ENTREPRENEURS TRAITS AND E-COMMERCE ADOPTION: 
AN EMPIRICAL STUDY

Syed Shah Alam: National University Of Malaysia, Ukm Bangi, Malaysia
Mohd Fauzi Mohd Jani: National University Of Malaysia, Bangi, Malaysia
Hisham Ismail: Multimedia University, Ayer Keroh, Malaysia

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Contact: Syed Shah Alam, National University of Malaysia, Faculty of Economics and Business, School of Business Management, 43600 UKM Bangi, Malaysia, (T) +603-8921 3724, (F) +603- 8921 3163, Email: shahalam@ukm.my

ABSTRACT

Entrepreneurs in Malaysia are playing an important role for the economic development of the country. Due to the potential benefits of e-commerce, entrepreneurs of Malaysia have the opportunity to expand their market in the world. The purpose of the study is to find out the extent of the effect of entrepreneurial personality traits towards the e-commerce adoption in the context of small and medium enterprise industries in Malaysia. In selecting the survey sample, the convenient sampling of non-probability sampling was adopted. Most of the major towns in Peninsular Malaysia have been chosen for the purpose of collecting the data. During the data collection, a total of 1480 questionnaire were distributed and 1416 returned usable questionnaire (96.67 percent response rate). The study revealed that the personality traits did have some significant impact on the e-commerce adoption among the entrepreneurs in Malaysia. The recommendation, limitation and conclusion are then discussed at the end of the paper.

Keywords: Entrepreneurs, E-commerce Adoption, Malaysia

INTRODUCTION

Entrepreneurs are the key player for the economic development of any country (Schumpeter, 1934; Wennekers and Thurik, 1999; Baumol, 2002, Van Stel et al., 2005). Founder of any business is considering as the entrepreneur. The person creating value by offering a product or service is most commonly called them as entrepreneurs. According to Stam et. al (2007) entrepreneurs are the driver of structural change and job creation. They also argue that entrepreneurs are also the engine behind the formation and subsequent growth of new firms. Entrepreneurs are contributing significantly to the economic strength of the nation considering the direct output of goods and services as well as the role in supplying requisite inputs to other enterprises and government understandings (Ndubisi and Kahraman, 2005).

In this present technological business environment electronic commerce (EC) has been the subject of a number of recent research investigations. Research by Senn (20000, Riggins and Rhee (1998) investigations have reported that when deployed by organizations, EC can serve to (a) enhance customer service; (b) facilitate the management of value chain activities; (c) improve inventory control; (d) increase market reach; and (e) reduce both marketing and distribution costs. They argue that EC will redefine the relationship between customers and suppliers of goods and services. It will provide opportunities afforded by the Internet which include: a new and lower cost channel to market; clicks and mortar synergies; scope for hypermediation; better knowledge of consumer preferences; and scope for diversification of products and services.

Since Malaysia has shifted her agriculture-based economy to industry based in order to stand the challenge of the twenty first centuries, the Malaysian government has provided a lot of programs and initiatives in
order to encourage entrepreneurs to adopt E-commerce into their business. The latest industrial initiative taken by the Malaysian Government after 1997 was to encourage firms to be more knowledge-intensive rather than production-intensive in order to transform Malaysia into a knowledge-economy (K-economy).

Malaysia has been recognized as having a high potential and prospect for EC implementation in South East Asia in the future and expected to be a role model of developing countries in terms of Information Communication Technology (ICT) implementation and establishment within the next 5 years. According to Economist Intelligence Unit (2007) Malaysia has ranked to the 37 of the world ranking in terms of eReadiness accessibility.

In spite of having better opportunities and encouragement in terms of technological, business and organizational resources as well as the government eReadiness towards its implementation, empirical research on EC adoption by entrepreneurs has been very limited. Furthermore, due to the competitive and dynamic environment of businesses, there is a need to conduct study EC among Malaysian entrepreneurs. Therefore, this research tries to fill the gaps on EC adoption research by attempting to identify the characteristics of entrepreneurs which predict the rate of adoption of EC in Malaysian businesses.

