International Journal on Emerging Technologies **10**(1a): 77-83(2019)

ISSN No. (Print): 0975-8364
ISSN No. (Online): 2249-3255

Factors Affecting the Efficacy of UAE-based Halal Food Sectors

Jumaa Al Junaii, Ali Abdulabaqi Ameern and Amiya Bhaumik
Faculty of Business and Accountancy,
Lincoln University College (LUC), Selangor, Malaysia

(Corresponding author: Jumaa Al Junaii)
(Received 02 March 2019, Revised 18 May 2019, Accepted 24 May 2019)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The present research utilizes structural equations modelling using SmartPLS software in order to assess the proposed model which is based on three knowledge economy pillars to identify its effect on the effectiveness of the Halal food sector in UAE. Following are the major independent constructs of the model, such as innovation driven climate, human resources, and ICT infrastructure. The dependent construct covers Halal food sector effectiveness. The present study focuses on cruciality of knowledge economy. The results state that all the three independent variables mentioned above are significant in predicting effectiveness of Halal food sector. The study model exhibited 51.9% of variance per cent when presenting effectiveness of Halal food sector.

Keywords: Halal food sector effectiveness; innovation-driven climate; ICT infrastructure; human resources.

I. INTRODUCTION

Knowledge economy is increasingly highlighted and is gaining roots in the Arab World as essential to future economic security. The Communication and IT Ministry of Saudi Arab focused on the requirement for IT society and digital economy solidification so that the productivity of the country is increased overly. UAE is following in this same direction and is of keen interest to the proposed investigation.

Vision 2021 of UAE states the urgency of setting up a competitive knowledge economy system.

Recently, the Islamic economics concept has gained much recognition in the global platform and has spread to other nations as well. Currently, it is not just limited or confined to Muslims or Islamic practice. This has led to spread of knowledge economy of Islamic states to the world and its application to other social environment. The contribution made to the Islamic knowledge economy has increased from non-Muslim world as suggested by a recent report of Global Islamic Economy projection. Thomson Reuters had prepared a report in 2017 highlighting about the expenditure that is expected to be spent by Muslims ($2.6 trillion) by the year of 2020 out of the total target of $8.4 trillion meant for the expenditure of whole Islamic Economy. This report concludes that the majority part of the Islamic Economical group belong to the non-Muslim community.

The indicators for the Global Islamic Economy are computed by analysing the correlation between the knowledge management features and the indicators (from Halal foods to Islamic Finance) for Islamic Economy. The current research is designed to assess the contributions made by the knowledge of the economy in uplifting the efficacy of UAE-based Halal food sectors.

II. LITERATURE REVIEW

A. Halal Food Sector

Literature has reported that the Halal concept emerged with an intention to main the health of the Muslim people both physically and nutritionally. It is also mentioned in the holy books, namely Quaran and Sunnah. The terms 'Halal' and 'Haram' denote to any act or thing that is permissible as per the Islamic Law. Additionally, the former term also implies to the food prepared rendering to the Laws of Islam. 'Halal' is a 1500 years old concept that is still prevalent in the Muslim community. A decade old report states that nearly $634.5 billion turnover was done by the food sector in the year of 2009 compared to the $587 billion turnover in 2004. Out of $3,992 billion business done by the world food market in 2009 compared to that of in 2004 ($3,843 billion), nearly 15.9% business was done by the halal food sectors. In terms of the Global food market, Halal sectors have raised their business margin by 15.3%. However, the Muslim market recorded a business of $1,292 billion (2014), and decreased by 17% and reached to nearly $1,128 billion (2015). The Global Islamic Economic Report suggests that Malaysia is at the top of the countries that deal with the Halal goods with Pakistan and UAE in the second and third ranking, respectively.

