaceuticals already in progress, this document should preferably be made available concurrently as supporting guidance for manufacturers, regulators, Halal certification bodies, pharmacists and researchers;
b. the execution of strategic dissemination of the Informed Decisions Concept, which is suitable for, and easily understood by, people from all walks of life and all levels of involvement in the decision-making process;
c. the adoption of the Halal Pharmaceutical Framework as per Figure 7. It is a proposed concept jointly developed by Brigadier-General Dato’ Dr Halim Basari and me. It would be a worthy consideration for implementation within the OIC;
d. the development of capacity building modules to manufacture Halal Pharmaceuticals and related subjects critical in the healthcare ecosystem. These modules should be developed for both academic and professional qualifications, to produce skilful, competent, and exemplary talents;
e. the establishment of the pool of experienced, qualified, and certified trainers, training providers, and train-the-trainer (TOT) schemes for these modules;
f. the development of the teaching module of “Shariah and Arabic for Halal Pharmaceuticals”, similar to the “English for Business” courses. I believe this module would facilitate and expedite a better understanding and grasps of Allah’s decrees relating to Halalan Toyyiban and the preservation of life and livelihood.

6. Conclusion

"This is the true perspective of my actions over which you could not have patience."

*Surah al-Kahf (Chapter 18), verse:82 (excerpted)*

We have to come to terms and acknowledge that most manufacturers and providers of goods we need for sustenance comprise non-Muslims. At the same time, how many Muslim stakeholders genuinely grasp the Halalan Toyyiban Ecosystem's true meaning?

Patience stems from comprehensive knowledge and leads to respect on the obligations to make Informed Decisions.

I urge those who are in the position to make a difference, to consider my ideas favourably. The latest news about the new coronavirus strain20 is a cause for concern. This pandemic affects not only life but also livelihood. These are elements of Maqasid Shariah which we are obliged to preserve.

Hence, are we not in the right position to make a difference? You and I are the consumer and the ultimate decision-maker. We are responsible and accountable for the decisions and actions we take. We can make the difference by optimising the blessings that Allah s.w.t. has granted upon us. The priceless, invaluable knowledge, expertise and experience we have been privileged with are all favours of Allah s.w.t. Therefore, we matter.

But of course, we can’t do it alone because we don’t possess all the knowledge individually. The convergence of minds needs an established entity to spearhead it. An organisation like SMIIIC (Figure 8) would be in the best position to take such lead. It would also be able to undertake additional roles to facilitate Public-Private-Partnership and coordinate Halal compliance in the Value Chain. It is an institute established by the OIC.

![Figure 7. Proposed Halal Pharmaceuticals Framework](image)

![Figure 8. SMIIIC’s Suitability](image)
"But humankind is the most argumnetative of all beings.”

Surah al-Kahf (Chapter 18), verse: 54

We need to acknowledge and accommodate the human nature Allah had described above. But surely the things we can agree upon far outweigh those in dispute. We can park the latter aside during this urgent need for immediate actions.

In Shaa Allah, by taking converged actions together, everyone can achieve more, in our pursuit of Excellence – Itqan, for Allah’s pleasure.

“Ensure every single link in the chain that you make is perfectly calculated.
When you do a job, do it perfectly.
All of you be good, do good.
I’m watching what all of you do.”

Surah Saba’ (Chapter 34), verse: 11(excerpted)

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Ms. Roziatul Akmam Osman is a Halal Subject Matter Expert, specializing in Strategic Halal Leadership and Management. She also specializes in Strategic Halal Marketing and Continuous Improvement. She is the Principal Partner of Rozi Osman International PLT, the firm she established to provide her professional services.

Rozi Osman is a duly certified Halal Executive and Internal Halal Auditor by Malaysia’s Department of Islamic Development (JAKIM). She is also a Certified Public Accountant (CPA) as well as a Lean Six Sigma Green Belt holder. She has accumulated a wealth of experience and expertise from over 15 years of experience in the Halal industry and more than 20 years of involvement in the accountancy profession. Her career and exposure in those various fields she has been involved in have shaped Rozi to whom she is today.

Her experience is the core of the professionalism incorporated in her conduct regardless of the task she performs. These virtues have facilitated her to accomplish many great things which, in turn, have benefited the various industries to where she had contributed her expertise. She aspires to continue contributing and benefiting many more.
The Halal Pharmacopoeia Proposition

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\section*{ABSTRACT}

Medicines and healthcare products are highly regulated to conform to established scientific and technical descriptions and parameters related to quality, safety and efficacy. The increase awareness of halal has gone beyond food and beverages, encompassing areas specifically related to healthcare products. The regulatory description and procedure are found in the monographs of pharmacopoeia as official documents for regulatory purposes. Basically, halal aspects are not considered and therefore create difficulties in determining the status of the halal of the product in question. This major issue can only be resolved with the establishment of the halal pharmacopoeia, a compilation of monographs of halal materials used in the pharmaceutical and healthcare industries. Regulatory agencies worldwide rely on the pharmacopoeia monograph description and procedure to check on authenticity, quality and safety of the item during the registration process. Currently there is no comprehensive list of ingredients in pharmaceutical and healthcare consumer products classifying and discriminating the nature of halal and non halal sources and no comprehensive list for halal standard ingredients as alternatives. Non halal medicines and healthcare consumer products are being formulated, manufactured, prescribed and dispensed and when halal alternatives could be made available. To establish the Halal Pharmacopoeia, the implementation can be done in 2 stages i.e. screening and selecting items to compile the Halal Pharmacopoeia Index based on Green (Halal), Red (Haram) & Grey (Masbooh) colour codes. Next embarking to compile monographs based on latest established world Pharmacopoeia, namely British Pharmacopoeia (BP), United States Pharmacopoeia (USP), Chinese Pharmacopoeia (CP), Japanese Pharmacopoeia (JP) & Indian Pharmacopoeia (IP). This project will spur the development of halal expertise and professional services to cater the need of International and local Halal Pharmaceutical & Healthcare Industries. To build databases and information systems to facilitate development & growth of a new generation of unique Halal built-in (Halal by design) products with high income growth potential The Halal Pharmacopoeia shall be the referral and basic requirement for implementing Halal Assurance and Quality Control used by Halal Certifying Bodies, Regulatory Agencies, Manufacturers of Halal Pharmaceuticals, Halal Supply Chain Industries, Halal Laboratories for authenticating halal raw materials including active pharmaceutical ingredients (API), excipients, packaging materials, dedicated premise & infrastructure, management, equipment & machineries - based on Pharmacopeial monograph specifications. Halal Laboratory Personnel are trained manpower and accredited to halal systems. Halal Research and Development centres and the industry can collaborate as partners for Halal Product Development & Innovation. This initiative will facilitate the production of halal pharmaceutical and healthcare products where the concept of “halal built-in” or “halal by design” is embedded in standards operating procedure (SOP) used in the Malaysian Standards MS 2424:2012 (Revision 2019) Pharmaceutical Requirements using similar principle of “quality built-in rather than tested for” as espoused by the United States Food and Drug Administration (USFDA).

\section*{1. Introduction}

Medicines and healthcare products are highly regulated to conform to established scientific and technical descriptions and parameters related to quality, safety and efficacy. The increase awareness of halal has gone beyond food and beverages, encompassing areas specifically related to healthcare products. The regulatory description and procedure are found in the monographs of pharmacopoeia as official documents for regulatory purposes. Basically, halal aspects are not considered and therefore create difficulties in determining the status of the halal of the product in question. This major issue can only be resolved with the establishment of the halal pharmacopoeia, a compilation of monographs of halal materials used in the pharmaceutical and healthcare industries. Regulatory agencies worldwide rely on the pharmacopoeia monograph description and procedure
to check on authenticity, quality and safety of the item during the registration process.

Why?
Currently there is no comprehensive list of ingredients in pharmaceutical and healthcare consumer products classifying and discriminating the nature of halal and non halal sources and no comprehensive list for halal standard ingredients as alternatives. Non halal medicines and healthcare consumer products are being formulated, manufactured, prescribed and dispensed and when halal alternatives could be made available.
- To establish a vital must have Halal Pharmaceutical reference (Halal Pharmacopoeia)
- To establish an entrepreneurial ecosystem
- To facilitate entrepreneurs in developing halal industry related to pharmaceuticals, nutraceuticals, supplements, herbal and cosmetics.
- Ease for penetration for global markets
- Several Islamic countries have interest in embarking similar reference.
- Application of the Halal Built in principle will develop specialized human resource expertise for the industry

World Halal Pharmaceutical Scene
- Efforts by world industry players to adapt to halal requirement.
- Global Islamic Economy Report 2019/2020 by Thomson Reuters in the halal pharmaceuticals sector these countries have a good infrastructure for halal pharmaceuticals: UAE, Malaysia, Singapore, Jordan, Egypt
- Other countries fast moving forward includes Turkey, Indonesia, Thailand, Japan, Korea
- Health: Governments must set standards
- Absence or lack of entrepreneurs in the halal pharmaceutical & healthcare industries

World Halal Summit 2018 Istanbul Declaration
"As WHS Organizing Committee, we hereby declare, (among others.)

7. puts emphasis on the importance of the authenticity tests and testing methods for detection of non-halal in its all different forms of instrumental analysis methods and detection kits which will improve the halal quality assurance,

8. promotes innovation in production of halal pharmaceuticals, vaccines, biological products, excipients and enzymes by taking into consideration the governments rule in putting rules regulating importing and producing halal pharmaceuticals,

9. also promotes developing halal pharmaceuticals university curriculum and halal pharmacopoeia as basic blocks in the halal pharmaceuticals field.”

Definition of Halal Pharmaceuticals
According to the MS 2424: 2019 the halal pharmaceuticals are: Products that contain ingredients permitted under the Shariah law and fulfil the following conditions:
- do not contain any parts or products of animals that are non-halal or not slaughtered according to Shariah law;
- do not contain najs according to Shariah law;
- safe for consumption, non-poisonous, non-intoxicating or non-hazardous to health according to prescribed dosage
- not prepared, processed or manufactured using equipment contaminated with najs according to Shariah law;
- do not contain any human parts or its derivatives that are not permitted by Shariah law; and
- during its preparation, processing, handling, packaging, storage and distribution, the halal pharmaceutical products are physically separated from any other pharmaceutical products that do not meet the requirements as stated in the item a), b), c), d) or e) or any other items that have been decreed as non-halal and najs by Shariah law.

![Figure 1: MS 2424:2019](image)

Rationale for Halal Pharmacopoeia
- A “must have” reference document for the full implementation of the Halal Built-in (Halal by Design) principle as stipulated in the Malaysian Standard MS2424 (Revision 2019) Guidelines for Halal Pharmaceuticals
- Absence of halal ingredients references for stakeholders in pharmaceutical & healthcare sector.
- Select and Single out critical non halal pharmaceutical ingredients to prioritize R & D and Innovation for halal alternatives
- SMIIC/OIC can spearhead and champion the Halal Healthcare & Pharmaceutical Industry Sectors as a Global Agenda with HP
- OIC countries, especially Indonesia, Pakistan, Turkey, Iran & Egypt having their own National Pharmacopoeia are in an advanced position to lead the halal pharmaceutical sector
- Non-OIC countries having National Pharmacopoeia could consider a HP version to facilitate the Halal Pharmaceutical Ecosystem.

Objectives of Halal Pharmacopoeia Project
To establish the world’s first Halal Pharmacopoeia:
1) Compilation & publication of a Halal Pharmacopoeia Index based on Green (Halal), Red (Haram) & Grey (Masbooh) colour codes
2) Compilation of monographs based on latest
established world pharmacopoeias, namely British Pharmacopoeia (BP), United States Pharmacopoeia (USP), Chinese Pharmacopoeia (CP), Japanese Pharmacopoeia (JP) & Indian Pharmacopoeia (IP)

3) To develop local & international expertise, professional services & entrepreneurs catering to the needs of International Halal Pharmaceutical & Healthcare Industries

4) To build databases & information systems to facilitate development & growth of a new generation of unique Halal built-in (Halal by design) products with high income growth potential.

2. What Is a Pharmacopoeia and Halal Pharmacopoeia (Hp)?

Pharmacopoeia provides a collection of standards and quality specifications for medicines includes starting materials, excipients, intermediates and finished pharmaceutical products. It describes the appropriate tests to confirm identity and purity of product, ascertain the strength (or amount) of the active substance and if required, performance characteristics.

3. The Need & Urgency of HP

The concern & urgency of this initiative from the Pharmaceutical and Healthcare Consumer Goods Industry in view of the current situation:

- Example in The Malaysian Halal Standards MS 2424:2012 (Revision 2019) Pharmaceutical Guidelines is specifically based on the “halal built-in” or “halal by design” rule/concept emphasizing the use of halal ingredients for the formulation of halal products
- Currently, to implement this ruling is not possible because,
  a. no comprehensive list of ingredients in pharmaceuticals & healthcare consumer products classifying & differentiating the halal & non halal sources
  b. no comprehensive list for halal standard ingredients as hala alternatives
  c. non halal medicine & healthcare consumer products are being prescribed & manufactured when halal alternatives are available
  d. absence of entrepreneurs in halal pharmaceutical & healthcare sector

Expected Outcome

1) Global Halal Pharmacopoeia
   a. Vital Must Have ‘Reference’ for the full implementation of SMII/C/OIC Halal Pharmaceutical Standards as in the Malaysian Standard MS2424 (Revision 2018) Guidelines for Halal Pharmaceuticals
   b. Compilation of official monographs based on the differentiation into halal, haram and masbooh classification of pharmaceuticals based on information obtained from latest leading world pharmacopoeia
   c. Halal standards reference centre (collection library of pharmaceutical standards) for API (active pharmaceutical ingredient) materials & excipients

2) Development of Entrepreneurs, Professionals & Expertise: Spur the development of halal expertise, entrepreneurial and professional services to cater the need of International and local Halal Pharmaceutical & Healthcare Industries

3) Creation of teaching & learning materials in Halal Science, Technology Research, Development and Innovation and Databases and information systems to facilitate development & growth of a new generation of unique Halal built-in (Halal by design) products with high income growth potential

Halal Pharmacopoeia Monographs on Ingredients Status

- To establish the Halal Pharmacopoeia, the implementation can be done in 2 stages i.e. screening

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<th>Mucin</th>
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<th>Calcitonin</th>
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<td>ADH – Anti diabetic Hormone</td>
<td>Oxytocin</td>
<td>Prolactin</td>
<td>TSH – Thyroid Stimulating Hormone</td>
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<td>Porcine Burn Dressing</td>
<td>Gelatine; Collagen</td>
<td>Spleen</td>
<td>Splenic Fluid</td>
<td>Stomach</td>
<td>Pepsin</td>
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</table>
and selecting items to compile the Halal Pharmacopoeia Index based on Green (Halal), Red (Haram) & Grey (Masbooh) colour codes.
- Next embarking to compile monographs based on latest established world Pharmacopoeia, namely British Pharmacopoeia (BP), United States Pharmacopoeia (USP), Chinese Pharmacopoeia (CP), Japanese Pharmacopoeia (JP) & Indian Pharmacopoeia (IP).

| GREEN LISTS       | - synthetic,  
|                  | - plants,    
|                  | - semisynthetic  
|                  | - microbes,  
|                  | - recombinant DNA 

| RED LISTS (HARAM): | PIG BASED     
|                   | - Gelatin  
|                   | - Insulin  
|                   | - Enzymes  
|                   | - Hormones, Etc. 

| GREY LISTS (MASBOOH): | Non zabihah animals, 
|                      | - Human source, 
|                      | - insects, etc. 

**Project Leader**
Professor Dr. Zhari Ismail, FASc
- Professor in Pharmaceutical Chemistry, USM
- Member, National Fatwa Council for Malaysian Islamic Affairs, & Fatwa Research Committee Member, JAKIM
- Chairman, Working Group MS2424:2019 Halal Pharmaceuticals-General Requirements
- Chairman, Technical Committee on Halal Pharmaceutical Issues, SMIC, Organisation of Islamic Countries (OIC) (2020-2025)
- Widely known resource person in the halal industry worldwide: Pharmaceuticals, Cosmetics, Nutraceuticals and Health-related products.

**Figure 2:** SMIIC TC16 Halal pharmaceuticals issues 1st meeting Istanbul 2019.

**Figure 3:** Halal pharmacopoeia users

**4. The How’s and Who to Realise Hp**
The Halal Pharmacopoeia shall be the referral and basic requirement for implementing Halal Assurance & Quality Control used by Halal Laboratory Personnel are trained manpower and accredited to halal systems. Halal Research and Development centres and the industry can collaborate as partners for Halal Product Development & Innovation.

**Target Users (Clientele)**
The basic requirements for implementing Halal Assurance & Quality Control used by:
1. Halal Certifying Bodies
2. Regulatory Agencies
3. Entrepreneurs & Manufacturers of Halal Pharmaceuticals & Healthcare Products
4. Halal related industries
5. Halal Laboratories for authenticating halal raw materials including active pharmaceutical ingredients (API), excipients, packaging materials, dedicated premise & infrastructure, management, equipment & machineries - based on monograph specifications as in Halal Pharmacopoeia
6. Halal Laboratory Personnel
7. Halal R & D centres

**5. When And Where to Begin and Take Off Project: Description & Timeline**

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<th>Year 3</th>
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<td>3. Chinese Pharmacopoeia (CP)</td>
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6. Benefits to the Ummah
Fulfilling The World Halal Summit 2018
Istanbul Declaration

- In promoting innovation in production of halal pharmaceuticals, vaccines, biological products, excipients and enzymes by taking into consideration the governments rule in putting rules regulating importing and producing halal pharmaceuticals,
- Developing halal pharmaceuticals university curriculum and halal pharmacopoeia as basic blocks in the halal pharmaceuticals field.
- This document is vital as reference for implementation of the SMIIT Standards and Malaysian Standard MS2424: (Revision 2019) Requirements for Halal Pharmaceuticals and other related Standards.
- To pioneer in the development of Halal Pharmacopoeia.
- Developing a strong infrastructure & necessary standard for the halal sector in other OIC Countries such as Indonesia, Pakistan, Turkey, Iran & Egypt that already have their own Pharmacopoeia.
- With all necessary standards in place, it will attract local & foreign pharmaceutical & healthcare industries to invest in manufacturing their halal products in OIC countries which may add up benefits for all in the long term
- Initiate Centres of Excellence (CoE) for learning & training of entrepreneurs & halal auditors for halal pharmaceutical and healthcare industries worldwide.
- Bring forward the Global Halal Pharmaceutical & Healthcare Industries to the forefront

7. Conclusion
This initiative will facilitate the production of halal pharmaceutical and healthcare products where the concept of “halal built-in” or “halal by design” is embedded in standards operating procedure used in the Malaysian Standards MS 2424:2012 (Revision 2019) Pharmaceutical Requirements using similar principle of “quality built-in rather than tested for” as espoused by the United States Food and Drug Administration (USFDA).

