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Challenges in halal food ecosystems: the case of the United Arab Emirates

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Abstract

Purpose – The purpose of this paper is to investigate challenges in balancing interoperability, food quality and customer satisfaction in halal food supply chains.

Design/methodology/approach – The study employed ethnography and grounded theory research methodologies. Research methods were ethnographic content analysis and document content analysis. The research framework encompassed a range of stakeholder groups connected with the halal food supply chain in the United Arab Emirates (UAE), focussing on Islamic jurisprudence, halal food sector analysis, import regulation compliance, halal food certification (HFC), food production, retailing and consumption.

Findings – The research found that supply chain intermediaries are challenged in balancing interoperability issues around non-unified global certification standards. Consequent variability in customer confidence in halal standards was found.

Research limitations/implications – This research focussed on the internal supply chain in the UAE, with future scope in HFC systems among external supplier nations and wider market research on customer perceptions of halal food integrity.

Practical implications – Transferability of the findings is high; to other halal food markets in particular, as well as supply chain systems for halal products across other Islamic economy sectors, notably halal pharmaceuticals and cosmetics. Aligning the halal ecosystem with trends in healthy eating and environmentalism is also considered.

Originality/value – The paper uniquely explores the halal food sector from the perspective of variant stakeholder disciplines in halal sector governance and operation. It exposes vulnerabilities in halal supply chains in a nation with one of the most demanding and diverse agri-food supply systems in the world.

Keywords United Arab Emirates, Islamic law, Muslim consumer behaviour, Halal supply chain management, Halal food certification

Paper type Research paper

1. Introduction

Halal is an Arabic term that bears the meaning of permissible according to shari'ah, or Islamic law (Riaz and Chaudry, 2003). Beyond its jurisprudential meaning, its contemporary usage has become synonymous with the narrower context of Muslim dietary law (Kashim *et al.*, 2015), especially in the context of food sourcing, most prominently, meat and poultry (Al-Qaradawi, 2013). However, it is also used to refer to a number of other products and services across the Islamic economy (Randeree, 2019), such as halal pharmaceuticals, halal cosmetics and halal tourism (Reuters and Standard, 2016).

The need for consumables, goods and services to be shari'ah-compliant has been a matter of importance to Muslims since the emergence of Islam in the seventh century. For much of the intervening time, halal standards have largely been taken for granted, with societies being insular and Muslim communities essentially being cohesive, such that matters aligning religious practice with dietary needs were congruent. More recently, with the progression of globalisation (Kolodko, 2018), "the rise of Islamic visibility" (Rakhmani, 2016) across Muslim minority environments and increasing mobility of people, goods and services, together with an emerging Muslim middle-class consumer-base, especially in the Western hemisphere and Arabian Gulf region (Nasr, 2010), there is a growing consciousness that Muslims have specific needs for faith-friendly products and services (Randeree, 2019). Halal is consequently becoming a global phenomenon (Haleem and Khan, 2017),

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transcending merely a religious concern, into becoming an attractive and lucrative market in international business and global trade (Lada *et al.*, 2009).

This research uniquely explored the halal food market in the United Arab Emirates (UAE) from the perspective of variant stakeholders in halal food sector operations, governance and consumption to reveal vulnerabilities in the halal food supply chain and its impact on customer confidence in halal integrity. The investigation was based on the UAE food sector, as the obstacles the country's halal ecosystem presents are significantly more challenging than those of other countries, largely due to high demographic diversity, as well as the consequent efforts its government and other institutions are necessitated to make in order to solve these challenges.

2. Literature review

2.1 Halal food in Islam

For Muslims, ensuring food is halal is of paramount importance, as this is a requirement prescribed in the Qur'an, the source of immutable, divine law (Bashir *et al.*, 2018). The guidance of the Qur'an and the tradition of the Prophet Muhammad (peace be upon him), encompasses the food's permissibility and compliance to religious standards of slaughter (halal) and to its goodness, wholesomeness and quality (known as *tayyib*) (Alzeer *et al.*, 2018). The Qur'an states these two criteria, "[…] Eat of what is on earth, (religiously) lawful (halal) and good (*tayyib*) […]" Q. 2:168.