B. Innovation-Driven Climate (IC)

It is defined as the capability to create novel and value-adding advantages. Some climates are supportive and some are hampering to creative ideas. It is also described as the existence and ability of universities, research centers, private entities, and think tanks to utilize the ever accumulating global knowledge, and apply it based on the local needs to create new knowledge. In order for the whole process to be fruitful, it is crucial to have public support due to many reasons, first, the government can withstand initiatives which are not profitable immediately; second, innovations that are sponsored by the government are easily assimilated into the public domain compared to those of private sector; and finally, innovations of the government are oriented towards social needs compared to the more constrained priorities of private-sector innovation. As for this study, Halal food sector as an important part of Islamic economy in the UAE, hence this study focuses on evaluating the influence of the IC on the efficacy of the Halal Food sectors.

Therefore, Hypothesis 1 (H1): Innovation-driven climate significantly has a positive impact on halal food sector effectiveness.

C. ICT Infrastructure (ICT)

A knowledge economy flourishes on a strong network of ICT. The economic aspects of ICT are universal across all sectors: as they signify a rewarding sector in its own in addition of being an important contribution in other's products and services selling and marketing. With regard to development, ICT is the basis for the building of a modern industrial economy. It has the prospective to produce bountiful leading industries more easily because its requirements for operationalization and acquisition of ICT are unpretentious in comparison to those of traditional, and that includes the Halal food sector as well.

Therefore, Hypothesis 2 (H2): ICT infrastructure significantly has a positive impact on halal food sector effectiveness.

D. Human Resources (HR)

It is concerned with a well-educated, creative, and highly talented workforce, as the prospect of generating products and services that are based on knowledge is higher. However, it is a difficult mission to create knowledge economies based on knowledge outputs in countries that have high portion of its workforce as fragile human capital. The way to generate a creative human capital is through the development of a strong educational infrastructure. Due to the globalized world, it is the economies with more developed human capital that gains the highest rewards because the boundaries of the market of ideas are minimal. As for this study, Halal food sector as an important part of Islamic economy in the UAE, it is the intention to examine the impact of human resources on Halal food sector effectiveness.

Therefore, Hypothesis 3 (H3): Human resources significantly has a positive impact on halal food sector effectiveness.

III. RESEARCH METHOD

A. Proposed Research Model:

The current research analyses the effect of the knowledge economy's three pillars on the Halal food sectors. Hence, the aforementioned three hypotheses are proposed in UAE context.

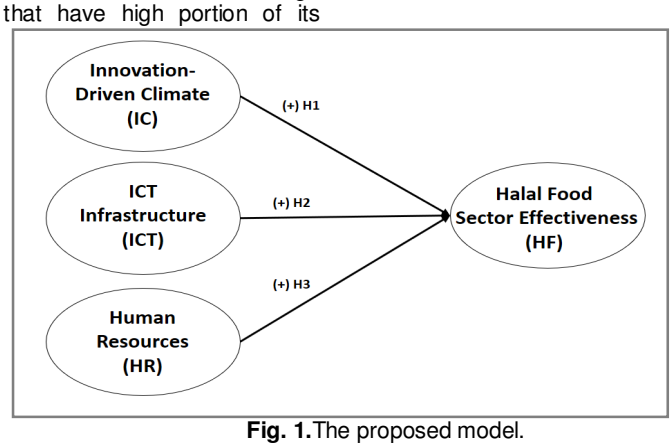

Fig. 1. The proposed model.

B. Formulation of the study questionnaire

Based on the Likert Scale and the literature on knowledge economy, a 19-item questionnaire in Arabic language was formulated to conduct the present study [1]. The values were calculated as per the instructions directed in prior researches. According to Brislin [2], a back-translation of the responses from Arabic to English was done for further analysis. Prior researches were referred to validate the variable measurements as shown in Appendix A.

C. Sampling of Data

The data was collected by delivering a self-administered questionnaires 'in-person' from April 2017 until August 2017 to employees in halal food companies in the UAE. Out of total 300 questionnaires, 210 responses were collected of which 190 were filtered for further analysis. As per the prior studies, the sampling quantity was nearly 70%, which was considered as sufficient for the current analytical study [3,4].

