Assessment on the Utilization of Current Halal Certification Technologies by Halal Industry Players in Malaysia

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Abstract—**The purpose of this paper is to present the utilization level of current Halal certification technology among Malaysian Halal business operators covering various Halal industry sectors. A set of questionnaire was used to elicit responses using convenience-sampling technique as to ensure equal population being selected. A total of 35 valid questionnaires was obtained from a total of 80 sets of questionnaire were distributed during the 9th International Halal Showcase (MIHAS) 2012 at Kuala Lumpur Convention Centre, KLCC Malaysia. The study finds that the highest technology usage among Halal industry players was e-Halal JAKIM and the lowest was HDC iPhone Apps.**

Index Terms—**Halal Certification Technology, Halal Certification Process, Halal Industry, Technology Adoption**

I. INTRODUCTION

INFORMATION technology can be a very helpful tool to Halal certification process in the Halal certification system in order for Malaysia to be one step forward in today's digital economy as the problems with current Halal logo is still questionable and unconvincing. Securing Halal certification is not an easy process. The authorities must conduct a thorough background check of manufacturers requesting Halal certification. This long process forces local manufacturer to be creative in packaging food products and simply imitating the Halal logo is more economical and adds to a manufacturer's competitive advantage. Halal logo imitations have led to consumer confusion. To avoid uncertainty, some consumers will call the authorities to ask about the validity of a Halal logo. In the worst case scenario, consumers will opt not to purchase a product (Nasir, Norman, Fauzi, & Azmi, 2011).

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As technology has evolved, many application systems have been built to support the overall Halal certification process. These include mobile phone technology, web based technology and machine technology. Therefore, this paper was aimed to focus on the current Halal certification technologies utilization among Halal business operators where those technologies were then being ranked according to their familiarity.

II. LITERATURE REVIEW

A. Halal Certification

There are many definitions of Halal certification being declared and used by other researchers. The definition may cover various Halal important aspects such as raw materials, ingredients, handlings, quality, sanitary and safety considerations. Table 1 below shows the various definitions of Halal certification derived from other Halal researchers.

TABLE I
HALAL CERTIFICATION DEFINITION

Author	Year	Definition
(IKM)	2009	A process where a credible organization certifies that the products and or services offered by a company meets the specified Halal standard. In the case of Halal food certification, every stage of food processing is examined "from farm to table"
(Mian N. Riaz)	2010	A document issued by an Islamic organization, certifying the products it covers meet the Islamic dietary guidelines, comprising, but not limited to, the following: the product does not contain pork or its by-products; the product does not contain alcohol; the product does not contain prohibited food ingredients of animal origin; the product has been prepared and manufactured on clean equipment; and meat and poultry components are from animals slaughtered according to Islamic law.
(Riaz & Chaudry)	2004	A document issued by an Islamic organization certifying that the products listed on it meet Islamic dietary guidelines, as defined by that certifying agency.
(Yusoff)	2004	Examination of food processes in its preparation, slaughtering, and cleaning, processing, handling, disinfecting, storing, transportation

		and management practices. The application of Halal should apply to all stages of processing "from farm to table".
(Talib, Ali, & Jamaludin, 2008)	2008	A total quality health and sanitary system that involves adopting procedures for slaughtering process and other related operations as prescribed by Islamic rules. This certifies raw materials, ingredients and products based on quality, sanitary and safety considerations. This broad-based certification system is not only limited to meat and poultry products, but also cut across other consumer items such as pharmaceuticals, toiletries, cosmetics and confectionery

It can therefore be assumed that Halal certification can be defined as a document issued by an authorized Islamic organization such as JAKIM certifies that the products or services listed meets the Syariah law. It starts from the source of the raw material until the stage where ready to be consumed by the consumer known as "farm to fork". The examination of the products includes the source of raw material, ingredients, slaughtering, production, storing, and transportation, packaging, handling, quality and sanitary process. The validity period for each Halal certificate is two years for every Halal certificate application.

B. Current Halal Certification Technology

Due to the rising awareness of Muslim consumers towards the importance of Halal certification and Halal logo, Information Technology (IT) has opened up exciting new channels for Halal certification to be one step in advance. Based on that, currently there are eight technologies that have been introduced for Halal certification.

To summarize, those eight current Halal certification technologies can be divided into three main categories namely mobile phone technologies, web based technologies and machine technologies.

There were four applications developed using mobile phone based technology. These include MyMobiHalal 2.0, HDC Nokia Apps, SMS JAKIM 15888 and HDC iPhone Apps. Next category was application development using web based consist of two applications called e-Halal by JAKIM and Halal Widget by HDC. Lastly was a machine-based technology. There were only two applications currently available known as HDC iKiosk developed by HDC and HaFYs Technology developed by Universiti Putra Malaysia.