Halal meat production and supply is therefore a holistic process, not merely one of slaughtering animals in a ritualistic manner, but for example, that animals are raised on halal feed and financial investment is shari'ah-compliant (Antara *et al.*, 2016). The halal supply chain thus not only includes how the food was obtained and distributed but also determining whether or not it is *tayyib* – pure, clean, wholesome and nourishing, which impacts monitoring of food ingredients, traceability (Poniman *et al.*, 2015), cross contamination issues with non-halal foods (Soon *et al.*, 2017), supply chain integrity (Ali *et al.*, 2017) and customer satisfaction (Yusoff *et al.*, 2015).

Islamic tradition of halal meat sourcing in particular, does not differ significantly from Jewish kosher meat, which is widely considered permissible for Muslim consumption according to the Qur'an (Regenstein *et al.*, 2003) as the food of the "People of the Book," the Qur'an stating, "This day are (all) things good and pure made lawful unto you. The food of the People of the Book is lawful unto you and yours is lawful unto them […]" Q. 5:5. Islam, being part of the succession of Abrahamic tradition, preceded by Judeo-Christian teaching (Jump, 2002) thus shares many common principles (Tieman and Hassan, 2015), including many aspects of dietary law.

2.2 Global halal food ecosystem

Today, the global food and agricultural industry is valued at $8.1 trillion, with fresh food and agricultural produce accounting for 52.6 per cent of the total value and packaged foods contributing the rest (McErlich and Boydston, 2014). Within this, the halal food sector is valued at $1.2 trillion, with a high annual growth rate of 8.5 per cent forecasted until 2021 (Armanios and Ergene, 2018). This, in part, is due to population size and growth rate, with Muslims accounting for 1.8bn people, or 24 per cent, of the worldwide population. This is increasing more rapidly than the global average, estimated to reach 2.8bn, or 29.7 per cent of the global population by 2050 (Pew Research Center, 2017). Affluence is also a growth factor, through improvement in the socio-economic status of Muslim households in certain regions, particularly Arab Gulf States (Watenpaugh, 2014) and Muslim minority countries in the West, leading to larger disposable incomes as well as greater buying power for branded products. Consumer consciousness in halal food certification (HFC) is simultaneously rising significantly (Ab Talib *et al.*, 2017; Ahmad *et al.*, 2015) leading to issues of trust in the integrity of halal systems and supply chains (Bonne and Verbeke, 2008a, b).

Apart from the UAE, a number of countries demonstrate developments towards a national halal industry (Mahidin and Mohd Saifudin, 2017), with Malaysia showing strong, government-led halal food regulation and services (Zailani *et al.*, 2015) such as halal logistics (Fathi *et al.*, 2016), traceability (Zailani *et al.*, 2010), packaging, branding and marketing, Malaysia provides value-adding activities for the world halal food market (Habib *et al.*, 2011) as well as being the most developed Islamic economy overall (Othman *et al.*, 2009), having strength in the Islamic finance and halal tourism sectors (Henderson, 2003). Its central government implements HFC through its own certifying agency, the Malaysian Islamic Development Department, known as JAKIM (Othman *et al.*, 2016), and the public show a willingness to pay a premium to ensure integrity of halal systems (Tieman *et al.*, 2013). As for Muslim minority countries, a few contributors as halal food producer nations have been central to the development of the global halal food market. Thailand's export market makes up around 60 per cent of its gross domestic product (Qureshi *et al.*, 2012) and is among the top 5 global food exporters, penetrating the global halal food market substantially with an export value of $6bn. Singapore exports halal food with approved HFC through the Islamic Religious Council of Singapore, known as MUIS (Majlis Ugama Islam Singapura) (Wahab *et al.*, 2016). Meat-exporting countries such as Brazil, Australia and New Zealand, in particular, have become essential to meeting the halal food requirements of many Muslim majority countries. Brazil is the leading exporter of halal beef and poultry into the global market (Manning *et al.*, 2007) contributing 55 per cent of the total halal meat supply worldwide and ensures 70 per cent of its frozen chicken, supplied to over 100 countries, is halal-certified. Australia specialises in meat products and has strong production and export capability in the global halal food market (Kabir, 2015), which accounts for approximately 10 per cent of the country's meat export and a trade value of 9 per cent of halal meat supply globally. New Zealand is the world's largest exporter of halal-slaughtered sheep meat and has a history of halal exportation since 1976 (Wan-Hassan and Awang, 2009).