The realization of the Halal Pharmacopoeia Initiative is made possible with the active participation and funding from interested parties in creating entrepreneurs in the global halal pharmaceutical & healthcare industries.

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Professor Zhari Ismail is a Professor in Pharmaceutical Chemistry, University Sains Malaysia, where he has been a lecturer since 1982. As an academician and professional in the pharmacy discipline and having wide experience in participating and setting standards for the halal industry, particularly in the halal pharmaceutical, cosmetics, nutraceuticals and health related products. Appointments:

- Member National Fatwa Council for Malaysian Islamic Affairs, and Fatwa Research Committee Member, JAKIM (2012-2019)
- Elected Senate member, Universiti Sains Malaysia USM (2011-2014)
- Head, HASRaT, USM Halal Services, Research and Training Cluster (2018)
- Chairman for Drafting MS2424: Malaysian Standards for Halal Pharmaceutical Guidelines.
- Recipient of 2010 Malaysia Halal Industry Development Corporation (HDC) Halal Scientist Award.
- Recipient of 2012 MOSTI & STANDARD MALAYSIA Standard & Accreditation Award.
- Editor (verification), The Halal Index, Vol.1 (Pig Based Pharmaceuticals) and “Adakah Ubat-Ubatan anda Halal?” (Are your Medicines Halal?).
- Head of R & D for CHEST 2010-2011 (Centre for Herbal Standardisation), Biotropics Malaysia Berhad-USM Collaboration and Principal Trainer for Halal Pharmaceuticals.

Professor Zhari is the Chairman, of SMIIC TC16 Technical Committee on Halal Pharmaceutical Issues since 2020.
Part IX

Laboratories and Halal Authentication
Gelatine (authentication) speciation by Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR-FTIRS) and multivariate analysis
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ABSTRACT

Gelatine authentication has been an essential issue with respect to religion and health concerns. It is necessary to analyse the origin of gelatine with reliable and fast methods to ensure the authenticity of gelatine samples. The aim of this work is to identify the authenticity of gelatine using ATR-FTIR spectroscopy combined with chemometric methods. The spectral data acquired from a total of 347 samples consisting of three group (bovine and porcine gelatine (edible) and animal glue (industrial gelatine)) were analysed with Partial least squares-discriminant analysis (PLS-DA) and Soft Independent Modelling of Class Analogies (SIMCA). The classification accuracy for PLS-DA was 98.5% and for bovine and porcine SIMCA models were 95.4% and 99.4% in test set, respectively. This study shows that ATR-FTIR coupled with multivariate analysis algorithms is a useful, fast and reliable tool to identify the authenticity of gelatine.

1. Introduction

In the Gelatine is a water-soluble high molecular weight polypeptide that produced by partial denaturation of the extracted fibrous protein collagen, from animals like ox, pig and fish(1, 2). It is reported that the global gelatine market size will grow to 230 million Metric Tons and from 2.6 billion in 2018 to 3.6 billion USD by 2023, that approximately 41%, 28.5%, 29.5% and 1.5% of the world gelatine produced is sourced from pig skin, bovine hides (the central layer of bovine hide contains native collagen that is suitable as a raw material in gelatine production), bovine bones, and fish respectively(3). Gelatine is available in a different form and popular for its peerless properties such as protein enrichment of food, stabilizer, binder, clarifying and gelling agent, film former, thickener, and emulsifier, in the food industry and has increasing application in the pharmaceutical industry(4). The study of the food authenticity has attracted the attention of religious adherents, especially the Muslims, Jews, Hindus, and vegetarians markets, due to the possible presence of banned substances(2). In food safety issues, there has been much concern about the incidence of disease transmission using the inland animal gelatine from the infected bovine to spongiform encephalopathy (“mad cow disease”) that shook the European countries by the emergence in the mid-1980s(5). Also, the bovine and porcine gelatines consumption would give risks to gelatine-allergic patients (6) For the accurate food labelling, the precise and reliable analysis methods, not only to reassure the consumer but also because of the legal requirements and safety of the consumer must be used to determine the species source of gelatine in the food and pharmaceutical industry(7). Currently different analytical methods, such as biochemical, chromatography, electrophoretic, immunochanical and polymerase chain reaction (PCR) and spectroscopic techniques have developed for gelatine authentication(2, 8). However, most of these analytical techniques are expensive, time consuming, destructive and require highly expert operators although the sensitivity and accuracy are high(8, 9). In recent years, attenuated total reflectance FTIR spectroscopy (ATR-FTIRS) has been used as a non-destructive, fast and least sample preparation method to differentiate different gelatine origins (10). ATR-FT-IR discriminate and classified bovine, porcine, and fish gelatine with the help of hierarchical cluster and principal component analysis (PCA)(11). The potential of FTIR spectroscopy for the detection of bovine and porcine source in gummy candies was studied(12). Nevertheless, generally these methods were used to discrimination of gelatine origins by combining with chemometric methods and few studies refer to exploration of edible gelatine discrimination with the toxic industrial gelatine(9). ATR-FTIRS make available distinctive information on gelatine morphological and molecular structure and, therefore, when coupled with chemometric methods, is suitable for detecting adulteration. ATR-FTIR spectra do not have the apparent characteristic peaks that permit for the identification of the gelatine species. Thus, chemometric methods are necessary for correct animal
source of the gelatine identification and authentication(10). In this regard, two main groups of multivariate classification consist of discrimination methods (e.g., Partial Least Squares Discriminant Analysis (PLS-DA)) and class modelling methods (e.g., Soft Independent Modelling of Class Analogies (SIMCA)). The selection of the correct strategy is depended on the final goal: when we have at least two classes, the discriminant approach is suitable, while class modelling is appropriate when a single class is on the focus(13). In this paper, ATR-FTIR spectroscopy combined with discriminant (PLS-DA) and class modelling (SIMCA) methods was used to study the feasibility of identifying edible gelatine sources (species) and discrimination of edible gelatines with industrial gelatine.

2. Materials and Methods

2.1. Samples collection

A total of 347 samples were collected for the development of a chemometric model to detect authentication of gelatine samples. The bovine samples (n = 200) and animal glue samples (industrial gelatine) (n = 97) gathered from Iran and porcine samples (n= 50) obtained from different country. All of the gelatine samples were in the form of crystalline powders, and stored in microtube at refrigerator temperature until further analysis with ATR-FTIRS.

2.2. Spectral Acquisition

The gelatine samples were analysed on the portable Agilent Cary 630 FTIR (Agilent Technologies, Santa Clara, Calif., U.S.A.) with a temperature-stabilized DTGS detector, permanently-aligned optics, ZnSe beam splitter, 60° air bearing Michelson interferometer and spectrum was collected using a single-reflection diamond ATR sampling interface with a 1 mm diameter sampling surface. Portable Agilent Cary 630 FTIR systems were equipped with compression clamps rotated to a maximum pressure (10000 psi) to ensure the best contact and highest sampling sensitivity. A background spectrum (120 scans) was collected before each gelatine measurement. All experiments were performed at room temperature. Absorbance spectra with a range of [650-4000] cm⁻¹ and a 16 cm⁻¹ point spacing were obtained from 140 scans.

2.3. Chemometrics

All chemometric data analysis were performed in MATLAB environment R2013a (Mathworks, MA, USA) and the PLSToolboxv7.8 (Eigenvector, WA, USA). Training (30%) and test (70) sets were created using the Duplex method (14). All classes were represented in the test set. Prior to classification, raw data was pre-processed with different methods such as, multiplicative signal correction (MSC), standard normal deviate (SNV) correction, 1st derivative, 2nd derivative (Savitzky–Golay and Gap Segment), mean centring, OSC (orthogonal signal correction) and baseline filtering. The best reprocessing combinations were selected to obtain the best separated PCA (Principal component analysis) distribution and performance parameter for PLS-DA and SIMCA models. The predictive classification models (PLS-DA and SIMCA) were validated using internal cross-validation (CV) and external validation (test set). The optimal number of PLS factors/principal components (Latent Variables (LVs)/ PCs) for the models was selected by venetian blinds cross-validation (Number of data split: 10, thickness: 1).

3. Results and Discussion

Figure 1 shows the ATR-FTIR spectra of bovine, porcine, and animal glue. The large broad bands in the raw spectrum centred at approximately 1623 cm⁻¹ and 1522 cm⁻¹ were associated with amide I and II, respectively.

![Figure 1. ATR-FTIR spectra of animal glue, bovine and porcine gelatines](image)

For the purpose of data exploration and assay the similarities/differences, the ATR-FTIR spectra after pre-processing steps were subjected to PCA model (Fig. 2). The relative cumulative variance for the first four principal components for the gelatine spectra was 98.7% (PC1: 97.2%, PC2: 0.88%, PC3: 0.42% and PC4: 0.22%), and the best separation was appeared on the PC 3 fig.2.

![Figure 2. PCA scores plot of ATR-FTIR spectra of bovine (blue triangle) gelatine, porcine (red diamond) gelatine and animal glue (green square)](image)

Then, the ability of PLA-DA models as a linear discrimination method to classify species was evaluated in the gelatine samples. The descriptive statistics for the best calibration, cross validation and test models developed using the Agilent Cary 630 FTIR instrument are shown in Table 1. The most appropriate pre-processing strategy was chosen according to highest sensitivity, specificity and lowest classification error. The best PLS-DA models were achieved with MSC (median) + 1st derivative (Sav-Gol) and total accuracy value for PLS-DA was 98.5% (table 1).
Table 1. Classification performance (in %) of PLS-DA model for classification of animal glue, bovine and porcine gelatin (Cross validation: Venetian blinds (Number of data split: 10, thickness: 1))

<table>
<thead>
<tr>
<th></th>
<th>Bovine</th>
<th>Porcine</th>
<th>Animal glue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLS-DA (4 LVs)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>Train</td>
<td>CV</td>
<td>Test</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>98.1</td>
<td>98.7</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>100</td>
<td>95.2</td>
<td>95.2</td>
</tr>
<tr>
<td><strong>Error rate</strong></td>
<td>0</td>
<td>3.3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>100</td>
<td>96.7</td>
<td>97</td>
</tr>
</tbody>
</table>

Furthermore, outlier detection using Q residuals/Hotelling's T2 and variable selection using variable importance in projection (VIP) with “greater than one” rule (15) was done but hadn’t significant improvement in PLS-DA classification performance.

Table 2. Classification performance (in %) of SIMCA model for bovine and porcine

<table>
<thead>
<tr>
<th></th>
<th>Bovine</th>
<th>Porcine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test set</strong></td>
<td>91</td>
<td>100</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>100</td>
<td>98.9</td>
</tr>
<tr>
<td><strong>Error rate</strong></td>
<td>4.6</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>95.4</td>
<td>99.4</td>
</tr>
</tbody>
</table>

In addition, Soft Independent Modelling of Class Analogies (SIMCA) as a one-class classification algorithms were assessed. The best pre-processing strategy for bovine and porcine SIMCA models were extended multiplicative signal correction (EMSC) and 2nd derivative (Sav-Gol), respectively. The performance of each model in terms of their sensitivity and specificity values for short spectral ranges of ATR-FTIR spectra (1477-1730 cm⁻¹) that considered mainly amide-I and amide-II bands are presented in Table 2 for external validation. Hashim et al. (2010) and Cebi et al. (2016) performed the discrimination of gelatine samples using short spectral ranges (amide-I and amide-II bands). Amide I and Amide II spectral range provides information about protein secondary structure and source of the gelatine(11, 16). However, neither study used class modelling techniques SIMCA model with variable selection for gelatine authentication with ATR-FTIR spectroscopy. Here, Porcine SIMCA model resulted in a 100% sensitivity score, that is, all individual porcine samples were correctly identified as authentic porcine gelatine. Specificity of porcine model was 98.9% that is, 98.9% of bovine and animal glue samples successfully rejected. About bovine SIMCA model sensitivity and specificity were 91% and 100% respectively, those are, and 91% of bovine samples were correctly identified as authentic bovine gelatine and 100% of porcine and animal glue samples successfully rejected.

4. Conclusion
Gelatine authentication (species and edible/nonedible) by ATR-FTIRS coupled with chemometric methods was focused in this research study. ATR-FTIRS combined with the abovementioned classifiers can provide fast and reliable results, as an analytical method, for distinguishing gelatines based on their origin from animals and based on quality (edible gelatine/non-edible gelatine). These methods may permit authority and manufacturers to authenticate gelatines used as an ingredient and afford accurate labelling for consumer protection. The modelling results show that all these classifiers present good accuracy (above 95%) for authentication of gelatine.
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5. ISMAIL AM. DEVELOPMENT AND VALIDATION OF AMINO ACID ANALYSIS METHODS IN GELATIN AND GELATIN-BASED PRODUCTS USING HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY. 2016.


Dr. Shojaee born in 1966 Tehran. He graduated as a Doctor of Veterinary Medicine from the Faculty of Veterinary Medicine, University of Tehran in December 1991. Appointed as Head of the Pharmaceutical Research Section, the Veterinary Organization of Iran from 1989 – 1993. Also, he served as a member of Iranian Veterinary Pharmacopoeia commission. He finished his Postdoctoral Research Fellow (01/01/2001 – 01/08/2001) at the Royal Veterinary College, University of London.

He served at ISIRI Technical Committees during preparation of many national standards in regards to Food Safety Issues including the veterinary drug residue and pesticide residues (from 1998 till now). He served as Senior Scientific Advisor to ISIRI on Food Safety from 2003 which extended to Halal Food Issues from 2008. He was a member of OIC Standardization Expert Group (SEG) between 2009-2010 for preparation of OIC Halal Food Standard. Currently he is serving; SMIIC TC 1 and 2 Committees as Technical Expert from 2011.

Appointed as Coordinator for FAO/WHO Coordinating Committee for Near East (CCNEA) and appointed as SMIIC Committee on Standards for Conformity Assessment (SMIIC/CCA) Chairman from 2016 till now.
Islamic Legal View on the Use of the Questionable Additives in the Food Processing

Salih Şengezer

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Mr. Şengezer made a brief definition of food additives in his presentation titled “Islamic legal view on the use of the questionable additives in the Food Processing”. He also tried to express what it means to be halal and to be doubted in the jurisprudence. Then, after briefly listing the factors that cause doubt and uncertainty in the fiqh rules of food additives; He mentioned that the position of the consumer and the producer in the face of these rules. Şengezer, who discussed the reasons why food additives received a suspicious verdict, emphasized that the origin/origin is uncertain, whether it is religiously pure, it is unclear whether there is any istihalah/change, and there is uncertainty about the harm in terms of human health. Between the consumer and the producer; It has been revealed that there are important differences in terms of the opportunity to avoid questionable additives, the opportunity to know the origin of the additive, to learn the ruling of fiqh, to act according to precaution, to benefit from the conveniences and the conflict. At this point, he pointed out that compared to the producers, consumers have less opportunities to know the additive, its origin, to learn the fiqh provision, and for this reason, they can benefit from permissions and conveniences. He pointed out that manufacturers are responsible for learning the origin of additives, choosing alternatives, questioning their halal status and presenting halal to others. Şengezer concluded his presentation with the following words: “As a result, it is not halal for food producers to use additives that are suspected in their halal status without being adequately questioned and doubts about their halal status removed. Producers are expected to take this sensitivity and pay maximum attention. Same way; We need to try to be determined and consistent in the supervision of official authorities, in the examination of halal certification bodies, and in revealing the fiqh ruling as teachers.

Mr. Salih Şengezer was born in 1979 in Kastamonu. He graduated from the Faculty of Theology of Ondokuz Mayas University in 2004. He completed his master's degree with his thesis titled "The History of Tedvin and Classification Thought" (2007). He continues his doctoral studies on "The Effect of Literary Arts on Understanding Hadith" at the same university.

Şengezer, who has been working at various positions of the Presidency of Religious Affairs since 2004, still works as an Expert of the Religious Affairs High Council of the Presidency of Religious Affairs.
Murat Simsek

Abstract
The halal is a comprehensive issue with several aspects. Firstly, it includes the food we consume, secondly, the ways of earnings, and the third, the lifestyle. Islamic law / ethics constitute the basis of halal. Today, the food and service industries have grown enormously, diversified and gained an international dimension. While thousands of products from raw materials to food additives are used in production; From tourism to transportation and from cosmetics to energy, many new service and consumption areas have emerged. It has become a necessity to evaluate all these areas from an Islamic perspective as well as health. The halal and healthy food issue within this is the largest and most important part. The purpose of this paper is to deal with the issue of halal testing within the framework of Islamic law. The necessity, adequacy and deficiencies of the test methods applied in food products will be emphasized. The opportunities offered by the newly emerging experimental facilities in halal tests, the risks experienced in practice, the standards to be found in halal tests and the procedure applied in this regard are included in the research. Analyses of food additives used in mass food production, gelatine analysis, portfolio samples used in meat products will also be examined.

1. Introduction
The basic question that can be asked to determine some criteria about halal food is this: “Why is an object halal or haram? The answers to this will also reveal the halal and haram criteria. Basically, this question can be answered as “it is mentioned directly in religious texts.” The authority to determine halal and haram belongs to Allah Almighty. Allah gave this authority to His prophet Mohammed (al-Araf, 7/157). Among these, there are those whose reasons cannot be comprehended with reason but whose wisdom can only be understood, and who have only the intention of testing (taabbud) in the world. In addition, there are items that are halal because they are in the clean (tayyib) group or items that are haram because they are in the dirty (habis / najis) group. There are also substances that are halal or haram because they are converted into another substance (istihlah) or mixed (istihlak). Beyond all these, the main purpose of making a distinction between halal and haram in terms of food is to protect the mental and physical health of people. [1,2,3].

The Standards and Metrology Institute for Islamic Countries (SMIIC) defines the term “Halal food” as follows: It means food and drinks that are allowed to be consumed within the Islamic rules and comply with the rules given in this standard”. The Institute defines the term “Islamic rules” as all the rules that Allah ordered for Muslims and take their source from the Quran and the practices of the Prophet Muhammad (sunnah).