**DEFINITION OF ENTREPRENEURS**

This paper concentrates on the study of entrepreneurs characteristics influence on EC adoption in the businesses. The focus on Entrepreneurship will be basically looked at the macro and micro perspectives of the topic. It concentrates on the social, structural, as well as psychological factors that determine who will become entrepreneurs. The study of entrepreneurs concentrates on the person in the process, the dancer of the dance, the core of the theoretical process.

The study of entrepreneurs has garnered many varied definitions of the topic. Some researchers have defined entrepreneurs as someone who recognize an opportunity, and marshals the resources to take advantage of, or act on that opportunity (Huefner and Hunt, 1994; Chung and Gibbons, 1997; Begley, 1995). Other researchers have attempted more encompassing definitions, which look at the entrepreneurial process, event and the entrepreneur (Bygrave and Hofer, 1991; Gartner, 1989; Sexton and Smilor, 1986). According to Zimmerer and Scarborough (2005) entrepreneur is one who creates a new business in the face of risk and uncertainty for the purpose of achieving profit and growth by identifying significant opportunities an assembling the necessary resources to capitalize on them.

Bygrave and Hofer (1991) defined the entrepreneurial event as the creation of a new organization to pursue an opportunity. The authors define the entrepreneurial process as involving all the functions, activities and actions associated with the perceiving of opportunities and the creation of organizations to pursue them. Finally, they define an entrepreneur as someone who perceives an opportunity and creates an organization to pursue it.

Another entrepreneurial definition ties the state of being an entrepreneur to innovative behavior and strategic management practices (Gartner 1988; Sexton and Smilor, 1986). The authors identify five innovative strategic postures of entrepreneurs: (1) introduction of new goods (2) introduction of new methods of production (3) opening of new markets (4) opening of new sources of supply and (5) industrial reorganization (Gartner 1988; Sexton and Smilor, 1986).

A look at the vast array of research on entrepreneurs indicates that there is still no standard universally accepted definition of an entrepreneur (Joanne et al., 2003). The definition used in a particular study is dependent on what one's intent is, or what one hopes to accomplish. For the purpose of this paper, entrepreneurs are defined as individuals who pursue opportunities with a long-term focus in mind (Miner, 1997; Begley, 1995). This definition recognizes that tendencies such as internal locus of control, achievement orientation, risk taking propensity and work values, are important in analyzing the psychology of entrepreneurs.
The Latin roots of the word are emtre meaning “enter”, per meaning “before”, and neur meaning “nerve center”. Entrepreneur could, therefore, mean someone who enters a business in time to form (or change) meaningfully that business nerve center or decision center (Shefsky, 1994). Bygrave (1994) introduced a definition that does not refer to any particular personality characteristics – an entrepreneur “is someone who perceives an opportunity and creates an organization to pursue it”. Entrepreneurship means activities connected with owning and managing a business firm (Brockhaus, 1976). Yet researchers have made distinctions between entrepreneurs and small business owners (Vesper, 1980; Carland et al., 1984; Glueck and Jauch, 1984; Shailer, 1994; Deakins, 1996; Thurik and Wennekers, 2004). Entrepreneurs are concerned with maximizing profits, growth and innovative behavior, and concentrate on opportunities rather than resources (Stevenson and Gumpert, 1991), while small business owners are associated with furthering personal goals, taking part in a business that occupies the bulk of their time and resources, and having a business linked with family needs and desires (Carland et al., 1984). Small businesses can be a vehicle both for Schumpeterian entrepreneurs to introduce new products and processes that change the industry, and for people who simply run and own a business for a living (Thurik and Wennekers, 2004).

The research literature also differentiates a number of sub-categories of small businesses (Still and Timms, 2000). “Self-employed” describes an independently owned small business with a single operator and no employees. “Micro-business” describes a small business operation, irrespective of sector, with less than five employees, while a “small enterprise” refers to a small business operation in the services, primary agriculture and information and communication Technology (ICT) of between five and 19 employees, and five and 50 employees in the manufacturing sector (NSDC). These sub-categories show the heterogeneity of the small business sector, and are adopted as a starting point in order to gain further understanding of the situation in Malaysia. For the purpose of the present study, no distinction will be made between the use of the terms “entrepreneur” and “small business owner”. They seem to be a “hybrid”, since they are concerned with growth and innovative behavior as well as with furthering personal objectives linked with family needs and desires.