2.3 The UAE context: demographic challenges, food retailing and halal standards

The UAE is located at the southern tip of the Arabian Gulf, with three neighbouring countries – Saudi Arabia, Qatar and Oman and is governed by a federal system founded in 1971 (Alfaki and Ahmed, 2017). The earlier discovery of crude oil and its commercial production in the UAE created a new economic situation that allowed the country to modernise over the past five decades (Abou Hana, 2017), with the economy diversifying into trade, finance and tourism and infrastructure investment in information and communications technology as well as large scale construction projects (Randeree and Chaudhry, 2007). The UAE thus transcended its subsistence economy beginnings into a thriving innovation-driven economy. High growth rate has resulted in the need for skilled foreign professionals to support economic development (Randeree and Gaad, 2008). Rapid development has directly influenced population growth through demand for foreign workers (Haak-Saheem and Brewster, 2017). The Muslim population of the UAE stood at 1.62m in 1990, currently is 3.58m and is forecasted to rise to 4.98m by 2030 (Pew Research Center, 2011). In addition to citizens of the UAE, or Emiratis, there resides a significant and diverse migrant workforce, known as expatriates or expats (Randeree, 2009), comprising various Arab nationalities, Iranians, Filipinos, South Asians (particularly Indians), Europeans and Americans (Randeree, 2012). The dependence on a foreign workforce has meant that UAE citizens constitute only one-fifth of the national population, with the labour market substantively male foreign-worker dominated (Augsberg *et al.*, 2009). In terms of Muslim practice, this "melting pot" of Muslim citizenry together with a religiously diverse expatriate workforce and their families has resulted in social divergence, such that large metropolitan cities, particularly Dubai, where many expatriates reside, are outwardly liberal, whereas other urban and more rural areas are visibly more religiously conservative. Other aspects of life, such as political and legal systems are naturally governed by ruling Emirati classes and are based on Islamic principles and Emirati personal lifestyle is largely faith-based, concealed and intensely private.

Such demographic diversity has a resulting impact on consumer choice and demand in the food retail sector (Todd, 2017). There is great diversity in terms of consumption and expenditure patterns in the UAE. Less affluent workers, primarily foreign labourers, remit the majority of their income to their families in their homeland (Jain and Oommen, 2017), minimising their own personal living costs in the UAE and often living in a collective household where food, housing, transportation and telecommunications are their main expenditures (Randeree, 2008). Professional expats are more affluent with considerable purchasing power (Nasr, 2010) and shop for more Western brands. Unlike most foreign labourers, many of these prosperous expat employees can afford to have their immediate families living with them in the UAE, intensifying an already high-mass consumption society (Abed and Hellyer, 2001) and creating demand for private healthcare and school services, upmarket housing, as well as recreational facilities, most prominently, lavish shopping malls (El-Adly and Eid, 2017).

Congruent with global growth in food consumption, the retail food sector in the UAE is thriving and has proven lucrative to foreign companies, whether tier one outlets or tiers two and three suppliers and producers (Al Faris and Soto, 2016). In 2010, total food product consumption was valued at close to $4bn in the UAE and food consumption increases by approximately 4 per cent per annum (The Economist, 2010), partly due to hypermarkets becoming the catalyst for high grocery sales in the UAE as well as across the broader MENA region (ElMelegy *et al.*, 2017). Carrefour, Geant, Choitram, Spinneys, Waitrose, Mega Mart, Lulu, Abu Dhabi Co-operative Society, Emirates Co-operative, Union Co-operative Society and Safeer are all major players in the sector. The market share of Lulu stood at 35 per cent, followed by Carrefour at 25 per cent and Spinneys with 15 per cent (Broomhall, 2011).