There are many stages in the food supply chain until it reaches the consumers; any breach of halal practices or contamination in the supply chain automatically poses a risk to the end-product. The way to provide Halal assurance to the industry and consumers is the development of standardization, certification, accreditation, and halal test methods. Halal test basically constitutes the rationale and infrastructure of halal certification. Halal testing is particularly closely related to accreditation and standardization. For example, it is necessary to determine the requirements that halal proficiency test providers must need to carry, the requirements for their businesses, technical requirements for certain application areas, and standards that require the development of halal proficiency test programs. Within this framework, standard of “Conformity Assessment – General Requirements of Proficiency Testing for Halal Purposes” (TS OIC / SMIIC 35: 2020) [4] has been published by SMIIC. (July 2020). In addition, the subject of Halal testing is also subject to the standards required for laboratories performing Halal Test. In this context, a standard was needed to demonstrate the technical competence, impartiality and independence of laboratories performing halal tests, to protect the consumer against unsuitable products or services, to confidence the objectivity of the laboratories performing halal testing and the accuracy of the test results. For this purpose, a standard called “Conformity Assessment – General Requirements for the Competence of Laboratories
Performing Halal Testing” has been prepared by SMIIC (TS OIC / SMIIC 36: 2020) [5].

2. Halal Test Standards

Standardization represents the ideal stage of Halal certification activities. According to the definition made by the International Organization for Standardization (ISO), standardization is the process of setting certain rules and applying these rules with the contribution and cooperation of all relevant parties to gain economic benefit from a certain activity. With the standardization process, life and property safety is primarily aimed. At the same time, it is not allowed to produce goods and services below the determined level by determining the lower limit of quality. The standard is prepared and approved by the authorized institutions, covers the conditions expected to be fulfilled mutually, and its implementation is usually left to the parties’ request.

Standardization studies are developed and carried out by Technical Committees (TC). The main task of the Technical Committees is to develop the relevant standards, review them systematically and rearrange them according to the needs. Terminology committee, finance committee and metrology committee can be given as examples of technical committees established for halal standards. [6] As a result, the standard refers to the document that has been agreed upon and approved by an institution that has the authority to implement the standard, aims to establish an order at the most appropriate level under the current conditions, and contains rules, guidelines or characteristics regarding activities and results for common and repetitive uses. [7]

According to the SMIIC Halal Food Standard [8] (TS OIC SMIIC 1: 7 / d), the calibration of the measuring and test devices used in the processes that affect the quality or health of the product should be done. Inspections and tests for the validation and verification of methods in accordance with article 10.1 of the same standard should be carried out in accordance with nationally and internationally recognized validated and verified inspection and test methods (TS OIC SMIIC 1: 10.1). Standards and Metrology Institute for Islamic Countries (SMIIC) affiliated with the Organization of Islamic Cooperation has published two standards for halal test studies as of 2020. One of these is “Conformity Assessment – General Requirements for the Competence of Laboratories Performing Halal Testing” (TS OIC/SMIIC 35: 2020) [4], the other is “Conformity Assessment – General Requirements of Proficiency Testing for Halal Purposes” (TS OIC / SMIIC 36: 2020) [5].

2.1. TS OIC/SMIIC 35: 2020

Standard on general requirements for the competence of laboratories conducting halal tests (TS OIC/SMIIC 35) aims to meet specific and general requirements for laboratories performing halal testing. Demonstrating the technical competence, impartiality and independence of the laboratories conducting halal tests is an important part of the process of protecting the consumer against unsuitable products or services. In addition, this strengthens the confidence in laboratories’ objectivity and the accuracy of test results.

According to this standard, the laboratory must appoint a Muslim staff member with responsibility and authority for halal testing activities. Laboratory personnel and all employees performing halal tests must adhere to all Islamic values, especially those related to halal (5/1-2). The laboratory will ensure that the technical personnel assigned to conduct halal testing are Muslim and receive appropriate halal training. Personnel authorized to examine the halal test result must also be Muslim (6/2-3).

The equipment used in the laboratory shall not be made of or contain any materials that are non-halal or considered najis under Islamic laws. Oils used in the maintenance of equipment and devices that may encounter the product should not be food grade oil and should not contain non-halal or najis ingredients (6.4./1-2). Cleaning method according to Islamic rules should be applied for equipment, field, and laboratory personnel in contact with non-halal source. There should be proper sample separation and storage prior to testing and during the inspection process to ensure no contamination (7.4.1.). The laboratory cannot put a halal mark on the report on the conformity of the product in question (7.8.3.1).

2.2. TS OIC/SMIIC 36: 2020

General Requirements of Proficiency Testing for Halal Purposes (TS OIC/SMIIC 36: 2020) has been prepared to provide a consistent basis for all interested parties to determine the competence of organizations that provide halal proficiency tests. The halal proficiency test provider should appoint an authorized Muslim staff, regardless of their other duties and responsibilities. This should ensure that the technical staff are Muslim and receive appropriate halal training. It should eliminate the risk of cross contamination from non-halal to halal. The equipment used for proficiency testing for halal purposes shall not be made of or contain any materials that are not halal or considered najis by the Islamic laws (4.2-3).

Halal proficiency test items stored should be specifically categorized and labelled and kept separate at each stage to avoid mixing or contamination with non-halal materials. Packaging, labelling and distribution of halal proficiency test items must be properly packaged using halal-compatible packaging materials as well as international (ISO / IEC 17043: 2010) rules (4.6/2-3). At least two (2) authorized Muslim personnel should be present for the review and authorization of the Halal proficiency test result (4.8.1).

This standard sets out principles for the selection and use of halal proficiency testing programs by participants and other interested parties (e.g. accreditation bodies, regulatory bodies or the participant’s customers). It is important that participants clearly understand the policies of interested parties for participation in such
halal proficiency testing programs, the criteria they use to evaluate successful performance in halal proficiency testing programs, and their policies and procedures for monitoring them. (Attachment A.1.).

Laboratories must choose their halal proficiency test schemes. Regarding the proposed group of participants for the halal proficiency test program, the compliance of the organizational logistics with the halal proficiency test scheme (e.g. timing, location, sample stability, distribution arrangements), metrological traceability and protection of the confidentiality of participants should be considered (A.2./1-2).

Interested parties must document their policies for participation in halal proficiency testing programs and this must be publicly available. Whether participation is mandatory or voluntary; The criteria used to decide on inadequate performance should be clearly defined (A.3.1). Participants should be able to draw their own conclusions about their performance from the design of the experimental program; The origin and nature of the test items, test and measurement methods and values, the organization of the test plan should be clear. (A.4.)

Part of these procedures are accreditation bodies. The requirements of an accreditation body regarding the use of the halal proficiency test are specified in OIC / SMIIC 3: 2019. In addition, some conditions and policies related to the requirements of accreditation bodies are set out in this standard (A.5.1). Required terms and policies regarding other related parties are also specified in this standard (A.5.2).

3. Halal Testing Applications

Halal test practices are basically a part of halal certification. In the process of halal certification, it is an important factor to use laboratories to determine the halal status of products and specially to apply chemical experiments. Considering that especially food additives have increased considerably today, this is inevitably needed in determining the origin and nature of them. To determine the location of the halal test within the halal certification process, it is necessary to fully evaluate the process, though with main headings. Here, the processes will be explained with an overview through samples of meat products [9] and baker’s yeast [10] and issues related to halal experimentation will be pointed out.

3.1. Meat Products Leaflet [9]

To see the place of the halal test application in the halal food certification sheet, the halal food certification leaflet applied by TSE will be examined as an example. This leaflet covers all the processes that should be included in a food document. Halal certification of meat products can be achieved by completing the following eight main headings and controls. These are as follows:

1. Document and product description for certification
2. Production facility and process requirements
3. Documentation requirements
4. Quality control requirements
5. Sample operations
6. Audit plan
7. Testing plan
8. Certification Scope

The halal test application is not only in the part of the seventh article, but also with many other substances. If we need to explain these processes as a selection with examples, we can say the following. First, the names and numbers of the documents based on certification should be determined (standard / criteria etc. For example, TS OIC SMIIC 1: September 2019 Halal Food General Rules). Again, the product name, class, genus, and type should be determined. The origin of the product concerned must be clearly stated (e.g., sausage: bovine meat or poultry meat). Legal conditions in the country of belonging (if any, for example Turkish Food Codex Regulation) should be specified.

Requirements for the production facility and related to the production process / equipment must be met (e.g., size, hygiene, protection, etc., as well as countertops, temperature meters and weighing devices). The minimum documentation conditions that must be applied by the organization (hazard analysis etc.) must be met. As a rule, in the halal certification program conformity assessment activities, first, compliance with the legal requirements of the relevant country is sought. For meat products, for example, suppliers of carcasses must be inspected on-site in terms of halal slaughter procedures and principles. As for the personnel conditions and qualifications in terms of quality control requirements; managers and enough personnel should be present, they should wear clothes according to their work, their daily personal hygiene should be checked, and these controls should be recorded.

Regarding the inspection and experiments that should be done by sampling (mandatory in the production place) The organization should conduct the final product inspection and tests specified in the standard / criteria within the framework of a quality control plan. This quality control plan may include all or some of the tests required by the standard. As for the examinations and experiments (which can be used in external laboratories) that should be done by sampling; The organization must have the inspections and tests that are within the scope of the standard / criteria and that cannot be performed at the production site, in external laboratories that can be monitored within the framework of a quality control plan.

Additional conditions (if any) regarding the subject, in these cases, for the inspections and tests that the organization cannot perform in its own quality control laboratory but are included in the other legal legislation of the country; (a.) For inputs and auxiliary materials, including packaging material, test reports made in traceable laboratories should be requested from suppliers. (b.) Tests related to the conformity of the final products should be made in the Public Institution / University Laboratory for the tests without the Accredited / Test Service Laboratory Approval Certificate. In Turkey, for example, legislation on
The halal food sampling method and the amount of sample may be within the framework of the legal practices in the relevant country and the method and quantities applied by the relevant certification body in other certifications. The establishments should create test request forms for themselves. Inspection and test reports of organizations in Halal Certificate of Conformity should be accepted for a period of 12 months (annual). For example, in cases where the original packaging of the embodiment taken with the sample in this case Turkey UB-FR-006 and Experimental Investigation report request must specify the form and the product is visually defined illustratively it is supported if necessary. Again, if the organization is also inspected and sampled according to TSE / TSEK; For the inspections and tests included in the relevant Turkish Standard / Certification Criteria, samples will be taken in the amount specified in the certification sheet published in accordance with TSE / TSEK. For TSE Laboratories, if additional analysis is requested within the scope of Halal Food, no additional samples will be taken. UB-FR-006 Inspections Report and Test Request Form will be used for test requests to be made within the scope of Halal Food certification.

The conditions for delivery of the sample to the laboratory should also be considered. For example, the samples should be packaged and delivered to the laboratory in a way that prevents them from being affected by external impacts, not directly exposed to sunlight and controlled temperature conditions.

Special Cases (if any) 1) In the process of sampling from the production site, the same amount of witness sample as the test sample should be taken and delivered to the establishment authority. 2) If a sample cannot be taken in its original package; The conformity of the product with the relevant standard or regulation article on the market should be evaluated by the inspection board.

The test plan should be planned in a way that specifies the timing in terms of audit type, surveillance, certification, and certificate renewal principles. The products covered by the document must be clearly stated. Not only the name of the product group, but also the sub-product types, even the names of the products themselves must be clearly stated. The sample is taken from the lot. Meat products of the same group, type, class and submitted for inspection at one time are considered a batch.

3.2. Baker’s Yeast Leaf [10]

Sample of Food Additive Leaflet in Halal Test: Information and stages to be included in certification:
1. Information on product identification
2. Information regarding the inspections and tests to be taken as basis for certification
3. Production site inspection requirements
4. Information regarding the certification procedure (in halal mark certification)

In the sample of baker’s yeast, the product group (food), product (food additive), scope (4 types of bread yeast: Press, dry, liquid, crumbled fresh yeast) should be clearly included in the information about the product description. The relevant standard to be applied in certification should also be specified (for example TS OIC / SMIIC 1; General Guidelines on Halal Food OIC / SMIIC 1: 2011).

In terms of the information regarding the inspections and tests to be taken as basis for certification, the use of the laboratories specified in the UBM-00-LS-00 approved laboratory list is required. In terms of sample amount, samples should be taken according to the inspection / test to be carried out, considering the legal legislation / relevant product
The Special Conditions for international recommended general food hygiene principles of the implementing rules (CAC / RCP 1), Food safety management systems - Requirements for any organization in the food chain (ISO 22000) and specific conditions of the countries concerned are considered (TS for Turkey 3522 / April 1992 Bread Yeast).

In terms of the production site inspection requirements, the conditions for the production facility must be met. Personnel dressing and undressing department should not be opened directly to the production area, protective measures should be taken to prevent the breakage and disintegration of the glasses and lighting devices in the production area, and the establishment should have a laboratory that is fully independent from other departments and capable of performing the necessary analyses properly. There should be a suitable warehouse prepared for loading and unloading ramps, cleaning, and disinfection materials suitable for the workflow. Clean and dirty sections should be separated in a way that does not interfere with the workflow, and a suitable disinfection system should be found in the transition points. There should be a separate warehouse where packaging materials are stored, and packaging materials should be stored on pallets so that they do not encounter the wall and the floor.

All surfaces of all machines and equipment that encounter the product should be made of stainless material and should be suitable for cleaning and disinfection. There should be a metal detector to ensure food safety in areas where there is a risk of metal contamination of the product content. Excessive amounts of raw materials, auxiliary materials, packaging materials or additives should not be stored in the production area, and the production area should not be used as a warehouse.

Protective clothing (overshoes, bonnets, aprons, etc.) should be available for people entering the production area, and unauthorized access to the production area by anyone other than the staff should be prevented. Personal belongings and clothes should not be kept in production and storage areas. The first in, first out rule must be obeyed in the warehouses, the desired product group or lot must be placed and stacked so that the desired product group or lot can be removed, and records must be kept. The packaged product should be protected from sunlight during storage and transportation, and preventive measures should be taken against external influences that may damage its properties. The establishment should be disinfected against insects at appropriate intervals with biocidal products authorized by the Ministry of Health.

The water used in the facility must be disinfected with the methods specified in the relevant legislation. Analysis of water used in production should be made within the framework of the provisions of the Regulation on Water Intended for Human Consumption published by the Ministry of Health.

Conditions Regarding Production Equipment: All boilers, tanks and transport pipes and carriers related to manufacturing and packaging should be made of materials that are not harmful to human health and corrosion-resistant metal.

Tools and equipment in the production line must be clean and used only for halal food production. The hygiene instructions of all the machines, devices, etc. used in the production of all places and spaces in the workplace and the systems and tools used in the internal and external transportation of the products should be available and it should be recorded that the hygiene practices are performed as specified in the instructions.

Food Safety Management System Conditions: The organization should have established and implementing a food safety system based on the principles of hazard analysis and critical control points. Regarding the activities that will affect the safety of the production personnel; production instruction, control instruction, photo etc. easy access to supporting documents should be provided. Traceability of raw materials, auxiliary materials, and materials in contact with the product should be maintained and their records should be kept. Quality control activities for semi-finished and final products should be carried out and their records should be kept. Inappropriate input, semi-finished and finished products should be clearly defined and separated to prevent accidental use, and the procedure should be established. When a deviation from the specified conditions is detected during the examinations and tests carried out, appropriate corrective / preventive actions should be taken and recorded.

General critical control points and Halal critical control points should be displayed on production flow charts and records should be kept. The calibration of measurement, control, and test devices in the production process and in the Quality Control laboratory should be made by traceable organizations and their records should be kept. In cases where verification can be made, these procedures should be performed by personnel trained in this matter and their records should be kept.

Qualification Requirements for Quality Control Facilities in terms of Personnel, Inspection and Test Equipment (Routine Inspections and Tests).

At least 1 technical staff (Food Engineer, Chemical Engineer, Chemist) should be employed within the company as the manager responsible for Production and Quality Control. Planned training should be given to the staff on Halal food production and training activities should be measured and recorded. Terms Relating to Intermediate Checks (Including Ranges): The establishment should be checked at least 2 times a year. In halal brand certification, the production site inspection report for the production site inspection is taken as basis. When necessary, additional issues regarding halal conditions are evaluated, if any. The standard number and effective date (OIC / SMIIIC 1: 2011), Halal Brand allowable product groups to use
Additional conditions in terms of halal control can be listed as follows in the context of TSE practices in our country:

1. Of the inputs defined for each product, it should be checked whether it is suitable for halal food production and its legal availability.
2. The final product analysis must be following the Microbiological Criteria Regulation / Standard and Halal Food production.
3. Oils used in production machinery and equipment must be suitable for food production and halal conditions.
4. The compliance of chemicals used in personnel hygiene and hygiene and sanitation of production equipment should be checked for compliance with halal conditions.
5. The compliance of the material from which the packaging is produced and the analysis reports, if any, with the Turkish Food Codex Communicates on Substances and Materials in Contact with Food / the relevant standard should be examined.
6. Marking control should be done according to the relevant legal legislation and article 12.2 of the TS OIC / SMIC 1: 2011 standard.
7. If a sample is taken to determine the conformity of the final product to TS 3522 / April 1992 Baker’s Yeast standard, it should be sent to the TSE Food Laboratory Directorate.
8. The amount of test sample in its original package; There must be at least 8 units of sample.

4. What are Halal Certificate Tests?
1. Vegetable and Animal Fat Products Testing and Analysis
2. Meat and Meat Products Testing and Analysis
3. Cocoa and Cocoa Products Test and Analysis
4. Sugar and Confectionery Testing and Analysis
5. Grain and Cereal Products Testing and Analysis
6. Cereals, Legumes and Products Test and Analysis
7. Egg and Egg Products Testing and Analysis
8. Milk and Dairy Products Testing and Analysis
9. Ready Meal (Cooked or Consumed Without Cooking) Tests and Analysis
10. Testing and Analysis of Substances and Materials in Contact with Food Additives
11. Food Additives - Baker's Yeast Test and Analysis
12. Fruit and Vegetables and Their Products Test and Analysis
13. Tea and Tea Products Testing and Analysis
14. Honey and Its By-Products Test and Analysis
15. Food Additives - Edible Salt Test and Analysis
16. Food Additives - Bovine Gelatin Testing and Analysis
17. Spices and Seasonings Test and Analysis
18. Foods for Special Nutrition Purposes Tests and Analysis
19. Water Testing and Analysis
20. Soft Drinks (Soft Drinks) Testing and Analysis
21. Substances and Materials in Contact with Foodstuffs-Collagen Sheath Test and Analysis
22. Coffee and Coffee Products Testing and Analysis
23. Fish and Fish Products Test and Analysis
24. Spices and Seasonings - Seasoning Testing and Analysis
25. Starch and Starch Products Test and Analysis
26. Oil Seeds Test and Analysis
27. Cosmetic Testing and Analysis

5. Evaluation in terms of Islamic Law

The subject of halal experiment is one of the points where Islam and science intersect. It is a great service to test modern scientific developments at the service of believers within the framework of Islamic principles. The work that Muslim scientists will do both in accordance with nature and health and in accordance with religious beliefs will be a service not only for Muslims but also for the people of the world.

