E-Commerce Adoption Factors for SMMEs: Supporting Cases from South Africa

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ABSTRACT

The emergence of e-commerce (electronic commerce) and the impact of this new technological innovation changed the approach to business, transactions and processes. E-commerce adoption definitions generally refer to the process of conducting business online, spanning both Business-to-Business (B2B) and Business-to-Consumer (B2C) markets to reach global players, gaining market share for competitive advantage, utilising telecommunication networks. However, a number of unanswered questions pertaining to e-commerce adoption highlight issues such as; legal matters, political issues, telecommunication regulatory issues, security and trust aspects, customer relations and product selection. Many of these issues are essential ingredients to enable successful online trading, however, some uncertainties may inhibit the implementation of e-commerce initiatives such as; e-loyalty, marketing, customer experience, bandwidth issues and online customer maintenance. This paper develops a theoretical framework for e-commerce adoption based on literature, verified by case study research conducted in South Africa and proposes ten e-commerce adoption factors for SMMEs.

Keywords: e-commerce, adoption, online, case study, SMME[2].

1. INTRODUCTION

E-commerce adoption is not merely signing up an Internet Service Provider (ISP). Potential barriers such as risks, security fraud and marketing issues associated with e-commerce adoption need to be considered. Technical, business and external factors including cultural, political, legislative and environmental issues have been identified as inhibiting e-commerce adoption issues (Reichheld & Schefter, 2000:105-106; Klopper, 2002; Mohammed, Fisher, Jaworski & Cahill, 2002:204; Hoffman & Novak, 2000:179-180; Boschma & Weltevreden, 2005:2; Braga, 2005:544). These potential pitfalls could be mitigated by providing guidelines to reduce the risk of failure at the outset (or even after adoption) of e-commerce initiatives. Developing countries, including those in Africa, have become detached from the global economy mainly due to a lack of sustainable and appropriate ICT strategies and poor telecommunications infrastructure. As the focus of this paper is on small business, Rashid and Al-Qirim (2001:64) found that small businesses in New Zealand for example, are flexible and quick to react and generally rush to connect and participate in Web-based business.

2. E-COMMERCE IN AFRICAN COUNTRIES

According to Kah (2004:273), "…the fading of the industrial revolution into the dawn of the information revolution has transformed the world economy into a truly global one". Unfortunately, the emergence of this new phenomenon has created a wider gap between *information-rich* and *information-poor* countries, pulling apart *developing* and more *developed* economies. Although the initial e-commerce adoption trends were slow in Africa compared to other countries, the South African e-commerce sector, especially small businesses, has shown promising growth, albeit at a low Internet penetration level (Cloete, Courtney & Fintz, 2002:9).

Furthermore, Bhatnagar (2000:1-3) points out that telecommunications infrastructure forms an essential part in any future economic and social development of African economies. Spiegel (2004) finds factors linked to an education system – companies in India for example, compete in ICT and e-commerce as global players whereas China is often chosen for manufacturing resulting from the Chinese government's intention to encourage a culture of manufacturing. Some of these issues also emerged in the literature review.

The selection of African developing countries used in this research study was based on the e-Readiness rankings (2005) comprising of Egypt, South Africa, Morocco, Nigeria and Botswana. The Internet usage of these countries are depicted in Table 1, ranked according to estimated Internet users.

Although Internet connections are available in many African capitals, e-commerce infrastructure gaps exists between developed and developing countries and is the largest in Africa where only one in about 118 people use the Internet.

3. OBJECTIVE OF THE RESEARCH

The researchers explored the underlying issues pertaining to e-commerce adoption, specifically in a developing country to provide e-commerce adoption guidelines to SMMEs. In addition, the extent and conditions under which e-commerce is adopted

Table 1. Population and Internet usage statistics: Comparison of African countries by 'Usage % in Africa' (Source: International Internet Usage Statistics, 2005).

