A UNIFIED APPROACH TOWARDS E-COMMERCE ADOPTION BY SMMES IN SOUTH AFRICA

Patrick Ndayizigamiye
School of Management, IT and Governance University of KwaZulu-Natal, South Africa
Ndayizip@ukzn.ac.za

Abstract
E-commerce has been identified as an enabler of economic development/growth in developing countries. This is due to the preponderant role that e-commerce plays in developing world as a catalyst towards improved customer service [4]; expansion of market reach [11]; improved customer relationship and communications [15,16] and supply chain integration [9]. In the South African case, the currently installed undersea cable which promises faster and more reliable Internet connection and the current government efforts to increase SMMEs online visibility make e-commerce an attractive platform to conduct online business. It is in this context that this paper seeks to investigate factors that contribute to e-commerce adoption. Using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, this paper investigates the adoption of e-commerce from 180 SMMEs in Pietermaritzburg area in South Africa. The findings reveal that although facilitating conditions have not influenced the decision to adopt e-commerce in the surveyed SMMEs, social influence, effort expectancy, performance expectancy are determinants of e-commerce within the selected SMMEs. Thus, this paper recommends a managerial approach towards the adoption of e-commerce focusing on making it easier for employees to execute their daily tasks.

Keywords: E-commerce adoption, SMMEs, UTAUT, Pietermaritzburg

INTRODUCTION

E-commerce is defined as “sharing of business information, maintaining business relationships, and conducting business transactions by means of Internet-based technology” [13, p.9]. There is evidence from the literature to suggest that e-commerce can bring economic benefits. These benefits include improved customer service [4]; expansion of market reach [11]; improved customer relationship and communications [15,16] and supply chain integration [9].

In South Africa, there is an evidence of a growth of Business to Consumer e-commerce (B2C) in the area of online retail [19]. In addition, there is also an evidence of an increase in the number of Internet users in South Africa. At the end of the year 2011, the number of Internet users in South Africa was about 8.5 million [7]. Thus, it is projected that the increase in the number of Internet users will translate into an increase of online shoppers.

This paper reports on the study conducted to explore the determinants of e-commerce adoption using the UTAUT constructs namely Performance expectancy, Effort expectancy,
Social influence and Facilitating conditions. The article is based on a sample of 180 SMMEs in Pietermaritzburg area in South Africa. The study used four (4) e-commerce adoption options to test the significance of each one of the UTAUT constructs as possible determinants of e-commerce adoption. These options are i) customers payment by credit card through the SMME’s website, ii) customers placing orders through the SMME’s website, iii) providing customer services through the SMME’s website and iv) placing orders with suppliers over the Internet.

LITERATURE REVIEW

The SMMEs environment

In South Africa, SMEs also known as SMMEs (Small, Micro and Medium Enterprises), are defined as businesses that employ less than 200 full-time employees. The size of an SMME (in terms of the number of full-time employees) differs according to the business sector it falls under. However, in all sectors, the size limit of an SMME is 200 full-time employees, except in agricultural sector where the size limit is 100 full-time employees [7]. A small enterprise has up to 50 employees, a medium enterprise from 51 to 200. A micro enterprise has up to 5 employees [7].

There is substantial support in the literature to attest that SMMEs play a pivotal role in economies around the world [3,8,12,14]. Generally, SMMEs “constitute more than 95% of the enterprises and account for more than 60% of the employment levels in different countries in the world” [2, p.2]. In South Africa, SMMEs play a critical role in the country’s economy. SMMEs contribute between 52% and 57% of the country’s GDP and up to 61% of the overall employment in South Africa [1]. Thus, by adopting e-commerce, SMMEs would take advantage of the benefits of e-commerce, thus contributing to third world countries’ development and poverty alleviation.

E-commerce adoption

E-commerce activities can be classified into several broad categories depending on the nature of the transactions or the relationship among the participants [17]. The major types of e-commerce are: Business to Business (B2B), Business to Consumer (B2C), Business-to-Business-to-Consumer (B2B2C), Consumer-to-Business (C2B), intrabusiness e-commerce, Business-to-Employees (B2E), Consumer-to-Consumer (C2C), collaborative commerce, e-learning and e-government. However, this research paper only focuses on B2B and B2C. The focus is limited mainly because the four e-commerce options examined in this paper fall under B2B and B2C categories only.