Halal-related requirements also include what is healthy, clean, useful, and human. For example, these efforts will achieve their goal on the day that people all over the world think that a food that they see as halal is healthy, clean, useful, and human. For example, these efforts will achieve their goal on the day that people all over the world think that a food that they see as halal does not contain anything harmful to health and is clean.

We can list the opportunities in this regard as follows:
1. The Muslim world is developing scientifically. This development will have a positive effect on resolving the Islamic - science crisis.
2. Halal experiments include safe results in terms of health.
3. Widespread use of halal certification will increase halal trade. This will increase commercial confidence and contribute to the economy.
4. Especially in Islamic countries it is promising to make the presence of halal laboratory experiments in Turkey.
5. It is a very pleasing development that Islamic rules are standardized and put into service to serve human health. Halal standards are developing day by day, and even in the Islamic economy, it is seen that certain standards are being reached.

We can list the risks in this regard as follows:
1. Using halal experiments in certification without being accredited.
2. The risk of not complying with halal standards as required in certification, especially in experiments.
3. Companies with non-Muslim managers still have a large share in halal certification.
4. Possibility of ethical control in laboratory inspections and services.
5. The risk of haram contamination in halal products.
6. The risk of contamination due to the measurement of non-halal things in halal test tools and devices.
7. The risk of insufficient Islamic sensitivity of the staff.
8. Risk of inadequate training of personnel
Conclusion

Recent developments in halal life are promising. In the field of Halal, there have been great strides in both standardization and accreditation. Positive developments also continue in the subject of halal experimentation. Two standards have been prepared. Turkey continues Certifications applications in the field, mainly by TSE. Although the theoretical developments in halal experiment are promising, the risks in practice should not be ignored.

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Other References


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In the fiqh method, sunnah, The Prophetic conducts in view of binding in Islamic Law; and the concept of nass; In the theoretical and historical context, he also worked on the subject, principles, issues, and place of science in the classification of fiqh science. He carries out studies on halal life, halal food, halal economy and halal tourism in the practical field of fiqh. He served as the director of NEU Halal and Healthy Food Application and Research Center (2017-2020) and as a member of TSE Halal Food Academic Advisory Board. Apart from his field of expertise, he is interested in investigative text publishing (editorial critical) as an academic field of activity and is the editor of Tahkik Journal of Critical Edition of Islamic Manuscripts (tahqiq.org). His important works include Imam Abu Hanifa and Hanafism (Hacıveyiszade Foundation Publications, 2019) and Blockchain Technology in terms of Islamic Finance (edit book, NEÜ Publications, 2020).

He has many articles in scientific journals, many papers in international symposiums and many book chapters. He is married and has two children.
Food Antimicrobials: Addressing Potential Sources, Challenges and Testing as Halal Food Preservatives

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ABSTRACT

Food antimicrobial agent (FAA) provides the first food defence system against food-borne pathogens and act as an antioxidant in preventing colour and taste changes in processed food products. Although various reports on halal focus on food, a negligible report is available for FAA as a halal food preservative. Muslims are concerned about (1) the FAA sources, which may contain non-permissible ingredients due to unknown and doubtful sources, (2) an incremented risk of consuming toxic FAA and (3) organoleptic effect rendered by the FAA. An in-depth scrutinization of sources and toxicity level of the FAA, appropriate laboratory testing may address these issues and challenges. The FAA is categorised according to ingredient sources such as animal, plant, bacteria, or synthetic origins. There are doubts on the halal status of animal-origin FAA as the source might be originated from pig, unslaughtered animal, human, or filthy origins. Investigation via analysis of process flow for the source of FAA and its additive and complementary deoxyribonucleic acid (DNA) and related analytical testing to confirm the halal status of the FAA will facilitate this activity. Toxicity challenge can be addressed through (1) preliminary determination of FAA dose including disk-diffusion, minimum inhibitory and time-kill tests and (2) toxicity test such as repeat-dose toxicity, genotoxicity, and carcinogenicity tests to verify and determine the final safe dose of FAA. The shelf-life test of the FAA on specific food model and actual food systems shall cater to organoleptic issues. Actions taken to address these issues and challenges shall ensure the production of the FAA complies with the requirement of halal standards worldwide and bring confidence to Muslim consumers on their food consumption. Furthermore, this review also highlighted how FAA could be verified as a halal food preservative, which is becoming future research in developing halal ingredients and processed food products.

1. Introduction

Islam provides guidelines for consuming food, especially halal foods. Halal is characterised as permissible and lawful according to the Qur'an and Sunnah [1]. With the common notation of halal and toyiyiban, the good hygiene practises and good manufacturing practises accommodate the concept of toyiyiban. For food manufacturing, the GHP and GMP help to prevent food spoilage.

Another approach to curbing food spoilage is by applying antimicrobial agents on foods as food additives. However, antimicrobial agents face the most significant challenge to fulfil halal definition since consumers concern about the origins of halal food antimicrobial agent (FAA). Also, toxicity and organoleptic issues may hinder the application of antimicrobial agents in food. Hence, this paper addresses the potential sources, challenges and testing of halal FAA in food production.

2. Halal food Antimicrobial Agents

Chemicals known as FAA were utilised in the food industry to prevent biological deterioration by bacteria [2]. The Food and Drug Administration (FDA) divides this into two categories: (1) bacteria that are directly attached to the food, and (2) bacteria present in the finished product.

Halal meals are devoid of najs (pigs, dogs, and their offspring) as well as toxin, intoxication, and harmful materials such as infection from food-borne pathogens during preparation, production, handling, packing, storage, and delivery, according to the third revision of Malaysian Standard Halal food - General requirements [3]. Hence, the validation of FAA shall be covered in the MS 1500:2019.
3. Challenges of Halal Food Antimicrobials

The FAA faces challenging issues about its halal status, efficacy in both food model and actual food systems, the status of generally recognised as safe (GRAS), the content limit of antibacterial agent, toxicity and organoleptic issues.

3.1. Halal Status of Food Antimicrobial Agent

The FAA from the animal origin becomes a significant challenge for the halal concept. Although they have active inhibiting property, the source of FAA is extracted from the gastrointestinal secretory fluids of rats and pigs which contradict the halal requirement for food antimicrobials [3]. Due to the limited information and lack of awareness, consumers accept these APs as food preservatives without knowing the origin of these antimicrobials. Free fatty acids from animal sources, which are also in abundance, could jeopardise a food’s halal status when mixed with this FAA.

Investigation of the halal status of FAA could be initiated via halal forensic approaches. The introduction of the ‘forensic’ word has described activities relates to finding evidence to solve crimes. Other fields have also incorporated the ‘forensic’ word in their nomenclature, such as digital forensics, forensic psychiatry, forensic science, environmental forensic, etc., to identify the evidence related to each of the fields. Halal authentication technique has also been recognised as halal forensics (HF) testing with its aim to find (1) the proof of halal status of the FAA and (2) the proof of conformity of a halal FAA as it is claimed [4].

The analysis of FAA via HF has faced challenges on the methodology for different types of samples. With the increasing demand for halal products, including the FAA, there is a need to outline the appropriate approach on determining the suitable HF approaches for authentication of FAA to cater for the requirement of producing halal food as outlined by the Department of Standards Malaysia [3].

The HF approaches resemble methods employed in other chemical measurements. Generally, for a testing laboratory to issue a testing result, the HF approaches should undergo validation and verification processes to fulfil the requirement of ISO 17025 [5], and a halal-testing laboratory should fulfil this requirement. References to achieve this requirement has indicated that the HF approaches shall establish performance characteristic (PC) before the FAA analysis [6].

With the increment request of halal products, the various HF approaches have received concern among analysts to provide reliable results for their clients. The most common HF approach is the DNA testing method; however, it faces challenges due to (1) the complex matrix of processed samples and (2) inhibitors existence in processed samples. Thus, other HF approaches such as high-performance liquid chromatography and gas chromatography-mass spectrometry incorporated with multivariate data analysis are sought to provide alternative HF approaches to investigate the halal status of FAA [7,8].

3.2. Efficacy of Food Antimicrobial Agent in Food Model and Actual Food Systems

The antibacterial activity assay is the first step in the efficacy evaluation of FAA. To meet food quality and safety needs, researchers have been studying the antibacterial effect of FAA on food-borne bacteria and spoilage microorganisms. Only a few approaches are used to assess FAA’s antibacterial activity. Endpoint methods and descriptive methods are two types of techniques. To evaluate putative bioactive chemicals, Sowhini et al. (2020) concluded that both endpoint and descriptive approaches should be used. Agar diffusion test (ADT), minimum inhibitory concentration (MIC), and minimum bactericidal concentration (MBC) are standard endpoint procedures [10,11]. The descriptive approaches for the antibacterial assay are the bacterial growth and time-killed curves.

The investigation of FAA efficacy on prepared food model media to reflect the actual food system is a common technique after completing antibacterial activity assays of FAA using the MIC and MBC tests [12]. The measurement of bacterial growth in a mixture of the FAA and bacterial-inoculated solution in beef extract, starch, and sunflower oil model media, which approximated the carbohydrate, protein, and oil actual food systems, respectively, is an example of the FAA efficacy study [13]. On the other hand, the food model media might be chosen based on the type of bacterial strain and its media growth. The efficiency and interactions of marjoram and thyme extracts on inoculated lettuce, meat, and milk model media with Enterobacter spp., Listeria spp., Lactobacillus spp., and Pseudomonas spp. [14]. Although FAA antibacterial activity in a food model media can only provide practical information on FAA behaviour, it is critical to confirm the findings in a real-world food system.

3.3. Generally Recognized as Safe (GRAS) and Limit of Food Antimicrobial Agents

The notion of halal is confined to permitted food and its nutritious value and safety for consumption. This notion has aided the broader understanding of halal means that are Shariah-compliant. Toyibian is an Arabic word that signifies "legal, steady, nutritious, and excellent quality", which applies to all halal products, including the FAA. To cater for the confirmatory of FAAs that are safe for consumption, organisations such as the European Union Commission (EUC) and the FDA have produced a safeguards list. The FAA is on the EU’s Everything Added to Food in the US (EAFUS) list, which the FDA recognises it as safe (GRAS) for use in the United States.

Other examples of GRAS FAA are shrimp-derived chitosan with GRAS notification codes GRN 000443 and Aspergillus niger-derived chitosan (GRN 000397), indicating that the FDA has approved chitosan is safe for consumption [15]. The FDA has also set a limit of 10 mg/L for chitosan in drinking water. Besides chitosan, the FDA has granted GRAS notification for free fatty acid (FFA), although trans-fatty acids are harmful to human health. The EUC and FDA have published the
maximum level erucic acid or unsaturated omega-9 fatty acid. Additionally, the German Federal Institute for Risk Assessment (BfR) suggested 20 g/kg maximum erucic acid levels in vegetable oils and fats [15].

3.4. Toxicity

Applying the FAA dosage to food should be based on the highest usage level and optimum toxicity benefit to comply with halal and toyyiban food processing. The FDA quality requirements for food additives have been the threshold for chemical certification [16]. To identify the toxicity of FAA that may develop carcinogen, the FAA shall undergo repeat-dose toxicity and genotoxicity tests. A carcinogen is a material that causes cancer, raises cancer prevalence, and shortens cancer activity after its inhalation, absorption, dermal treatment, or injection [17]. Repeat-dose toxicity tests are used to determine the carcinogen's safety from the carcinogen [18]. Genotoxicity is the toxicity caused by carcinogens that interfere with DNA.

3.5. Organoleptic Issues

Despite the fact that FAA can inhibit bacterial growth, organoleptic concerns demonstrate that food taste quality should be preserved. Unsaturated FFAs are prone to oxidation and produce rancidity in the food system due to their high abundance of double bonds [19]. Besides of oxidation issue, the FAA blended with food does not have a strong flavour and taste. The taste of meat mixed with 0.8% v/w oregano oil after cooking and cooling at 5°C does not alter meat taste, indicating this FAA amount's acceptability. The addition of oregano oil to minced meat after it has been cooked also has improved the flavour, smell, and colour of the minced meat. Although most essential oils are GRAS, essential oils are rarely used in food since the FAA is highly limited due to flavour.

4. The Concept of Halal Built-In

The Malaysian standards related to halal products contribute to the increasing demand for halal goods, services, and infrastructure as a counterpart of the halal ecosystem in Malaysia. Muslim consumer awareness of halal issues is responsible for this demand, and due to these factors, halal standards are formulated based on halal built-in by relevant stakeholders.

Halal built-in is a systematic approach towards halal management and control systems in all aspects which involve the supply chain and logistical aspects. The development of a built-in halal system ensures food production meets the halal requirements and meets nutritional standards starting from selecting and procurement of the halal ingredient, which includes the FFA. Since the built-in halal system is established, the processed products do not have to be tested.

5. Conclusion

Halal and toyyiban should be regarded holistically in nutrition, including the addition of FAA during the manufacturing process. More comprehensive studies are required to identify effective preservation methods that will not cause a nutrient loss in food. Natural FAA has been used for food quality and protection to reduce the adverse effects on human health. Therefore, there are appropriate requirements for keeping food fresh. Various studies involving essential oils, enzymes, bacteriocin, chitosan, and organic acids have shown that they are ideal for food-borne pathogen inhibitors. Toyyiban aspects of the FAA should be included in the nutritional debate to ensure the food can be halal and nutritious.

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Part X

Halal During COVID-19 Pandemic
Halal Food Certification in the Context of Globalization, Economic Growth and Foreign Trade

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**ABSTRACT**

Along with globalization, there has been an unprecedented growth in national economies in the world history. While the per capita income in the world was 5,318 USD in 1971, it reached 11,070 USD in 2019. While globalization has such a positive effect on economic growth, on the other hand, the nation state, culture, religion, language, etc. It forces many structures to turn into a one-dimensional shape. In this context, it is clear that there is a change in the perception of individuals' religious sensitivities with increasing personal income and globalization. The consumption habits of popular culture are easily adopted by individuals from almost every religion. As it is known, consumption of pork meat and meat of animals not slaughtered according to Islamic methods is prohibited in Islam. This sensitivity is mostly ignored in consumption habits of popular culture. However, the application of Halal Food Certification has led to the emergence of a new market by allowing consumption in the context of Islamic sensitivities. In the global halal food market, a transaction volume of USD 715 trillion was realized as of 2018. This figure is expected to reach 2.043 trillion US dollars in 2027. This rising trend also shows how much people need the service this market offers. With the increase in human movements in the international arena, people of different races and beliefs started to reside in different geographies of the world, in this process, the increasing number of settled Muslims in the Western world and the increase in the number of people who accept Islam in the Western world also bring halal food consumption to the agenda in the Western world. Therefore, the consumption demand of food products in accordance with Islamic methods is increasing in the Western world. This causes the share of halal food certified products to increase in international trade. However, how the consumption in accordance with Islam should be and the importance of halal food certification in this context is not correctly understood by the young Muslim generation who came to the world in countries far from the Islamic geography. In terms of the long-term sustainability of this market, it is very important to bring this awareness to individuals. In this context, it is necessary to establish educational and social policies that will develop a correct and effective Islamic understanding of individuals, taking into account the erosive nature of popular culture on the Islamic sensitivities of Muslim individuals living in both Islamic geography and Western countries. Otherwise, the increase in prosperity and globalization with economic growth may have negative effects on the halal food market along with Islamic sensitivities.

1. Introduction

The globalization process, which accelerates with technological developments, takes place in many dimensions such as economic, social, political, technological, etc. In the most general sense, it can be expressed as the process of integrating societies in different geographies of the world with each other over time by increasing their shopping and dependencies (Steiger, 2013:31). While globalization continues the integration process, it erodes local-national structures and especially manipulates culture. This situation, which can be qualified as culture assimilation, can be explained as the tendency to transform local cultures into a uniform culture under the influence of Western culture.

With the adoption of the US-dominated Western culture; The demand for various products, especially of American companies, such as fast-food chains, famous clothing and automobile brands, technological devices, etc. is increasing. Therefore, the USA and Western countries have the opportunity to produce and sell more goods. While the superiority of the USA in military power represents its "hard power", the dominance of the American culture within the Western culture and the imposition of this culture to the whole world through various channels represents the "soft power" of the USA (Nye, 1990; Adıgüzel, 2011:150).

US-cantered Western culture manipulates consumption local consumption habits in order to make them suitable for their own culture. It tries to change the current consumption patterns by increasing consumption, especially with advertising and marketing arguments. Because the essence of the capitalist system is consumption. No matter how and in whatever way, all kinds of consumption are encouraged. For example, high-wage consumption products, even if the individual does not need them at the moment or does not need them at the time, the perception is created as a mandatory need through media, etc. and the individual is provided to buy. In
order to obtain all these consumer products offered to him, the individual can go under the workloads and working tempo he would not accept under normal conditions (Omay, 2009).

The capitalist system has increased production as much as possible in order to catch high growth trends and a high level of production has been reached in an unprecedented manner in the known history of humanity. For example, the per capita income in the world was 5,318 US dollars in 1971 and reached 11,070 US dollars in 2019 (World Bank, 2020). Economic growth has also triggered the increase in personal income, and consequently, the majority of individuals around the world have gained a higher purchasing power than in the past. However, the fact that the increasing prosperity gains a consumption habit within the popular consumption understanding is an issue that should be considered carefully for Muslim individuals. Because Islam has a unique understanding of consumption.

The consumption habits imposed by the Western culture have a great role in the consumption of food products. Especially in fast-food consumption habits, the understanding of higher consumption with lower wages has an approach that is incompatible with the consumption understanding in Islam. Because the patterns of consumption in Islam are determined in the context of certain principles. One of the most important of these is the consumption in proportion to the need and the avoidance of waste. However, in the fast-food culture, it is aimed to consume in a continuous and increasing manner. Different products, flavours, promotions, toys for children, etc. Many elements in the form of trying to shape the consumption and make it consumed as much as possible. As is known, with increasing consumption, obesity problems are observed even in children from very young ages.

Increasing consumption raises the issue of whether people know enough about what they consume. Especially in Muslim countries, the increase of foreign origin fast-food chains along with the globalization process has increased the amount of food imported from abroad and thus created a perception for people to know the content of the product they consume. The issue of consuming products that are considered halal according to Islam, which is brought to the agenda by individuals with relatively high Islamic sensitivities, represents an increasing need and has brought products with halal certification and the developing market accordingly to an important place today. Many individuals who now carry the Muslim identity have begun to pay more and more attention to the content of what they consume and that the content is suitable for Islam. The awakening on this issue should be carefully preserved in terms of the sustainability of the halal food market and protected from manipulation.

