

Exploring Halal Awareness and Halal Knowledge of the Information and Communications Technologies Industry in Bangladesh

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Abstract: *The Halal industry is getting popular in Bangladesh nowadays. Being the second-largest Muslim-majority country, Bangladesh has immense potential to flourish in Halal industries. The Information and Communications Technologies (ICT) industry is thus a large part of the Halal industry's reach. ICT must support the Halal movement as the main player in every organization. ICT firms must be well-versed in Halal and associated topics in order to do this. In this study, the knowledge and awareness of Halal among Bangladeshi ICT firms were investigated and evaluated. The study used a qualitative methodology and a survey approach. Members of the Bangladesh Organization of Software and Information Services (BASIS), the nation's trade organization for the software and IT-enabled services sector, comprise the examined companies. A standardized questionnaire was created for data-gathering purposes, and the firms that were surveyed provided information. The study identified 18 factors as the areas of Halal knowledge, 14 factors as sources of Halal knowledge, and 6 factors as the methods of acquiring Halal knowledge. The collected data was compiled in MS Excel and a simple descriptive statistical analysis was performed. Data was presented in pie charts and bar diagrams. The study found that the ICT firms in Bangladesh have little knowledge of Halal and related matters, hence their Halal awareness is not satisfactory. The firms that have experience working with the Halal industry only worked with the financial dimension. It is also found that there is a shortage of experts and content on Halal and related issues. Very few firms have worked with these Halal issues and this is the first study conducted on the ICT industry regarding Halal awareness in Bangladesh.*

Keywords: *Halal awareness, Halal knowledge, ICT industry, Bangladesh*

1. Introduction

Bangladesh is going through a high speed to digitize it. The Bangladeshi government is taking lots of initiatives to adopt Information and Communications Technologies (ICT) in all possible sectors and through these initiatives, they are developing the ICT industry. Thus,

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the ICT industry is growing rapidly in Bangladesh to materialize the dream of being ‘Digital Bangladesh’. Moreover, ICT has a key role in all types of firms, becoming a part and parcel of every firm. Thus, ICT is critical to implementing any compliance, especially Shari’ah compliance.

Bangladesh is the Emerging Tiger of South East Asia. It has achieved many development milestones in recent years. One of the biggest achievements of Bangladesh is the adoption and development of ICT in almost every public and private sector. Bangladesh is about to attain Vision 2021 to digitize the country to become a developing and middle-income country. For this, the Bangladesh government has taken many big steps to facilitate the ICT industries by establishing industrial parks, hi-tech parks, providing tax facilities, and many more. So, Bangladesh is now on a high pace in the way of digital transformation.

ICT adoption and development are supported by a few regulatory agencies and organizations in Bangladesh. The ICT Division (ICTD) is housed inside the Ministry of Posts, Telecommunications, and Information Technology (MoPTIT) of the Government of the People’s Republic of Bangladesh. The use of Information Technology (IT) and the development of related policies are supported by the Bangladesh Computer Council (BCC), a statutory and autonomous government agency. The Bangladesh Association of Software and Information Services (BASIS) is the national trade association for software and IT-enabled services in Bangladesh. The organization was founded in 1998 with the goal of fostering a thriving software and IT service sector in the nation. From the BASIS website, it is found that in 2021, the number of BASIS members has increased rapidly in recent years which shows the actual development of the ICT industries in Bangladesh. According to BASIS (2017), there was a total of 1081 general and associate members, where 1026 are located in Dhaka city.

In Countrymeters.info it is found that in 2021, Bangladesh has the 8th largest population with around 167 million people. Among this big population, about 90% are Muslims. Bangladeshi Muslims are good practicing Muslims and there is a gigantic market in the Halal industries (Afrin, 2021). Among the other Halal industries, the Halal ICT industry has great potential in Bangladesh. Even, the non-Muslim population in Bangladesh is also attracted by the Halal industries because of its safety and sustainability facilities (Jyote & Kundu, 2020; Nisha & Iqbal, 2017).

1.1 Objective

This study’s main goal was to evaluate the level of knowledge that Bangladeshi ICT companies have regarding Halal and its application. This study sought to achieve the following specific goals in order to meet the main goal:

1. To evaluate the level of knowledge of Halal awareness among ICT firms in Bangladesh.
2. To trace the sources of knowledge/information used by the ICT firms in Bangladesh

to know the Islamic rulings on Halal and related issues.

3. To trace the methods of learning adopted by the ICT firms in Bangladesh to know these issues.
4. To find the experiences of the ICT firms in dealing with Halal industries and/or Halal compliance.

1.2 Scope and Limitation

The study only explores the knowledge of the ICT firms of Halal and related matters, not other industries or knowledge of the ICT firms or anything else. This is a sampling study and the sample size is only 50 out of 1840 BASIS members. There are thousands of ICT firms, which are not members of BASIS. So, the study does not cover the total population constituted by the ICT firms in Bangladesh. Due to time and monetary constraints, the study collected data only from the ICT firms located in Dhaka, not outside else.

1.3 Research Question

The research attempted to provide an answer to the following queries:

1. What do the ICT firms know about Halal and related issues relevant to the industry?
2. From which sources do the ICT firms know those matters?
3. How do the ICT firms know those matters?
4. Do the ICT firms have any experience in working with Halal industries and/or Halal compliance?

1.4 Significance

The study is important in two ways:

1. The study helps measure Halal awareness in ICT firms in Bangladesh. Thus, the study helps the ICT firms to self-check their level of knowledge about Halal which might influence them to learn more and have training and certification.
2. Subsequently, it helps the policymakers, regulators, educators, and content creators take necessary steps to improve, enhance, and increase the regulations, contents, training, and other programs to raise the level of Halal awareness among the ICT firms in Bangladesh.

1.5 Organization

Following is how this study is structured: first, in the introduction section, we outlined the study rationale, objective, scope and limitation, and significance. Second, we showed the theoretical framework defining Halal, Halal knowledge, Halal awareness, and the ICT industry. Third, we reviewed the literature and in the fourth section, we discussed the research methodology.

Five, we showed the study findings and analyzed the results in various dimensions. Finally, we concluded the study also outlined the challenges, recommendations, and stated the future research.

2. Conceptual Framework

2.1 Halal Concept

Allah SWT conveyed the life guidelines for believers for how to become successful on the earth and in the days hereafter through the law of Islam (Basri & Kurniawati, 2019; Hasibuan, Basri, & Mahfudz, 2021). In Islamic law, there are three types of products, namely Halal, haram, and mushbooh (Basri & Kurniawati, 2019). A product, service, or management program cannot violate the Halal and Haram principles according to Islamic law or Shari'ah. (Basir, Abdul Ghani Azmi, Syed Ismail, Ibrahim, & Mohamed, 2017). The meaning of the word halal, which derives from the Arabic term halla, is "permitted," "allowed," "lawful," "legal or lawful," "accepted," "authorized," and "slick," whereas haram, which derives from the Arabic term haruma, is "forbidden," "prohibited," "unlawful," "illegal," and "unaccepted," according to the Quran and Hadith (Basir, Abdul Ghani Azmi, Basri & Kurniawati, 2019; Novitasari, Chidir, Sutardi, Iskandar, & Pebrina, 2021; Busyra & Ardi, 2020; Haleem & Khan, 2017; Oemar, Prasetyaningsih, Bakar, Djameludin, & Septiani, 2022; Petiwala, Naeem Nawazish, Shukla, Sharma, & Nanda, 2021; Rishelin & Ardi, 2020; Samsi, Zainal, & Ibrahim, 2011; Syed Ismail, Ibrahim, & Mohamed, 2017). Mushbooh alternatively, syubha, shubhah, and mashbuh meaning 'doubtful', 'questionable', 'suspected', or 'black and white' that the Muslims should avoid (Basri & Kurniawati, 2019).

Usable and consumable everything is regarded as Halal (Adiweno, Zagloel, & Ardi, 2018). The Halal philosophy starts with production and concludes with consumption (Haleem & Khan, 2017). Halal is advocated by both Quran, Hadith, Ijma, and Qiyas whereas haram is not, and mushbooh is neither supported nor prohibited. Although these words are used mainly in the food industry, they also include other areas, like behavior, dress, speech, conduct, technology, cosmetics, medication, logistics, etc. Thus, Halal symbolizes integrity, ethics, safety, and hygiene; as a result, it is not only a matter of religion (Adekunle & Filson, 2020; Basir, Abdul Ghani Azmi, Syed Ismail, Ibrahim, & Mohamed, 2017; Busyra & Ardi, 2020; Haleem & Khan, 2017; Oemar, Prasetyaningsih, Bakar, Djameludin, & Septiani, 2022; Petiwala, Naeem Nawazish, Shukla, Sharma, & Nanda, 2021; Rishelin & Ardi, 2020). We define Halal as "*the act that the Muslim community should perform maintaining the law of Islamic Shari'ah*".

So, any kind of goods and services provided by companies must adhere to the Halal and Haram criteria (Basir, Abdul Ghani Azmi, Syed Ismail, Ibrahim, & Mohamed, 2017). In the Islamic system, businesses whether manufacturing or service-oriented are Halal when the principles of Shari'ah are conformed strictly (Karia & Asaari, 2016). Halal ensures human

welfare by protecting faith or religion, life, intelligence, lineage, and property (Basri & Kurniawati, 2019). The popularity of the Halal ideology is rising among both Muslims and non-Muslims (Bashir, 2019).

2.2 Halal Literacy and/or Knowledge

Someone familiar with something by being experienced is known as knowledge. So, Halal knowledge is a process of acknowledging what is allowed for Muslims. This acknowledgment covers the knowledge of Islamic laws related to Halal products which are accepted by the Quran and Hadith (Elias, Othman, Yaacob, & Saifudin, 2016; Oemar, Prasetyaningsih, Bakar, Djamaludin, & Septiani, 2022). A person's ability to differentiate between Halal and haram things based on his/her level of knowledge and perception of Islam is considered as halal knowledge. Halal knowledge is acquired through Halal literacy. Halal literacy is important to be carried out to secure the Muslim community, enhance the selling of Halal products, and give a picture of recognizing Halal among the community (Maryam & Sumar'in, 2022). We define Halal knowledge as "*the knowledge acquired through Halal literacy from any sources*".