IV. ANALYSIS OF THE COLLECTED DATA AND STUDY FINDINGS

The research model of the current study was assessed by using PLS SEM-VB and SmartPLS 3.0 software [5]. The elaborative evaluation led to the implementation of a two-step of analytical methodology, i.e. structural (to test the relationship hypotheses) and measurement (to test the validity and reliability) models of assessment. This two-step analysis model is superior in comparison to the one-step assessment methodology [6,7]. The first model measures the parameters of the structural model, whereas the later one records each constructs measurement.

PLS technique is utilized in the current study for its analytical skills to deduce clear evaluations. On the other hand, SEM is implemented to conduct a coinciding strategical evaluation of the data for precise calculations.

A. Descriptive analysis

The mean and standard deviation (SD) values for each variable of the current study are presented in Table 1. The respondents shared their opinion about their idea on the online usage as per the Likert Scale. As per the respondents, the human sources variable recorded the highest mean value of nearly 4.90 out of 7.0 (SD = 1.17). However, ICT infrastructure recorded the lowest mean value of 4.73 (SD=1.24).

B. Measurement Model Assessment

The measurement model was examined by implementing the reliability and validity features of the

constructs (convergent and discriminant validities). The reliability of each core variable in the measurement model (construct reliability) was evaluated by using the individual Cronbach's alpha coefficients.. The Cronbach's alpha coefficient values were recorded between 0.794-0.872 [8]. The composite reliability (CR) values were between 0.867 to 0.910, which exceeded 0.7 (Table 1) [9,10].

The factor loadings aided in analyzing the Indicator Reliability. According to Hair *et al*. (2010), values exceeding 0.50 indicate significant factor loadings (Table 1).

AVE was assess to analyze the Convergent Validity. It is reported that this validity shows a positive correlation with the alternate values of the same variables. The AVE values range within 0.573 to 0.672 that is more than 0.50 [7]. The convergent validity has been achieved by all the construct variables in this study (Table 1).

Table 1: Measurements of the constructs.

Constructs	Item	Loading (> 0.5)	M	SD	α (> 0.7)	CR (> 0.7)	AVE (> 0.5)
Innovation-Driven Climate (IC)	IC1 IC2 IC3 IC4 IC5	0.884 0.907 0.868 0.788 0.620	4.80	1.33	0.872	0.910	0.672
ICT Infrastructure (ICT)	ICT1 ICT2 ICT3 ICT4 ICT5	0.789 0.827 0.775 0.787 0.696	4.73	1.24	0.835	0.883	0.602
Human Resources (HR)	HR1 HR2 HR3 HR4 HR5	0.747 0.788 0.819 0.718 0.706	4.90	1.17	0.794	0.867	0.620
Halal Food Sector Effectiveness (HF)	HF1 HF2 HF3 HF4	0.809 0.829 0.812 0.692	4.78	1.27	0.813	0.870	0.573

Note: M=Mean; SD=Standard Deviation, α= Cronbach's alpha; CR = Composite Reliability, AVE = Average Variance Extracted.

- The measurements were calculated as per the Likert's Scale with significance ($p<0.01$).

Discriminant validity, Heterotrait-monotrait ratio (HTMT), Fornell-Larcker, and Cross-loadings were applied to analyze the measurement model. Cross-loadings are basically termed as the first step in assessing the indicator's discriminant validity [11]. The cross loading parameters have satisfied all the requirements in the present study as denoted in Table 2.