Business to Business e-commerce

Business-to-Business e-commerce activities range between 70 and 85% of total e-commerce activities in OECD1 countries [12]. The global market for B2B was expected to reach $15 trillion by 2012 [17]. The value of B2B comprises at least 85% of the total transaction value of e-commerce [17]. The knowledge of e-commerce issues remains scarce particularly within the B2B e-commerce environment [6]. B2B e-commerce implies exchanging and sharing information within the firm itself or with external stakeholders [5]. Thus, B2B can be used to support internal processes through private networks (e.g. extranet and intranet) or can be used to link external organisations through public networks such as the Internet. The table below depicts some of the benefits associated with B2B e-commerce.

---

1 Organisation for Economic Co-operation and Development. Made of 34 countries, its aim is to stimulate economic progress and world trade.
Table 1: Benefits of B2B e-commerce

<table>
<thead>
<tr>
<th>Benefits of B2B e-commerce</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased visibility offered by a Web presence</td>
<td>[12]</td>
</tr>
<tr>
<td>Expansion of market reach</td>
<td>[11]</td>
</tr>
<tr>
<td>Reducing market entry barriers and targeting market segments</td>
<td>[10]</td>
</tr>
<tr>
<td>Improved customer relations and communications</td>
<td>[15,16]</td>
</tr>
<tr>
<td>Improved customer service</td>
<td>[4]</td>
</tr>
<tr>
<td>Supply chain integration</td>
<td>[9]</td>
</tr>
</tbody>
</table>

Source: [10]

Business to Consumer e-commerce

Business to Consumer e-commerce implies sales of goods and/or services to individual customers. B2C e-commerce has been equated in many instances to electronic retailing (see for instance [17]), which is retailing moved online as opposed to in-store. The U.S. online retail sales reached $175 billion in 2007 [17]. It is estimated that online retail sites get 4.6 million visitors a minute [17]. The growth of B2C e-commerce was projected to reach $335 billion by 2012. In addition, online retailing was expected to grow at an annual rate of 14% from 2008 to 2012, compared to only 2.6% for brick and mortar (traditional, not online) stores. In 2007, retailers reported that 27% of store sales were either directly or indirectly influenced by the web [17]. This demonstrates the web capability to influence brick and mortar retail sales.

Goldstuck [19] argues that online retail in South Africa is growing rapidly, reaching the R2 billion mark in 2010. In addition, the number of online retailers has reached a 30% growth rate in 2011. Compared to traditional physical retail in South Africa which reached R561bn in 2010 [19], online retail only makes up about 0.36% of the total retail in South Africa [19]. However, in 2010, the growth rate of online retail in South Africa was four times higher than physical retail [19]. Hence, South African firms who seek to venture into online business stand to benefit from B2C, as there is potential growth for the demand of e-commerce related services.
Figure 1 below shows the value of online retail South Africa (in rands) each year since 1996 until 2011.

**Figure 1: Online Retail revenue in South Africa from 1996 to 2011**

![Online Retail revenue in SA 1996-2011](image)

Source: [7]

**THEORETICAL FRAMEWORK**

**Unified Theory of Acceptance and Use of Technology (UTAUT)**

The UTAUT model is made of four constructs (see figure below) namely: performance expectancy, effort expectancy, social influence and facilitating conditions. Performance expectancy refers to the degree to which an individual believes that the use of a system will translate into an increase in job performance. Effort expectancy refers to the extent to which a system is perceived to be easy to use. Social influence is the degree to which individuals perceive that influential people believe they should use a new system. Facilitating conditions refer to the availability of infrastructure (organisational and technical) to support the use of a system. Gender, age and experience are the most important intervening variables that moderate the effects of the four constructs on the behavioural intention to use the system [18]. Voluntariness of use of a system is also a moderating factor of the social influence on the user’s behavioural intention to use a system.

The four constructs emanate from a combination of several theories: i) the Theory of Reasoned Action (TRA) ii) the Theory of Planned Behaviour (TPB), iii) the Technology Acceptance Model (TAM), iv) the Motivational Model (MM), v) a theory combining the TAM and TPB models (C-TPB-TAM), vi) the model of Personal Computer (PC) Utilisation (MPCU), vii) the Diffusion of Innovation theory (DOI), and viii) the Social Cognitive Theory (SCT). Xiaoping and Jing [20, p. 325-325] emphasize that “according to the empirical validation, this model is better than the eight individual models in explaining user intentions to accept a particular technology”.

In this paper, the four constructs are tested
as potential determinants of e-commerce in the selected SMMEs in South Africa.