The factors of insufficient knowledge, attitude, or familiarity with Halal products among Muslim consumers work behind using the products (Jabar, Ishak, Johar, & Wahid, 2014). Malaysian cosmetics consumers lack the knowledge to recognize Halal products and they mainly rely on JAKIM's (alternatively, Jabatan Kemajuan Islam Malaysia or Department of Islamic Development Malaysia) Halal logo before purchasing. JAKIM, Ministry of Domestic Trade Co-Operatives, and Consumerism (KPDNKK), Halal Industry Development Corporation (HDC), and consumer association are actively involved to inform people about the Halal status of products (Bakar, Rosslee, & Saidin, 2014; Jabar, Ishak, Johar, & Wahid, 2014).

2.3 Halal Awareness

To become aware of or to understand something is regarded as awareness meaning that one has the knowledge that makes him/her understand, feel, perceive, and concern of a particular subject, event, or situation that is happening. This knowledge includes the perception of Halal products and how they are prepared. Therefore, Halal awareness is the process of becoming aware of the issues regarding the Halal concept that is allowed for Muslims. How much a person aware of Halal is determined by one's belief in religion, acquaintances, health concerns, and the impact of the Halal label (Aziz & Chok, 2013; Basri & Kurniawati, 2019; Dewi, Dina, Komariah, & Zaroni, 2021; Jannah & Al-Banna, 2021; Kurniawati & Savitri, 2019; Malik, Hermawan, & Asnawi, 2019; Maryam & Sumar'in, 2022; Oemar, Prasetyaningsih, Bakar, Djamaludin, & Septiani, 2022; Hasibuan, Basri, & Mahfudz, 2021; Othman, Jamaludin, Mohd Salleh, & Ramli, 2019; Saputro, Wilujeng, & Pratikto, 2021). It refers to the way Muslims view everything having to do with Halal (Nurfajrina, Handayani, & Sari, 2021). Halal

awareness indicates the Muslim people's interest, experience, and knowledge to purchase services supported by Islamic principles (Jalasi & Ambad, 2021). That means, it comprises three dimensions comprising knowing the Halal concept, knowing the Halal process, and concerning about the importance of consumption (Dewi, Dina, Komariah, & Zaroni, 2021). Halal awareness can be divided into three levels: elementary level (fundamental level), intermediate level (basic level), and advanced level (ample comprehension, awareness of, and practice of Halal in daily life) (Othman, Jamaludin, Mohd Salleh, & Ramli, 2019). We define Halal awareness as "*the process of acquiring Halal knowledge and being aware of all aspects of Halal products including digital assets*".

Acquiring knowledge of Halal is the first stage in acquiring Halal goods (ztürk, 2022). Knowledge of Halal practices and an understanding of their advantages impact Halal awareness (mar, Prasetyaningsih, Bakar, Djamaludin, & Septiani, 2022). A person is expected to buy and consume Halal food and drink more as they get more familiar with the Halal concept (Septiani & Ridlwan, 2020). Although consumers have varying beliefs, they have a similar intention to buy safe and trusted products. Because Muslim consumers seek Halal products, manufacturers and retailers need to focus on maintaining their religious beliefs which in turn require the knowledge and awareness of Halal and haram concepts (Jabar, Ishak, Johar, & Wahid, 2014). To do so, Halal awareness is necessary to comply with Shari'ah law in producing Halal goods and services (Elias, Othman, Yaacob, & Saifudin, 2016). This Halal awareness includes all aspects of Muslims' livelihood. Thus, the concept of this study covers a very little scope that is mostly unexplored in the Halal concept, the ICT industry.

2.4 ICT Industry

ICT has been developing very rapidly as well as businesses are adopting it very widely (Hendayani & Febrianta, 2020). ICT originally descended from IT and communication technologies (CT). For the purpose of designing and engineering applications for crucial computer systems and networks, the word encompasses computing, information management, and communication networks. For this reason, the ICT professionals are experts in the management of data and networks, applications and systems, computer hardware, and software (Kum Leng Chin, Chang, & Atkinson, 2008). ICT has a broader scope now than it did before the telecommunications, computing, and broadcasting industries came together. In accordance with the Organization for Economic Co-operation and Development's (OECD) definition in the International Telecommunication Union's (ITU) report on ICT statistics, 2004 is "... ICT sector refers to equipment and services related to broadcasting, computing, and telecommunications, all of which capture and display information electronically." ICT industry includes both manufacturing and service sectors (Lee, 2009). We define the ICT industry as "*the firms producing digital tools and technologies that are useful to people*".

ICT revolution started in the 1980s and from then it has entered every sector of the economy and society (Nolan, 2021). Many countries like China have been included in the ICT industry since the mid-1980s when it was known as the electronic industry because of its focus on the manufacturing sector (Ahmed, 2007). After Intel was founded in 1968 and the microprocessor was first released in 1971, the current ICT revolution started in the 1970s. The first desktop microcomputer with a keyboard and mouse was unveiled by Hewlett-Packard (HP) in 1973, while the first mass-produced personal computer (PC) was developed by Apple in 1977. PC sales climbed to 366 million in 2011 from 71 million in 1996. Although its penetration has increased significantly in recent years, the World Wide Web (WWW) and Internet's development in the middle of the 1990s helped the ICT revolution accelerate (from 390 million users in 2000 to 4.6 billion users in 2020). The search engines were introduced by Yahoo in 1995 then Google in 1998. Nokia introduced the first mass-market mobile phone in 1992, while Apple released the first mass-market smartphone in 2007. The first e-commerce business Amazon was started in 1995 raised its revenues by USD 281 billion in 2019 from a revenue of USD 2.4 billion in 2004. The popular social media Facebook began its journey in 2004 and YouTube in 2005 reached its culmination of success in terms of users and revenues. Finally, in the recent era, the ICT industry has become a leading edge of innovation and it will even more important leading the days coming ahead (Nolan, 2021).

The ICT industry largely depends on new technology, the result of rapid innovation resulting in a shorter product life cycle that affects the size and market share of ICT companies. Rapid innovation provides entrepreneurial opportunities. Having a shorter life cycle, the ICT industry enhances innovations (Yang, Lee, & Lee, 2013). ICT innovations have a great implications on business and socio-economic development for the reason of sharing knowledge, developing community, and equating. Individual, corporate, and societal levels were all affected by this effect. Thus, ICT innovations have changed the way human beings interact. Along with food, clothing, and shelter, information has been included in the basic needs of humankind. The implications of ICT innovations in developing and emerging nations are remarkable (Ahmed, 2007).

The ICT industry is regarded as the key driver of development and economic growth in the European Union (EU). However, Asian countries have been performing very well in both the manufacturing and services sectors in comparison with global market competitors (Psychoyios & Dotsis, 2018). ICT significantly affects a company's ability to expand economically by providing cost reduction, efficiency enhancement, and new market access facilities worldwide by bringing innovation. Thus, it is considered as a vital necessity for firms (Hendayani & Febrianta, 2020). The ICT industry enjoys lower entry barriers than the non-ICT industry (Yang, Lee, & Lee, 2013). The Bangladesh ICT industry has maintained around 60 percent growth in export averagely from 2009 to 2018 and it has created around 300,000 job opportunities. To become a developed country by 2041, Bangladesh needs to reform its policy from Least Developed Country (LDC) to a middle-income country. For this

purpose, the ICT industry in this country requires to operate at a maximum level and minimize the skills gap, grow the ICT industry inclusively, rationalize electricity costs, restrict imports of IT or IT-enabled services (ITES) substitutive, create awareness of tax, vat, customs duty, cash incentives, declare more cash incentives, involve IT/ITES companies in country's mega project, give easy access to finance, provide more funds on research and development, etc. (Latifee & Hossain, 2018). The ICT application is regarded as an opportunity in Halal logistics. The application of radio frequency identification (RFID) and the use of ICT in transportation provide absolute opportunities for real-time Halal tracking, tracking of location, identification of products, and telecommunication (Syazwan Ab Talib & Bakar Abdul Hamid, 2014).

From the above discussion, we develop the following framework as depicted in Figure 1.

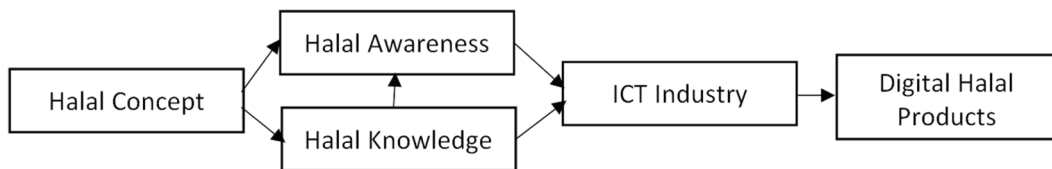


Figure 1. Research framework

3. Literature Review

ICT has a blended role in modern organizations. It is integrated into every level of management and every unit of an organization. Moreover, ICT has self-reinforcement characteristics that influence the way an organization is managed. ICT is great for ensuring transparency and imposing any compliance (Laudon & Laudon, 2020). Thus, ICT can be very useful in maintaining Shari'ah compliance for all types of organizations. And of course, the ICT firms are to know the Islamic rulings related to the industry so that they can follow them in their organizations and develop systems for others.

ICT firms have many aspects on which they need to know the respective Halal compliance issues. Simply speaking, ICT firms have management of their own and they deal with their customers. Thus, they necessarily have management style, employee rights, customer rights, contracts, pricing, advertisement, tax & other levies, and related issues. From the Islamic perspective, organizations have Zakat, Shari'ah compliance, and Halal certification issues. There are some other related aspects and issues on which compliance is to be imposed and measured (Grais & Pellegrini, 2006).

