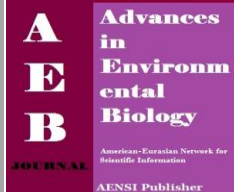




AENSI Journals

Advances in Environmental Biology

ISSN:1995-0756 EISSN: 1998-1066

Journal home page: <http://www.aensiweb.com/aeb.html>

Effect of Environmental Context on Ict Adoption Among Rural-Based Small And Medium Enterprises In Malaysia

¹Mathivannan Jaganathan, ²Rosli Mahmood, ³Shuhymee Ahmad and ⁴Ismail Ahmad

¹College of Business, Universiti Utara Malaysia, Kedah.

²College of Business, Universiti Utara Malaysia, Kedah.

³College of Business, Universiti Utara Malaysia, Kedah.

⁴College of Business, Universiti Utara Malaysia, Kedah.

ARTICLE INFO

Article history:

Received 25 January 2014

Received in revised form

2 June April 2014

Accepted 6 June 2014

Available online 15 June 2014

Key words:

Small and medium enterprises (SMEs),

ICT adoption, environment,

information intensity, competition

intensity

ABSTRACT

The objective of this paper is to examine the effect of the environmental context on the adoption of ICT among rural-based small and medium enterprises (SMEs) in Malaysia. Two hypotheses were formulated to answer the objectives of study; (i) there is significant relationship between information intensity and ICT adoption, and (ii) there is significant relationship between competition intensity and ICT adoption. A quantitative research design based on the questionnaire survey was used to collect the data. A total of 1000 questionnaires were mailed and 167 usable responses were received. The findings reveal that both information intensity and competition intensity had positive significant relationship with ICT adoption among rural-based SMEs in Malaysia. These findings may be of help to rural-based SME owner/managers and the policy makers in finding solution for the successful implementation of ICT.

© 2014 AENSI Publisher All rights reserved.

To Cite This Article: Mathivannan Jaganathan, Rosli Mahmood, Shuhymee Ahmad and 4Ismail Ahmad., Effect of Environmental Context on Ict Adoption Among Rural-Based Small And Medium Enterprises In Malaysia. *Adv. Environ. Biol.*, 8(9), 563-569, 2014

INTRODUCTION

The rapid advancement and development in the information and communication technology (ICT) have changed dramatically many aspects of economic and social lives. It has also transformed radically the way businesses are conducted. This transformation has not only created more opportunities, it also posed a threat to the small and medium enterprises (SMEs). SMEs comprise a large part of the global economy and employ a great number of workers. More than 95 percent of the total establishments in Malaysia are SMEs and they control a large chunk of the economy. However, SMEs lagged behind other industries in fully embracing the ICT capabilities, and this makes them more vulnerable to changing economic conditions as they have relatively lower level of competitiveness [4]. It has been reported that lack of education and technical skills were the main factors leading to the lower rate of technology adoption among SMEs in Malaysia [20,34]. Since the contribution of SMEs to the nation's economic development is extremely important, their successful adoption of ICT capabilities is of great interest and focus of much research. Nevertheless, research on the rural based SMEs is still lacking. The limited research that has been done shows that SMEs in the rural areas are facing numerous challenges in adopting ICT. These SMEs also face the challenges which are unique mainly from a spatial perspective [5,31], and hence adequate infrastructure and awareness are essential for improved access and capability to utilize the ICT among rural based SMEs. The adoption of technology among the rural SMEs has now become a national agenda. The government has initiated the essential policy framework for a nationally comprehensive strategy that rural-based SMEs have made use of to adopt sound ICT including expansion programs on the internet. These initiatives have enabled these firms to achieve some corporate goals with remarkable success [33]. To accelerate the adoption of this technology, the policy makers are also searching for answers about the important factors that would influence the rural SMEs to adopt ICT. One of the factors rooted in the OTE Model developed by Tornatsky and Fleisher [37] is the environmental context. The environmental context for the adoption of new technology by the rural-based SMEs highlights the intensity of information required to address the full extent of the characteristics of a particular service, and the competition that surrounds the product and services. Thus this study aims to investigate the effect of the environmental factors on the adoption and acceptance of ICT among SMEs in the rural areas so that the strategic benefits of the technology could be fully exploited. Specifically, this study seeks to answer the following research questions:

- a. Is there significant relationship between information intensity and ICT adoption among rural-based SMEs in Malaysia, and
- b. Is there significant relationship between competition intensity and ICT adoption among rural-based SMEs in Malaysia?