With the increase in human movements in the international arena, people of different races and beliefs started to reside in different geographies of the world, in this process, the increasing number of settled Muslims in the Western world and the increase in the number of people who accept Islam in the Western world also bring halal food consumption to the agenda in the Western world. Therefore, the consumption demand of food products in accordance with Islamic methods is gradually increasing in the Western world. This causes the share of halal food certified products to increase in international trade.

The importance of consumption in accordance with Islam and the importance of halal food certification in this context are not correctly understood by the young Muslim generation who came to the world in countries far from the Islamic geography. In terms of the long-term sustainability of this market, it is very important to bring this awareness to individuals. In this context, it is necessary to establish educational and social policies that will develop a correct and effective Islamic understanding of individuals, taking into account the erosive nature of popular culture on the Islamic sensitivities of Muslim individuals living in both Islamic geography and Western countries. Otherwise, the increase in prosperity and globalization with economic growth may have negative effects on the halal food market along with Islamic sensitivities.

2. What Kind of Food Consumption Is Stipulated in Islam?

According to Islam, the earth has been given to people. Therefore, products that are forbidden to consume are very few compared to the products that are suitable for consumption. In the Qur'an, in the 145th verse of Surat al-Anam; Say, ‘O Prophet’ “I do not find in what has been revealed to me anything forbidden to eat except carrion, running blood, swine— which is impure—or a sinful offering in the name of any other than Allah. But if someone is compelled by necessity—neither driven by desire nor exceeding immediate need—then surely your Lord is All-Forgiving, Most Merciful”. Accordingly, consumption of meat of animals that died without being slaughtered, blood, pork and meat of animals slaughtered without mentioning the name of Allah is not considered appropriate in terms of Islam. If you pay attention, it is possible to say that banned food items occupy a small place compared to all other food items.

There is a distinction in Islam regarding animals living on land and sea. Terrestrial predators, birds of prey, donkeys, mules and cats, dogs, monkeys, mice, snakes, scorpions, insects etc., which are preferred especially in the Far East cuisine. consumption of such animals is not permissible according to Islam. There are also some differences in terms of consumption of food products in terms of sects in Islam. In this context, according to the Hanafi Sect; It is not considered appropriate to consume animals other than fish such as mussels, frogs and crabs. However, the consumption of these animals is permissible according to the other three madhhabas. Fish, on the other hand, is an animal species whose consumption is not prohibited in terms of all sects (Bardakoglu vd., 2020:38-41).

In addition to this, a certain type of behaviour in food consumption in Islam was also highlighted. For example, in a hadith stating that “while his neighbour is hungry, it is not from us who is full”, it is also ordered to share food consumption and to help especially those in need. Also, slaughtering small and bovine animals
during the Eid al-Adha in Islam and delivering the meat to the needy together with the family members are among the main obligations (Bilmen, 2017:481). It is also recommended to be in a middle way in consumption and not to waste.

Nowadays, with increasing personal income, people consume food outside the home and therefore cannot always find the opportunity to learn the content of the food they consume. As a result of the increasing international food trade, many products from different geographies of the world or produced by foreign companies in the Muslim geography take their place in the market. Accordingly, many additives in the content of foods are also purchased from foreign countries. Therefore, a very large amount of food trade takes place in international circulation. This situation causes confusion about what goods should be consumed, especially by individuals with high Islamic sensitivity. Here, products with halal food certificate provide an important convenience and meet an important need in the market.

3. Halal Food Certification, Cultural Assimilation, Consumption and Manipulation of Production

In the most general sense, Halal Food Certification is an accreditation document that inspects the conformity of goods put on the market by various companies with Islamic rules and international food standards and is given in connection with this inspection. Companies that have this certificate gain a competitive power in the market of the relevant goods and can act more comfortably in the market since they are certified that they sell food products in accordance with Islamic rules. In addition, from the consumer perspective, it is observed that individuals with Islamic sensitivities develop a sense of trust in their food shopping and also the principle of having full knowledge about the goods in the market has developed.

In the global halal food market, a transaction volume of USD 715 trillion was realized as of 2018. This figure is expected to reach 2.043 trillion US dollars in 2027 (Statistica, 2020). This rising trend also shows how much people need the service this market offers. In addition, the increasing Muslim population and increasing migration movements around the world can be counted among the factors that accelerate the growth of the halal food market.

Muslim migrations to the European continent, which increased rapidly after the second half of the 1900s, brought up issues such as the exposure of Muslims who started living in the Western world to cultural assimilation and resistance to this cultural erosion. Research shows that food consumption habits change later than language and clothing, and that they resist western culture longer than other factors. While continuing their lives in the Western world, Muslim immigrants try to live their lives with the desire to avoid the things prohibited by Islam and fulfill the responsibilities Islam imposes on them. This attitude also has the characteristics of a stance against cultural assimilation. Most immigrants have a concern of cultural assimilation if they do not have this opposing stance (Bonne ve Verbeke, 2008:36).

To give an example, Midamar Company, which operates in the halal food sector, claims that they contribute to the cultural assimilation of Muslim individuals in the Western culture through the products with the halal food label they put on the market. He also states that thanks to the products they produce, Muslim students who go to school in the Western world and buy hot dogs with halal food certificate from the school canteen express that they can consume the way they want (Gazdziak, 2011:22).

Another aspect of cultural assimilation occurs in production and marketing channels. As it is known, consumption at the rate of need and production in this consumption dimension are foreseen in Islam. Therefore, a wasteful consumption habit was not tolerated and prohibited. However, today the concept of need has almost lost the distinction between compulsory and non-essential needs, with this change in consumption understanding, waste has become widespread and natural resources have been brutally destroyed (Şeriati, 2004:167-168). Globalization has caused unconscious and excessive consumption in developed countries due to economic growth and increasing foreign trade, especially high income. In this context, Tabakoğlu criticizes this situation by stating that the world has turned into a place where those who die of hunger and those who die of overnutrition coexist (Tabakoğlu, 2005:162).

When considered in terms of production, it is understood that a production structure suitable for Islam should be found. According to Islam, there should not be waste in production, and a production should be made in proportion to the need and in a size to be consumed. In addition, certain Islamic principles should be followed during the production and subsequent marketing and market entry processes. For example, in the mutual exchange that will take place according to Islamic principles, the producer should explain his product in all its aspects (with its deficiencies and advantages), while advertising the product, the purchasing motives of the consumers should not be manipulated just to sell the product. On the other hand, the consumer should establish a balance between need and waste, avoid consumption and waste that is not within his / her need, and the necessary financing should be met according to Islamic methods. In this context, Participation Banks also play an important role.

Participation Banks have a very important place today in the realization of economic activities in the context of Islamic principles, with activities such as the realization of commercial transactions in accordance with Islamic principles, profit-loss sharing and letters of guarantee (Armağan, 2005:37-38). It is very important that financial transactions are carried out in accordance with Islamic principles as well as commercial activities. Therefore, consumption, production, finance and all other economic activities should be considered as parts of a whole and should try to apply the economic-inclusive provisions of Islam in all areas.
4. Conclusion

While globalization continues the integration process, it erodes local-national structures and especially manipulates culture. This situation, which can be described as more culture assimilation; It can be explained as the tendency to transform local cultures into a uniform culture under the influence of Western culture. Along with globalization, there has been an unprecedented growth in country economies in the world history. While the per capita income in the world was 5,318 USD in 1971, it reached 11,070 USD in 2019. While globalization has such a positive effect on economic growth, on the other hand, the nation state, culture, religion, language, etc. and forces them to turn into a one-dimensional shape. In this context, it is clear that there is a change in the perception of individuals' religious sensitivities with increasing personal income and globalization. The consumption habits of popular culture are easily adopted by individuals from almost every religion.

US-centred Western culture manipulates consumption local consumption habits in order to make them suitable for their own culture. It tries to change the current consumption patterns by increasing consumption, especially with advertising and marketing arguments. Because the essence of the capitalist system is consumption. No matter how and in whatever way, all kinds of consumption are encouraged. For example; high-wage consumption products, even though the individual does not need it at the moment or never needs it, media etc. By creating a perception as if it is a compulsory need, it is ensured that the individual purchases. In order to obtain all these consumer products offered to him, the individual can go under the workloads and working tempo he would not accept under normal conditions.

Nowadays, with increasing personal income, people consume food outside the home and therefore cannot always find the opportunity to learn the content of the food they consume. As a result of the increasing international food trade, many products from different geographies of the world or produced by foreign companies in the Muslim geography take their place in the market. Accordingly, many additives in the content of foods are also purchased from foreign countries. Therefore, a very large amount of food trade takes place in international circulation. This situation causes confusion about what goods should be consumed, especially by individuals with high Islamic sensitivity. Here, products with halal food certificate provide an important convenience and meet an important need in the market.

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How Islamic consumption should be and the importance of halal food certification in this context are not correctly understood by the young Muslim generation who came to the world in countries far from the Islamic geography. In terms of the long-term sustainability of this market, it is very important to bring this awareness to individuals. In this context, it is necessary to establish educational and social policies that will develop a correct and effective Islamic understanding of individuals, taking into account the erosive nature of popular culture on the Islamic sensitivities of Muslim individuals living in both Islamic geography and Western countries. Otherwise, the increase in prosperity and globalization with economic growth may have negative effects on the halal food market along with Islamic sensitivities.

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Turkey is a country with a developing economy. It has taken important steps in recent years to strengthen its position in the global Islamic economy. Turkey, in terms of the Global Islamic Economy index scores; It was ranked 15th in 2018, 13th in 2019, and 12th in 2020. Especially; since 2017, the increase is in line with Turkey's economic growth in halal cosmetics and pharmaceuticals scores. With 7.4% growth of Turkey's economy in 2017, Turkey's economic indicators halal cosmetics and pharmaceuticals points from 40.63 points to 31.66, rose to 48.0 score points in the 2019. According to the Global Islamic Economic indicator data, index scores are higher than the global index score of Turkey. In 2018, Turkey's economic indicators halal cosmetics and pharmaceuticals 40.63 points, while the global index was 31.08 points level. Halal medicine spending by Muslims increased from $ 92 billion in 2018 to $ 94 billion in 2019. Turkey ranks first with $ 10 billion halal pharmaceuticals expenditure in 2019. Due to the COVID-19 crisis, Muslim spending is expected to decline by 6.9% to $ 87 billion in 2020. Halal cosmetics spending by Muslim consumers increased from $ 64 billion in 2018 to $ 66 billion in 2019, with a growth of 3.4%. In 2020, Muslim consumer spending is expected to fall by 2.5% to $ 64 billion again due to the COVID-19 crisis. The global halal cosmetics and halal pharmaceuticals industry had its best year of sale ahead of the COVID-19 outbreak. While the epidemic reduces sales, especially at retail outlets, consumer behaviour is also changing due to social distance and wearing face masks. As consumers begin to adapt to the pandemic environment, companies are striving to improve e-commerce and digital marketing. Likewise, with the refocusing of healthcare by governments due to the epidemic and the increasing awareness of the public's health, the halal pharmaceuticals sector and the wider ecosystem are preparing for great growth.

1. Introduction

In countries where the majority of the society consists of Muslims, the concept of halal is an important factor for consumption and economy. The concept of halal product has emerged as an issue that Muslim individuals attach more importance to, especially in recent years. This concept, which manifests itself in the fields of food, personal care, cosmetics, medicine, pharmacy, travel, media, finance and fashion, has become more and more effective in people's lives [1]. Today, Muslim consumers are faced with a wide range of products and services in the halal cosmetics and pharmaceutical industries. These products are offered to consumers by many different companies or brands in national or international areas. The production and sale of halal products preferred by Muslims in the economic growth targets of the countries increases their importance every passing time. Therefore, the halal cosmetics and pharmaceutical market continues to increase in the world compared to the previous year. Covid-19 pandemic actual process in the world and Turkey, halal cosmetics and in the pharmaceutical market has affected the increase in the negative. Companies; With the adaptation of consumers to the pandemic process, they had to develop e-commerce and digital marketing fields to increase spending in the market.

2. Halal Cosmetics and Pharmaceutical Market

Global halal market; It consists of halal food, Islamic finance, halal travel, hijab clothing, halal media and recreation, halal medical drugs, halal cosmetics and personal care products. The changes in the global Islamic Economy halal cosmetics and pharmaceutical market for the year 2014-2020 are given in Figure 1[2-1, 2-2, 2-3, 2-4, 2-5, 2-6].
Pharmaceutical spending by Muslims increased from $92 billion in 2018 to $94 billion in 2019. Due to the COVID-19 crisis, Muslim spending is expected to decline by 6.9% to $87 billion in 2020. However, a recovery is expected in the following years. Muslim consumer spending in the pharmaceutical industry is expected to reach $105 billion in 2024, with a Compound Annual Growth Rate of 2.3% from 2020. Turkey with $10 billion halal pharmaceutical expenditure in 2019 is ranked first in the world, accounting for 10% of the world halal pharmaceutical expenditure, Turkey has an important trade volume in this area.

Halal cosmetics spending by Muslim consumers increased from $64 billion in 2018 to $66 billion in 2019, with a growth of 3.4%. In 2020, Muslim consumer spending is expected to fall by 2.5% to $64 billion again due to the COVID-19 crisis. Muslim consumer spending in the cosmetics industry is expected to reach $76 billion in 2024, with a Compound Annual Growth Rate of 2.9% from 2020. Turkey halal cosmetics spending 3.4 billion dollars in 2017, raised in 2019 to $4 billion.

Muslims who avoided the consumption of products that did not comply with their standards in the past; They now demand halal certified products that comply with their beliefs, paying attention to health, hygiene, cleanliness and quality issues. The Halal product market, which also includes the Halal cosmetics and pharmaceutical market, has a high potential as a growing market when taken as a whole.

One of the important markets for halal cosmetics and pharmaceutical is undoubtedly Turkey. 99% of the population is Muslim Turkey, both as the crossroads of two continents located between the two religions and civilizations is an important position as a country.

3. Development of Turkey’s Halal Cosmetics and Pharmaceutical Score

Global Islamic economy indicator scores can be calculated separately for each country as well as global score can be calculated. This provides the opportunity to compare the scores calculated for each country with the global scores. Although these scores do not find a place for itself in the top 15 countries when compared to other countries, they are important in determining whether a country is relatively below or above the global trend.

Turkey, the State of The Global Islamic Economy Report (SGIER) in terms of global Islamic Economic indicators prepared by scores; It was ranked 15th in 2018, 13th in 2019, and 12th in 2020. Turkey's rise in the last few years seems to be lawful score an important step. According to the data of the report covering 2014-2020 and prepared for two consecutive years while Malaysia always maintains its first place, the countries of the United Arab Emirates, Bahrain, Saudi Arabia, Jordan, Qatar, Oman, Pakistan, Kuwait, Indonesia, Sudan, although they are in different ranks, show continuity in the top 15 countries according to the indicators between 2014-2020.

According to the Global Islamic Economy index score of Turkey indicator scores are higher than the global index in the range of scores each year. Figure 2 in the table generated by the global Islamic economic indicator scores, between the years 2014 to 2018 are located in Turkey and global score comparison [2-1, 2-2, 2-3, 2-4].
According to the data in figure 2 Turkey; Although it cannot find itself in the top positions in the country rankings, it shows that it is at a better level compared to the global indicator scores.

When analysed in terms of the change in year 2016 began with the rise of Turkey has continued in 2018. The rise is expected to continue in 2019 and 2020. In this case, the global halal market grows increasingly suggests that in terms of both global and Turkey.

Global Islamic economic indicator scores, according to the international halal cosmetics and pharmaceutical distribution sector in the years 2014-2019 created with Turkey and global comparison scores are presented in figure 3[2-1, 2-2, 2-3, 2-4, 2-5, 2-6].

In terms of Global Islamic Economy indicator scores prepared by State of The Global Islamic Economy Report (SGIER); According to the halal pharmaceutical and cosmetic industry lead indicator of Turkey raises scores than the global index score. In 2018, while Turkey's economic indicators points to 40.63 halal cosmetics and pharmaceuticals, the global index score was 31.08. While Turkey's halal pharmaceutical and cosmetic index score has increased to 48.00 from 40.63 in 2019 to score points. Turkey's rising trend since 2017 in the halal pharmaceutical and cosmetic industry, the rise in the first 15 countries, has a great importance.

With 7.4% growth of Turkey's economy in 2017, Turkey's economic indicators halal cosmetics and pharmaceutical points from 40.63 points to 31.66, rose to 48.0 score points in the 2019. Turkey's rise in the rate of growth, the top row shows the halal products market is an important factor in the rise.


The number of Muslims that make up about 24% of the world's population; It creates an undeniable large market for businesses. Understanding the demands and needs of the Muslim population and making products and services suitable for these demands and needs emerges as an obligation [3]. For this reason, the concept of halal has become too important to be considered as a religious concept, and it is also a symbol for businesses in terms of production, consumption, quality and lifestyle [4].

Halal certified products are not only demanded by Muslim consumers, but also by consumers of other religions. As the level of knowledge and awareness about halal products increases, the demands of consumers of other religions, especially Jews and Christians, against such products tend to increase [5].

Especially since the 2015-2016-year, Turkey's economic growth rate and the rate of growth of halal cosmetics and pharmaceutical market expenditure parallelism is shown in figure 4.
Turkey's economic growth was realized in 2015, a decrease compared to the previous year. Turkey's 6.08% economic growth in 2015, has grown, 3.18% in 2016. While the halal cosmetics market grew by 3.70% in 2015, it grew by 1.78% in 2016. The halal drug market, on the other hand, is in contrast to the economic growth and cosmetics market; While it grew by 4% in 2015, it grew by 6.41% in 2016. During the years of economic growth, the increase in the growth in the cosmetics market has also continued.

Due to the Covid-19 epidemic crisis, the world global economy is expected to shrink by more than 4% in 2020. As in all sectors, there will be a contraction in the halal product market in 2020 and after.

5. Conclusion

Muslims who avoided the consumption of products that did not comply with their standards in the past; They now demand halal certified products that comply with their beliefs, paying attention to health, hygiene, cleanliness and quality issues. Taken as a whole, the halal product market has a high potential as a growing market.

The global halal cosmetics and pharmaceutical industry experienced its best year of sale before the Covid-19 outbreak. While the epidemic reduces sales, especially at retail outlets, consumer behaviour is also changing due to social distance and wearing face masks. With the consumers beginning to adapt to the pandemic environment; companies are striving to improve e-commerce and digital marketing. Same way; With the refocusing of health services by governments due to the epidemic and the increasing awareness of the public's health, the halal cosmetics and pharmaceutical market is preparing for a major breakthrough after the Covid-19 outbreak.