Form Spielgaben (2015), nowadays, people primarily learn from websites and printed materials. People also learn from listening to lectures and contacting respective subject experts. People also learn from their trials and errors, even from simulated games. Fictional stories/novels also help people learn new things. In the Inspire Education and Born Trainer

websites in 2022, in the corporate world, people learn from asking colleagues and reading brochures published by specialized authorities. Learning from the websites is becoming more popular recently in Bangladesh.

Bangladeshi Muslims are usually positive about Islamic values and practices. People try to follow the rulings of Islamic Shari'ah in their daily life. The primary focus of Bangladeshi Islamic discourses is on the issues related to the Ibadah, and less on the Muamalah, and very less is the business, and almost none on very specific & specialized industries like ICT (Ahmad & Nelson, 2009). There are very few specialized institutions that deal with the Halal industries related issues. Moreover, the way people learn Islam is often not comprehensive and less academic which sometimes creates confusion & conflict (Ahmad, 2006; Roy, Samia, & Rob, 2020). So, it is high time we assessed the level of awareness of Halal and related issues of the ICT firms in Bangladesh. Table 1 summarizes the studies conducted on Halal aspects in the various industries from different countries.

Table 1. Summary of the studies conducted on Halal aspects

Sl.	Reference	Location	Main Theme	Key Findings
1.	Oemar, Prasetyaningsih, Bakar, Djamaludin, and Septiani (2022)	Indonesia	Impact of Awareness on Halal certification	There is a strong positive correlation between Halal awareness and readiness to apply for a halal certificate.
2.	Novita et al. (2022)	Indonesia	Intention to purchase Halal products	Purchasing Halal items is greatly influenced by Halal knowledge and certification.
3.	Maryam and Sumar'in (2022)	Indonesia	Halal literacy and awareness of Halal products	The likelihood of purchasing halal products will significantly increase if halal literacy raises halal awareness.
4.	Öztürk (2022)	Turkey	Halal awareness and knowledge on purchasing Halal products	In addition to significantly influencing purchasing intention, halal chicken goods have a very positive impact on halal education, awareness, and perceived psychological risk about halal products.

Sl.	Reference	Location	Main Theme	Key Findings
5.	Feizollah, Mostafa, Sulaiman, Zakaria, and Firdaus (2021)	Global	Halal tourism	With non-Muslim nations like Japan and Thailand on the list of Halal travel destinations, the word “Halal” was discovered in a tweet search to be associated with the words “food” and “hotel,” making the sector a worldwide one in both Muslim and non-Muslim nations. Positive sentiment exceeded negative sentiments in the tweets.
6.	Petiwala, Naeem Nawazish, Shukla, Sharma, and Nanda (2021)	Global	Mobile application for Halal food	An all-rounder-based mobile application is developed that can be helpful to Muslim and non-Muslim communities to identify Halal food in restaurants.
7.	Ali, Chung, Kumar, Zailani, and Tan (2021)	Malaysia	Halal food supply chain (HFSC)	Blockchain technology has a significant impact on HFSC. This technology can enhance SC integrity but it faces some challenges in implementation. The importance of SC integration and food regulations play role in succeeding the blockchain technology.
8.	Islam and Wahab (2021)	Bangladesh	Halal food cart business	The big challenges with Halalan tayyiba and erratic policies for the Chittagong food cart business are security, lack of awareness, lack of legislation, weather.
9.	Saputro, Wilujeng, and Pratikto (2021)	Indonesia	Intention of buying Halal products	Halal awareness, Halal certifications, and brand image all have an impact on consumers’ desire to purchase, with the latter two factors acting indirectly through brand perception.
10.	Nurfajrina, Handayani, and Sari (2021)	Indonesia	Awareness for Halal food	Muslim consumers’ halal awareness and lifestyle choices significantly influence their preferences to purchase Japanese food in Jakarta.

Sl.	Reference	Location	Main Theme	Key Findings
11.	Jannah and Al-Banna (2021)	Indonesia	Intention of buying Halal products	Consumers' intent to purchase halal products and the traceability of business actors who are impacted by knowledge, certification, and religiosity are both influenced by halal awareness, which is defined by halal knowledge and certification.
12.	Dewi, Dina, Komariah, and Zaroni (2021)	Indonesia	Intention of buying Halal products	Halal awareness, certification, and price influence the purchasing intention of Samarinda's consumers significantly.
13.	Jalasi and Ambad (2021)	Malaysia	Halal awareness	In Sabah, awareness of halal issues has a big impact on people's intentions to use halal homestays. Female Muslim consumers have more Halal awareness than males.
14.	Novitasari, Chidir, Sutardi, Iskandar, and Pebrina (2021)	Indonesia	Halal awareness on purchasing Halal products	A high positive association exists between mindset, subjective norm, perceived behavioral control, and intention to buy Halal goods.
15.	Suryani and Ahkmam (2020)	Indonesia	Halal medicine industry	Muslim consumers' desire to buy Halal medications is dependent on their mindset and perceived ability to manage their behavior.
16.	Busyra and Ardi (2020)	Indonesia	Halal meat supply chain	Feedlot, livestock, slaughtering, transporters, storage and handling, and retail markets are found as the upstream risk categories in the Halal meat supply.
17.	Rishelin and Ardi (2020)	Indonesia	Halal meat supply chain	Halal meat supply chain downstream sector encounters 48 risks factors.

Sl.	Reference	Location	Main Theme	Key Findings
18.	Hendayani and Febrianta (2020)	Global	Family Halal food business HSC performance	Technology and the efficient HSC of the family-run Halal food company are strongly correlated. Technology can assure the effectiveness of Shari'ah compliance of Halal food supply chain processes in the family businesses where it cannot ensure efficiency.
19.	Utomo, Sekaryuni, Widarjono, Tohirin, and Sudarsono (2020)	Indonesia	Promoting Islamic financial ecosystem	The intention of business owners to utilize Islamic financial products or Halal products is highly influenced by their level of knowledge, attitude, and awareness of Islamic finance.
20.	Regenstein and Moghul (2020)	United States of America	Halal food industry	The USA has already become a major meat exporter to the Muslim countries and the pollution of Muslims has been increasing, there is potential for further development of Halal food in the future. Another reason for this expansion is that the Halal industry has become mature and the concept is now better understood, more businesses will attempt to grab this opportunity to serve the global population.
21.	Al-Teinaz and Al-Mazeedi (2020)	United Kingdom	Halal food industry	International Halal standards are typically created to serve the interests of Muslim customers, but when they are carefully reviewed, it becomes clear that under the Halal moniker, the standards primarily serve the interests of industries producing both food and non-food items.

Sl.	Reference	Location	Main Theme	Key Findings
22.	Vanany, Rakhmawati, Sukoso, and Soon (2020)	Indonesia	Blockchain application for Halal food integrity	Blockchain application is feasible in the Halal food industry, which provides advantages to the industry. A blockchain framework is developed for Halal food integrity.
23.	Suryadi et al. (2020)	Indonesia	Internet shopping for Halal cosmetics	Customers' intent to buy Halal cosmetics online is influenced by their level of belief.
24.	Akram, Rizvi, Ali, Hamza, amd Iftikhhar (2020)	Global	App-based Halal and healthy food detector	The proposed app that works through bar code scanning and OCR is useful to consumers all over the world to find out the Halal food and at the same time it guides to select nutritious food.
25.	Ibrahim et al. (2020)	Global	Halal Green Supply Chain Management (HGSCM)	Four factors including IT, purchasing capabilities, performance monitoring, and education and training of employees are related to the framework of HGSCM.
26.	Mohamed Yousoof, Jayaraman, and Munusamy (2020)	Malaysia	Halal awareness and knowledge among entrepreneur	The intention and behavior to purchase Halal items are significantly positively correlated with awareness, knowledge, economy.
27.	Septiani and Ridlwan (2020)	Indonesia	Halal awareness on purchasing Halal products	The propensity to purchase Halal foods is strongly positively correlated with Halal awareness and certification.
28.	Septiani and Ridlwan (2020)	Indonesia	Halal awareness on purchasing Halal products	A considerable positive link exists between attitude, subjective norm, perceived behavioral control, and intention to buy halal goods.
29.	Mohd Nawawi et al. (2019)	Thailand	Emergence of Halal food industry	The booming tourism industry has a strong presence of Halal components to enhance its uniform Halal definition and standards as well as an effective support to SMEs.

Sl.	Reference	Location	Main Theme	Key Findings
30.	De Boni and Forleo (2019)	Italy	Halal food market development	The Italian food market has the opportunity to develop a Halal food market. Some internal and external factors likely demographic, institutional, market, and firm contexts work behind this development. Adopting Halal strategies is complicated by institutional context issues, a lack of knowledge about Halal concepts and practices, and mistrust of Islamic cuisine and culture.
31.	Vanany, Maarif, and Soon (2019)	Indonesia	Halal meat industry improvement	Slaughtering of chicken, processing of meat, and delivery of meat are found as the key process in Matrix 1 while in the Matrix 2, there is equipment, a process, paperwork, and employees. The Quality Function Deployment (QFD) model lessens problems in the factory that processes poultry. by choosing a key improvement program in the last phase. Again, this improvement program supports the decision-making and resource allocating processes of the firm.
32.	Othman, Jamaludin, Mohd Salleh, and Ramli (2019)	Malaysia	Halal awareness	Orang Asli community has a lower level of Halal awareness that can be strengthened in the future by providing Halal literacy from the early childhood stage that should be sustained and ensured the continuance throughout the generations.
33.	Feizollah, Ainin, Anuar, Abdullah, and Hazim (2019)	Global	Perception of Halal tourism and cosmetics in Tweet search	People's attitudes toward Halal tourism and Halal cosmetics are favorable, giving Halal cosmetics a higher rating.