POPULATION AND INTERNET USAGE PERCENTAGE COMPARISON OF AFRICAN REGIONS					
Region	Total estimated population in 2006	Population as % of African (%)	Estimated Internet users	Usage % of Africa (%)	Usage % growth (2000-2005)
Egypt	71,236,631	7.0	5,000,000	21.1	1,011.1
South Africa	48,861,805	7.4	3,600,000	15.8	50.0
Morocco	30,182,038	11.6	3,500,000	15.4	3,400.0
Nigeria	159,404,137	1.1	1,769,700	7.8	784.9
Botswana	1,856,800	3.2	60,000	0.3	300.0

Table 2. E-commerce adoption definitions (Source: Literature, keywords or descriptive phrases in bold text).

Category	Author	E-commerce adoption
Causes	MacGregor and Vrazalic (2005:514)	E-commerce adoption is **a cost effective way to reach global customers and to compete on even terms with larger counterparts.**
	Castleman (2004:34) refers to a report produced by APEC(1999:12)	"Adoption of e-commerce has been advocated as a way of **reducing transaction costs**, gaining market share, streamlining business processes, achieving **competitive advantage,** and **improving relationships** with business partners for improved business performance".
	O'Keefe, O'Connor & Kung (1998:630) citing Lambkin, 1988)[1]	**Early adopters** of IT (e-commerce) can gain an **advantage** in the same way that early entrants into a market can gain an advantage.
	Fillis,Johannson & Wagner (2004:182)	The implications for non-adoption of e-business may vary where **product opportunities** may be lost due to late market entry when firms eventually decide to embrace the new technology, where often new types of products and services would already have entered the market.
Effects	Damanpour (2001:16)	Adopting the Internet's connectivity aspect for business has **changed the way companies communicate internally and externally**. **Internally**, how they buy and sell on the Web and share information. **External** communication activity increases efforts to understand **customers, suppliers, business partners and competitors**.
	Ratnasingam (2003)	Businesses are often too small and therefore unable to provide the financial resources **to retain the appropriate skill levels of staff** needed to implement or oversee e-commerce initiatives.
	Quaddus and Achjari (2005:127-129)	E-commerce adoption encompasses a **wide spectrum of business processes** and **configuration of technology resources** to facilitate how business managers perform their tasks, **interact with customers** and conduct their business.

was also examined. The development of an e-commerce adoption definition was needed to serve as a terms of reference for the research and to scope the e-commerce adoption study. Furthermore, proposing an e-commerce adoption theoretical framework requires verification from evidence obtained from local case studies. This would culminate in proposing ten e-commerce adoption factors.

4. DEFINING E-COMMERCE ADOPTION

The researchers firstly created a working definition for e-commerce adoption by selecting seven of the most descriptive and appropriate definitions found in literature. The definitions were then divided into two categories according to the frequency of keywords or overriding descriptive phrases appearing in the e-commerce adoption definitions. The categories are *causes* and *effects*, depicted in Table 2.

Using the information in Table 2, a definition for e-commerce adoption was created, reading as follows:

e-Commerce adoption *is a cost effective way to reach global players, gaining market share, streamlining a wide spectrum of business processes and technology for competitive advantage utilising telecommunication networks, improving relationships, advantageous to early adopters, willing to change and improve communication - internally and externally, ensuring sufficient resources and skilled-staff.*

5. THEORETICAL FRAMEWORK

A cause/effect view of e-commerce adoption emanated as the most feasible categorisation from literature to serve as a theoretical framework. Kah (2004:274) suggests government and industry intervention in developing countries are considered suitable drivers pertaining to causes for e-commerce adoption. The authors expanded the drivers to include SME business activity for their research. However, on the basis of Usage % of Africa (%) appearing in Table 1, Botswana (0.3%) was eliminated from this study. These causes and effects are summarised in Tables 3 and 4 respectively. For ease of use and completeness, four bibliographies are provided serving as the primary source for each of the specific countries explored.

In Table 4 the effects of e-commerce adoption of the selected African countries are depicted, summarised using impact, advantages and disadvantages as drivers.