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The Issues, Challenges and Opportunities Arising for the Halal Economy and the OIC Countries

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ABSTRACT

The COVID-19 crisis has hit the world by storm and disrupted major economies, countries and industries as well as having a devastating impact on family’s social structures and communities. The effects of COVID-19 will not remain only in the current times but is likely to impact populations and countries for years to come. As the reset button has been pressed for the World as we know it, the question remains on how resilient are the OIC countries are to weather the storm and come out winning on the other side (if there is such a thing as winning from this pandemic). The issues, challenges and opportunities arising for the Halal Economy and the OIC countries has been discussed.

During the presentation the author highlight these important headlines:

Introduction:
- Covid-19
- Existing and emerging needs of OIC countries and populations
- Geopolitics is changing Trade Internationally
- Brexit and Britain and the European Union relationship will change
- Internationally the need for new products, services and approaches
- The changing dynamics of trade partners, suppliers and customers opens new risks and opportunities for OIC countries and Halal businesses

Factors to Consider:
- Timeliness and Agility
- Resilience of the economy and nation
- Skills and opportunities for growth
- Trade agreements
- The role of OIC and financial institutions
- Prevention, protection and proactivity

Opportunities:
- Health, wellbeing and SDGs
- Halal Tayyab
- The new norm enabling cross border connectivity
- Entrepreneurship, women and youth
- Environmental impact and animal welfare
- Trade intra-and inter OIC Opportunities
- Investment in Growth
- Interconnectivity and ecosystems incorporating government, trade organisations, HCBs and investors
- Sustainable ‘Halal’ Cities

Partnership and Collaboration Opportunities:
Wherever there are problems, there is opportunities for being the provider of solutions linked to trade, economic, environmental and social impact.
Halal Food Supply Security – Devising Food Security amidst COVID-19 Crisis

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ABSTRACT

Food insecurity has been a pressing issue for governments to address. Globally about 265 million people could face acute food insecurity by the end of 2020, almost a double from pre-COVID-19 crisis. Growing population, rising urbanization and food wastage had already been top issues, but the current crisis is posing a greater threat to the food supply security. What impact will the crisis have on the Halal food supply security? To what extent could governments, industries and academia help build a resilient food supply system for the Halal market economies? The purpose of this paper is to discuss the impact of COVID-19 crisis on the Halal food supply security. The assessment will be carried in two levels - first by examining the impact on the Halal food industry and highlighting which Halal food sub-categories are most vulnerable to the food supply-chain disruptions. Second, the impact of the crisis on government policies will be assessed by presenting the food supply security framework, where the Halal markets will be categorized according to the level of impact on food security. This paper establishes robust mid-term government strategies (1-3 years) - an action plan towards a sustainable and secure Halal food industry. In presenting these strategies, the Triple Helix model is leveraged to present the role of three key knowledge economy participants - academia, industry and government - in devising a secure Halal food system to overcome these challenging times.

1. Introduction

Globally about 265 million people could face acute food insecurity by the end of 2020, almost a double from pre-COVID-19 crisis. Almost 690 million people around the world were undernourished in 2019 (8.9% of the population), 10 million increase from previous year. The COVID-19 pandemic is likely to increase this number by 83 million to 132 million in 2020 [1].

Food insecurity and poverty are a major cause for undernutrition. It all starts from production and supply of food. Around 14% of the food produced globally is lost during the post-harvest production stage, before reaching the retailers [2]. While 33-50% of all food produced is never eaten [3].

The countries of the Organization of Islamic Cooperation (OIC) have a population of 1.8 billion people, a fifth of the world’s population [4]. Collectively, they make up 15% of global food consumption [5].

Most of these countries belong to the low-income category of less than $995 GNI per capita [6]. Around 52% of the OIC population live in rural areas that are dependent on agriculture. There is an immediate need among the least developed members of the OIC to address acute hunger, with acute food crises affecting more than 65 million people (2018) in OIC member countries [7].

Most OIC member countries do not have a fully developed and secure food supply system. They are highly import dependent and with mild or high food insecurity. Along with building robust supply-chain, increasing intra-OIC trade and self-sufficiency for food supply is also key for these OIC countries, given the impact of the COVID-19 on the supply-chain and the major global food suppliers.

The purpose of this paper is to highlight these impacts of the COVID-19 pandemic on the food supply-chain - key food categories impacted and the effect on the major supplier markets. The impact on the OIC countries also differ with the level of food security and net imports of each country which shall also be discussed.

Secure food systems are at the heart of economic prosperity. The importance of leveraging the triple-helix model for food security will be considered in this paper. The interconnectedness of government, industry and academia is crucial for innovative and strong food security solutions.

2. Food Security

According to Food and Agriculture Organization of the United Nations (FAO), food security is defined as: “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” [8].

Food security includes four main pillars [7]:

- [8]
1. Availability: includes average protein supply, value of food production
2. Access: includes transportation, gross domestic product (in purchasing power parity)
3. Utilization: includes access to improved water sources and sanitation facilities
4. Stability: value of total imports; domestic food price volatility; per capita food production and supply and political stability
5. The Global Food Security Index (GFSI) analyses food security in 113 countries globally. The index looks at food availability, affordability, quality (utilization) and safety (stability) in the economy. 37 out of the 57 OIC countries are assessed in the study which shall be referred to in this paper.

3. Impact of Crisis on Supply-Chain

The disruption of food value chains due to the COVID-19 crisis could be because of lack of workers availability, lack of seed or fertilizer supply, or reduced transport facilities - all factors driven by lockdowns and social distancing norms and policies.

What we are witnessing is a disruption of the food system like the repercussions of the 1990s crisis, when supply chains collapsed. Those experiences showed that impacts were strongly heterogeneous, depending on the nature of the commodity, the resource-intensity of the systems, and the level of economic development.

Table 1 shows the top 10 food (Halal) categories of 24 categories) imported by the OIC member countries that make up 75% of all food imports. The highest imported category is Cereals at $41.9 billion imports in 2019. The two-year projections are also calculated, given world merchandise trade volume is forecasted by WTO to fall 9.2% in 2020. Trade will rebound to 7.2% in 2021, although it will remain well below the pre-crisis trend [9]. These are optimistic signs of trade compared to the initially projected impact of 13-33% drop in 2020.

In order to experience a lesser negative impact, industry players in the OIC need to strengthen their supply-chain

<table>
<thead>
<tr>
<th>Table 1: Top food (Halal) categories by OIC imports and projections</th>
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<tbody>
<tr>
<td><em><em>Top 10 HS Halal Food</em> Sectors</em>*</td>
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<tr>
<td>----------------------------------</td>
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<tr>
<td></td>
</tr>
<tr>
<td>10 Cereals</td>
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<tr>
<td>01 Live animals</td>
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<tr>
<td>15 Animal or vegetable fats and oils...</td>
</tr>
<tr>
<td>04 Dairy produce; birds' eggs; natural honey...</td>
</tr>
<tr>
<td>12 Oil seeds and oleaginous fruits; miscellaneous grains...</td>
</tr>
<tr>
<td>08 Edible fruit and nuts; peel of citrus fruit or melons</td>
</tr>
<tr>
<td>02 Meat and edible meat offal</td>
</tr>
<tr>
<td>17 Sugars and sugar confectionery</td>
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<tr>
<td>23 Residues and waste from the food industries; prepared animal fodder</td>
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<tr>
<td>19 Preparations of cereals, flour, starch or milk; pastrycooks' products</td>
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</table>

* Some 4-digit codes of these HS codes are identified as Haram and removed from analysis.

<table>
<thead>
<tr>
<th>Table 2: Top food (Halal) categories impacted by COVID-19</th>
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<tr>
<td><em><em>Top 10 HS Halal Food</em> Sectors</em>*</td>
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<td>10 Cereals</td>
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<tr>
<td>12 Oil seeds and oleaginous fruits; miscellaneous grains...</td>
</tr>
<tr>
<td>13 Lac; gums, resins and other vegetable saps and extracts</td>
</tr>
<tr>
<td>14 Vegetable plaiting materials...</td>
</tr>
<tr>
<td>11 Products of the milling industry; malt; starches; inulin; wheat gluten</td>
</tr>
<tr>
<td>05 Products of animal origin, not elsewhere specified or included* Preparations of cereals, flour, starch or milk; pastrycooks' products</td>
</tr>
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<td>19</td>
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</tbody>
</table>
capabilities and plan for logistics, capacity building and key product categories to focus on. They must also assess the food supplying markets of key products for the extent of impact of the COVID-19 crisis in these markets.

Table 2 shows the top 10 food (Halal) categories, ranked by the potential severe impact on imports to OIC. The top 20 countries with active COVID-19 cases makeup 70% of all cases worldwide [10]. The assumption is, if these countries are among the top five exporters to OIC, then there is high risk of disruption to the supply-chain.

Meat and edible meat offal rank the first, since its major suppliers are among the most impacted by COVID-19, and collectively supply 66% of the total supply to OIC.

USA is among the highest country with active COVID-19 cases, about 7 million.

4. Food Security and Import Dependency

Members of the OIC can be distributed into 6 groups based on the level of their food security and dependency on imports.

Figure 1 shows a map of the 57 OIC countries and the three levels of net imports in 2019. Major net importers of more than $6 billion are Saudi Arabia, Egypt, UAE, Algeria, Iran and Bangladesh. Only 4 countries are net exporters of more than $4.6 billion exports, and these include Indonesia, Malaysia, Turkey and Côte d'Ivoire. All other countries are net importers of at least above $20 million net imports.

Figure 2 shows the classification of the 37 OIC countries as per the Global Food Security Index (GFSI) 2019. Eight countries score above 66 (out of 100), and are also among the top 50 globally. These include Qatar, UAE, Kuwait, Malaysia, KSA, Turkey, Oman, Kazakhstan and Bahrain. All other countries have a medium food security (score 51-66), and fourteen low on food security (score below 51). Yemen and Chad are at the lowest of the ranking, in the region as well as globally, with scores 35.6 and 37 respectively.

Combining these two, key metrics of assessing food security – import dependency and food security index - Figure 3 portrays the combined level of food security for the 36 OIC countries. Following are the results:

- **High food secure; Low import dependent**
  This is the ideal state of food security in the paradigm, but only two, middle income OIC countries made it here – Malaysia and Turkey. Both are net exporters of food (Halal) at $0.01 billion and $5 billion net exports, respectively.

- **Medium food secure; Low import dependent**
  Second ideal state of food security, only Indonesia is classed here. It is the largest net exporter in OIC, with $13 billion net exports, and also the largest consumer spends market of food (Halal) at $144 billion.

- **High food secure; High import dependent;**
  - **And High food secure; Medium import dependent**
    Mostly developing, high-income economies, mainly from GCC, are in this category: KSA, UAE, Qatar, Kuwait, Oman, Bahrain, Kazakhstan

- **Medium food security; Medium import dependent**
  - **Low food security; Medium import dependent**
    Most OIC countries belong to this category, that are net importers of $0.02 - $6 billion net imports or $0.08 - $5 billion net exports. Their GFSI score is between 35.6 to 64.8

- **Low food secure & high importer/low importer**
  These categories do not have any OIC countries. Low food security and high import dependency is the extreme, negative category, but none in the OIC categories here.
5. **Triple Helix Model for Food Supply Security**

The Triple Helix model of innovation has attracted developed and developing economies to use as a policy making tool and promoting a knowledge-based, innovative economy. It involves the collaboration of three key players - government, industry and academia.

Each of these players play an important role in the food industry, by creating stringent food security and trade policies, integrating technology for efficiency, or by providing R&D facilities. The inter-connectedness between these innovation players is crucial for this creative process.

### 5.1. Case Study:

The Dutch government leverages the triple helix model to foster food security. This determination supported by the launch of its vision in 2018, themed ‘valuable and connected’. Through a series of measures, such as revising regulations, the government aims to stimulate collaborative initiatives and innovative entrepreneurs and academic institutions. [11]

Australia is also one of the leading countries in terms of successful collaboration between government, private-sector companies, research facilities. The strategic advisory arm of Australia’s national science agency CSIRO Futures has laid out a roadmap for addressing food security and nurturing the development of Australia’s agriculture sector. [12]

As discussed earlier, most OIC countries are highly import dependent, with a low level of food security. What these economies require are decisive roadmaps and innovative solutions to become self-sufficient and ultimately global suppliers of food (Halal). For that, this paper suggests broad mid-term strategies for each of the key players – government, industry and academia, to secure the food supply chain and trade.

### 5.2. Government

Governments should not act as an industry promotion-and-facilitator where government acts as an enabler of an ecosystem with targeted initiatives, creating a positive environment for players. Some strategies include:

- Regulatory flexibility and financial incentives to food producers and R&D facilities
- Investigate and consider the impacts of non-tariff barriers to trade
- Strengthen regional and international coordination (‘fair’ trade agreements, joint support policies)
- Decisive action plans to bring supply-chains closer to home and become self-sufficient nation
- Advanced Food Security measures (partnerships, investments, trade agreements)
- Facilitate efficient knowledge transfer and foster development of markets to enable the creation, and diffusion of knowledge
- Support emerging start-ups and SMEs in food sector (through finance, set-up and easy regulations)
- Provide an effective system of Intellectual Property Rights (IPR), and make commercialization of IP an easy process

### 5.3. Industry

Industry players must carefully examine the impact of COVID-19 crisis on their supply-chain and key food products. Following that, decisive plans must be carried and implemented around alternate product sourcing, staffing and collaborate with R&D institutions for
innovative solutions. Some other strategies include:

- Increase in-process transparency of quality and enhance domestic food testing capabilities
- Assess alternate product sourcing, leveraging intra-OIC trade
- Improving the collaborative efforts between businesses and the research community to enable knowledge transfer
- Leverage agritech and foodtech to foster food security. Develop enhanced manufacturing, traceability, and logistics automation
- Create an entrepreneurial culture by instilling the skills and attitudes needed for creative enterprise
- Consider acquisitions to ensure footprint across the value chain and support the failing companies

5.4. Academia

Academic institutions can be a great source of R&D testing facilities and a hub for innovate, next-gen food technologies. It is important to leverage these institutions through financial support, and to help them commercialize their intellectual property. Some strategies at institutional level include:

- Develop a national centre of excellence in food-safety research and collaboration
- Launch educational programs around the urgency to address this global food crisis and educate people and companies around optimizing food supplies and food-waste solutions
- Establish incentives and/or an award system to ensure emerging ideas are encouraged
- Another incentive would be commercializing IP to enable industry players support in implementing the ideas and leaving a wider impact

6. Conclusion

This paper examines the repercussions of COVID-19 on the food supply-chain and trade of OIC countries. It is crucial to highlight this given the dire situation of global food security emerges from under-developed food systems.

The paper first examined the impact on key product categories in the value-chain. The highest OIC import categories were Cereals, Live animals and animal/vegetable fat. COVID-19 is forecasted to have a -9.2% impact on trade in 2020, but 2021 looks positive with a 7.2% increase. Top global suppliers of some of the key product categories are severely impact by COVID-19, requiring OIC industry players to consider alternate product sourcing options.

Next, the impact of COVID-19 on the food supply trade was examined. The results found that most of the OIC countries are net importers with medium/low food security. No OIC countries were identified as low on food security and very high on net imports (dire situation), however OIC countries still need to become self-sufficient, strengthen intra-OIC trade, and improve on food security to become global suppliers of food (Halal) and key contributors to the zero hunger SDG goal.

Finally, to achieve the goals set above, triple-helix model was leveraged to ensure key stakeholders of the economy collectively take part in the creative problem solving. Governments must support the industry, especially emerging players, and R&D institutions to create and implement innovative food-tech solutions. Industry players must scrutinize their supply-chains and consider support from institutions to provide innovative solutions. Academia must incentivize innovative ideas through intellectual property rights (IPR) and help commercialize those IPR so that the industry can support in implementing them.

This paper was aimed at giving an overview of the state of food supply security and trade amidst COVID-19 pandemic. Further detail study can be done on this aspect, including:

- Assessing quadruple helix model: taking into consideration role of the fourth key player - civil society. Considering consumer behaviour changes and impact on food demand and supply
- Analysing the key role of NGOs to support and leverage each of the economy players – government, industry and academia
- Deep analysis of each classification of the food security framework proposed in this study

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5. DinarStandard synthesis and analysis.
Iman Ali supports research and analysis across all aspects of DinarStandard’s Islamic economy advisory work. Her special areas of focus are the fourth industrial technologies of Blockchain and IoT. She has delivered for DinarStandard clients research and analysis work covering regional Halal economy, Islamic social finance and various innovation research engagements. Iman has previously interned as a Blockchain Consultant at Avanza Innovations and Commercial Project Intern at Siemens. She was also one of the eleven Student Ambassadors at Dubai Future Accelerators (4th Cohort) facilitating government entities and tech-start-ups.

Iman has several publications on SCOPUS journals and conference papers titled: Thoughtful Threads: Ethical Fashion, Blockchain Redefining: The Halal Food Sector, Commercialization of Intellectual Property; an Insight for Technocrats, Commitment Towards Most Cyber Resilient Nation- UAE. She is also a chapter author of book: Artificial Intelligence - An Inducement of Technology in Human Affairs (published by Wolters Kluwer). Iman holds Bachelors in Commerce Honours from Amity University Dubai and several certifications namely Fundamentals of Islamic Finance, Lean Six Sigma (Green Belt) from KPMG and IBM Blockchain Essentials.
Halal Food Forensic Post Covid-19
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A B S T R A C T

Today, Muslim friendly hospitality services/halal tourism services such as airlines, hotels, food services, etc. are the new fast developing tourism products in the halal tourism industry. Halal tourism is the type of tourism that adheres to the values of Islam. Henderson (2009), suggest that the all product development and marketing efforts designed for and directed at Muslims and tourism mainly by Muslims. In an excellent review, the halal tourism is distinct from the common tourism because it supported by self-esteem which has purpose of the action (goal-oriented) and motivation. Jalan Gombak, 53100 Kuala Lumpur (2012) define the halal tourism as the activities of Muslims travelling to and staying in places outside their usual environment for not more than one consecutive year for participation of activities that originate from Islamic motivations which are not related to the exercise of an activity remunerated from within the place visited (Al-Hamarnah, 2008; OIC). Consumers are the end-user of goods and services. As such their rights and interests should be given the highest priority by the industry. There have been many consumer complaints related to hospitality services. These include misleading advertisement, fraud holiday package, unfair contract terms, non-disclosure of information, low quality and inefficient services etc. It is thus very important to examine these issues from consumer perspectives to ensure that halal hospitality services are consumer-friendly services and free from such problems. In doing so it is necessary to ensure consumers are adequately protected in both legal and administrative regulations. The study will discuss the following issues: (i) The need for legal and administrative framework related to Muslim friendly hospitality services in Malaysia generally and the Local Authorities By Laws in particular in an attempt to identify the weakness and to suggest for its improvements; (ii) The efficacy of management and administration of laws related to hospitality services such as the Islamic Tourism Centre, Tourism Board, Local Authorities, Tourism Promotional Board hospitality services and to propose for effective administration and management of halal tourism, hospitality Services in Malaysia; (iii) Legal protection on the involvement of tourism industries in halal tourism, hospitality Services in Malaysia in order to ensure their sustainability and ability to compete with multinational company; (iv) An analysis as to whether new ideas and innovative activity among the key players/ institutions such as training program, business methods, certification process, branding, franchising etc. can be protected as intellectual property under the Copyright Act, Trade Marks Act, Patents Act; and National Heritage Act; and (v) Consumers protection and Halal Tourism, Hospitality Services such as misleading advertisement, fraud holiday package, unfair contract terms, non-disclosure of information, low quality and inefficient services, etc.