Sl.	Reference	Location	Main Theme	Key Findings
34.	Aziz, Md Rahin, and Mohamed Asri (2019)	Malaysia	Health and beauty products advertisement on Facebook	The five qualities of honesty, nondeception, simplicity, dignity, and humanity are not met by Facebook advertising for health and beauty products. Despite the fact that the product has a Halal certification, the advertising techniques do not entirely adhere to Shari'ah compliance.
35.	Basri and Kurniawati (2019)	Indonesia	Intention to acquire Halal goods	Religion, Halal certification, and consumer intention to buy Halal items are all influenced by these factors.
36.	Bashir (2019)	South Africa	Intent to acquire Halal products from overseas customers	Foreign consumers' purchasing habits and intentions are influenced by their understanding of, attitudes toward, and awareness of the Halal movement. Surprisingly, non-Muslim consumers' Halal awareness and attitude are found higher than Muslim consumers.
37.	Malik, Hermawan, and Asnawi (2019)	Malaysia	Halal awareness for Halal restaurant	Eight different instruments of Halal awareness and Halal practice are found including food handler, control, food, sanitation, equipment, waste disposal management, storage, and water supply system.
38.	Kurniawati and Savitri (2019)	Indonesia	Halal awareness for Halal products	Higher levels of religious conviction, health concerns, logo certification, and exposures all contribute to halal awareness.
39.	Adiweno, Zagloel, and Ardi (2018)	Indonesia	Halal supply chain (HSC) and third-party logistic (3PL)	HSC significantly boosts the economy while having a negligible negative impact on the environment.

Sl.	Reference	Location	Main Theme	Key Findings
40.	Hammad (2018)	Kingdom of Bahrain	Halal compliance with bitcoin mining	Still, no clear-cut fatwa has been found regarding Halal compliance because of its anonymity characteristics on bitcoin mining although no respondent ruled out the possibility of its Halal orientation.
41.	Kamarun et al. (2018)	Global	Halal textiles	Muslim consumers find it difficult to tell the difference between genuine silk and synthetic silk fabrics, which forces them to be perplexed by problems with Halal clothing.
42.	Aziz, Ramli, and Amin (2018)	Global	Halal pharmaceuticals industry	Muslims are becoming aware of the Halal status of medication and it is the duty of the physicians and pharmacists who are liable for provide information regarding Halal pharmaceuticals products.
43.	Muhamad and Abdul Latiff (2018)	Malaysia	Halal chocolate bar	Undergraduate students in the Kelantan region have a relationship between their desire to purchase chocolate bars with the Halal label and their attitude, subjective norm, and perception of behavior control.
44.	Zarmani, Ramli, and Shaikh Mohd Salleh (2018)	Global	Halal medical device development	The components like sources, processes, reactions, the usage effects can be considered for developing Halal medical devices.
45.	Haleem and Khan (2017)	Global	Critical success factors in Halal Logistics	A robust ICT application is necessary for the HSC. Halal integrity is considered the main aspect of success for the Halal industry. To train Halal logistics, appropriate rules, standards, and codes must be developed.

Sl.	Reference	Location	Main Theme	Key Findings
46.	Mohezar, Moghavvemi, and Zailani (2017)	Malaysia	SWOT analysis of the Islamic medical tourism market	SWOT analysis includes factors like friendly hospitality, the growth of Shari'ah-compliant hospitals, the country's characteristics as strengths, the low level of international certifications as weaknesses, the population growth of Muslims as an opportunity, and competition from the major medical tourism market as a threat.
47.	Othman, Md. Shaarani, and Bahron (2017)	Malaysia	Halal certification process	It has been found that organizational performance and knowledge, attitude, and sensitivity to governmental policy are positively correlated with the Halal certification processes.
48.	Niehaus and Walravens (2017)	Japan	Halal food discourse	In Japan, to support Muslim travelers, students, and the community, the Halal market has evolved. Here two dimensions of civilization-discourse and individual daily life are connected.
49.	Fezarudin, Illyas Tan, and Qasem Saeed (2017)	Global	Halal training	Finding patterns in human capital and Halal training through the use of Tableau, a visualization tool with a variety of interactive graphs, can help stakeholders like Halal training providers and job seekers make wise decisions.

Sl.	Reference	Location	Main Theme	Key Findings
50.	Mohd Suki and Abang Salleh (2016)	Malaysia	Impact of Halal image	Customers' attitudes, perceived behavioral control, subjective norm, and perception of Halal all have an impact on how likely they are to shop at Halal-certified establishments. Having a Halal image, stores gain a positive attitude among Muslim consumers who believe that these stores surely have Halal products and, thus they re-support these stores as part of Islamic teaching practices.
51.	Asiaei, Aziz, and Zailani (2016)	Malaysia	Halal logistics industry	Ports play a key role in delivering Halal products that are significantly affected by a vulnerability in the Halal supply chain. By streamlining the logistical procedures and implementing a Halal control and assurance system, the susceptibility can be decreased.
52.	Karia and Asaari (2016)	Global	Innovation in Halal service	The Islamic scholars mentioned that Halal services are ascribed by Halal aspects (Sharia'h compliance) of tasks, conducts, and operations not conflicted with Islamic thoughts and done with trust, honesty, and dedication, reduce hardship, and produce goodness to society, environment, economy, finally the desire of Allah SWT. Three views are used to classify Halal services: akhlak, or the practice of virtue, aqidah, or the soul and spirit, and Shari'ah principles, or Islamic law.
53.	Abd Halim, Mansor, and Hasbullah (2016)	Malaysia	Halal kit identifier	Radio Frequency Identification (RFID) technology can be used to detect the Halal status of products that is useful to consumers validating their desired Halal products.

Sl.	Reference	Location	Main Theme	Key Findings
54.	Kadir, Shamsuddin, Rahim, and Rosa (2015)	Malaysia	NFC technology for authenticating Halal certificate	Near field communication (NFC) technology can be applied to easily authenticate the Halal certificate.
55.	Syazwan Ab Talib and Bakar Abdul Hamid (2014)	Malaysia	SWOT analysis of Halal logistics	Some examples of SWOT are as strong government support found as a strength, inconsistent definition as a weakness, population growth of Muslims as an opportunity, and non-uniformity of Halal standards as a threat.
56.	Ngah, Zainuddin, and Thurasamy (2014)	Malaysia	Halal supply chain	Halal transportation and warehousing adoption rate is relatively low again, different barriers impede the adoption of these facilities.
57.	Jabar, Ishak, Johar, and Wahid (2014)	Malaysia	Halal cosmetics	The people of researched area Bandar Jengka, Jerantut, Temerloh, and Maran are aware of and knowledgeable about the Halal cosmetics but this awareness vary one town to another.
58.	Bakar, Rosslee, and Saidin (2014)	Malaysia	Mobile Halal application	Consumers insignificantly focus on trust in mobile application systems who do not know exactly what applications are available to educate them about Halal product awareness. But they believe that mobile applications can educate people in raising Halal product awareness. Finally, there is an association between mobile application usage and buying Halal cosmetics.

Sl.	Reference	Location	Main Theme	Key Findings
59.	Ab Mutalib, Jaswir, and Akmeliawati (2013)	Malaysia	Authentication of Halal beverages	International Islamic University Malaysia-induced portable electronic nose is found to be very accurate and reliable in detecting ethanol in beverages like soft drinks, fruit drinks, alcoholic beverages, and isotonic drinks. This device detects some portion of ethanol in Halal-labeled beverage products found in the survey.
60.	Aziz and Chok (2013)	Malaysia	Intention of buying Halal products	Halal awareness, certificate, marketing promotion, and brand value are positively associated with purchasing Halal products where food quality has a negative relationship.
61.	Iberahim, Kamaruddin, and Shabudin (2012)	Malaysia	Development of Halal logistics system	The government is in favor of ongoing oversight and enforcement of the Halal certification. There exists a lack of international contacts, centralized coordination, and professionals in the Halal logistics sector.
62.	Machfud, Khatib, Haji-Ahmed, and Ahmad Dahlan (2011)	Malaysia	Halal product price indicator portal (HPPIP)	An HPPIP is proposed to assist customers more easily access Halal products that will promote national development.
63.	Siti Sarah Mohd Bahrudin, Illyas, and Mohamad Ishak Desa (2011)	Malaysia	Halal product tracking technology	ICT can be applied in the Halal supply chain to track and trace Halal products thus the technology can make detection more convenient for people of any kind of religion and culture throughout the world.
64.	Samsi, Zainal, and Ibrahim (2011)	Global	Halal online business	Halal online business becomes successful when they comply with their website's information requirements.

Sl.	Reference	Location	Main Theme	Key Findings
65.	Mohd Albakir and Mohd-Mokhtar (2011)	Malaysia	Halal logo detector	Two-dimension bar code and QR code-based highly secured, cost-effective, and applicable Halal logo detector can be applied to detect the authentication of the Halal logo printed on the product.
66.	Junaini and Abdullah (2008)	Malaysia	Halal food verification	MyMobiHalal 2.0 mobile application framework is designed, which is potential in detecting Halal food products very quickly and easily through scanning barcode.
67.	Elias, Othman, Yaacob, and Saifudin (2016)	Malaysia	Halal awareness and knowledge among entrepreneur	The purpose and conduct to manufacture Halal items are positively associated with awareness, knowledge, and economy.
68	Pratama, Hamidi, and Cahyono (2023)	Indonesia	Halal brand awareness	Players in the halal market must adapt to customers who are transitioning from conventional to halal lifestyle orientation, and the regulator must offer incentives to encourage the growth of a larger halal ecosystem.
69	Widjiarti Nur Riswandi, Sudarsono, Asri Noer Rahmi, and Ali Hamza (2023)	Indonesia	Halal cosmetics and Halal knowledge	People's attitudes, subjective norms, and propensities to buy halal cosmetics are significantly influenced by their religious beliefs and product expertise. Curiously, the findings indicate that, when it comes to cosmetics, product knowledge has a bigger impact on attitudes, subjective norms, and purchase intentions than does religion. Subjective norms have no bearing on the young Muslim generation's inclination to buy cosmetics; but, attitudes, brand image, and product quality do.