III. METHODOLOGY

A. Research Objective

The objective of the research was to study the usage of existing Halal certification technologies. To achieve this objective, overall there were five steps involved. Specific reviews on current Halal certification technologies were done concurrently with the mapping process of at which stage or subtask does those technologies support the overall

Halal certification process flow. After that, a development of a questionnaire instrument was taking place to study the current Halal certification technologies usage among Halal business operators. The questionnaire evaluation by the Halal business operators was done during MIHAS 2012. The valid questionnaires were then being analyzed using SPSS 20.
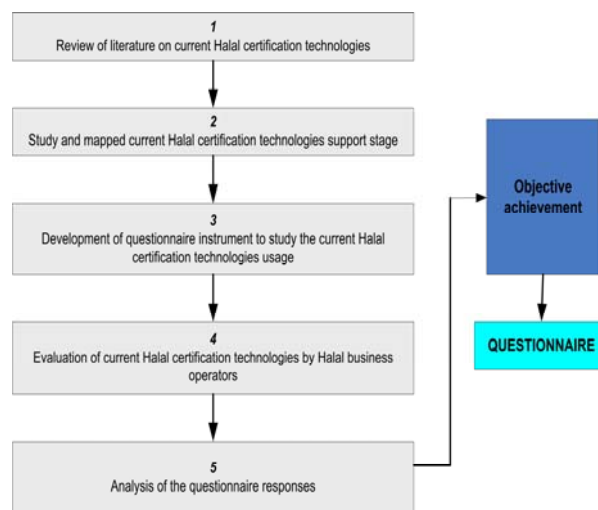

Fig. 1.Research Process

B. Reason for Conducting Survey

The questionnaire survey was conducted, as it is to help the researcher to discover the level of IT implementation and usage of current Halal certification technologies among Halal business operators in supporting Halal certification. By choosing questionnaire survey, it can ensure greater anonymity as it increased the likelihood of obtaining accurate information while minimizing the time, human and financial resources.

C. Sampling and Population

In this research, the samples are the Halal business operators such as manufacturer or producer, repacking manufacturer, logistics, cosmetics, pharmaceuticals, consumable products and slaughter house. Convenience sampling technique was chosen as the researcher will have the opportunity to the given population equally for being selected from the frame or list where members of the target population are selected one at a time and independently.

As the exact number of exhibitors participation was known, a sample of 299 exhibitors was drawn from the 9th International Halal Showcase (MIHAS 2012) directory that was divided into two categories namely from Malaysia and internationally. The international exhibitors came from 22 countries.

The questionnaire was given to the respective respondents due to his or her specific knowledge and the ability in utilizing as well as using any current Halal certification technology as stated in the questionnaire instrument. Therefore, he or she is in a unique position to report on the phenomena being studied. Table II shows the population size of overall exhibitor participants.

TABLE II
TOTAL POPULATION SIZE

Country	Number	Percentage
Australia	3	1.003
Belgium	11	3.678
China	4	1.337
France	6	2.006
India	1	0.334
Indonesia	14	4.682
Iran	8	2.675
Japan	1	0.334
Korea	7	2.341
Kuwait	1	0.334
Malaysia	**206**	**68.896**
Netherlands	1	0.334
Pakistan	1	0.334
Philippines	7	2.341
Poland	1	0.334
Russia	1	0.334
Singapore	6	2.006
Sri Lanka	3	1.003
Taiwan	4	1.337
Thailand	1	0.334
Turkey	8	2.675
UAE	3	1.003
United Kingdom	1	0.334
Total	**299**	**100**

Since this research was focused on Malaysia Halal certification process so 93 international exhibitors came from 22 other countries could not participate in this questionnaire survey. However, from 206 Malaysian exhibitors, researcher only managed to randomly distribute the questionnaire to be answered to only 80 exhibitors.

This is due to several circumstances such as the respondents who is at the booth is not qualified to answer because he or she is the sales representative of the company, they not willing to answer because the questionnaire is in English while they only focusing on the sales during at the time. Moreover, some respondents have limited their ability to answer the questionnaire in a day due to so many questionnaires was distributed that came from other universities and research institutes.

D. Pre Testing

The pre-testing was conducted for eleven days starting from 6th March 2012 until 16th March 2012. A total of six selected respondents were all among the lecturers at the Faculty of Computer Science and Information Systems from two different departments namely Department of Information System and Department of Industrial Computing and Modelling. By these numbers, two were female lecturers while the rest were male lecturers. This feedback was used to modify the original questionnaires.