Literature Review:

ICT is a crucial requirement for sustainable economic development in the rural areas. ICT when applied to the rural based businesses can help improved communications, increase participation, and disseminate information and share knowledge among the small business community [27]. Although factors influencing the adoption of ICT in SMEs have been studied, there has been limited research in the area of ICT adoption in rural based SMEs and therefore the literature does not adequately address the issue. Many rural communities lack modern ICT infrastructure to compete in the new global society. The rural community requires access and capability to utilize technology to remain economically viable and at the same time improve the quality of life.

Narula and Arora [27] identified awareness as the major constraint of ICT adoption in the rural business settings. Most knew on the facilities but lacked awareness on the benefits ICT could offer. Kyobe [22], Corrales and Westhoff [8], and Kapurubandata and Lawson [19] identified a number of factors that influence those SMEs. These included limited skills, low investment of ICT, lack of research on innovation, poor infrastructure, myths associated with ICT, lack of national policy on ICT development, technology supply problems, education problems, and economic factors. Corrales and Westhoff [8] also pointed out other factors such as exposure, capacity to adopt and use ICT, and state policies. They argued that adoption can only occur when these SMEs enjoy the necessary level of income to afford the technology, as well as the necessary skills and adequate technological infrastructure to adopt the technology. According to Huggins and Izushi [16], Friedlander [12], and Galloway and Mochrie [13], poor technological infrastructure is a major hindrance to implementation of ICT projects in rural areas, while Smallbone et al. identified inadequate telecommunications infrastructure in rural areas as a major barrier to the use of ICT. Moreover, without access to high speed, low cost communication networks, rural businesses would not be able to realize the benefits of ICT [6,9]. In addition, commercial feasibility and capability of the technology are required for the suitability of adoption [13]. Thus, adequate infrastructure is essential for improved access and capability to utilize technology among the rural based SMEs.

Hypotheses Development:

Information Intensity:

The rapid advancements made by information technology have changed the policy of firms who conduct businesses, especially regarding selling their products and services. Most of these products come with information regarding the characteristics, nature and method of usage. The more complex the product is, the more information is required to describe the product and service of the firms [26]. SMEs in a more information-intensive environment are more likely to adopt new technology [28,33]. For instance, SMEs in service-oriented industries are likely to have higher information content in their products and services in comparison to SMEs in manufacturing oriented industries. Hence, SMEs that are oriented to the service industry are more likely to adopt ICT [35]. Al-Qirim [2] who investigated the impact of information intensity on the adoption of technology applications among SMEs in New Zealand found that the information intensity was influenced by the adoption of web-sites. Thus, the following hypothesis is formulated:

H1: There is significant relationship between information intensity and ICT adoption among rural based SMEs.

Competition Intensity:

Porter [29] identified five competitive forces that shape business strategy; new entrants, threat of substitute, bargaining power of customers, bargaining power of suppliers, and rivalry among current competitors. He also suggested that the adoption of ICT will change the competitive environment in three ways; by changing the structure of the industry, changing rules of competition, and giving businesses new methods by which to gain competitive advantage over their competitors. Studies have shown that intensity of competition is also associated with the degree of ICT adoption [24,11,17,10]. Sandy and Graham [30] who examined the factors that influenced the extent of the deployment of new technology for SMEs found that competitive pressure was a major factor affecting the adoption. In the context of Malaysia where the market is relatively small, the rural-based SMEs will have a low cost alternative in ICT to advertise their products and services on a global scale, as well as finding suitable business partners around the globe. The following hypothesis is thus postulated:

H2: There is significant relationship between competition intensity and ICT adoption among rural based SMEs.

Methodology:

There is no specific definition of 'rural' and this study focused only on SMEs registered with various agencies under the Ministry of Rural and Regional Development (MRRD). Data were collected by means of a mail survey questionnaire completed by the owner/managers of these SMEs. A total of 1000 owner/managers from the sampling frame were sent with the questionnaires, and 167 usable responses were returned giving a response rate of 16.7 percent. Given the nature of SMEs and the low response usually associated with mail surveys, this response rate was considered reasonably adequate. Similar studies by Mahmood and Hanafi [25] and June and Mahmood [18] revealed response rates of 15.86 percent and 20.0 percent, respectively.

A reliability test was conducted to determine the internal consistency of the instruments used. Table 1 shows the variables' Cronbach Alpha values ranges from .621 to .766. Although two variables, information intensity and ICT adoption were below 0.7 which is interpreted as low reliability, it is still within the acceptable limits [15].