Sl.	Reference	Location	Main Theme	Key Findings
70	Darmawan and Fathurrohman (2023)	Indonesia	Intention to purchase Halal food	At the Asia Kintan Buffet Restaurant, purchase intention is positively impacted by knowledge about, certification for, and the quality of halal food.
71	Khasanah, Dharmmesta, and Sutikno (2023)	Indonesia	Halal food literacy (HFL)	Halal awareness, halal knowledge, behavioral beliefs, and halal-related label beliefs are the four HFL factors. These four factors accounted for 57.828% of the variance from 11 items and 69.758% of the overall variant.

The increasing progress of the Halal industry side by side with the consumer awareness of Halal products and the unprecedented growth of ICT demand studies on Halal awareness in the ICT industry.

4. Methodology

This is primarily an exploratory study and followed the survey method. It collected primary data and explored the awareness on Halal and level of Halal and related knowledge of ICT firms in Bangladesh as well as the sources of the knowledge/information they use and methods they follow to know the Islamic rulings on Halal industries and related issues. The study followed a qualitative approach and use cross-sectional data.

4.1 Population and Sample Selection

The study collected data from the ICT firms in Bangladesh that are members of BASIS. BASIS has 1840 registered members which are all big IT firms categorized as General Members, Associate Members, Affiliate Members, and International Members. For convenience, data has been collected from the chosen 50 BASIS members located in Dhaka. The sample has been selected as 30 out of the 1199 General Members, 13 out of the 533 Associate Members, 5 out of the 100 Affiliate Members, and 2 out of the 8 International Members. Although BASIS has a definite number of member firms, but this number varies with time and many firms are outside the membership. This is why we depend on the G power sample size determiner (see Figure 2). According to Faul, Erdfelder, Lang, and Buchner (2007), our sample size is determined as 18 with an effect size of 0.20, and a power of 0.95 where we collected data from 50 firms.

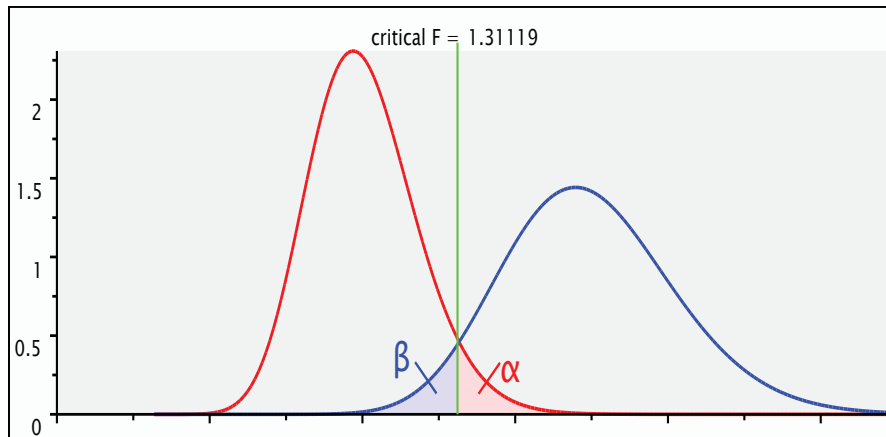


Figure 2. Sample size determination using G power

4.2 Instrument Design

For collecting the primary data, 18 factors/parameters have been identified regarding the areas of knowledge of the ICT firms (see Table 2). These factors cover Halal and related issues relevant to the ICT firms found from Aziz, Md Rahin, and Mohamed Asri (2019); Basri and Kurniawati (2019); Dewi, Dina, Komariah, and Zaroni (2021); Grais and Pellegrini (2006); Iberahim, Kamaruddin, and Shabudin (2012); Illyas Tan, Razali, and Desa (2012); Jannah and Al-Banna (2021); Malik, Hermawan, and Asnawi (2019); Novita et al. (2022); Othman, Md. Shaarani, and Bahron (2017); Utomo, Sekaryuni, Widarjono, Tohirin, and Sudarsono (2020);

Table 2. The factors of Halal knowledge

No.	Knowledge areas	No.	Knowledge areas
1	Materials used	10	Disposal of material
2	Logistics	11	Collateral duty
3	Privacy	12	Advertisement
4	Customer rights	13	Bribery
5	Management	14	Contents
6	Employee rights	15	Zakat
7	Finance	16	Tax and other levies
8	Pricing	17	Shari'ah compliance
9	Contracts	18	Halal certification

A five (5) point scale has been developed to collect data on those factors.

To trace the learning sources, 14 factors/parameters (see Figure 3) part of which have been identified from the study of Ambali and Bakar (2014); Elias, Othman, Yaacob, and Saifudin, 2016; Jannah and Al-Banna (2021); Spielgaben (2015).

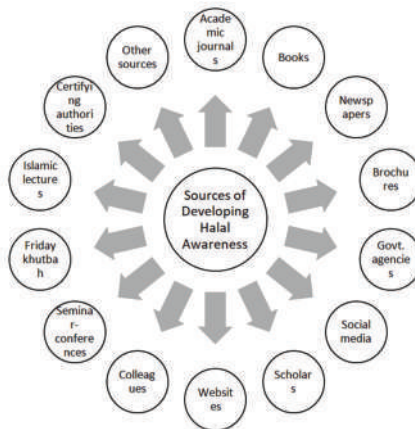


Figure 3. The factors for the sources of Halal awareness

For methods of learning, 6 factors/parameters part of which have been identified from existing literature by Spielgaben (2015) as shown in Figure 4.

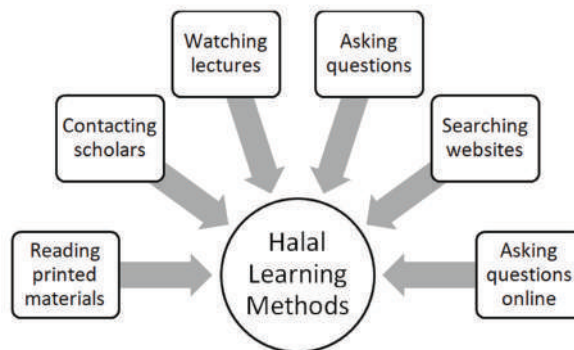


Figure 4. The factors of the Halal learning method

Combining all the factors/parameters, a structured questionnaire has been developed for collecting the primary data.

4.3 Data Collection

Primary data has been collected from the ICT firms by a structured questionnaire. The questionnaires were developed in MS word and also set in Google forms and distributed to the firms via email. Some of the firms responded to the questionnaire via Google forms, some responded by email, and some questionnaires have been collected from their location in person.

4.4 Data Analysis and Presentation

The collected data has been compiled in MS Excel and prepared for analysis. Simple descriptive statistical analysis has been used and the data has been presented in tables and graphs for better understanding and visibility. The summarized research methods are shown in Table 3.

Table 3. Summary of the research method

Research question	Research approach	Research method	Data collection method	Data collection instrument	Data analysis
What do the ICT firms know about Halal and related issues relevant to the industry?	Qualitative	Survey	Online	Structured questionnaire	Descriptive statistics
From which sources do the ICT firms know those matters?	Qualitative	Survey	Online	Structured questionnaire	Descriptive statistics
How do the ICT firms know those matters?	Qualitative	Survey	Online	Structured questionnaire	Descriptive statistics
Did the ICT firms work with Halal industries and/or Halal compliance?	Qualitative	Survey	Online	Structured questionnaire	Descriptive statistics

5. Results and Discussion

Data have been collected and analyzed in four aspects: (i) Areas of Halal Knowledge (question 1), (ii) Sources of Halal knowledge (question 2), (iii) Methods of acquiring Halal knowledge (question 3), (iv) Having experience working with Halal and Shari'ah compliance issues (question 4). Collected data are compiled and presented in tables and figures, and an analysis of the data is given in the next sub-sections.

5.1 Knowledge Areas

The data collected from the 50 ICT firms are compiled here in Table 4.

Table 4. Areas of knowledge on Halal awareness

SL	Question	No knowledge	Very little knowledge	Little knowledge	Good amount of knowledge	Adequate and updated knowledge
1	Materials used	5	32	13	0	0
2	Logistics	3	24	18	5	0
3	Privacy	0	12	25	13	0
4	Customer rights	0	20	20	10	0
5	Management	0	12	28	10	0
6	Employee rights	0	12	23	15	0
7	Finance	0	14	18	18	0
8	Pricing	0	22	18	10	0
9	Contracts	2	20	20	8	0
10	Disposal of materials	5	20	15	10	0
11	Collateral duty	10	22	13	5	0
12	Advertisement	5	25	15	5	0
13	Bribery	0	14	23	13	0
14	Contents	4	20	18	8	0
15	Zakat	0	12	25	13	0
16	Tax and other levies	3	22	15	10	0
17	Shari'ah compliance	10	15	20	5	0
18	Halal certification	7	20	15	8	0

5.1.1 Regarding materials used

Responses regarding materials used are presented in Figure 5.

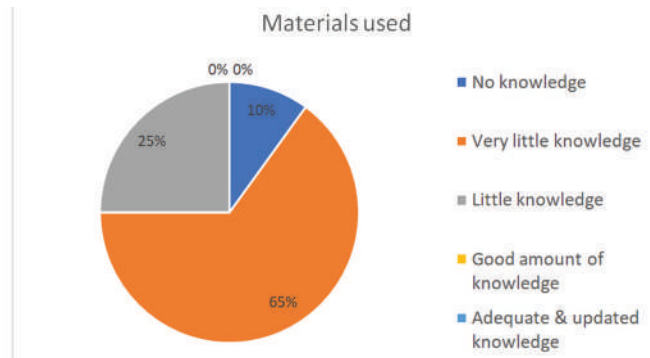


Figure 5. Responses regarding materials used

From the pi-chart in figure 5 shows Islamic knowledge regarding materials used in the IT products. In the figure, 65% ICT firms have very little knowledge about Halal and 25% have little knowledge while 10% do not know this. And no firms have proper Islamic knowledge regarding the materials used in the IT products. The ICT firms in Bangladesh lack Islamic knowledge regarding the materials used in the IT products.

5.1.2 Regarding logistics

Responses regarding logistics are presented in Figure 6.