Table 2: Results of discriminant validity by the cross loading

	IC	ICT	HR	MOC
IC1	**0.884**	0.465	0.498	0.438
IC2	**0.907**	0.505	0.512	0.473
IC3	**0.868**	0.509	0.478	0.438
IC4	**0.788**	0.523	0.446	0.476
IC5	**0.620**	0.581	0.520	0.504
ICT1	0.440	**0.789**	0.373	0.422
ICT2	0.497	**0.827**	0.439	0.449
ICT3	0.361	**0.775**	0.369	0.405
ICT4	0.592	**0.787**	0.502	0.571
ICT5	0.550	**0.696**	0.518	0.458
HR1	0.422	0.491	**0.747**	0.513
HR2	0.433	0.350	**0.788**	0.467
HR3	0.538	0.523	**0.819**	0.565
HR4	0.421	0.356	**0.718**	0.487
HR5	0.481	0.443	**0.706**	0.431
HF1	0.399	0.428	0.470	**0.809**
HF2	0.467	0.401	0.530	**0.829**
HF3	0.423	0.541	0.511	**0.812**
HF4	0.513	0.512	0.535	**0.692**

The bold variables in the table denote the square root value of the AVE that is more than the corresponding values, indicating a strong correlation between the variables and their respective indicators (Table 3). The exogenous constructs showed a correlation value <0.85, and thus the better discriminatory validity is satisfied [12].

Table 3: Results of discriminant validity by Fornell-Larcker criterion.

	Factors	*1*	*2*	*3*	*4*
		HF	HR	IC	ICT
1	HF	**0.787**			
2	HR	0.655	**0.757**		
3	IC	0.577	0.607	**0.820**	
4	ICT	0.604	0.575	0.641	**0.776**

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations.

Being unable to determine the lack of discriminant validity in general research works, the Fornell-Larcker criteria is surely a debabatable topic [13]. HTMT ratio in terms of multi-trait-multi-method matrix has been thus proposed in this study. When the HTMT values are higher than 0.90 or 0.85, the discriminant validity exhibits few issues. However, the HTMT values are recorded to be less than 0.85 (Table 4), thus satisfying the validity value.

Table 4: Results of discriminant validity by HTMT.

	Factors	*1*	*2*	*3*	*4*
		HF	HR	IC	ICT
1	HF				
2	HR	0.806			
3	IC	0.682	0.716		
4	ICT	0.723	0.685	0.73	

4.3 Structural Assessment Model

Beta (β), R^2, and the corresponding t-values were implemented through the bootstrapping mechanism of 5000 resamples to evaluate the structural model. The analysis was made on the basis of the effect sizes (f^2) and the predictive relevance (Q^2) with p-value determining the presence of any effect. However, the effect size is not mentioned [14].

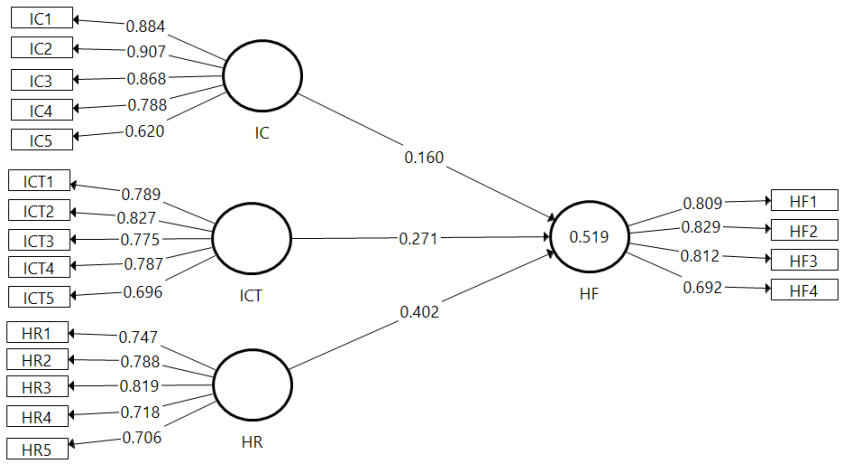

Fig. 2. PLS algorithm results.

Hypotheses Tests. The structural model in the current research supports all the three proposed hypotheses. Hence, H1, H2, and H3 are accepted with ($\beta = 0.160$, t= 2.382, p <0.05), ($\beta = 0.271$, t= 3.733, p <0.001), and ($\beta = 0.402$, t= 5.774, p <0.001)respectively.