Table 1: Reliability Scores

Variable	Items	Alpha Value
Information intensity	3	.621
Competition intensity	3	.766
ICT adoption	7	.697

The variables in this study were also validated through factor analysis. Before performing the analysis, the suitability of the data was assessed through two tests; Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity. The KMO has to be more than at least 0.6 and Bartlett's Test of Sphericity has to be significant. For factor analyses, principle component analysis and Varimax rotation were performed. It was suggested that items that had factor loadings lower than 0.50 should be eliminated [15].

For environmental factors, factor analysis was conducted on the six items scale. The two statistical measures to assess the factorability were conducted through KMO which was at 0.725 and Bartlett's test of sphericity was significant at $p < 0.001$. The analysis revealed a two factor structure that explained 63.015 percent of the variance. Only factors with a loading value of 0.50 and above were considered, and therefore no items were deleted. The two factors were designated as information intensity (F1) and competition intensity (F2) (see Table 2).

Table 2: Factor Analysis (Environmental factors)

Item	Factor 1	Factor 2
My firm must have access to reliable, relevant and accurate information	.792	
My firm is dependent on up-to-date information		
My firm must be able to access information quickly whenever it is needed	.761	
	.696	
Substitutable products and services affect our firm in this industry		.866
The rivalry among firms in this industry is intense		.854
Customers can easily switch to a competitor in this industry		.737
Eigen values	2.644	1.137
% of variance explained	63.015	

For ICT adoption, the analysis was conducted on the seven items scale. The suitability of data was also assessed. The KMO was measured at 0.674 which exceeded the recommended value of at least 0.6 and Bartlett's test of sphericity was significant at $p < 0.001$. Only factor with loading value of 0.50 and above were considered, and therefore no item was deleted. The seven items were loaded on a single factor, and the factor abstracted represents a total variance of 56.358 percent (see Table 3).

Table 3: Factor Analysis (ICT adoption)

Item	Factor 1
Allow customers to locate and send information to appropriate contacts within the firm	.735
Send customers regular updates about new products and other developments within the firm	
Provide solutions to customer problems and allow them to track and inquire about orders electronically	.665
Provide customers with general information about the firm	
Provide after sales service to the customers via online information	.610
Provide information in response to customer questions or requests	
Accept orders and payments electronically from customers	.583
	.551
	.499
	.505
Eigen value	2.501
% of variance explained	56.358

RESULTS AND DISCUSSION

Demographic Profile of the Respondents:

Table 4 below describes the profile of respondents by gender, age, academic qualifications, and number of years of working experience. The table shows that 131 (78.4%) of the respondents were males and the remaining 36 (21.6%) respondents were females. This shows that males are still dominating the business in the rural areas although the number of women participating in the business as owner managers is increasing. The table also shows that 85 or 50.9 percent of the respondents were in the range of 30 to 39 years old. Another 21 or 12.6 percent were below the age of 30 while only 13 or 7.8 percent of the respondents were in the age range of 50 years and above. In terms of academic qualifications, more than 50 percent attained only SPM/SPTM levels of qualifications while 60 or 25.9 percent of the respondents possessed Diplomas. Another 7.8 percent obtained a degree qualification and only 4 or 2.4 percent of the respondents graduated with a master or a post degree. It can be concluded that the majority of respondents in this study only achieved a relatively lower level of academic qualifications. The analysis on the profile of respondents also revealed 74 or 44.3 percent of them had between 10 to 15 years of working experience, and 65 or 38.9 percent of the respondents had at least 5 to 9 years working experience. There were 4 respondents (2.4%) who have had a working experience of more than 20 years while those with working experience of between 16 to 20 years made up the fourth largest group (6.0%). Only 14 or 8.4 percent of the respondents had less than 5 years of working experience.

Table 4: Profile of the respondents (owner managers)

Variable		Frequency	Percentage
Gender	Male	131	78.4
	Female	36	21.6
	Total	167	
Age (Years)	Below 30	21	12.6
	30 – 39	85	50.9
	40 – 49	48	28.7
	50 and above	13	7.8
	Total	167	
Qualifications	SPM/STPM	90	53.9
	Diploma	60	35.9
	First Degree	13	7.8
	Post Degree	4	2.4
	Total	167	
Working Experience (Years)	Less than 5	14	8.4
	5 – 9	65	38.9
	10 – 15	74	44.3
	16 – 20	10	6.0
	Above 20	4	2.4
	Total	167	