The UAE federal government has responsibility for both HFC standards and food safety (Al Yousuf *et al.*, 2015). The Ministry of Environment and Water is responsible for food control services, policies and regulations at the national level and compliance of all imported and locally produced food, is delegated to each emirate; Dubai Municipality in the case of Dubai. Regulatory compliance is to standards issued by The Emirates Authority for Standardisation and Metrology (ESMA), and The Codex Alimentarius Commission General Principles of Food Hygiene (CAC/RCP 1–1969), or CODEX (Latif *et al.*, 2014), which articulates key requirements for hygienic and safe food production. There is scope for Hazard Analysis and Critical Control Point, an effective system for enhancing food safety, to be incorporated universally into Halal assurance, though this is presently an emerging as well as challenging concept (Demirci *et al.*, 2016). The Gulf Halal standard ensures halal meat production is in line with shari'ah requirements across feeds, handling, logistics and distribution under Gulf Standards Organisation GSO2055, which incorporates all guidelines for HFC bodies and their accreditation requirements (Tieman, 2015). The Food Control Department and Dubai Central Laboratory at Dubai Municipality are the two bodies charged with monitoring food imports, production and supply; testing for safety, health and hygiene on foodstuffs extending to food borne viruses, toxins and contagious disease detection across processed, frozen, chilled or live produce; inspecting hotels and commercial restaurants; and testing for companies seeking compliance documentation for importing, distributing and selling goods in Dubai (Abushelaibi *et al.*, 2015). Despite the challenges, the UAE is proactively addressing issues in food importation, safety and HFC, with the aim of satisfying the needs of an economically and culturally diverse society.

3. Methodology

The research methodology was an ethnography of the halal food ecosystem in the UAE. The ethnographer performed as a multilingual (English, Arabic, Hindi and Urdu) embedded researcher (Lewis and Russell, 2011), using collaborative and reflexive practitioner approaches as part of the sample population.

Ascertaining consumer insights within a variable halal ecosystem requires long-term investigation. As such, data was collected through subjective customer perception examination, accumulated longitudinally between 1999 and 2017, inclusive, with time-relative bias excluded by varying individuals and organisations involved, thus avoiding panel attrition, increasing sample size and enhancing flexibility and accuracy. The UAE sample comprised circa 1,250 interactions, formal and informal consumer respondents and professional interviewees among the following stakeholder sets: consumers; retail businesses, suppliers and marketeers; technical experts in food security, inspection, accreditation and safety; policymakers; high-level state clerics; and Muslim scholars, academicians and professionals, both in the UAE and internationally.

Ethnography is a subjective methodology and objectivity of an ethnographer is subject to bias (Rohner *et al.*, 1973). The ethnographer in this study is male, Muslim, of South Asian British heritage. The ethnographic content analysis method, defined as the reflexive analysis of documents (Altheide, 1987), was applied, whereby document collection and content analysis covered key stakeholders, informing on Islamic law, halal logistics and supply chain and food retailers. Further, product data was collected through direct observation method (Wells and Lo Sciuto, 1966) in retail outlets in major cities of the UAE and among variant districts representative of the diversity of inhabitant nationalities. The accumulated data were categorised and coded to determine the four key propositions presented, using the grounded theory approach (Corbin and Strauss, 1990).

4. Results and analysis

The findings demonstrate a range of issues emerging from the research using grounded theory methodology. Though too numerous to list exhaustively, examples of open coding data sets include importation regulation; food safety, control and testing; country of origin of products and consumer confidence; variation in the perception of the need for the use of "halal" as required terminology within a Muslim majority country; abattoir systems and processes; halal certification systems and their effectiveness and reliance; food types for which consumers would wish to see availability of halal options; variability in consumer and retail supply chain professionals' expectations for unifying global halal certification and governance; and inconsistency of consumer confidence, disaggregated by age, nationality, ethnicity, intra-faith perspectives (Randeree, 2016) and other demographic traits.