The association between the exogenous and endogenous constructs is computed by using basic path co-efficient depicting the direct influence of system quality on user satisfaction.

Fifty-two percent of the variance in halal food sector effectiveness is explained by innovation-driven climate, ICT infrastructure, and human resources. The values of R^2 have an acceptable level of explanatory power, indicating a substantial model [15,16].

Effect sizes (f^2) was examined in this research. Researchers analysed and it determined the effect of the exogenous latent construct and assess the change in the R2 values. Hence the f2 values are recorded in the Table 4, which depicts one medium and two small effect size relationships [15].

The blindfolding procedure has should been employed on the endogenous constructs of this study with a reflective measurement only, when predictive relevance (Q2) value is more than 0, thereby concluding in an adequate amount of predictive relevance (Table 5).

O'brien [17] had suggested that the multicollinearity problems that overlaps the variance explained by the exogenous constructs in endogenous variables. Variance inflation factor (VIF) is referred as the measurement of the multicollinearity degree. Values more than 10 for VIF denotes an issue, whereas the value more than just 5 denotes multi-collinearity issues. Therefore, there is no significant multicollinearity issue among the exogenous constructs. In other words, there is no overlapping of the variance explained by the exogenous constructs in endogenous variables.

Table 5: Structural path analysis result.

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision	R^2	f^2	Q^2	VIF
H1	IC→HF	0.160	0.067	2.382	0.009	Supported	0.52	0.027	0.296	1.983
H2	ICT→ HF	0.271	0.073	3.733	0.000	Supported		0.081		1.871
H3	HR→ HF	0.402	0.070	5.774	0.000	Supported		0.192		1.747

Importance-Performance Map Analysis (IPMA). IPMA was implemented as post-experimental PLS procedure with the halal food sector effectiveness used as the outcome construct in this study. The IPMA provides an estimation of the total effects corresponding to the importance of predecessor constructs in affecting the target construct (halal food sector effectiveness). The average values of the latent variables are in correspondence with their performances, however, those scores (Index values) are calculated by rearranging the scores from least to highest performance score (0 to 100). The PLS evaluation is enhanced by IMPA as it focuses on the average value of latent constructs and their indicators (performance) along with the coefficient analysis (importance) (Table 6).

Table 6: IPMA for Halal Food Sector Effectiveness.

Latent constructs	Total effect of the construct *Halal Food Sector Effectiveness* (Importance)	Index values (Performance)
Innovation-Driven Climate (IC)	0.15	63.43
ICT Infrastructure (ICT)	0.28	62.58
Human Resources (HR)	0.44	65.36

System quality is very crucial parameter that is essential to determine the user satisfaction for its increased importance value with respect to other constructs in the suggested model (Fig. 4). Although an obvious gap is existent in the factors influencing the satisfaction rate of the users, the factors exhibited similar scores of performance.

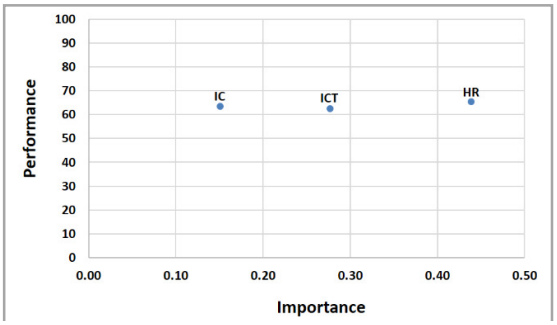

Fig. 3. IPMA (Priority Map) for Halal Food Sector Effectiveness.

IPMA aims to identify the predecessors that have both relatively high importance (with strong total effect) and relatively low performance for the target construct (with low average latent variable scores). Particular attention may be given to the attributes of these constructs, which can be potential areas for improvement. Hence, the system quality performances should be enhanced by the managerial people to improvise the user satisfaction.