Table 5 shows the firm's background such the structure of ownership, number of employees, years of establishment, and nature of business. The ownership structure of the responding firms revealed that 71 or 42.6 percent were registered as sole proprietors, 48 or 28.7 percent were partnerships, and the remaining 48 or 28.7 percent of the firms were incorporated as limited companies (Sdn Bhd). The majority of these firms employed 5 or more employees with 7.2 percent of them had more than 20 employees. A firm which employs less than 5 employees is considered as a micro enterprise, and those with 5 to 50 employees are considered as small while those with 51 to 150 are classified as medium enterprises. In terms of years of establishment, 80 firms (47.9%) were established between 5 to 9 years ago, 58 firms (34.7%) between 10 to 15 years, and 13 firms (7.8%) were established between 16 to 20 years. Only 12 firms (7.2%) were established in less than 5 years, while 4 firms (2.4%) were in existence for more than 20 years. The SMEs usually comprised of several sub-sectors. The analysis subdivided the firms into sub-sectors according to the businesses these firms were operating. 27 or 16.2 percent of these firms were in the food and beverages, 38 or 22.8 percent were in the service sector, and the rest were categorized as retailing (7.2%), manufacturing (7.8%), ICT (9.0%), transportation (1.8%), textiles (6.6%), agriculture (9.6%), contracting (8.4%), and others (10.8%).

Table 5: Profile of the respondents (firms)

Variable		Frequency	Percentage
Ownership Structure	Sole proprietor	71	42.6
	Partnership	48	28.7
	Sendirian Berhad	48	28.7
	Total	167	
No of Employees	Less than 5	23	13.8
	5 - 9	74	44.3
	10 - 15	42	25.1
	16 – 20	16	9.6

	More than 20	12	7.2
	Total	167	
Establishment (Years)	Less than 5	12	7.2
	5 - 9	80	47.9
	10 - 15	58	34.7
	16 - 20	13	7.8
	More than 20	4	2.4
	Total	167	
Nature of Business	Food/Beverages	27	16.2
	Retailing	12	7.2
	Manufacturing	13	7.8
	ICT	15	9.0
	Transportation	3	1.8
	Service	38	22.8
	Textiles	11	6.6
	Agriculture	16	9.6
	Contracting	14	8.4
	Others	18	10.8
	Total	167	

Tests of Hypothesis:

There are significant relationships between information intensity, competition intensity, and ICT adoption. In order to assess these relationships, a multiple regression analysis was conducted, and the results are shown in Table 6. When the independent variables were considered simultaneously in the regression model, the two variables had shown strongest positive significant relationship with ICT adoption, where information intensity ($\beta = .207$, $p < .05$) and competition intensity, ($\beta = 0.244$, $p < .05$).

Table 6: Multiple Regression Analysis

Predictors	B	SE B	<i>B</i>	Sig.
Information intensity	0.180	0.068	.207	.009*
Competition intensity	0.163	0.053	.244	.002*
R squared		0.142		
F		13.524**		

* $p < .05$, ** $p < .001$

The result of the regression analysis shows that there is significant relationship between information intensity and ICT adoption, and that it provides support for the adoption of ICT among rural based SMEs in Malaysia. Moreover, it had a strong positive significant relationship with ICT adoption, and thus higher levels of information intensity were related to ICT adoption. According to Thong [36], if the information intensity was high in a firm, then it is more likely for the firm to adopt ICT. The finding of this study corroborates with those of previous researchers who found that information intensity had a positive relationship with ICT [1,2,7]. Therefore, the owner/managers of rural-based SMEs have to keep in mind the importance of information intensity in the market. This could be improved by updating the technical information and follow-up of market developments, both domestic and foreign.

The finding also provides support for the second hypothesis that there is a significant relationship between competition intensity and ICT adoption among rural-based SMEs. Moreover it had a strong positive relationship with ICT adoption ($\beta = .244$, $p < .05$), and thus higher levels of competition intensity were also related to higher ICT adoption. According to Alzougool and Kurnia [3], the environmental context, including the competition intensity is conceded to be one of the important factors that should be studied by any researcher who studies ICT adoption due to its critical role in market competition. The competition intensity had been examined in previous studies [1,2,21,32,24,14], and they all found that competition intensity had a positive relationship with ICT adoption. The result of this study is in line with those studies. Therefore, the owner/managers of rural-based SMEs in Malaysia should focus on understanding the competition intensity in the market by studying the trend and expectations of the customers in the market. Recognizing the customer as an integral part of the business is crucial. Thus, by giving attention to the opinions of customers on the products and services is a key for the firm survival in the intense competition in the market.