Analysis through the selective codification of all collected data sets were subsequently categorised into four propositions concerning the halal ecosystem. These propositions are consumer confidence in halal product importation, consumer trust in state regulation of global halal supply chains, consumer confidence in halal branding of products and consumer perceptions of non-halal ingredients and replication of non-halal brands. These highlighted consumer trust and confidence as the key facets of theoretical codes.

4.1 Consumer confidence in halal food importation

Consumer trust and confidence in the halal supply chain was found to be affected by the country of origin of food products. Importation from Muslim minority countries requires HFC from a UAE approved body in the supplier country, as opposed to Muslim majority countries whose supply chains are considered halal in the UAE, therefore requiring no HFC for export. Production in Muslim minority countries is controversial as once UAE authorities have certified import into the UAE, no further regulations are applied within the supplier nation. Consequently, Muslim consumers hold reservations over halal integrity of products imported specifically from non-Muslim countries, such as raw meat imports from Australia and Brazil. This issue is not exclusive to the UAE, as other Muslim majority countries, such as Malaysia, have similar regulatory standards and consequent consumer concerns (Toong *et al.*, 2015). Worldwide, halal certifiers are so numerous that the UAE authorities could not logistically accredit them all and given that only those that have been approved can be used to export products to the UAE, the consequence is that many products cannot be imported from non-approved certifiers:

P1. The country of origin of halal products affects consumer choice and confidence in halal supply chain integrity.

4.2 Consumer trust in government regulation of the halal industry

There is a dichotomy in consumers accepting that all food sold in the UAE is halal. For many purchasers, price and quality are key determinants of consumer choice and trust in the state to inspect and approve HFC bodies and thus ensure their food is halal. Internal food production systems in the UAE are universally acknowledged as shari'ah-compliant. Foreign food imports, on the other hand, rely on UAE authorities to act responsibly to ensure proper HFC standards are applied, though how effective their implementation of this is, remains contentious.

Trust in state regulation is not universal and there is evident scepticism of halal integrity among UAE consumers. Variability of customers' perceptions exists and there is distrust among a minority of Muslim consumers that many imported products being sold cannot be routinely assumed to be halal. The study highlighted cultural diversity, with national origin of consumers significant and with such a diversity of expatriate inhabitants in UAE society and with a population comprised of around 80 per cent expats from over 180 countries, food needs are equally diverse. The extent of dietary acculturation (Ali *et al.*, 2017) in the UAE is very low, with many residents demanding importation of food types from their homeland. Retail outlets in different regions of the UAE thus cater for the needs of different and distinct nationalities and cultural groups. Customer profile thus varies widely by locality; in some areas of the UAE, up to 80 per cent of retail food customers are Arab, whether local Emiratis or Arabs of other nationalities, whereas in other districts, up to three-quarters of shoppers are Western expats, or residents of South Asian, African or Far Eastern heritage. Inventory within stores is therefore determined by variant geographic locations and the nature of demand.

Within this milieu, the ethnographic data within the UAE setting suggest that non-Arab Muslims were more concerned about halal integrity of meat products compared to Arab Muslims. In particular, European, American and South African Muslims tended to have a more detailed understanding of HFC through experience in their homelands, living as minority groups, whereas for other Muslims, quality and price were the main determinants of purchase as opposed to technicalities of HFC and consequent religious permissibility:

P2. Consumer trust in state governance of halal supply chain regulation is affected by consumer culture.