V. DISCUSSION

Based on the proposed model, this current work enhances the apprehension on role executed by knowledge economy in terms of innovation driven climate, human resources, and ICT infrastructure in predicting Halal food sector effectiveness among employees in halal food companies in the United Arab Emirates, and brings the related repercussions

The study found that innovation driven climate positively affects the effectiveness osislamic finance sector among employees in government sector who are using islamic finance services in the United Arab Emirates, this is supported by previous studies. It is explained by the fact that The more global investors are willing to invest in the UAE, royalities and license fees for new companies are minimal, research and development financed sufficiently, and easiness to start a business, the more robust the halal food industry become, the more strict governmental regulations are implemented and prices of halal food will be controlled within an acceptable limit.

Likewise, the results revealed that ICT infrastructure significantly influence the effectiveness osislamic finance sector among employees in government sector who are using Islamic finance services in the

United Arab Emirates, this is supported by previous studies. It is explained by the fact that the more the internet penetration rate, UAE smart government services, mobile networks services, the more strict governmental regulations are implemented, and prices of halal food will be controlled within an acceptable limit.

Finally, it was found that human resources positively affects the effectiveness osislamic finance sector among employees in government sector who are using islamic finance services in the United Arab Emirates, this is supported by previous studies. It is explained by the fact that the more progress to improve literacy rate of UAE nationals above 15 years old, tertiary enrolment, professional and technical UAE workers availability, in addition to having an adequate amount of training for employees in the public sector and being able to preserve brilliant minds from migration, the more strict governmental regulations are implemented, and prices of halal food will be controlled within an acceptable limit.

VI. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

One of the implications of this study is arguing that the Islamic Discourse and Islamic Economies, in general, is not irrelevant as observed. It may be argued that the area of Islamic Economics is far from exhaustion. Ultimately, knowledge management and knowledge systems have been affirmed based on the present investigation as existent within the Islamic Discourse. Knowledge development has been established as a key contributor to the strengthening, growth and development of the Islamic Sectors. Further, the study placed Halal food beyond any barrier of language and religion. Another important implication of the study lies in the assessment of knowledge requirements of the various Islamic economy Sectors to establishing the three knowledge economy indicators as valid antecedents of Halal food sector. Knowledge economy as an input in any given model has been established with acceptable levels of reliability and validity. This implies further investigations can build on this instrument and indicators which were originally defined based on the knowledge economy pillars.

The contribution of knowledge to the UAE Islamic Economy including Halal food sector can be achieved by exploring and acknowledging individual effects of economic incentives and organizational routine, installing an efficient and new system, education and effective human resource management and installation of resilient technological infrastructure. These three areas hold renowned benefits that are directly observable in Islamic Economy development.

As for future directions, a second-order construct must be assessed for its interrelationship with the variables of Knowledge Economy and Islamic Economics for the sake of validity. In the course of assessing validity, structural equation modelling.

VII. CONCLUSION

It is thus found that factors like a good economic incentive system, organizational routine, an effective and innovative system, highly educated and skilled labor force are required for establishing the milestone for UAE-based Halal food sectors. Irrespective of varied obstacles, the current study highlighted various outlooks. The present study also concluded that all the three proposed hypotheses were found to be significant and 51.9% of Halal food sectors were reported to effective.