Conclusion:

The results of this study shed an interesting insight about ICT adoption by rural-based SMEs in Malaysia. Both the information intensity and competition intensity of the environmental context were found to have positive significant relationships to ICT adoption by the rural-based SMEs. In addition, these findings also concur with some empirical studies conducted earlier which provided support on the ICT adoption. This study has significant implications for owners/managers of rural-based SMEs facing a problem and with an intention to adopt new technology, or who were looking for full advantages from ICT adoption, the government agencies that are attempting to encourage the use of ICT applications by rural-based SMEs, and private organizations that

are planning to extend their marketing with ICT strategy among SMEs, especially those in the rural areas. These could lead to successful implementation of ICT in SMEs in the rural setting. ICT adoption has the potential to dramatically improve quality of the firms and is an increasingly essential dimension for the firms to improve their competitive edge. Without adequate access to ICT, SMEs especially those in the rural areas may not be able to fully participate and survive in the increasingly highly volatile and dynamic markets

This study has several limitations that provide opportunities for future research. First the sample size in this study may limit the generalizability of the findings. The low response rate makes it difficult to identify the population the sample represents. Furthermore, the sample frame was based on a data set comprising only firms that registered with certain agencies and as such may not be representative to all rural based SMEs. Second, the use of a single respondent for each firm may be subject to common method bias. Only owner/managers of the firms were chosen to collect the data for the study. Although the owner/manager may be the key person in the SME, one person's authority cannot represent the entire strategy of the firm. In addition, the perceptual opinions of the owner/manager may be biased because of subjective judgments of his or her own firm. Nevertheless, the researchers had taken necessary steps to minimize any biases that may have resulted. The third limitation was the cross-sectional nature of the study. One of the limitations of cross-sectional study is the restriction to prove the cause-effect relationship among the variables. This study only described how the independent variables and dependent variable (ICT adoption) relates, but did not provide many insights into how the firm evolves amidst changing internal and external dynamics. In addition, cross-sectional data can only provide a snap shot at one point of time. Although useful and information, assertions based on temporal snapshots are limited to the frame of time in which the data were collected. Thus, future research should consider the use of a longitudinal investigation that would allow firms to be studied over time and provide further insights into the dynamic nature of the relationship between variables.

REFERENCES

- [1] Al Moawi, A.N. & R. Mahmood, 2011. Applying the OTE model in determining the e-commerce adoption on SMEs in Saudi Arabia. *Asian Journal of Business and Management Sciences*, 1(7): 12-24.
- [2] Al Qirim, N., 2007. The adoption of e-commerce communications and application technologies in small businesses in New Zealand. *Electronic Commerce Research and Applications*, 6(4): 462-473.
- [3] Alzougool, B. & S. Kurnia, 2008. *Electronic commerce technologies adoption by SMEs: a conceptual study*. Proceedings of the 19th Australasian conference on Information system, Australia.
- [4] Arendt, L., 2008. Barriers to ICT adoption in SMEs: how to bridge the digital divide. *Journal of Systems and information Technology*, 10(2): 93-108.
- [5] Arenius, P. & D.D. Cleriq, 2005. A network based approach on opportunity recognition. *Small Business Economics*, 24: 249-265.
- [6] Anderson, K., 2001. *Teleworking in rural areas*. Scotland: Rural Development.
- [7] Chang-Shuo, L., 2006. *Organizational, technological and environmental determinants of E-commerce adoption in SMEs in Taiwan*. Unpublished PhD thesis, Lyn University, US.
- [8] Corrales, J. & F. Westhoff, 2006. Information technology adoption and political regimes. *International Studies Quarterly*, 50(4): 911-933.
- [9] Deakins, D., L. Galloway, & R. Mochrie, 2003. *The use and effect of ICT on Scotland's rural business community*, Research Report, Scottish Economists Network, Scotland.
- [10] Dos santos, B.L. & K. Peffers, 1998. Competitor and vendor influence on the adoption of innovative applications in electronic commerce. *Information and Management*, 34(3): 175-184.
- [11] Forman, C., 2005. The corporate digital divide: determinants of internet adoption. *Management Science*, 51(4): 641-654.
- [12] Friedlander, A., 2002. *Networked technologies and the internet: a brief historical perspective*. Washington DC: Benton Foundation.
- [13] Galloway, L. & R. Mochrie, 2005. The use of ICT in rural firms: a policy oriented literature review. *INFO*, 7(3): 33-46.
- [14] Grandon, E., J.M. Pearson, 2004. *Factor that differentiate between adopters and non-adopters of e-commerce: an empirical study of SMEs*. Proceedings of the Americas conference on information system, August 6-8, New York.
- [15] Hair, J.F.J., A.H. Money, P. Samouel, & M. Page, 2003. *Research methods for business*. Chichester: John Wiley.
- [16] Huggins, R. & H. Izushi, 2002. The digital divide and ICT learning in rural communities: examples of good practice service delivery. *Local Economy*, 17(2): 111-122.
- [17] Iacovou, C.L., I. Benbasat, & A.S. Dexter, 1995. Electronic data interchange and small organizations: adoption and impact of technology. *MIS Quarterly*, 19(4): 465-485.