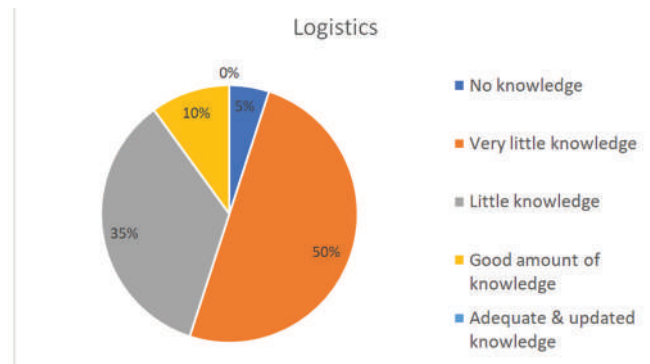


Figure 6. Responses regarding logistics

From Figure 6, no firms have been found having adequate and updated Islamic knowledge when it comes to logistics. 10% firms have good amount of Halal knowledge while 35% firms have little knowledge. Many firms (50%) are highly inexperienced and lack knowledge. Islamic logistics appear to be thus hardly used in Bangladesh, notably in the ICT sector.

5.1.3 Regarding privacy

Responses regarding privacy are presented in Figure 7.

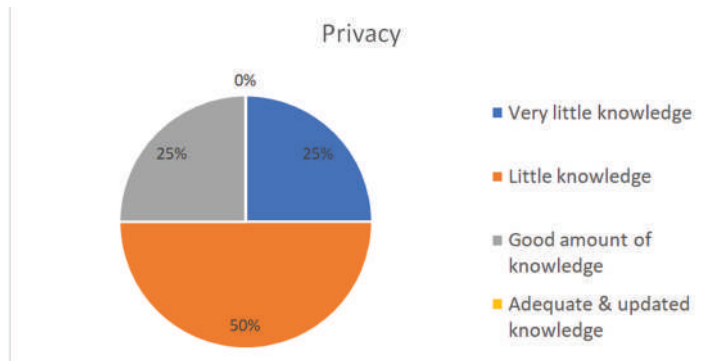


Figure 7. Responses regarding privacy

Figure 7's pi-chart demonstrates Islam's privacy concerns and Halal issues. Half of the ICT firms have little knowledge, a quarter have a reasonable degree of knowledge, and a further quarter have very little. The firms are more knowledgeable about Islamic privacy laws. It is admirable that businesses are concerned about privacy issues, but their expertise is insufficient to keep the issues in line with Islamic law and morals.

5.1.4 Regarding customer rights

Responses regarding customer rights are presented in Figure 8.

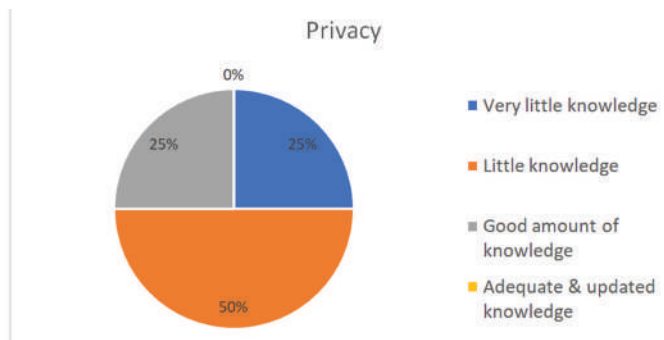


Figure 8. Responses regarding customer rights

Islam strongly upholds consumer rights, and the majority of businesses surveyed are at least somewhat aware of this. Less than a quarter of businesses have a good knowledge of customer rights, and none of them have adequate and updated knowledge. Because it is such a delicate subject in Islam, the data are therefore somewhat satisfactory but significant progress is expected.

5.1.5 Regarding management

Responses regarding management are presented in a Figure 9.

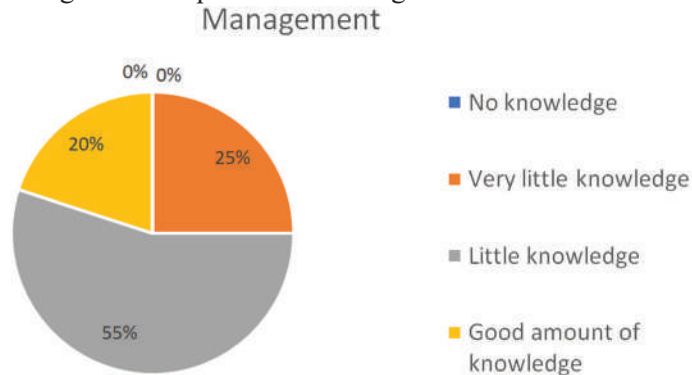


Figure 9. Responses regarding management

Figure 9 shows that most businesses have a poor level of knowledge of Islamic management, with just 20% reporting having a good level of knowledge but none an adequate level. Management is involved in everyday affairs and is responsible for driving a company. Islamic organizational management expertise is therefore crucial, yet the evidence that has been discovered falls short of expectations.

5.1.6 Regarding employee rights

Responses regarding employee rights are presented in a pi-chart (see Figure 10).

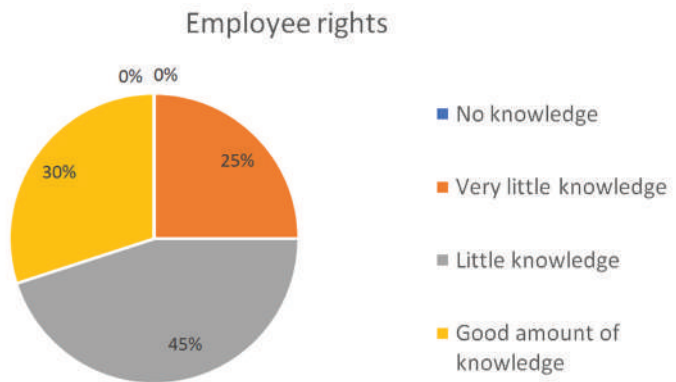


Figure 10. Responses regarding employee rights

Another highly important area of Islamic law is the protection of employees' rights, which are strictly upheld by Islam. In this, it was discovered that 70% of the firms had little knowledge and 30% had an adequate level. Organizations are required to comprehend it better because it is an extremely delicate subject in Islam.

5.1.7 Regarding finance

Responses regarding finance are presented in a pi-chart (see Figure 11).

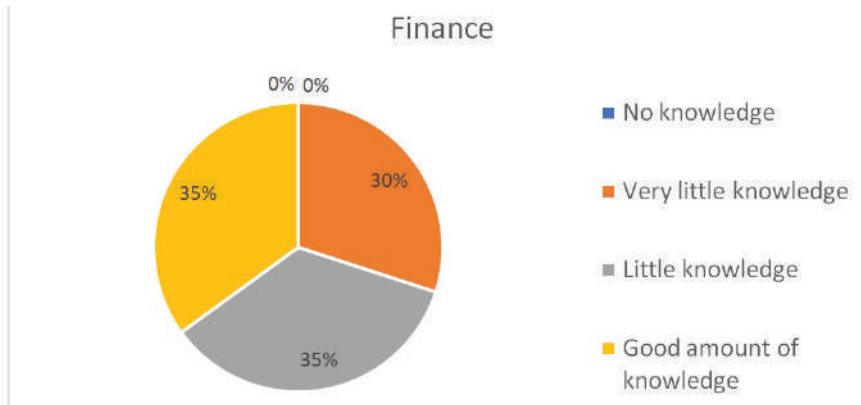


Figure 11. Responses regarding finance

Finance is the lifeblood of an organization and Islamic finance has emerged to serve organizations in different ways. In this, the firms were found to have some understanding of Islamic finance but no firms were found with adequate knowledge. It is of course a good thing that the ICT industry is aware of Islamic finance but much improvement is required to adopt Islamic finance in the ICT industry.

5.1.8 Regarding pricing

Responses regarding pricing are presented in a pi-chart (see Figure 12).

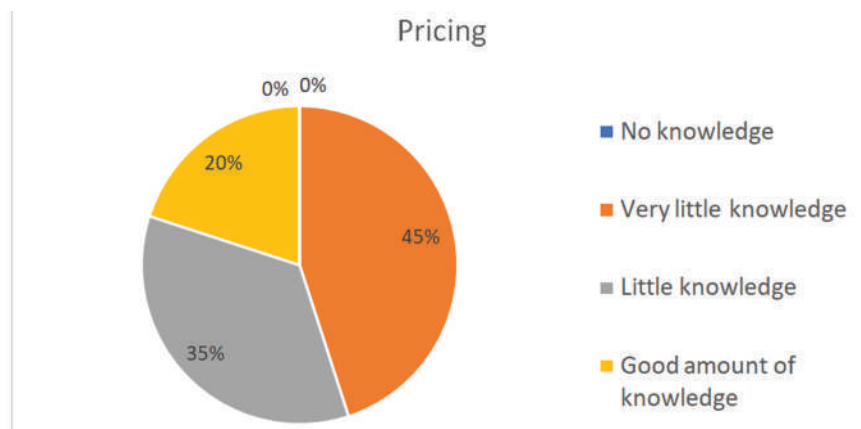


Figure 12. Responses regarding pricing

Regarding Islamic ruling on pricing, most of the firms found with little knowledge, and some have a good amount of knowledge. Knowledge of those ICT firms needs to be enhanced to follow the Shari'ah compliance.

5.1.9 Regarding contracts

Responses regarding contracts are presented in a pi-chart (see Figure 13).