4.3 Consumer confidence in halal branding

It was observed that the UAE, as with other Muslim majority countries, is perceived by some as lacking stringency in halal regulations in an increasingly globalised marketplace. This allows brands an opportunity to fill this void in perceived quality standard through branding their products as authentically halal and trustworthy. Brand names, such as Al Islami, are capitalising on this lack of trust in halal integrity and authenticity, in their branding strategies, for example, branding products as "The Real Halal". The Al Islami brand image was conceived around the ethos of trustworthiness of its halal food products, with halal encompassing all aspects of the business. Founded in 1981, the company operated out of a slaughterhouse in a small village in northern Denmark and exported to Dubai. It was initially called Coop Islami due to its establishment as a co-operative society in conjunction with an Islamic bank but became Al Islami in 2006. Al Islami introduced processed meat products and cheeses containing halal rennet and, in 1991, set up a factory in Jebel Ali Free Zone in Dubai to manufacture and process food items. Al Islami was the company most often cited by customers in the UAE with respect to halal food integrity and overtly marketing products as Islamic, through its use of terminology such as "halal" or "Islamic". Similar branding was becoming successful in marketing campaigns in the UAE, with brand names such as Islami Company and Islami Co-Op being used to emphasise product compatibility with Islamic dietary requirements. Al Islami further enhanced its own reputation through developing state-of-the-art research facilities to design and test new products at their Dubai headquarters and has longstanding relationships with the government, indicating the value of their research at state level in the area of halal food production:

P3. Products branded to emphasise halal supply chain integrity (particularly meat and poultry related commodities) positively impacts consumer perception.

4.4 Consumer perceptions of brand replication and non-halal ingredients

Another area of consumer divergence of halal integrity is on issues pertaining to alcohol in food and beverages. The production and consumption of alcoholic beverages or foods containing alcohol are impermissible, or haram, in any quantity or type in Islamic law (Fischer, 2008), though variant *fatawa*, or religious edicts pertaining to alcohol permissibility fully absorbed into food, or alcohol of a chemical source rather than present through fermentation, are observed. Alcohol as an ingredient is often used as a processing aid or concealed ingredient (Ahmad *et al.*, 2015), for example, in pastry, to increase shelf life, or as a flavouring liquor in chocolate confectionary (Shirazi, 2016). Concerns in this area also extend to selected soft drinks, which are marketed in containers to resemble alcoholic drinks such as beer cans and champagne bottles. Cultural sensitivity more so than religious teaching is relevant in this, in that although the beverage is in itself non-alcoholic, the bottle design is suggestive of alcoholic beverages such as champagne or wine. Non-alcoholic beer products, including brands such as Barbican, are also very popular in the GCC region. These can therefore cause disapproval in terms of cultural sensibilities of faithful consumers. Ethnographic evidence of generational divergence was also identified, with male consumers under the age of 25 being the target demographic for advertising campaigns for these products, whereas many Muslim residents over this age group articulating antagonism to the availability of such products, citing cultural or religious misappropriation:

P4. Commodities branded to replicate non-halal products such as alcoholic beverages negatively affect the perception of some Muslim consumers.

5. Discussion

Overall, the findings suggest that the UAE exhibits a well-developed halal ecosystem proportionate to its geographic size and population. However, the halal landscape of the UAE compared to other countries is one of the most challenging for farm-to-fork halal integrity, due to the diversity of its population and corresponding consumer demand for a wide variety of food types. The UAE relies heavily on imported goods across all sectors including food, though is increasing domestic food production, reinforced through a rising presence of food re-processing plants in Jebel Ali Free Zone. Food sold in the UAE comprise approximately 80 per cent imported products, with the remaining 20 per cent locally sourced, such as dairy products, poultry, eggs, seafood and fresh vegetables. For locally processed food manufacture, for example snack foods, nearly all source ingredients are imported. The federal government has invested over $1.5bn towards the development of the food-processing industry over the past decade, focussing on a value-added food-manufacturing sector targeting local and re-export markets. There are approximately 150 food-processing plants in the UAE, including those producing vegetable oils, soft drinks and juices, snack foods, pasta, confectionary and dairy products. Dubai's food-processing industry alone is valued at $3bn and grows up to 11 per cent annually (Government of Ras Al Khaimah, 2010).

Key supply chain challenges in the halal food industry include interoperability, contamination and product traceability. Furthermore, halal ingredient procurement has been highlighted as being of vital importance in global halal supply chains, with widespread application of many non-halal ingredients with the potential for offering halal alternatives for ingredients such as gelatine, pepsin and carmine. All have either halal or vegetable-based alternatives and OIC nations are actively growing their production capability, though even mainstream processed food manufacturers have the capability to include Muslim market share into their consumer base through the utilisation of non-pork, halal derivatives into their supply chains.