**CONCEPTUAL FRAMEWORK**

According to Molla and Licker (2005); and Tan et al. (2007), the literatures on EC adoption by businesses suggest that most researches are based on the following frameworks:

1) The Diffusion of Innovation (DOI) (Rogers, 1995; Zhu and Kraemer, 2005)
2) Technology Acceptance Model (TAM) (Davis, 1989)
4) Institutional Theory (Chatterjee et al., 2002; Scott, 1995) and

These models have differences in term of their focus and are designed to examine different aspects of business EC adoption. Some models examine only the external environment of firms (Gibbs et al, 2003; Hemple and Kwong, 2001; Kshetri and Dholakia, 2002), while some are focused on technological aspects (Claycomb et al, 2005).

Diffusion of Innovation (Rogers, 1995) and Technology Acceptance Model (Davis, 1989) has been widely used in the previous studies. But these models are tending to ignore the entrepreneurs characteristics. SME do not adopt EC due to the negative attitude of entrepreneurs on ICT. By assessing entrepreneur’s characteristics, we provide empirical evidence how entrepreneur’s traits have significant effect on EC adoption in their business.

In studies of technology adoption in SMEs, researchers have emphasized on the owners/managers of SMEs especially their characteristics, behaviours and attitudes (Fichman and Kemerer, 1997; Grover et al., 1997). This is because such individuals usually directly and/or indirectly involved in all decision making in their organization. Lakhanpal (1994) reveals that individual characteristics i.e., innovators, leaders and other individual attributes in key positions have significant impacts on explaining differences in the degree of innovation adoption. Therefore, these factors are worthy to be used to explain the adoption patterns of EC by SMEs in Malaysia.
According to Schumpeter (1947) there is a distinction between an adaptive and creative response to new technologies. He argued that creative response as a process, whereby the industry did something that was outside the range of existing practice. He also mentioned that the creative responses were influenced by the quality of brains available and the decisions and behaviour of social actors. In this study, we have considered the adoption of EC as a creative response of the entrepreneur as ICT is outside the range of existing practice for the sample firms. This will depend upon the knowledge base of entrepreneurs, as well as their characteristics that would likely to influence EC adoption. It can be argued that entrepreneurs have been reported in personality and psychological research to exhibit unique characteristics that distinguish them from other technology users (Ndubisi and Kahraman, 2005). These characteristics may have interesting implications for their EC adoption and usage determinations. The characteristics have suggested by past literature are, need for achievement (McClelland, 1961; Decarlo and Lyons, 1979), locus of control (Mueller and Thomas, 2000; Sexton and Smilor, 1986), Risk taking (Bowen and Hisrich, 1988; Palmer, 1971), values (Sexton and Smilor, 1986; Decad), ability to identify business opportunities (Cairedd, 1988), autonomy (DeCarlo and Lyons, 1979; Sexton and Bowman, 1983), creativity/innovativeness (Sexton and Bowman, 1983), confidence (Zimmerer and Scarborough, 2005), capability to process information (McGaffey and Christy, 1975), Low interpersonal effect, social adroitness, low harm avoidance and low succorance (Sexton and Bowman, 1984).

**THE RESEARCH MODEL**

The research model empirically tested in this study contains constructs that have demonstrated literature support, based on a number of research done in this area in different countries, particularly online shopping on end-user perspective (refer to Figure 1). The model examines the factors that affect EC adoption by entrepreneurs. The research model is shown at

![Diagram of the research model](image)

The schematic diagram of the research model above shows the relationship between the dependent and independent variables. Essentially, the theoretical framework shows above is the foundation on which the entire research is based upon.