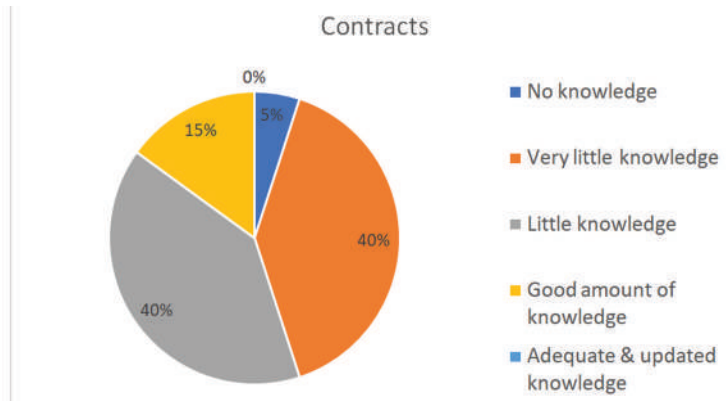


Figure 13. Responses regarding contracts

ICT firms regularly deal with different contracts, especially with the customers but most of the firms found with little knowledge of it. Only 15% have a good amount of knowledge on the issue and none have an adequate level of knowledge. It requires huge development to fully comply with the Islamic rulings on the issue of contracts.

5.1.10 Regarding disposal of materials

Responses regarding the disposal of materials are presented in a pi-chart (see Figure 14).

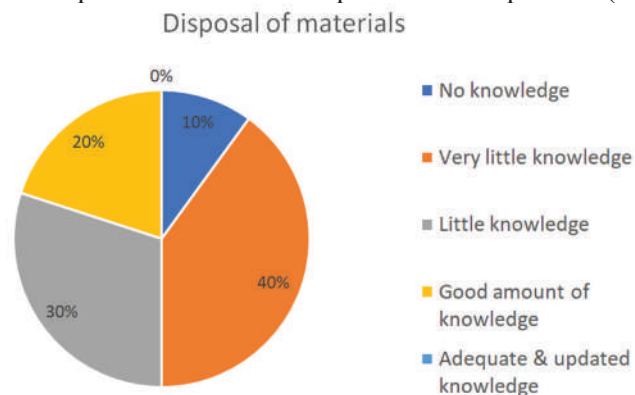


Figure 14. Responses regarding disposal of materials

Regarding Islamic ruling on the issue of the disposal of the materials used, most of the firms have little knowledge and 20% found with a good amount of knowledge on it. Even 10% of firms do not know it. Disposal of materials is a big concern for the environmental issue and Islam is quite aware of it, and there are enough rulings on this. ICT firms must know These Islamic rulings on the disposal of materials to follow Islam and sustainability parameters.

5.1.11 Regarding collateral duty

Responses regarding collateral duty are presented in a pi-chart (see Figure 15).

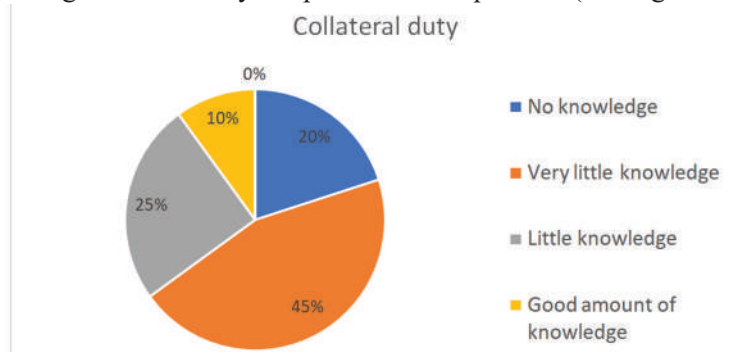


Figure 15. Responses regarding collateral duty

Collateral duty is a very acute matter on which Islam has proper guidance. Regarding collateral duty, the data shows most of the firms have little understanding and 20% have no knowledge. Only 10% have a good understanding. This is a very critical area of Islamic knowledge and the firms' understanding of the issue must be increased.

5.1.12 Regarding advertisement

Responses regarding advertisements are presented in a pi-chart (see Figure 16).

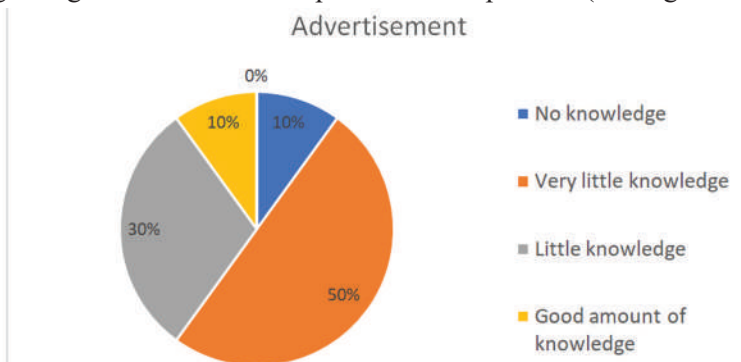


Figure 16. Responses regarding advertisement

With regard to advertising, the data indicates that ICT firms, with the exception of 10% of them, have a low degree of understanding. Sadly, just 10% of firms are aware of Islamic laws governing advertising. The ICT businesses in Bangladesh should improve their expertise in this field.

5.1.13 Regarding bribery

Responses regarding bribery are presented in a pi-chart (see Figure 17).

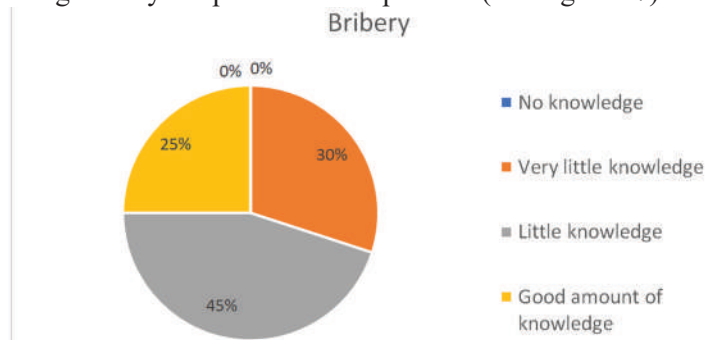


Figure 17. Responses regarding bribery

Bribery is often treated as a part of the economy but Islam has a proper ruling on this. Many of the ICT firms found with a good level of understanding of the matter where most of them have little knowledge. Bangladeshi ICT firms must have a better understanding of the bribery issue because the country is rapidly proceeding to adopt ICT in every possible area where bribery can be used in many forms.

5.1.14 Regarding contents

Responses regarding contents are presented in a pi-chart (see Figure 18).

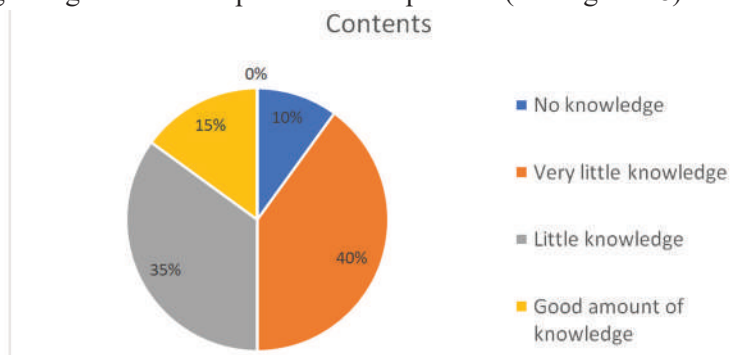


Figure 18. Responses regarding contents

Islamic ruling regarding the contents the ICT firms create or deal with, data shows a minimum understanding for most of the firms. Few firms were found with a good level of understanding and 10% with no knowledge of it. Contents play a very significant role in society and the firms must have a better understanding of Islamic rulings to comply with Shari'ah.

5.1.15 Regarding Zakat

Responses regarding Zakat are presented in a pi-chart (see Figure 19).

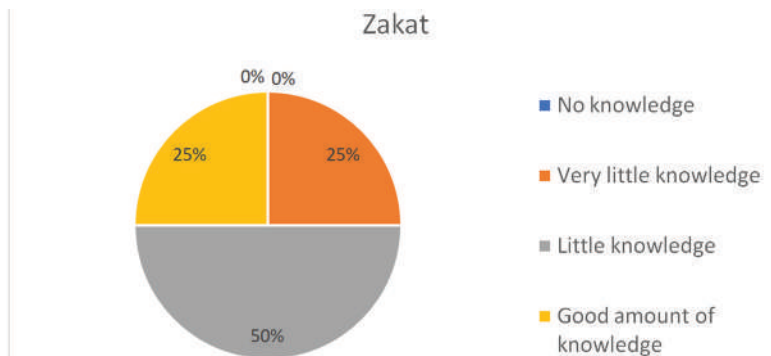


Figure 19. Responses regarding Zakat

Regarding Zakat, most of the firms have some understanding and some are found with a good level of understanding but none are found with an adequate level of knowledge. As Zakat is a mandatory liability to every organization, the ICT firms need to have a proper understanding of the matter.

5.1.16 Regarding tax and other levies

Responses regarding tax and other levies are presented in a pi-chart (see Figure 20).

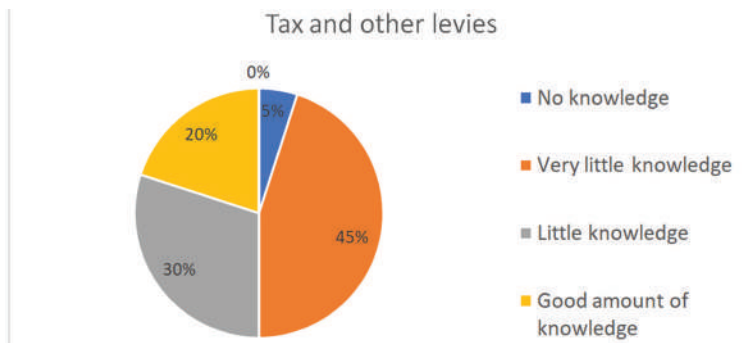


Figure 20. Responses regarding tax and other levies

On Islamic rulings on the tax and other levies set by the authorities, the firms have a poor level of knowledge, and 5% firms are found with no knowledge of this. Few firms have a good level of knowledge. Islam strictly commands to follow the authorities and for this Islam prescribes to pay the tax and other levies duly. From the data, it seems the firms have a lack of understanding of Islamic rulings on the issue of tax and other levies to respective authorities.