Consumer demand for goods and services in the UAE is generally high and household spending on grocery items exceeds most developed nations. The UAE halal meat industry in particular is vibrant and has thus far proven resilient to environmental pressures, such as political and economic fluctuations. According to the Ministry of Foreign Trade, halal meat import into the UAE is very high, per capita three times greater than each of the following five largest importers, with consumption overall 18 times greater per capita than the global average (Lukwaro, 2010). The demand for halal meat continues to grow due to rising population, with many residents having very high disposable incomes relative to global norms in developed countries. There is limited scope for increasing internal halal meat production capability, which continues to present opportunities to foreign suppliers. The reliance on foreign importation from such a wide array of countries of origin has a consequential impact on consumer confidence in halal sourcing, particularly halal meat and poultry.

The following four propositions were suggested from the ethnographic and document data analysed:

P1. The country of origin of halal products affects consumer choice and confidence in halal supply chain integrity, negatively for imports from Muslim minority countries and positively from Muslim majority countries.

This proposition complements earlier research, which found positive for the reduction of uncertainty over halal integrity among Muslim consumers (Bonne and Verbeke, 2008a, b):

P2. Consumer trust in state governance of halal supply chain regulation is affected by consumer culture, positively by Muslim consumers from Arab Muslim majority countries including the UAE and negatively by Muslim consumers from Muslim minority countries, especially the UK, South Africa and parts of South Asia and South East Asia.

This proposition is also supported through earlier research in the UAE (Rajagopal *et al.*, 2011) as well as in other settings. In Muslim minority countries, such as the UK or the USA, halal food is not certified by governmental bodies, but by independent agencies. Consumer views on halal integrity as well as the ethics of animal welfare in these environments vary considerably (Farouk *et al.*, 2016). For example, in the halal slaughter process, permissibility of electrical stunning of animals prior to slaughter (Fuseini *et al.*, 2016), use of mechanical slaughter and verbally blessing the animal in God's name by non-Muslim slaughter men, or an audio recording of this pronouncement played through an electronic device, are just a few examples of the many contentious issues. Alternate positions on such issues result in circumstances where meat products certified halal by one agency would not be certified as such by another and thus be considered impermissible by sections of the Muslim populous. Many social and technical variations among the four dominant schools of *fiqh* (Randeree, 2013), or Islamic jurisprudence, in regards to halal integrity were historically not encountered in Muslim majority countries until different Muslim cultures and religious contexts interacted through global trade (Lever and Fischer, 2018):

P3. Meat and poultry related products branded to emphasise halal supply chain integrity positively impacts consumer perception.

This proposition is further harmonised by the notion that halal integrity is seen by many consumers as a default guarantee of food safety and better quality, with earlier studies demonstrating empirically the preference for halal food products, even by many non-Muslim consumers, due to the positive reputation fostered by associated brands (Ayyub, 2015). Earlier research also indicates a positive relationship between religion and consumer attitude in the context of food purchasing and consumption (Bonne *et al.*, 2007):

P4. Commodities branded to replicate non-halal products such as alcoholic beverages negatively affect the perception of some Muslim consumers.

Earlier research empirically supported this view and demonstrated that the effect of religiosity has multidimensional facets, such as belief, practice, culture, tradition and historical precedence and these all can impact consumer food choice and perception. Thus, the intersection of perceived values, in this case between consumer products and belief, have been termed "sensitive products" and illustrate that where different levels of religiosity and consumer behaviour intersect, perceptions can be negatively experienced, as highlighted in Khraim *et al.* (2011) research in the Jordanian retail sector. Non-alcoholic drinks in the guise of alcoholic beverages such as beers, wines and champagne, are examples where these acuities in Muslim consumer behaviour interconnect.