EC adoption is the dependent variable in this research. The dependent variable is analyzed in this research in order to find out the answers or solution to the problem. Meanwhile, the independent variables in this research are the entrepreneurs’ characteristics including achievement, opportunity, confidence, innovativeness, independent, risk taking and Locus-of-control. The independent variables are believed to be the variables that influence the dependent variable (EC adoption in business) in either a positive way.
HYPOTHESES

A series of testable hypotheses were developed from the proposed research model, as shown below:

Hypothesis 1: There is a significant relationship between achievement and entrepreneurs’ EC adoption
Hypothesis 2: There is a significant relationship between opportunity and entrepreneurs’ EC adoption
Hypothesis 3: There is a significant relationship between confidence and entrepreneurs’ EC adoption
Hypothesis 4: There is a significant relationship between innovativeness and entrepreneurs’ EC adoption
Hypothesis 5: There is a significant relationship between independent and entrepreneurs’ EC adoption
Hypothesis 6: There is a significant relationship between risk taking ability and entrepreneurs’ EC adoption
Hypothesis 7: There is a significant relationship between locus-of-control and entrepreneurs’ EC adoption

THE STATISTICAL MODEL

According to the existing literature the statistical model in this study can be expressed as follows:

\[ y = \beta_1 ACV + \beta_2 OP + \beta_3 CON + \beta_4 INV + \beta_5 IND + \beta_6 RTA + \beta_7 LOC + \text{constant} \]

where \( y = \) EC adoption, \( ACV = \) achievement, \( OP = \) opportunity, \( CON = \) confidence, \( INV = \) innovativeness, \( IND = \) independence, \( RTA = \) risk taking ability, \( LOC = \) locus-of-control.

METHOD

Questionnaire development

From the previous literature on entrepreneurs characteristics, 30 items were generated to measure the 7 attributes described above as requirements for truly EC oriented. Items measuring attributes were developed specifically for this study on the basis of personal interviews with the few respondents. All 30 items were accompanied by a six-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Seven items from the E-commerce scale (Alam et al., 2007) were used to measure the entrepreneurs’ EC adoption in this study. This measure employs a five-point scale in Likert format, ranging from 1 (after 5 years) to 5 (current users).

After the questions were generated form the entrepreneurs interviews, it was pre-tested on a sample of 50 respondents. By administering the pre-test, we could ensure that the attributes measured in the study reflected actual interactions and expectation from the entrepreneurs when adopting EC into their business. It was decided to keep all items in the research so as to have contributions on a wider scale to see if these items indeed measured the same constructs form the entrepreneurs point-of-view.

Sample

The sample for this study was composed of 1480 SMEs owner in Peninsular Malaysia. Owner/entrepreneurs of the SMEs of each organization were the respondents. Simple random sample method was used to distribute the questionnaire using trained research assistants. A total of 1480 questionnaire were distributed and 1416 returned usable questionnaire (96.67 percent response rate). Out of the 1416 surveyed, 64.9 percent were service are indicating predominantly service based organization, 33.1 percent were manufacturing companies and 2.0 percent did not mention anything. It is found that more than 50 percent of the SMEs have below 50 employees (53.7 percent).
Most of the entrepreneurs age was below 40 years (52.5 percent) where as Chinese are the largest portion of entrepreneurs dominating business in Malaysia.

According to the respondents business experiences and Internet usage in their business a high percentage of those surveyed (23.2 percent) have been doing business 3 to 4 years, while relatively few (3.7 percent) for 6 to 7 years.

**RESULTS**

Reliability

The internal reliability of the items were verified by computing the Cronbach’s alpha and it suggested that a minimum alpha of 0.6 was sufficed for early stage of research (Nunally, 1978). The Cronbach alpha estimated for EC adoption scale was 0.916, Achievement scale was 0.716, Opportunity scale was 0.745, determination scale was 0.773, locus-of-control scale was 0.720, risk taking behavior scale was 0.726, independence scale was 0.783 and creativity scale was 0.739. The results indicate the cohesiveness among all the items within their own grouping were relatively strong. In addition, with the Cronbach’s alpha in this study were much higher than 0.6, the constructs were therefore deemed to have adequate reliability.