APPENDIX

Appendix A

Instrument for varibles

Variable	Measure
Innovation-Driven Climate (IC)	IC1: Foreigners are compelled to invest into UAE IC2: Royalties and license fees payment for companies established are moderate for the businesses IC3: There is enough allocation to Research and Development in the country IC4: Innovations in Manufacturing and trade sectors are poised to drive the economy forward IC5: Starting up a business is very easy
ICT Infrastructure (ICT)	ICT1: Telephone penetration among the UAE population is highly satisfactory ICT2: TV penetration among the UAE population is highly satisfactory ICT3: Newspaper penetration among the UAE population is highly satisfactory ICT4: International Call Cost is very low, especially in North America ICT5: The UAE Smart Government is really working
Human Resources (HR)	HR1: Literacy Rate of UAE Nationals above 15 years has made significant progress over the years HR2: Tertiary Enrolment of UAE nationals has made satisfactory progress over the past few years HR3: Availability of professional and technical workers among the UAE National population is highly satisfactory HR4: Staff Training in the Federal Ministries is adequate to prepare the employee HR5: Educated UAE Nationals do not travel abroad
Halal Food Sector Effectiveness (HF)	HF1: The Halal Food Sector is firmly established in UAE HF2: Government regulations and certifications surrounding Halal Food are strictly implemented HF3: I often read news articles and observe events on Halal Food issues HF4: Halal Food prices have been controlled within an acceptable limit and do not increase often

REFERENCES

[1]. Lee B. C., Yoon J. O. & Lee I. (2009). "Learners' acceptance of e-learning in South Korea: Theories and results". *Computers and Education*, Vol. **53**, 4, PP. 1320–1329.

[2]. Brislin R. W. (1970). "Back-Translation for Cross-Cultural Research". *Journal of Cross-Cultural Psychology* (Vol. **1**). 185-216.

[3]. Tabachnick B. G. & Fidell L. S. (2007). "Using Multivariate Statistics". *PsycCRITIQUES*, Vol. **28**, PP.980.

[4]. Krejcie R. V & Morgan D. W. (1970). "Determining sample size for research activities". *Educational and Psychological Measurement*, Vol. **38**, PP. 607–610.

[5]. Ringle C. M., Wende S. & Becker J.M. (2015). "SmartPLS 3". *Bonningstedt: SmartPLS*.

[6]. Schumacker R. E. & Lomax R. G. (2004). "A Beginner's Guide to Structural Equation Modeling". *New York: Lawrence Erlbaum*.

[7]. Hair J.F., Black W.C., Babin B.J. & Anderson R.E. (2010). "Multivariate Data Analysis". *New Jersey*.

[8]. Kannana V.R. & Tan K.C. (2005). "Just in time, total quality management, and supply chain management: understanding their linkages and impact on business performance". *Omega: The International Journal of Management Science*, Vol. **33**, No. 2, PP. 153–162.

[9]. Werts C.E., Linn R.L. & Jöreskog K.G. (1974). "Intraclass reliability estimates: Testing structural assumptions". *Educational and Psychological Measurement*, Vol. **34**, no. 1, PP. 25–33.

[10]. Gefen D., Straub D. & Boudreau M.C. (2000). "Structural equation modeling and regression: Guidelines for research practice". *Communications of the Association for Information Systems*, Vol. **4**, No. 1, PP. 1–79.

[11]. Hair J.F.J., Hult G.T.M., Ringle C. & Sarstedt M. "A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), 46 Long Range Planning 328 (2014)". *London: Thousand Oaks: SAGE*.

[12]. Awang Z. (2014). "Structural Equation Modeling Using AMOS". *Shah Alam. Malaysia: University Teknologi MARA Publication Center*.

[13]. Henseler J., Ringle C.M. & Sarstedt M. (2015). "A new criterion for assessing discriminant validity in variance-based structural equation modeling". *Journal of the Academy of Marketing Science*, Vol. **34**, No. 1, PP. 115–135.

[14]. Sullivan G. M. &Feinn R. (2012). "Using Effect Size - or why the p Value is not enough". *Journal of Graduate Medical Education*, Vol. **4**, No. 3, PP. 279–282.

[15]. Cohen J. (1988). "Statistical Power Analysis for the Behavioral Sciences (2nd Editio)". *Lawre Associatesnce Erlbaum*.

[16]. Chin W. W. (1998a). "Issues and opinion on structural equation modeling". *MIS Quarterly*, Vol. **22**, No. 1, PP. 7–16.

[17]. O'brien R. M. (2007). "A Caution Regarding Rules of Thumb for Variance Inflation Factors". *Quality & Quantity*, Vol. **41**, No. 5, PP. 673–690.