1. Introduction

Tourism continues to assume a key role in the Economic Transformation Programme (ETP) to propel Malaysia into a high-income nation by the year 2020. Globally, Malaysia was ranked as the 10th most-visited nation on the World Tourism Organisation (UNWTO)’s Tourism Highlights 2013 Edition with a record high of 25 million tourist arrivals in 2012. Further growth is expected in 2014 in line with the aggressive campaign that has been undertaken by Tourism Malaysia in conjunction with Visit Malaysia Year 2014. Tourism Malaysia is also expected to enhance its digital platforms further with an aim to keep Malaysia trending in the global tourism arena. Ironically, Muslim friendly Hospitality services or the Islamic tourism is a high-yield segment that has the potential to develop and contribute towards Malaysia’s growth. There has been a steady increase of Muslim tourist arrivals in Malaysia from about 1.37 million in 2000 to 4.7 million in 2010 and in 2013 the estimated number of Muslim visitors to Malaysia was 5.22 million (20.33 per cent) of the total tourist arrivals in Malaysia. In a survey conducted by Dinar Standard (a leading US-based survey institute for the Muslim travel market) which was presented during the 2013 International Tourism Bourse (ITB) in Berlin, Malaysia was named one of the world’s favourite destinations among Muslim travellers, alongside Turkey and the United Arab Emirates (UAE).
2. Why Malaysia?

The Malaysian halal industry comprises of various sectors such as food and beverages, Islamic banking and finance, halal logistic, retailing, pharmaceutical, and cosmetic and personal care, tourism, and few others. Malaysia already a pioneer for halal food and beverages is now moving towards becoming the pioneer for Muslim friendly Hospitality Services for the world. Malaysia places great emphasis on the comfort and convenience of its Muslim residents and guests. Mosques and musollahs (prayer room) can easily be found in each district around the country, and ample prayer facilities are available at almost every tourist attraction, shopping malls, airports, parks and public places. Abundance choices of halal food are the main attraction to the Muslim tourist. Most restaurants in the country serve halal food including international fast-food franchises such as Kentucky Fried Chicken (KFC), Mc Donald’s, and Pizza Hut which are all certified by the competent authorities (Department of Islamic Development Malaysia (JAKIM) or the State Religious authorities). Many of Malaysia’s tourism accommodation including international hotel chains provide Qibla direction and prayer mats in their guest rooms. In a survey conducted by Dinar Standard it was revealed that prayer facility, availability of halal food and a Muslim-friendly atmosphere being the most important factors in determining their choices of coming to Malaysia.

3. Sustainability Program

Availability of halal food, existence of mosque and musollahs (prayer room) at the public places, tax-free shopping zone, a Muslim-friendly atmosphere is not enough to sustain the growth and development of Muslim friendly Hospitality Services in Malaysia. In the long run it has to be a highly regulated industry that is able to set a global standard to any other countries so that Malaysia will remains as the reference centre for Muslim friendly Hospitality Services globally. Although it is almost impossible to have a fool-proof system to be in placed but a set of law, regulations and administrative mechanism need to be developed in order to ensure its growth and sustainability. For instance, a proper definition and terminologies that surrounds the industry are very much needed in order to avoid misconception and misunderstanding among the consumers.

4. Malaysia Technical Committee Programme (MTCP)

This two-week training course was organised by the Islamic Tourism Centre for the tenth time under the Malaysian Technical Corporation Programme (MTCP). The participants hailed from both the Organisation of Islamic Cooperation (OIC) member countries and non-Islamic countries comprising Indonesia, Gambia, Palestine, Sudan, Yemen, Tunisia, Iran, Oman, Egypt, Morocco, Uganda, Uzbekistan, Tajikistan, Cambodia, Laos, Malawi, Vietnam and Zimbabwe. The objectives of the course are:
- To enable participants to understand the current global trends in travel and tourism and the emergence of Islamic travel and tourism;
- To help identify and understand the expectations of Muslim travellers;
- To explore the issues associated with the development, management and marketing of Islamic tourism.
- To help develop appropriate tour packages and marketing strategies for successful Muslim tourists’ arrivals to a destination; and
- To share Malaysia’s best practice experiences for sustainable Islamic travel and tourism.

5. Dedicated facilities and Services

To further support the industry and to avoid consumer fraud it is highly perceived that facilities and services which are commonly associated with the industry such as “Dedicated Muslim Friendly Entertainment Zones (DEZ), “Dedicated Muslim Health and Wellness spa, Muslim friendly Hotels/ Shariah Compliant Hotel, and Muslim friendly tourist guide and Muslim friendly tourism packages must be properly registered and regulated by the relevant agency. For instance, only properly trained Muslim Personnel can be appointed as Islamic Tourist Guide. It should be a requirement that a special training programme is to be designed for the Islamic Tourist Guide. Similarly, every health and wellness spa which claims to be Islamic spa or Shariah compliant spa must be legally registered and certified by the relevant authority. Having one or two Muslim workers without properly implementing Islamic Spa Practices is not sufficient to qualify them as Islamic spa.

6. Islamic Tourism Blueprint

An Islamic Tourism Blueprint, “The Strategic Plan for Islamic Tourism Development” was published by Islamic Tourism Centre (ITC) in 2012. It outlines a comprehensive and implementable strategic plan for the future development of Islamic tourism within Malaysia via Islamic tourism standards and quality control drafts in management, operations and implementation. Formulation of the Strategic Plan for Islamic Tourism Development takes into account the substance and objectives outlined by the 10th Malaysian Plan, Tourism National Key Economic Areas (NKEA) and Tourism Industry Policies that aim to achieve sustainable tourism growth and elevate the tourism industry to a higher level of achievement.

7. Muslim Friendly Hospitality Services (MFHS) Standards

The Muslim Friendly Hospitality Services (MFHS) standard is Malaysia’s first standard dedicated for the Islamic tourism sector. Initiated and led by International Institute for Halal Research & Training (INHART) of International Islamic University Malaysia (IIUM). The Muslim Friendly Hospitality Services is a Shariah guided requirements for tourism industry players in setting up an assurance to preserve the integrity of products and
services catered for Muslim travellers. Among others the standard is developed with the objectives to ensure that products and services produce meet the shariah principles; to protect and preserve the integrity of Muslim Friendly tourism products and services through effective application of the standard; and to enhance customer satisfaction by meeting customer requirements. The drafting committee of the standard comprises representatives of tourism industry players, Islamic Tourism Centre (ITC) Ministry of Tourism Malaysia, Tourism Malaysia, Malaysia Association of Hotel Owners (MAHO), Malaysia Association of Hotel (MAH), Malaysia Association of Tour and Travel Agents (MATTA), Bumiputra Travel and Tour Agents Association of Malaysia (Bumitra) and Malaysian Tourist Guides Council (MTGC).

8. Rating Tools and Monitoring

In addition to the existing concept of hotel rating an initiative is also undertaken by the International Institute for Halal Research and Training (INHART), IIUM to develop Shariah compliant rating tool and Audit System for the Muslim Friendly Hospitality in Malaysia. It comprises of guidelines, manuals, scorecards and technical notes. The Rating Tools System will be used in the tourism industry via hospitality services to rate the hospitality services according to the Shari’ah compliance elements. These elements will be listed through Scorecards which will be guided through guidelines, manuals and technical notes.

9. Training Programmes

Effective enforcement of policy, Blue print, standard and related mechanism depends very much on the existence of qualified and competent personnel in the industries. Hence, to further support the implementation of the Muslim friendly Hospitality Standard and the rating tool, the International Institute for Halal Research and Training (INHART), IIUM in collaboration with Ministry of Tourism Malaysia and the Islamic Tourism Centre undertake the initiative to develop a special training modules with an objectives to produce a highly qualified personnel to fill in the gap in the Muslim Friendly Hospitality services in Malaysia. The training packages are meant for tourism accommodations, tourist guide and tourism packages. The personnel are expected to be well verse in both western as well as Islamic concept of tourism and hospitality.

10. Intellectual Discourse on Muslim Friendly Hospitality

Discussion, meetings, seminars, focus group and round table discussions on development and issues related to Muslim friendly development are important in order to gather information and to discuss related issues and challenges in the industry. As such several seminars are conducted at local and international levels. Among others are as follows:

10.1. Joint Seminar on Islamic Tourism (JOSIT)

Islamic tourism is increasingly popular within the Southeast Asia region particularly in Brunei, Indonesia, and Malaysia. To accommodate the need of the Muslim tourist arrivals in these countries the Islamic Tourism Centre (ITC), Ministry of Tourism Malaysia co-organised a consensual Joint Seminar on Islamic Tourism (JoSIT). This seminar provides a platform for industry players from the participating countries to share experiences and best practices in the Islamic tourism. This seminar also presents an excellent opportunity for those involved to meet and network with each other, thus strengthening bilateral ties as well as stimulate mutual growth in Islamic tourism within these countries.

10.2. Regional Seminar on Islamic Tourism (RESIT)

This seminar is organised by the Islamic Tourism Centre (ITC) with an objective to share, discuss, coordinate, plan and develop suitable Islamic tourist packages and tourism trails that showcase Malaysia’s Islamic tourism products to local and international visitors. The seminars also aim at identifying the needs and expectations of Muslim tourists to Malaysia as well as to discuss partnerships and collaboration between the public and the private sector. The seminars were held in several states in Peninsular Malaysia and attended by key players in the tourism industry including travel and tour operators, government officials, airlines, hoteliers and other product owners.

10.3. World Islamic Tourism Mart

Suitable business platform and adequate business networking is one of the key components to ensuring sustainability and marketability of the Muslim Friendly Hospitality products and services. In light of this, the World Islamic Tourism Mart was organised with the main objective to provide an ideal platform for the exchange of ideas and knowledge as well as business networking among industry players. Besides providing an avenue for business networking and connectivity, the event also reaches out to the general public by connecting directly with interested international and local buyers in a more proactive approach. The event also provides the opportunity for participants to showcase their products and services to the global Islamic tourism industry as well as expand their market share and tap into new market segments.

11. Conclusion

Continuous support from the government agencies, industrial players, the general public and intensive research in the Muslim Friendly Hospitality Services in Malaysia will contribute to its growth and sustainability. Development of Malaysia Standard (MS) on Muslim Friendly Hospitality Services, rating tool and monitoring system, and development of training programmes for well trained personnel will make the Malaysian Muslim Friendly Hospitality Services a highly regulated industry and thus will be able to set a benchmark to the other counties that are serious in this industry. In addition, intellectual discourse will help to provide a suitable platform to discuss potential issues and challenges face by this industry.
Prof. Dr. Irwandi was awarded the 2018 King Faisal International Prize laureate in Service to Islam presented by the King Faisal Foundation. He is a well-known “Halal” Scientist who has contributed to the betterment of Muslim Ummah and has untiringly serves Islam for several years through his continuous scientific research works on halal-related issues. He believes in “giving back” to the Muslim Community by publishing all his research works in journals, books and chapters in books; offers training in halal-related disciplines; involves in education and contributing to the community services.

He acknowledges the importance of embracing this new discipline called “Halal Science” with emphasis on the understanding that halal materials are alternatives to non-halal materials and ingredients; halal authentications; development of rapid method for non-halal contamination; halal food and cosmetics and the development of halal standards.

To date, Prof. Irwandi has published more than 180 scientific papers in reputable international journals; contributed to 35 book-chapters; presented more than 250 research papers in international conferences – including keynote address and invited lectures; and written more than 30 non-refereed and mass-media scientific articles. Additionally, his dedication to research has enabled him to file 6 patents under his name and bagging more than 60 scientific awards which are recognized both locally and internationally.
Muslim Consumer's Behaviour- COVID-19

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** A R T I C L E I N F O **

** Keywords:**
- Covid-19
- Halal Friendly Tourism
- Muslim Friendly Tourism
- Muslim Consumer

** Abstract **

The Covid 19 that originated from Wuhan, virus has almost spread to around 200 counties who has declared pandemic. The People now realize halal is safety and hygienic, People are moving towards a healthier way of life style which is the Halal way. People have now started believing that Halal means its Hygienic and safe for human consumption. Now halal means trusted, which is credible & dependable. where halal certified products are being purchased and sought for - no longer now the symbol of halal is only for Muslims but it is for everyone and all classes of people from the Higher class to the downtrodden immaterial of the race, caste & creed.

1. **Global Muslims Consumers’ Behaviour**

However, there are some prohibitions that guide Muslim consumers’ behaviour. It must be known that all spending in Islam must comply with the sayings of Allah. The Quran says “Spending in the ways of righteousness and charity” and says “And spend in the way of Allah from what We have provided you before death approaches one of you and says, "My Lord, if only You would delay me for a brief term so I would give charity and be among the righteous “(Almunafiqun:10). Based on this, Muslims must commit themselves to the following principles when making a purchase. The principles that guide Muslim consumers as mentioned in the Holy Quran and A hadith are: consumer behaviour, like any other behaviour, is affected by cultural, social, personal and psychological characteristics. Especially Muslim consumer behaviour abide by its exceptional perspective and epistemology/beliefs.

With approximately 1.8B Muslim populations in the world, the Muslim consumer sector undeniably represents an outstanding opportunity for businesses and marketers across the world. Reliable information about the structure of Islamic markets has recently started to appear because Muslim consumers are distributed across more than 65 countries.

Islam provides the framework that shapes the moral and ethical behaviour of a growing number of Muslim consumers around the globe. On a survey covering Muslim consumers, 80% of respondents revealed that they avoid consumption or buying of goods that are forbidden by Islamic law. Consumers were found to be aware of what is right and what is wrong when it comes to purchasing. Not surprisingly, 70% of respondents indicated that their buying decisions can be influenced by advertising and promotion campaigns, yet their purchase remains within the teachings of Islam.

Not knowing the Halal standards or not knowing which standard to be chosen has confused and affected Muslim consumer behaviour. Introducing one single halal standard run by the Muslim religious delegates, which respects Muslim consumers’ rights and requirements will path a way to Muslim consumers to fearlessly choose Halal products without hesitation.

2. **Non-Muslims Perception About Halal After Covid-19**

The People who do not follow Islam has gained the confidence for Halal products and services and they believe that halal industry means they can rely on the quality and the authenticity. Everyone wants to live in a disease-free world is it possible - yes, we can because the majority of the diseases are because of food adulterations, GMO – Genetically modified foods and the environment that we live includes pollution of various kind.

In India 30 Percent of cancer patients are suffering just because of food and food adulterations. The Arab countries – are have many millions of populations with cancer diabetes especially because of food habits and food adulterations.

Consumers are becoming increasingly aware that non-halal food and food that is not processed in a hygienic manner have great potential to cause diseases, such as the one we see today.

One of the most notable health benefits of eating kosher foods is that no unspecified contaminates ever enter the food being consumed. Special regulations and procedures make certain that insects and bugs do not find their way into “vegetables, fruits, and grains prior to packing” (Weil).

The Jews are very strict in their practices and there is a huge demand for Kosher products - Unlikely the same for Muslims there is a concept which is carried the environment which is called “Kullu” Halal everything is halal this has become everywhere
the new normal term where the Muslims has to be educated and awareness needs to be created. We have witnessed this trend globally wherever the Arab traveller travels abroad they feel that everything is halal including chicken beef and mutton they do not have any sort of awareness or information that the products should be Halal especially while they travel abroad.

There is a major misconception that the pork and Alcohol are the particular non halal products particular to Arab country travellers as they believe the rest is Halal. This behaviour is seen in widely in the Arab travellers. Halal food was earlier referred to as the food choice for Islamic community alone which has now broken its image from religion specific food to a more dynamic, cleaned, hygienic food type. Due to COVID - 19, Impact on Halal Food Market is expected to grow with the CAGR of 4.2% by 2027, increasing popularity of halal food among non-Muslims driving the market growth. Many non-Muslim consumers now believe that the Halal process of food preparation obliges business owners to follow ethical practices in their business activities, thereby forcing them to provide better quality food.

Halal logo can provide more value and is more important than ISO or similar certification in terms of customers’ perceptions. This confirms that the Halal process emphasizes cleanliness and environmental hygiene, from planting the crops to serving the food – a notion that is widely appreciated by Muslim and non-Muslim groups.

With the recent outbreak, people are looking to boost their immunity through healthy eating. The World Health Organization (WHO) has appealed to the public to consume more healthy food and avoid or reduce alcohol consumption as it weakens the immune system. Alcohol which is considered haram in Islam will be a game changer based on the statement made by WHO. Therefore, rising penetration of the halal product in non-Muslim community is projected to positively influence the market growth over the coming years. Soon we can see the world as this event themed as: “Halal for All, Halal in All Aspects, from Production to Consumption”.

3. Muslims Consumers Rights and NGO’S

Halal market in 2030 – after the Covid will grow exponentially up to 30 percent which could be approximately to 10 trillion USD per Annam.

The growing trend clearly depicts that everyone believes halal certification bodies are taking the initiatives to check audit and create a platform for a healthy choice to choose for their families.

Muslim behaviour towards the food items and other products they consume are really not serious. Most of the Muslim consumers are not bothered who is certifying and what products need certification and what kind of ingredients are being used, there should come a definite change in the consumer especially Muslim behaviour & lifestyle this should be changed Muslims should ask for certification, or at least the traceability of the products or food that they consume.

Currently, there are several harms done to Muslims on the economic and social levels. We need to identify them before acting on to defend Muslim consumers’ rights and values. Muslim consumers need to be more aware of their rights to know the Halal status of products and services they are buying, consuming or receiving. Awareness by publishing, media campaigns and by providing the means of training and education required to protect Muslim consumer rights.