Hypotheses Testing

The strength of the proposed relationship was assessed using the respective statistical analyses summarized in Tables II.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Beta</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>-.244</td>
<td>-4.488</td>
<td>.000</td>
</tr>
<tr>
<td>Opportunity</td>
<td>.182</td>
<td>3.366</td>
<td>.001</td>
</tr>
<tr>
<td>Determination</td>
<td>.367</td>
<td>7.818</td>
<td>.000</td>
</tr>
<tr>
<td>Locus-of-control</td>
<td>.055</td>
<td>1.177</td>
<td>.239</td>
</tr>
<tr>
<td>Risk taking behavior</td>
<td>.120</td>
<td>2.826</td>
<td>.005</td>
</tr>
<tr>
<td>Independence</td>
<td>-.157</td>
<td>-3.769</td>
<td>.000</td>
</tr>
<tr>
<td>Creativity</td>
<td>.010</td>
<td>.216</td>
<td>.829</td>
</tr>
</tbody>
</table>

**Hypothesis 1:**

The results of this study show that the association between achievement and EC adoption is significant with $\beta=-0.244$ ($p=0.000$) as indicated in the multiple regression result. Surprisingly, the relationship between the Achievement and e-commerce adoption is found to be negative. The result shows that when the entrepreneur feels that they have achieved their business target, the dependency towards e-commerce is found to be less important. Furthermore, the result also attests that for the high achiever, the e-commerce may not be as a great help in supporting their daily operation.

**Hypothesis 2:**

Another important trait of an entrepreneur is opportunity seeker. Normally, the true entrepreneur will see everything as opportunity for them to turn it to business. As such, looking at the various advantages that e-commerce may offer to the adopters, this trait was tested to see the linkage towards the EC adoption. As expected, the results of this study shows that the association between being an opportunist and EC adoption is significant with $\beta=0.182$ ($p=0.000$). The result further indicates that the direction of the associations is positive in which it implies that the more the entrepreneur is seen as an opportunist, the possibility of them to adopt e-commerce will be higher.

**Hypothesis 3:**
In order to succeed, entrepreneurs should be determinant in their job. They need to focus and consistent in their decision. It is observed that internet services may help the entrepreneurs to complete their project more effectively and efficiently. In this situation, the determination towards internet-based services will be tested to see whether there is any effect towards the e-commerce adoption. The multiple regression analysis shows that the association between determination and EC adoption is significant with $\beta=0.367$ ($p=0.000$). The result attests that most of the entrepreneurs are confident that by adopting EC, it will assist them in their daily operation. Furthermore, with the positive coefficient value, it could be concluded that the higher their determination on internet-based services, the chances for them to adopt the e-commerce will be greater.

**Hypothesis 4:**

The entrepreneurs should be able to influence over the outcome in their business and have the feeling of accountability in their decision. This is very important since, entrepreneurs should be responsible to any plan that they have made in order to ensure the survival of their ownership. Due to its importance, this study will try to investigate the relationship between locus of control and the possibility of adopting the e-commerce. Surprisingly, the results of this study shows that the association between having the sense of locus of control and EC adoption is not significant with $\beta=0.055$ ($p=0.239$). In this situation, most entrepreneurs feel that the e-commerce does not really help them to be more accountable and responsible to their actions and decisions. This is due the low level of involvement of the entrepreneurs of EC usage into their business with (only 30% of SMEs have primary ICT based business). However, we can expect to get stronger association if the level of EC is high.

**Hypothesis 5:**

Another stumbling block of adopting the e-commerce is security. Even though, the entrepreneurs are risk takers, but they are actually calculate risk takers. In any decision, they will analyze the situation before making the final approval for any plans or actions. The result of this study shows that the association between risk taking behavior and EC adoption is significant with $\beta=0.120$ ($p=0.000$). The support for hypothesis 5 reflects that risk taking behavior of entrepreneurs did exist in the context of implementation and adoption of e-commerce in their organization.