6. Conclusions

Although the halal food sector is one of the most advanced sectors of the Islamic economy, second only to Islamic finance, to achieve maturity, the halal sector requires strategic development. The most significant issue within the halal food sector, but applying more broadly across all sectors of the Islamic economy, is standardisation, where agreement and consensus on global HFC, production and distribution standards are hard to achieve and thus far, elusive. This presents a substantial opportunity and there is evidence that ESMA and others are collaborating more in extending regulatory frameworks, practice and conduct as well as shari'ah standardisation with respect to issues around the breadth of Islamic scholarly interpretations on permissibility of products and services in an effort to go beyond limited national concerns and towards developing a truly global, standardised and trusted halal food ecosystem.

This research paper is among limited contributions that address the dearth in scholarly published work on the MENA region and wider Middle East with respect to halal food ecosystems. Furthermore, the novelty of this research partially lies in the longitudinal nature of its methodological framework, which lends itself to providing a mechanism to broaden the stakeholder set across the food supply chain as well as to nuance variations in the halal food ecosystem in the UAE over time.

Evidence of this can be seen throughout each of the four key propositions arrived at over this time. Consumer choice and confidence in halal supply chain integrity, for example, has demonstrated gradual decline with greater product range, increasing food choice and the consequent growing demands on global importation. Further, the country of origin of halal products had limited consequence for consumers in the early years of the investigation but has clearly emerged and evolved over more recent years, with accumulative food options and the advent and later domination of hypermarkets. Likewise, demographic change and the increasing expatriate population have impacted consumer trust in state governance of halal supply chain regulation. Furthermore, meat and poultry related products that are specifically branded as halal, were previously of limited visibility, but have had increasing impact on consumer perception, whereas previously, citizenry in particular had little concern for such branding given these products were less diverse and predominantly sourced domestically. Finally, the replication of non-halal products was previously not in existence in the UAE, whereas globalisation and increasing cultural homogeneity has led to the emergence and growth of this phenomenon.

Consequently, this work has gone some way to addressing interoperability challenges and supply chain intermediary difficulties, with emphasis on concerns over non-integrated halal certification standards as well as consumer confidence irregularity in halal standards, which impacts the global halal ecosystem.

The implications of this study are crosscutting in managerial and societal contexts. From a managerial perspective, the outcomes of this work demonstrate that international halal markets and halal product supply chain systems in other Islamic economy sectors, including halal pharmaceuticals and cosmetics, can benefit significantly, through a deeper understanding of source ingredients and Muslim consumer perception analysis. In a societal context, these key areas also posit trends which should allow perceptive stakeholders to identify and react to cultural variance across Muslim consumers over time, as well as develop more positive and impactful brand strategies.

Longer term, the implications of this research are that staying abreast of changing demands among Muslim consumers requires continuous examination across the Islamic economy. This can facilitate companies in benefitting from first mover advantage. For example, in terms of halal food sourcing and consumption, Muslim consumers are becoming progressively more environmentally astute, increasingly concerned over the source of ingredients and evermore mindful of their personal health.

Environmentally, this includes increasing conscientiousness of fair-trade practices, environmentally friendly sourcing, sustainability, recyclability and renewable and biodegradable packaging.

Sourcing of products through more organic means, free from genetically modified organisms and the avoidance of chemical fertilisers and pesticides are becoming of greater relevance. Furthermore, protein sources such as grass-fed beef or chicken which have not been treated with growth hormones, antibiotics or steroids and raised free-range are also in the public conscience. Locally sourced products and the emergence of artisanal foods, produced in limited batches through traditional techniques are yet to see significant traction, but provide opportunities for the halal food sector also.

In terms of personal health, global trends indicate marginal movement towards probiotic antioxidants and gluten-free foods, a growing disapproval of products containing high fructose corn syrup, greater interest in sugar-free foods, natural foods, whole grain, whole wheat products, super foods and nutrient-dense foods that are being seen as beneficial to health and possessing disease prevention or remedy. There are clearly opportunities in the halal space for growth of these emerging trends, as well as implications for halal and mainstream collaboration in finding product solutions for meeting correlating Muslim consumer needs.

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