Lack of transparency confuses Muslim consumers whether the products are complying with their halal definition. For instance, Muslim consumers don’t need to be taught what Halal is but they need to be clearly informed about the traceability and ingredients of products. Transparency, capability, expertise and solidarity are required to succeed the mission of protecting Muslims rites and religious rights.

4. WMCO World Muslims Consumers Organisation

World Muslim consumer organization is started as a forum as a single platform for all related issues, case studies, research work, reports and solutions to be discussed and answers and information are sought for. But it is not actively working - first in this kind this has to be strengthened from the various global Muslims and Muslim leaders where this should be empowered

www.wmco.com is actively working but it needs more stringent regulations which needs to be used globally by everyone.

There are nearly 80 percent of Muslim travellers that are not even asking for halal certified meal or foods that are provided in flight on air according to the global study. While the Muslims travel there should be a standard procedure or protocol that by default halal food catering and air catering services needs to be served especially to the consumers. The Muslims are failing to ask their rights, The Muslims around the world are missing to ask the basic questions from where and which source is the food coming from & traceability. Are the products that we use or consume on a day to basis is it Halal or Haram source, we need to look into the Thoyyiban part which is the Hygienic part in depth where the Muslims themselves fail to understand this concept.

Being a non-religious group WMCO promotes universal Islamic values in the economic and social fields. WMCO during the World Consumer rights day, emphasize the importance for all Muslims consumers to eat true halal meat as a religious right, following the Islamic Religious method of animal slaughter, as agreed by the majority of our Muslim scholars and theologians in the world. During a critical situation of Indian Muslims recently, WMCO wrote a letter to the OIC, in which it has strongly mentioned the movement of Islamophobic against Indian Muslims in India, A petition was launched by WMCO on change.org to call for the protection of the religious minorities, specifically Muslims and Christians, and Dalits in India. The letter also states “inviting Indian Muslims and victims’ families to speak at the OIC meetings to brief about the situation would be a strong Human gesture.” I appreciate the initiative taken by WMCO in supporting Indian Muslims on this sensitive.
5. **Food Safety and Security-Halal Certification**

   Food safety and security has now become the key factor and people feel that they need to do proper auditing and accrediting bodies traceability should be adopted. People believe that halal certification means hygienic safe, ethical where the food safety & security is adopted to avoid food adulterations in the food industry. Based on Halal certified products to gain international consumer confidence this trend will go upwards trend from 20 to 30 percentile.

   The People who do not follow Islam has gained the confidence for Halal products and services and they believe that halal industry means they can rely on the quality and the authenticity. Everyone wants to live in a disease-free world is it possible - yes, we can because the majority of the diseases are because of food adulterations, GMO – Genetically modified foods and the environment that we live includes pollution of various kind.

   Halal certification stands unique in food safety and security by not certifying haram or harmful, unhygienic food like blood, alcohol, and pork. This ensures Halal food is safe and secure for human consumption.

   Halal Assurance system provides a systematic approach to ensure and preserve halal integrity of products starting from the point of receiving raw materials until the dispatch of finished goods to customers, this system has considered food safety, quality and cleanliness at each level of production.

   In addition to mandatory Food safety certifications like HACCP or ISO, Halal certification is an added reassurance to consumer that the firm satisfies international standards. Halal requirements are consistent with the principles and concepts of HACCP, that indicating Halal certification is engrained in the guidelines of safety, hygiene and wholesomeness.

   Halal certification along with mandatory food safety certification, would make its production process and output unique compared to other competitors and ultimately resulted in sustainable competitive advantage.

6. **How to Gain International Consumers’ Confidence?**

   It is indeed true that I want to insist that halal certification body has to be very transparent - halal certification bodies should be auditable and accountable with some external third auditors who can audit the accounts and the entire system of certification.

   There has to be absolute transparency to ensure within the framework of the government protocol. Majority of halal certification bodies has no transparency this leads to non-Muslims to question about the financial background from the funding about the incoming and the outgoing. Globally, consumers were confident in early 2020, but covid-19 is rapidly eroding the confidence. Depth of the fall and the recovery from it – will vary by country.

   In my view there are 5 steps to gain international consumer confidence:

   **Next-Level Product Transparency**- Giving consumers an ‘insider’s look’ into your strict audit process, either in the form of a YouTube video or other social platforms.

   Build Your Social Media Platform- Have you ever looked at someone’s Instagram or Twitter followers count to gauge whether or not to take them seriously? Same happened when a consumer learns of a new product, more and more often they look at the brand’s social media platforms to get a better idea of the company— instead of their website. This is done by looking at the number of followers, and it’s a form of social proof marketing.

   Perfect Your Testimonials- Testimonials are perhaps one of the oldest and best forms of social proofing. They serve as the evidence to support your marketing claims.

   Tell Your Story- Telling your story effectively helps you have an emotional relationship with your consumers. While some elements of your brand may be forgotten, your story— if impactful— will not.

   Get Product Certifications- to Increase Consumer Confidence third-party certification is an easy way to improve credibility. Consumers recognize that product certifications indicate that a product or brand has been independently verified by a regulatory agency to meet specific sets of standards and food values.

7. **DREAM - Disease Less or Disease-Free World - POSSIBLE?**

   Food safety and security is now become the key factor and people feel that they need to do proper auditing and accrediting bodies traceability should be adopted. People believe that halal certification means hygienic safe, ethical where the food safety & security is adopted to avoid food adulterations in the food industry. Based on Halal certified products to gain international consumer confidence this trend will go upwards trend from 20 to 30 percentile.

   Majority of the Muslim country does not have advance food safety laboratories in their country even after having very advanced infrastructure and economy but not in the framework of govt, R & D is missing.

   The People who do not follow Islam has gained the confidence for Halal products and services and they believe that halal industry means they can rely on the quality and the authenticity. Everyone wants to live in a disease-free world is it possible - yes, we can because the majority of the diseases are because of food adulterations, GMO – Genetically modified foods and the environment that we live includes pollution of various kind.

   In India 30 Percent of cancer patients are suffering just because of food and food adulterations

   The Arab countries – are have many millions of populations with cancer diabetes especially because of food habits and food adulterations

   Halal and Toyyiban part has to be followed together whereby halal is not only focusses on food and food safety eating habits but also the hygienicity and the traceability of the product that we consume or the food that we eat.

   Disease less and free world does look like a dream cannot be achieved yet it is possible.

   Imagine a world with no cancer, no malaria, no tuberculosis, no flu and so on down to the absence of the common cold. With scientists chasing after cure-all anti-virus treatments and a universal flu vaccine in labs
around the world, for instance, Adipo labs from Korea invented Remission 1-degree Celsius technology is a cure for cancer, eradication of infectious diseases certainly appears to be medical research’s ultimate goal.

I believe achieving disease less world starts within each one of us. We have learned our lesson with the recent pandemic, with that in mind when we start our cleanliness and hygiene practice right from washing our hand to consuming quality and hygiene food, together we can achieve disease less or free world. We stood together to fight Covid 19 and here we are, and it is possible to achieve disease less world when we stand together and fight against. Remember we are fighting against the problem, not fighting ourselves.

8. ISLAMOPHOBIA- The Recent Trend in India - Muslims Countries Actions? Allegation to HCB'S- Fund Being Used for Terrorism Activities?

Islamophobia – is the new normal which has now initiated in the Indian continent hereby a huge population of 1.3 Billion, only 22 to 25 % are Muslim but the rest belongs to the other caste whereby 70 percent belongs to the Hindu, Sikh, Jain Christian Buddhist and other Communities. It is quite natural that they boycott because of their religious sentiments and they feel Halal is more into religious aspects than food safety.

The Islamophobia is very much stronger in India & Australia as they feel huge allegations. Some of the allegations that are baseless and clueless like the Halal certification bodies are funding for Terrorism and terrorist activities throughout the world from the money gained from Halal business. They think that Halal is terrorist funding activity movement this is completely wrong perception without any proof.

Always halal and Halal related certification is attacked where the people and the country has been always against using against the Islamic population.

It is indeed true that I want to insist that halal certification body has to be very transparent - halal certification bodies should be auditable and accountable with some external third auditors who can audit the accounts and the entire system of certification.

India has become an epicentre of Islamophobia in Asia, with reports of domination committed against the large Muslim population pouring every day among the COVID-19 pandemic. Thanks for the tweet by OIC’s Independent Permanent Human Rights Commission which said - “[We] urge the Indian Gov. to take urgent steps to stop the growing tide of Islamophobia in India and protect the rights of its persecuted Muslim minority as per its obligations under international Human Rights law”

There has to be absolute transparency to ensure within the framework of the government protocol. Majority of halal certification bodies has no transparency this leads to non-Muslims to question about the financial background from the funding about the incoming and the outgoing. This can be proved easily once we are transparent and we need to develop and come up with in the framework and policies how this can be achieved.

9. CSR – Corporate Social Responsibility

CSR activity is to be ensured by the Halal certification bodies whereby they to have the responsibility to preserve the environment as a whole and the ecosystem. Whenever there is an Audit conducted by the HCB the factories should be planted with a greater number of trees to cut down carbon emissions & pollutions by not damaging the environment. The HCB should ensure that the waste that goes out of the factory or Industry should not pollute the water or its surroundings. The Industrial effluents should be disposed of wisely. There should be Food banks created wherever we know that the food is being wasted so that the food can be kept in a refrigerator and the needy person can use the food, whereby to create a Hunger free world. Our motto should be to give back nature what we have taken from it a pollution free society!

More importantly the HCB has to enforce and implement all the above CSR activities while they do the auditing to the factories. HCB should be actively taking part and to engage with the CSR- clean and green pollution control activities, creating food banks near restaurants and to provide with seed balls to plant more trees, so that we could preserve the nature as much as we can and create a healthy ecosystem.

10. Halal Certified Products Is the Solution to Mankind

The People now realize halal is safety and hygienic, People are moving towards a healthier way of life style which is the Halal way. People have now started believing that Halal means its Hygienic and safe for human consumption. Now halal means trusted, which is credible & dependable. where halal certified products are being purchased and sought for - no longer now the symbol of halal is only for Muslims but it is for everyone and all classes of people from the Higher class to the downtrodden immaterial of the race, caste & creed.

There is a larger misassumption that Halal is for only for Muslims or Halal is only for Food and slaughter specifically but Halal is for All. Halal certified product means it went through some stringent process right from procuring raw materials to consumer plate or termed as “Farm to Fork”. That means all the product certified as halal is safe, hygiene, wholesomeness, free of toxin and can be utilized by all human beings. Quran states “O mankind, eat from whatever is on earth (that is) lawful and pure” (Holy Quran 2:168). Together we build a healthy world, Halal is a way of life to mankind.

11. Halal Market in 2030

The Halal industry has become one of the important business segments due to the growing Muslim population, rapid digitalization, high demand for Halal products and an integrated global economy. Both Muslims and non-Muslim producers are tapping the substantial potential in the global Halal industry. The current Muslim population is approximately 1.8 billion (24% of the world population) and is expected to increase to 2.2 billion (26%) in 2030 and 2.6 billion (30%) in 2050 respectively.
 Authorities all the world who are at the policy makers and decision makers levels should thrive for securing the food safety standards for the people of their countries to save their own people from this deadly diseases & viruses. Shariah scholars should be educated and enough awareness should be given as they will the point of contact which can drive the initiatives up to the local public until the downstream this can be done via various platforms - jumma khudbah is one of the easiest and free platforms to educate all Muslims.

Every Muslim attends the Jumma prayer and khutbah, so this should be one of the easiest ways to disseminate the knowledge and educate each and every Muslims very easily for this the authorities should push the policymakers and the importance should be given for the HCB’s. Halal Certification Bodies are the key solution to the mankind.

Governments of the Islamic as well as the non-Islamic nations and the manufacturers of halal-certified food products have been taking various initiatives in terms of marketing & educating consumers about these products. The confidence of consumers in halal brands has been the most influential factor in the actual purchase of these products. The Halal industry could also play an important role in achieving some of the UN Sustainable Development Goals including poverty eradication, zero hunger, responsible consumption and better nutrition particularly in Muslim-majority countries and in general globally. There is a much greater potential for OIC countries to participate in all sectors of the global Halal industry.

It is interesting to reckon that China is keen to even diversify its exports and tap the multi-trillion-dollar Halal segment. For instance, China-based companies have made investments into Wuhui Shanghai Food and Dubai Halal Food Park, just to mention a few. The industry can come up with a single set of standards of globally-accepted Halal certification. Islamic financial institutions, supposed to have ample liquidity, could invest in new business ventures and facilitate social and economic development. It has become increasingly essential for producers, manufacturers and marketers to provide transparent product information to consumers. In short, there is a need to tackle opportunities and challenges through a cohesive approach using a common platform to spur the growth and further accelerate the expansion of the global Halal industry.

12. Conclusion

Most of diseases that we talk today whether it is Cancer, Tuberculosis, Diabetics, blood pressure are actually because of the food adulteration and Genetically modified Harmful foods. Covid 19 is one of the best examples today to the world that what we consume should be Halal or permitted. By consuming all that is available things which are harmful to the human body should be avoided is what the Halal way teaches us the ethical way of lifestyle.

Any country which is trying to disturb halal and uses the Hashtag like “#Boycott Halal” and spreading rumours and Allegations which are baseless and fake, The global countries which are manufacturing , Accrediting and Certifying halal and the products and services should boycott and cut the trade related ties against those countries which are throwing baseless allegations.

Once the trade ties boycott is raised this is an alarm to those countries that imports and products can be stopped anytime and this should prove to be joint action and unified action that has to be strictly take in support of any good Halal certification body who are trying to give this world Safe, Hygienic and ethical products and services which are good for consumption.

Post Covid-19 all the certification bodies to ensure a major role in the field of Halal (permitted) and especially toyyabban (Hygienic) part. This will bring in confidence to all the community and the global society as a whole in oneness togetherness that this is the solution for our future and next generations to come.

Mohamed Jinna is the Founding Chairman of United World Halal Development, Singapore, he has a Bachelor Degree in Computer Science from Baharathidasan University, India and done Masters in Telecommunication & Networking from Baharathidasan University, India.

He has also pursued his Advanced Diploma in E-commerce from Singapore and Diploma in Islamic banking, Finance from United Kingdom and a Certified in Halal Auditing and Shari’ah Compliance from Malaysia. He has setup a consortium of business across various nations and holding various honourable positions in global Halal Industry.
WORLD HALAL SUMMIT 2020 ISTANBUL DECLARATION

World Halal Summit (WHS) 2020, Istanbul under the theme “Halal for All: "Halal in All Aspects, From Production to Consumption”, supported by leading organizations in their relevant sectors, brought academicians, researchers, stakeholders, professionals together with policy makers and pioneers of halal industry in both online and offline platform by the attendance of prominent speakers in the halal field, throughout its sessions, the speakers focused on:

- Halal Market And Halal Quality Infrastructure
- Halal Standardization: New Challenges and Opportunities
- OIC/SMIIC Standards on Conformity Assessment
- The Role of Islamic Finance in Production to Consumption
- Halal Lifestyle
- Halal Tourism
- Recent Developments in Halal Technology
- Halal Products In Daily Life
- Halal Pharmaceuticals
- Halal and Authenticity Testing and
- Recent Developments and Opportunities in Halal Industry.

As WHS Organizing Committee, we hereby declare;

1. Noting,
   - OIC/SMIIC Standards in Halal food, cosmetics, tourism, conformity assessment, supply chain and other relevant fields
   - Role of the SMIIIC in Halal Quality Infrastructure
   - Importance of the clear identification of the role of public and private institutions in Halal issues
   - Certification and accreditation practices as per OIC/SMIIC Standards
   - Fraud certificate problem in Halal certification
   - Importance, needs and recommendations for capacity building in the OIC and Non-OIC Countries in Halal issues

ENTIRELY PROMOTES the collaborative work done under the Standards and Metrology Institute for Islamic Countries (SMIIC) to produce standards on Halal Issues that relates to products, services, certification and accreditation for OIC and non-OIC region globally, and

INVITES all relevant parties to use and implement OIC/SMIIC Standards;

2. Taking into consideration,
   - The role of Islamic finance on investment
- Growth and opportunities in the integration between the Halal economy and Islamic finance
- The role of Islamic fintech in financial inclusion
- Sustainable Halal ecosystem and the role of Islamic finance
- Fintech-based financial inclusion and bank risk-taking by looking evidence from OIC countries

**HIGHLIGHTS** the needs for financial inclusion by fintech technologies governed by the principles laid down by Islamic Rules, and

**SUPPORTS** the using of fintech for financial inclusion by all relevant parties and especially by actors of the Halal industry;

3. **Considering:**
   - The importance of awareness of Halal lifestyle and the growing risk of anti–halal movements in Europe
   - The role of Halal food and the importance of Halal earnings in Halal lifestyle
   - New product development and safe tourism in Halal tourism sector
   - Expectations of Muslims from the Muslim travel market and new opportunities for Halal tourism,
   - Impact of the artificial intelligence on Halal food inspection and certification
   - Remote assessment and audits in the field of Halal
   - Verification and authenticity of Halal certificates
   - Food traceability in agriculture and halal

**UNDERLINES** that the growing interest to the Halal tourism services and Halal lifestyle with new opportunities, needs, trends and tools, brings the need for clear identification and standardization of the Halal tourism products and services,

**SUPPORTS** the use of technological tools to improve the Halal conformity assessment activities and continue the audit and assessments under the Covid-19 Pandemic conditions,

**CONDEMNS** anti–halal movements and Islamophobic actions against Muslim consumers and Islamic rules;

4. **Also noting:**
   - Needed standards to regulate the many different types of pharmaceuticals
   - Stakeholders' Roles in instilling respect towards informed decisions on Halal pharmaceutical
   - Multivariate analysis on gelatin speciation
   - Evaluation of Halal testing practices, food additives and Halal food preservative in terms of Islamic law
PUTS EMPHASIS on the importance of the scientific studies as an input to the development of standards on Halal pharmaceuticals, testing methods and other relevant issues,

PROMOTE the preparation of the Halal pharmacopoeia as a long term project and a cornerstone in halal pharmaceuticals,

CONDEMN any attempt to misuse the halal for any purpose;

5. RECOMMENDS this declaration to political representatives, religious officials, producers, service providers, scientific and academic communities, halal certification bodies, institutions accreditation, standardization and financial institutions, trade and tourism chambers;

6. REMINDS Halal is for all in all aspects, from production to consumption;

7. THANKS to all organizers, speakers, supporters, e-exhibitors and participants for their kind contributions.

Istanbul, December 23, 2020
Proceedings of the 6th World Halal Summit Scientific Conference (WHS 2020)