E. Actual Survey

During the actual study, the questionnaire was distributed to ten different types of respondents, which have been divided according to the different Halal industry sector. They consist of manufacturer or producer, sub-contract manufacturer, repacking manufacturer, food premise, slaughterhouse, logistics, cosmetics, hotel or resort, pharmaceutical and consumable products Halal business operators.

The questionnaire was distributed during the 9th International Halal Showcase (MIHAS) 2012 at Kuala Lumpur Convention Centre, KLCC Malaysia. The actual study was conducted for two days starting from 4th April 2012 until 5th April 2012. A total of 80 questionnaires were distributed to randomly selected respondents by referring to the show directory provided by the organizer to each registered participant.

IV. RESULTS

A. Response Rate

Based on Table III, it can be seen that of 35 questionnaires (43.75 percent) were returned from 80 sets were distributed which their products are totally Halal certified from Malaysia Halal authority. However, two sets of collected questionnaire need to be dropped due to their Halal certificate are awarded from Singapore and Iran. In total, 43 sets of questionnaire representing 53.75 percent non-refundable. Failure to return questionnaires that were distributed is due to difficulties in this study in obtaining cooperation from respondents who were chosen to answer questionnaires. The analysis of this study is based on information obtained from questionnaires that were returned immediately.

TABLE III
RESPONSE RATE OF DISTRIBUTED QUESTIONNAIRE

Status	Number (Set)	Percentage
Returned Questionnaire (Halal certified by Malaysian Halal authority)	35	43.75
Returned Questionnaire (Halal certified by International Halal authority)	2	2.5
Not Returned	43	53.75
Total	**80**	**100**

V. DISCUSSION

A. Current Halal Certification Technology Comparison

From Table IV it can be summarized that from the eight current Halal certification technologies there is a lack in the system or application. Most of the technologies only support the phased whereby after the Halal certificate and Halal logo already been issued. All the technologies gave more advantages to the end consumers rather than the Halal authority. It is also clearly seen that there are no technologies currently being used that can help the authority during the evaluation phase in order to select the application.

On the other hand, we found that the majority of the respondents usually used or familiar with e- Halal system and HDC Halal widget. Besides that, from eight current technologies listed in our questionnaire survey, 2 technologies namely HaFys and MyMobiHalal 2.0 were not being used by the respondents. These are not a commercialized technology and only applicable at the university for research and development only.

TABLE IV
COMPARISON HALAL CERTIFICATION TECHNOLOGY

Types of Technology	Technology Category	History	Advantages	Disadvantages	Phased Covered
e-Halal Malaysia	Web Based Technology	Introduced by JAKIM and fully implemented by end of 2007	• All the Halal certified products, services and premises are listed in the database. • Easier Halal certification application system	• Halal products, premises and abattoirs information are not well organized and complicated. • Available in Malay language only • The database is not up to date	1
JAKIM My SMS 15888	Mobile Phone Technology	Introduced by JAKIM and fully implemented on 3rd May 2010	Specially design to check the status of Halal certificate application. Applicant can check their application status or their Halal certificate status	Limited to plaintext representation only.	1
HaFYS Technology	Machine Technology	Founded by Yaakob Che Man, Shuhaimi Mustafa and Adam Din from Universiti Putra Malaysia (UPM). 1st launced on 25th June 2010 by Halalysis Sdn. Bhd	• Portable in the field or in the lab. • Rapid (1 hour) • Reliable for animal speciation. • Direct without DNA extraction and indirect with DNA extraction PCR testing. • Easy to operate by unskilled operators	The cost for one machine is RM 50,000 and the cost for one cartridge is RM 200. Each test requires one cartridge.	2
MyMobiHalal 2.0	Mobile Phone Technology	Founded by Syahrul N. Junanini and Johari Abdullah	Using MMS which can include the official Halal logo	• Lower than one mega pixel resolution camera it will result in inaccuracy rendering the barcodes. • If the barcode is sent is not clear, reply sent to customer mentioning invalid barcode entry.	4
HDC Halal Widget	Web based Technology	Introduced by HDC on 31 August 2009	• Easier and faster directory search by investors and industry operators around the world. • Bloggers and website owner can place the widget on their website.	• The product dropdown list is not available. The user has to enter it manually. Limitation only given to the industry size and state only. No limitations of displayed information at one time. • More time needed for the search process as the user needs to think and enter keyword before searching	4
HDC i-Kiosk	Machine Technology	Introduced by HDC and still in the testing period by putting the Kiosk at the Alamanda, Putrajaya and Mydin USJ.	• Consumers can check the status of Halal products being purchased • An advantage to traders who wish to obtain legal status of raw material supply	Need to know the functions to operate the i-Kiosk correctly.	4
HDC Nokia Apps	Mobile Phone Technology	First introduced by HDC specifically on the Nokia platform.	• Easy reference to locate Halal food premises using GPS and Google maps within 15km radius. • Can access the validity of the Halal status of products, premises and abattoirs. • Feeds user with the latest news and events revolving around Halal industry and a list of ingredients and food additives (E numbers).	Limited to Nokia users only	4
HDC iPhone	Mobile Phone Technology	First introduced by HDC specifically on the iPhone platform.	• Easy reference to locate Halal food premises using GPS and Google maps within 15km radius. • Can access the validity of the Halal status of products, premises and abattoirs. • Users can rate the cleanliness of food premises.	• The "Locator" application is only applicable to iPhone users only because it requires the GPS assistance. • Limited for iPhone, iPod Touch and iPad users only.	4