5.1.17 Regarding Shari'ah compliance

Responses regarding Shari'ah compliance are presented in a pi-chart (see Figure 21).

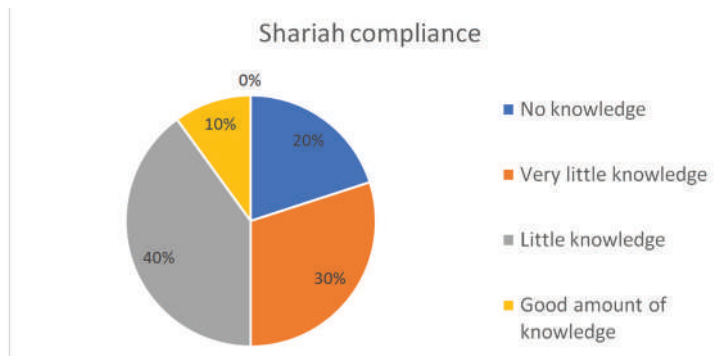


Figure 21. Responses regarding Shari'ah compliance

Regarding Shari'ah compliance, most of the firms have little knowledge and 20% do not even know it. Only 10% of firms have a good level of knowledge but none have an adequate level of understanding. As Bangladesh is a Muslim-majority country, Shari'ah compliance is very important here and the ICT firms should know and follow them.

5.1.18 Regarding Halal certification

Responses regarding Halal certification are presented in the pi-chart shown in Figure 22.

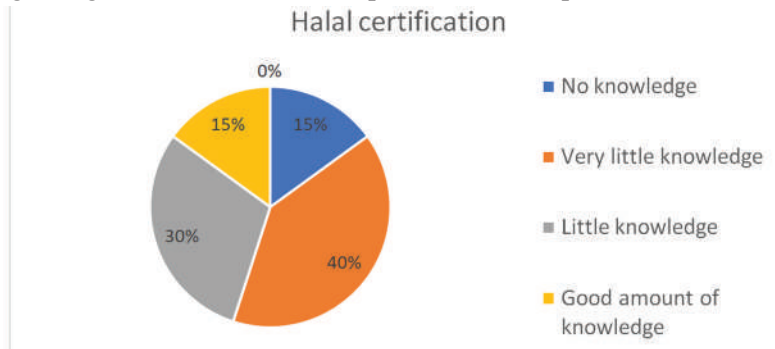


Figure 22. Responses regarding Halal certification

The ICT firms have little knowledge about Halal certification and few with no knowledge about it. Few firms possess much knowledge on this. Halal certification is getting attention in Bangladesh nowadays. ICT firms should go for the Halal certification to fully enter into the Halal industries.

5.2 Sources of Information

Figure 23 illustrates the information sources through which ICT firms learn about Islam and related topics. The bar chart in Figure 23 displays the information that has been gathered on the ICT firms' learning resources.

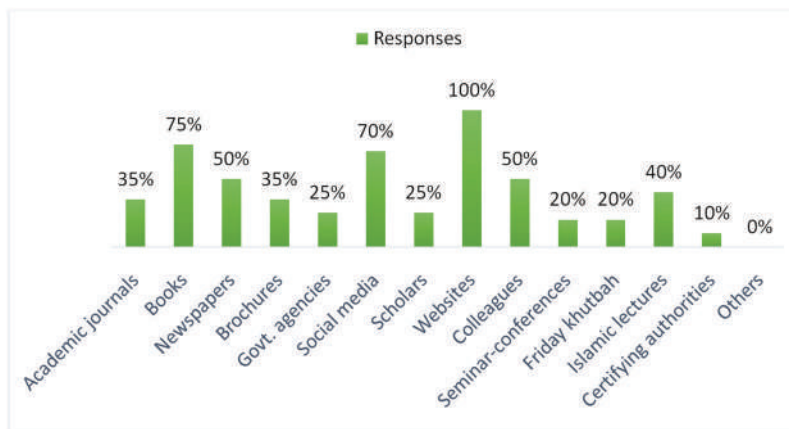


Figure 23. Sources of information for learning awareness

Websites account for 100% of the learning sources for Halal knowledge, according to Figure 23. Books are the second-largest source. Then, social media keeps on. Newspapers and colleagues constitute a 50% learning source. Then, scholarly publications and brochures persist as another source of learning. Some of the firms learn these matters from government agencies, contacting Islamic scholars, seminars and conferences, and Friday sermons. Very few learned these matters from certifying authorities. Web contents and printed materials are mostly accessed by the ICT firms in Bangladesh. The role of government and certifying authorities should have been immense but found insignificant. Many experts in the applied Islamic knowledge areas and their accessibility seem less in Bangladesh. Friday sermons and Islamic lectures might have more impact on educating the Bangladeshi people but are found less impactful here.

5.3 Methods of Learning

The data on the learning methods are presented in the bar diagram shown in Figure 24.

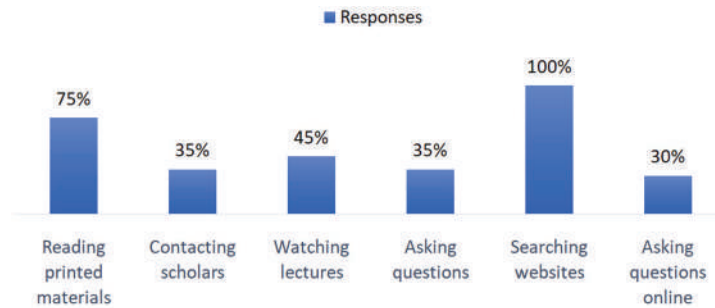


Figure 24. Learning methods for Halal awareness

Figure 24 indicates that web searching is the most popular way of learning Halal knowledge and Islamic rulings by the ICT firms (100% response) followed by reading printed materials (75%). Watching Islamic lectures (45%) is adopted by many firms while some firms contact Islamic scholars, ask questions to others, and ask a question online. As web searching is adopted by every organization, increasing web content can potentially increase the level of Halal knowledge of the ICT firms. The availability of printed materials plays a key role in increasing the knowledge of the firms.

5.4 Having Experience in Working with Halal and Shari'ah Compliance Issues

Only 20% of ICT firms were discovered to have experience dealing with Halal and Shari'ah compliance issues when the experience of the firms was searched (see Figure 25). They worked primarily with interest matters, not anything else.

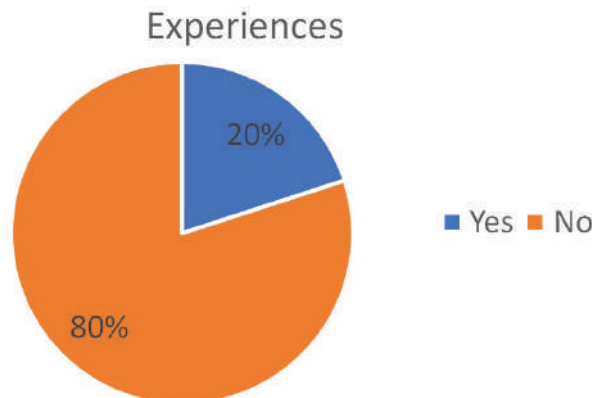


Figure 25. Responses regarding experiences

The data shows a very starting scenario of the Halal journey of the ICT firms in Bangladesh. It is also interesting that the ICT industries in Bangladesh have entered into the Halal revolution.

6. Conclusion

We measure the level of Halal knowledge of the ICT firms and related matters, tracing the sources of Halal knowledge from where these firms know these issues, tracing the methods of Halal knowledge by these firms, and finding their experiences of working with the Halal and Shari'ah compliance. Our survey resulted in some fruitful findings including 18 factors of Halal knowledge (materials used, logistics, privacy, customer rights, management, employee rights, finance, pricing, contracts, disposal of materials, collateral duty, advertisement, bribery, contents, zakat, tax and other levies, Shari'ah compliance, Halal certification), 14 factors for the sources of Halal learning (websites, books, social media, newspapers, Islamic lectures, academic journals, asking their colleagues, brochures, government agencies, contacting Islamic scholars, seminars and conferences, Friday sermons, certifying authorities, and others), 6 factors for methods of Halal learning (web searching, reading printed materials, watching Islamic lectures, contacting Islamic scholars, asking questions to others, and asking a question online).

ICT firms in Bangladesh still lack Halal and related knowledge and a few of them have ever worked with Halal industry and Shari'ah compliance issues. The study implies that there is a shortage of relevant publications/content accessible to these firms and a lack of experts/scholars accessible to these firms as well as a shortage of government and non-governmental authorities/initiatives to promote Halal industries. The Halal movement has just begun in Bangladesh, primarily in the area of Finance. Bangladesh has a big potential for the Halal industries and it is time we took the necessary steps to flourish these industries here.

6.1 Challenges

To accomplish this project, we faced the following challenges:

- Collecting data was very challenging as we collected primary data from the firms. Personally, it was not possible to visit every organization and they also could not give time to provide the data. So, we had to take the help of the internet which posed additional challenges.
- Time and monetary constraints were two big challenges to complete the project.
- Validating the research methodology and verifying the data were two big challenges.

6.2 Recommendations

In Bangladesh, more academic and government initiatives should be taken to promote Halal and related matters. Government should establish the necessary authority to train, monitor,

certify, and audit Halal industries. Rigorous academic research should be initiated to explore the areas of Halal industries, especially in the ICT industry. The curriculum of the Islamic educational institutions should include Halal and related matters to develop expertise in this aspect. National Halal policy and framework should be developed and implemented as soon as possible.

6.3 Future Research

Starting from this study, at least three studies can be initiated. These are:

1. An empirical study on the learning contents/sources to assess how much knowledge they provide for respective industries.
2. A study to assess the curriculum of the Islamic institutions to observe how much knowledge they teach and preach on the Halal industries and related issues.
3. A study to find the way to increase Halal and related knowledge of the ICT firms in Bangladesh.
4. A research on the viability and significance of widely implementing the Halal certification authority in Bangladesh
5. Research on how Bangladeshis view products with the Halal label and how interested they are in buying them.

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