**Hypothesis 6:**

Being independent is a must for any entrepreneur. They should depend on themselves without relying on other people especially in the introductory and development stage of their business lifecycle. Looking at the important of this trait, the study tries to investigate to what extent the adoption of e-commerce will help them to become more independent. As anticipated, the results of this study show that the association between being independent and EC adoption where the multiple regression result shows the result of $\beta=-0.157$ ($p=0.000$). The result proves that most of the entrepreneurs are depending on the additional methods or ways for them to operate more effectively in their business. This is where the study found the adoption of e-commerce has brought great help especially in term of meeting their target as well as decisions.

**Hypothesis 7:**

Previous research finding found that creativity or innovative played a vital role in ensuring the success of any business organization. The owner has to be innovative not only in producing or developing new product but also in term of daily management of their organization. All the procedures and company-wide processes should provide some supports so as to ensure the company could prosper in the future. In view of this, it is predicted that the internet would come as one of the special tool in helping and managing the routine of the organization. Although the findings show that creativity has a positive relationship with EC adoption intentions, surprisingly, the relationship between creativity and e-commerce adoption is found to be not significant ($\beta=0.010$; $p=0.829$). This may be the result from a dramatic increase in the number of business solutions companies in Malaysia which is due to the promotion of EC by the government through Multimedia Super Corridor (MSC). The main consequence is that the creativity in the internet or EC usage were led by the creative thinking of IT workers or IT consultant whereby many creative software were...
developed and limit the inborn creativity possess by the entrepreneur. These conditions can consequently lead to an unimportance of creative nature of entrepreneurs.

CONCLUSION

The research framework for this study relied on the seven successful entrepreneurial traits as identified in various studies namely need for achievement, opportunity seekers, confident, locus of control, calculated risk taker, independent and innovative or creative. Based on the result of the study, most of the traits are found to be correlated with the e-commerce adoption (EC adoption) with the exception for locus of control and creativity. These results indicate that these two factors will not likely to influence the overall decision to adopt the e-commerce in their daily operation. One of the reasons why locus of control did not influence the EC adoption is mainly due to the reason that the adoption of e-commerce does not really influence or affect the accountability in their job. Normally, the accountability comes with their decision on certain issues and most of the time all these should be treated in different ways and support from e-commerce or internet will be significantly less. Moreover, most of the entrepreneurs feel that they could not use their creativity in conducting their operation using the e-commerce. In addition, some of them may have a feeling that they are not expert in the field and leave it to the IT consultant to advice and recommend the best e-commerce package that they should use. The consequence of this is the analysis between creativity and EC adoption where it was found that the association to be non-significant. However, this result is only referred to the context of EC adoption and therefore could be generalized in the sense that entrepreneurs are not creative.

As for conclusion, this study has achieved its main objective, which is to, study about the effect of entrepreneur characteristics and personality towards their intention to adopt e-commerce in the context of small and medium industries in Malaysia. Furthermore, the analysis indicates that in general the personality traits did have some effect towards the EC adoption even though two of the traits did not show any support.

LIMITATION AND FUTURE RESEARCH

The current research, although successful in exploring the effect of entrepreneurial traits towards the EC adoption in Malaysia, is subject to certain limitations. The first limitations is due to few studies, which have been published to date, only focused on the acceptance or adoption or diffusion of internet or e-commerce. Furthermore, no studies have made on the effect of personality traits or in the context of this study focusing on the entrepreneur towards the EC adoption, thus, there are no proven examples that can be followed or referred. This limitation also leads the researchers to face difficulty when collecting secondary data and extra information that can give a support to the current studies. Therefore, the researchers have to study the previous researches, which more focused on personality traits of an entrepreneur and the general perception and discussion on the e-commerce adoption separately and come out with new framework of the research. Even though this research study has faced some limitations and problem, but it is still be able to succeed and achieve its objective. Hope that this research will be useful for everybody particularly for the Ministry of Entrepreneurship Development to get some ideas and develop suitable training programs to help and assist the entrepreneur in the future endeavor.

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