- [18] June, S. & R. Mahmood, 2011. The relationship between role ambiguity, competency and person job fit with the job performance of employees in the service sector SMEs in Malaysia. *Business Management Dynamics*, 1(2): 79-98.
- [19] Kapurubandata, M. & R. Lawson, 2008. Availability of e-commerce support for SMEs in developing countries. *The International Journal on Advances in ICT for Emerging Regions*, 1(1): 3-11.
- [20] Kogilah, N., A.S. Santhapparaj, & V.C. Eze, 2008. *An empirical study of website adoption among SMEs in Malaysia*. Proceedings of the 10th International Business Information Management Association Conference, Kuala Lumpur.
- [21] Kuan, K. & P. Chau, 2001. A perception based model of EDI adoption in small business using technology-organization-environment framework. *Information and Management*, 38: 507-521.
- [22] Kyobe, M., 2011. Investigating the key factors influencing ICT adoption in South Africa. *Journal of Systems and Information Technology*, 13(3): 255-267.
- [23] Leatherman, J., 2000. *Internet based commerce: Implications for rural communities*. Kansas City: Kansas State University.
- [24] Lertwongsatien, C. & N. Wongpinunwatana, 2003. E-commerce adoption in Thailand: an empirical study of SMEs. *Journal of Global Information Technology Management*, 6(3): 67-83.
- [25] Mahmood, R. & S. Hanafi, 2013. Entrepreneurial orientation and business performance of women-owned SMEs in Malaysia: competitive advantage as a mediator. *International Journal of Business and Social Science*, 4(1): 82-90.
- [26] Malone, T.W., J. Yates, & R.I. Benjamin, 1987. Electronic markets and electronic hierarchies. *Communications of the ACM*, 30(6): 484-497.
- [27] Narula, S.A. & S. Arora, 2010. Identifying stakeholders' needs and constraints in adoption of ICT services in rural areas: the case of India. *Social Responsibility Journal*, 6(2): 222-236.
- [28] Pavic, S.C.L., M. Koh, J. Simpson, Padmore, 2007. Could e-business create a competitive advantage in UK SMEs? *Benchmarking*, 14(3): 320-351.
- [29] Porter, M., 2008. The five competitive forces that shape strategy. *Harvard Business Review*, 86(1): 78-93.
- [30] Sandy, C. & P. Graham, 2007. Factor influencing the extent of deployment of e-commerce for SMEs. *Journal of Electronic Commerce in Organizations*, 5(1): 1-29.
- [31] Scott, A.J., 2006. Entrepreneurship, innovation and industrial development: geography and the creative field revisited. *Small Business Economics*, 26: 1-24.
- [32] Scupola, A., 2003. The adoption of internet commerce by SMEs in the South of Italy: an environmental, technological and organizational perspective. *Journal of Global Information Technology Management*, 6(1): 51-71.
- [33] Soliman, K.S. & B.D. Janz, 2004. An exploratory study to identify the critical factors affecting the decision to establish internet-based interorganizational information systems. *Information & Management*, 41(6): 697-706.
- [34] Tan, K.S., S.C. Chong, B. Lin, & V.C. Eze, 2008. Internet based ICT adoption: evidence from Malaysian SMEs. *Industrial Management and Data System*, 109(2): 224-244.
- [35] Thompson, S.H. & P. Yujun, 2003. A contingency perspective on internet adoption and competitive advantage. *European Journal of Information System*, 12(2): 78-92.
- [36] Thong, J.Y.L., 1999. An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, 15(4): 187-214.
- [37] Tornatzky, L. & M. Fleischer, 1990. *The process of technological innovation*. New York: Lexington.