**Figure 2: The UTAUT model**

*Source: Venkatesh et al. (2003)*

**METHODOLOGY**

A survey was conducted amongst Pietermaritzburg SMMEs. Data was collected by means of questionnaires administered to 200 SMMEs owners/managers. The questionnaires sought to test the UTAUT constructs as possible determinants of e-commerce within the selected SMMEs. A total of 180 usable/analysable answers were collected, representing 90% of usable responses from the respondents. The variables below were used to test the constructs as possible determinants of e-commerce adoption by SMMEs. A Chi square test of independence was used to test the significance of the association between the constructs variables and each one of the e-commerce options.

**Performance expectancy:**

Variable 1 (V1): e-commerce technology enhances the job performance of company employees
Variable 2 (V2): e-commerce enables company employees to accomplish specific tasks more quickly

**Effort expectancy:**

V1: E-commerce is easy to use

**Social influence:**

Variable 1 (V1): Owner manager support
Variable 2 (V2): Owner/manager enthusiasm about e-commerce adoption

**Facilitating conditions:**

The influence of facilitating conditions on e-commerce adoption was captured through the following variables within the questionnaire V1: presence of IT skills, V2: availability of financial resources and V3: availability of technological resources.

**RESULTS AND DISCUSSION**

In order to test the significance of the association between each e-commerce option with the UTAUT constructs, the following hypothesis were formulated:

i) **Performance expectancy**

Variable 1 (V1): e-commerce technology enhances the job performance of company employees

**H0**: There is no relationship between V1 and e-commerce adoption

Variable 2 (V2): e-commerce enables company employees to accomplish specific tasks more quickly

**H1**: There is a relationship between V1 and e-commerce adoption

In order to determine the relationship between performance expectancy and e-commerce adoption, the variables described above were cross-tabulated with each of the four (4) e-commerce options. In addition, a Chi square independence test was run to test the significance of the relationship. The output of the tests is shown in table below and only significant relationships are further elaborated.

Table 2 below indicates that adoption of credit card payment by customers in Pietermaritzburg (PMB) is significantly (p<0.05) related to V1 of performance expectancy. Further analysis shows that the majority (95.1%, N=58) of SMMEs that allow customer credit card payment through their websites in Pietermaritzburg agree that e-commerce technology enhances the job performance of company’s employees. Thus, H0 for V1 is rejected for online payment by credit card. This implies that performance expectancy (V1) could have influenced the decision to adopt online credit card payments in Pietermaritzburg.
Table 2: Summary of Chi square tests results between performance expectancy and e-commerce adoption.
(The table shows the p values*)

<table>
<thead>
<tr>
<th></th>
<th>Online payment by credit card</th>
<th>Online ordering</th>
<th>Customer services</th>
<th>Placing orders with suppliers over the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>0.004**</td>
<td>0.195**</td>
<td>0.861**</td>
<td>0.932**</td>
</tr>
<tr>
<td>V2</td>
<td>0.157**</td>
<td>0.77**</td>
<td>1.00**</td>
<td>0.806**</td>
</tr>
</tbody>
</table>

*p<0.05 = significant relationship; p>=0.05 = no significant relationship
** Fisher’s test (more than 20% of data has count less than 5)

ii) **Effort expectancy**: refers to the extent to which a system is perceived to be easy to use. In this paper, effort expectancy is represented by ease of use of e-commerce.

Association between effort expectancy and e-commerce adoption

The following hypotheses were formulated in order to test the relationship between effort expectancy (ease of use of e-commerce) and e-commerce adoption:

H₀: There is no relationship between effort expectancy and e-commerce adoption
H₁: There is a relationship between effort expectancy and e-commerce adoption

Table 3. Summary of Chi square test between effort expectancy and e-commerce adoption.
(The table shows the p values*)

<table>
<thead>
<tr>
<th></th>
<th>Online payment by credit card</th>
<th>Online ordering</th>
<th>Customer services</th>
<th>Placing orders with suppliers over the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use of e-commerce</td>
<td>0.895**</td>
<td>0.036**</td>
<td>0.242**</td>
<td>0.067**</td>
</tr>
</tbody>
</table>

*p<0.05 = significant relationship; p>=0.05 = no significant relationship
**Fisher’s test (more than 20% of data has count less than 5)

Ease of use of e-commerce (as a variable of effort expectancy) was cross-tabulated with each of the four (4) e-commerce options. The results of the Chi square tests depicted in table 3 indicate that there is a significant (p<0.05) relationship between online ordering and effort expectancy in Pietermaritzburg.
iii) **Social influence**: the degree to which individuals perceive that influential people believe they should use a new system. Association between social influence and e-commerce adoption

In this research, social influence was tested through two variables:

Variable 1 (V1): Owner manager support
Variable 2 (V2): Owner/manager enthusiasm about e-commerce adoption. The following hypotheses were used to test the relationship between i) owner/manager support, ii) owner/manager enthusiasm about e-commerce and e-commerce adoption:

- **H₀**: There is no relationship between owner manager support and e-commerce adoption
- **H₁**: There is a relationship between owner manager support and e-commerce adoption

There is no significant (p>0.05) relationship between V1, V2 and e-commerce adoption as depicted in table 4. Thus, H₀ is accepted for V1 and V2

<table>
<thead>
<tr>
<th></th>
<th>Online payment by credit card</th>
<th>Online ordering</th>
<th>Customer services</th>
<th>Placing orders with suppliers over the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>0.244</td>
<td>0.978</td>
<td>0.918**</td>
<td>0.837</td>
</tr>
<tr>
<td>V2</td>
<td>0.166**</td>
<td>0.462</td>
<td>0.862**</td>
<td>0.875**</td>
</tr>
</tbody>
</table>

*p<0.05* = significant relationship; *p>=0.05* = no significant relationship

**Fisher’s test** (more than 20% of data has count less than 5)

iv) **Facilitating conditions**

Association between facilitating conditions and e-commerce adoption

The following hypotheses were formulated to test the significance of the relationship between the facilitating conditions and each of the four e-commerce options:

- **H₀**: There is no relationship between availability of financial resources and e-commerce adoption
- **H₁**: There is a relationship between availability of financial resources and e-commerce adoption
- **H₀**: There is no relationship between availability of technological resources and e-commerce adoption
- **H₁**: There is a relationship between availability of technological resources and e-commerce adoption
Table 5. Summary of Chi square tests between facilitating conditions and each of the e-commerce options.
(The table shows the p values*)

<table>
<thead>
<tr>
<th>Presence of IT skills</th>
<th>Availability of financial resources</th>
<th>Availability of technological resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online payment by credit card</td>
<td>0.358 **</td>
<td>0.374**</td>
</tr>
<tr>
<td>Online ordering</td>
<td>1.000 **</td>
<td>0.119**</td>
</tr>
<tr>
<td>Customer services</td>
<td>0.932**</td>
<td>0.084**</td>
</tr>
<tr>
<td>Placing of orders with suppliers through the Internet</td>
<td>0.605**</td>
<td>0.135**</td>
</tr>
</tbody>
</table>

*p<0.05= significant relationship; p>=0.05= no significant relationship
**Fisher’s test (more than 20% of data has count less than 5)

The results of the Chi square tests depicted in table 5 above indicate that there is no significant relationship (p>0.05) between the facilitating conditions and each of the e-commerce options. Thus, H0 is accepted for all hypotheses.

In summary, in order to identify determinants of e-commerce within the context of this paper, the following UTAUT variables were tested: i) performance expectancy, ii) effort expectancy, iii) social influence and iv) facilitating conditions. It is concluded that performance expectancy could have influenced the decision to adopt e-commerce in Pietermaritzburg. Significantly, the majority (95.1%, N=58) of SMMEs that allow customer credit card payment through their websites in Pietermaritzburg agree that e-commerce technology enhances the job performance of company’s employees. Thus, performance enhancement could have been one of the reasons that propelled SMMEs to adopt such e-commerce option. In addition, effort expectancy could have influenced the decision to adopt e-commerce in Pietermaritzburg. Significantly, the majority (54.9%, N=56) of SMMEs that allow customers to place orders online in Pietermaritzburg agree that e-commerce is easy to use. Thus, the fact that e-commerce is easy to use could have contributed into the decision to adopt e-commerce. Top management enthusiasm about e-commerce adoption as a social influence factor, is a determinant of e-commerce adoption. However, facilitating conditions have not influenced the decision to adopt e-commerce in the surveyed SMMEs.

CONCLUSIONS

Using the UTAUT model, this paper re-emphasizes the need for management involvement in the decision to adopt e-commerce. Thus, e-commerce adoption should be approached from a managerial point of view. In addition, the study reveals that performance enhancement is one of the potential determinants for e-commerce adoption. Hence, e-commerce should be integrated with the business processes focusing on making it easier for employees to execute daily activities.

Ease of use of e-commerce also should be considered for e-commerce to be adopted successfully. Hence, e-commerce should be implemented gradually starting with what the employees are familiar with, and then gradually moving towards more sophisticated e-commerce applications. The implementation level should also be backed up by a training strategy to make...
it easier for employees to execute their tasks.

REFERENCES