B. Demographic Information

Table V presents the demographic information of the respondents. Out of 35 respondents, 23 respondents were male and 12 respondents were female. On the other hand, majority of the respondents were between 21-30 and 41-50 years old. Both shares same number of respondents with 10 respondents. Second highest were 9 respondents between 31-40 years old. Less than 20 years old with only 4 respondents and only 2 respondents were more than 50 years old.

For the industry sector, the highest with 21 respondents was manufacturers. However, 4 industries shared a same number of respondents. Repacking manufacturers and pharmaceutical both with 2 respondents while slaughterhouse and logistics both with 1 respondent. Cosmetics with 3 respondents and lastly consumable products with 5 respondents. On the other hand, all 35 respondents were aware of the technology being used in Halal certification when all of them answered yes.

The highest medium used by the respondents in obtaining information about Halal certification technology were using newspapers and attending Halal campaign with a total of 16 respondents. Second highest were 6 respondents preferred to search from websites. A total of 8 respondents using radio and social media to search for Halal certification technology information. Lastly 5 respondents may refer to brochure to know about Halal certification technology.

In the past 6 months, most of the respondents claimed that they only used those mentioned technologies once with 11 respondents. However, 20 respondents said they only used those technologies twice or 3 times. Only very few respondents used those technologies 4 times between the past 6 months.

TABLE V
RESPONDENTS CHARACTERISTICS

Category	Characteristics	Number of Respondents
Gender	Male	23
	Female	12
Age	Less than 20	4
	21-30	10
	31-40	9
	41-50	10
	More than 50	2
Industry Sector	Manufacturer	21
	Repacking Manufacturer	2
	Slaughterhouse	1
	Logistics	1
	Cosmetics	3
	Pharmaceutical	2
	Consumable Products	5
Awareness	Yes	35
	No	0
Information Availability	Newspaper	8
	Websites	6
	Radio	4
	Social Media	4
	Brochure	5
	Halal Campaign	8
Frequency of Technology Usage	1	11
	2	10
	3	10
	4	4

C. Technology Ranking

Table VI presents the total number of respondents with 6 technologies that have been used by the Halal business operators. The majority of the respondents were familiar with e-Halal JAKIM. 19 respondents choose to use e-Halal system. The second highest was Halal widget with 10 respondents. Surprisingly, HDC Nokia Apps and SMS JAKIM 15888 shared a same number of respondents with the total of 18 respondents. HDC iKiosk had 7 respondents Lastly was HDC iPhone Apps with only 6 respondents From here, the total numbers of respondents were more than 35 because one respondent may answered more than one technology that they had used.

TABLE VI
TECHNOLOGY RANKING

Technology	Number of Respondents	Ranking
e-Halal JAKIM	19	1
HDC Halal Widget	10	2
HDC Nokia Apps	9	3
SMS JAKIM 15888	9	4
HDC iKiosk	7	5
HDC iPhone Apps	6	6

VI. CONCLUSION AND RECOMMENDATION

The research was undertaken to investigate the successfulness of current Halal certification technology deployment by Halal business operators in various industries. The motivation is driven by the evidence that no research was done in exploring the usage of current Halal certification technology.

With regards to the use of Halal certification technology among Halal business operators, it is good to educate and build up the awareness on the importance of having Halal certification to their products or services. Familiarity on the existence of current technology also is important to maintain the high frequency of usage and consistency between those developed technologies. It is important to highlight that the given statistical analysis in this research presenting a lack, as we do not investigate on the reason that contribute to the unfamiliarity of those systems. Based on our question on the selection of technologies have been used most of the respondents answered e-Halal system and HDC Halal widget only.

On the other hand, the findings from the questionnaire survey valid only for 35 respondents. Therefore, with only 35 returned and valid questionnaires, our study could not be considered as truly represent all Malaysian Halal business operators. This is because we cannot generalize our results to the all listed industry sectors mentioned in the questionnaire. It will be good to study on the usage of current Halal certification technology focusing on the Halal authority side in the future to see the similarities and differences in technology utilization from both Halal business operators and Halal authorities.

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