6. SOUTH AFRICAN E-COMMERCE EXPANSION

- Eight online retailers are currently dominating the online consumer and apparel market and account for approximately 80% of all online retail sales. Motjolopane (2006:20) reports that "… Retail sales at the end of 2003 increased by 35% and grew by 25% in 2004".
- E-commerce adoption has expanded rapidly in the airline industry in South Africa. According to Hartley and Worthington-Smith (2003:151-152), the volume of online travel sales compared to Europe. The 'no frills' airline, Kulula.com is considered to be South Africa's largest revenue-generating B2C business. 1time Airline, another successful *no-frills* airline in South Africa, is claiming more than 75% of online travel transactions (Warden & Remenyi, 2005).

7. RESEARCH METHOD

According to Strauss and Corbin (1998:11), qualitative research is a research mechanism to assist researchers finding evidence not arrived at by statistical procedures or other means of quantification. In such cases, hermeneutic approaches are preferable to analyse findings (Remenyi, Williams, Money & Swartz, 1998:288). Hussey and Hussey (1997:66) suggest that case studies are often described as explanatory research used in areas where there are few theories or a deficient body of knowledge. Furthermore, Yin (1994:20-27) states that a case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not evident. Tellis (1997) alludes to the interactive nature of case studies and states the need to use multi-perspectival analysis, where the researcher is able to consider the relevant groups of participants. Evidence from multiple cases is often considered more compelling and the "… overall study is therefore regarded as being more robust" (Herriott & Firestone, 1983:14 in Yin, 2003:46).

7.1 Number of Cases

According to Yin (2003:47) the underlying logic of multiple-case studies indicates that the researcher should select each case with care in order for it either, to predict similar results (a literal replication) or predict contrasting results for predictable reasons (a theoretical replication). Five SMMEs were used to gather evidence. The SMMEs used were Case A (international travel business), Case B (mail order and electronic component store), Case C (pre-paid electricity

Table 3. Causes of e-commerce adoption: African developing countries

Government or Industry intervention to enable ICT	SMEs sector activities
Egypt - Bibliography 1	
Initiatives launched by the Egyptian government and private sector to promote ICT and e-commerce adoption. Egyptian banks lag and lack support for SET (Secure Electronics Transaction). Low usage of credit cards poses inhibiting factor for adopting e-commerce. Low e-readiness affects e-commerce adoption.	SMEs represent almost 99% of the number of companies in the private non-farm agricultural sector. Slow uptake in e-leadership and information security, connectivity, human capital and e-business.
Morocco – Bibliography 2	
Awarding of fixed-line license aimed to provide stimulation to the telecommunication sector. Fixed-line telecommunication network declined from 1999 but recovered in 2003 due to demand for Internet access and ADSL broadband services. The telecommunication operator Maroc Telecom listed on the Paris and Casablanca stock exchanges in 2004. Telecommunication market has experienced consistent growth mainly mobile sector where competition was introduced in 2000.	Due to large-scale emigration of males to France over the years has introduced an ethnic factor of not starting many small businesses. Tourism is strengthening Morocco's small business links with the West causing awareness.
Note: No suitable literature on e-commerce adoption by SMEs in Morocco was available	
Nigeria - Bibliography 3	
Government has been the sole provider of telephony and communication systems.	Current government promoting e-business among SMEs in its National IT Policy. SMEs have been made are aware of the advantages offered by the Internet and how it could assist them reach global markets and a source of information.
South Africa – Bibliography 4	
Telkom has been the sole supplier of communication links. Government promoting great support for SMMEs. Western Cape Provincial Government allocated R50 million for small business development in 2004. Electronic banking (e-banking) is being rapidly established and mobile banking (m-banking) was introduced in 2006.	SME and e-commerce sector experienced rapid growth over the last five years and Internet penetration is more evident in small business and upper income households. Common online purchases are groceries, apparel and books, By number of Websites, flowers and gifts followed by apparel, food, beverage and groceries are most popular. Online airline ticket sales have increased rapidly in South Africa.

provider), Case D (luggage store) and Case E (low cost airline) – these were all e-commerce start-up SMMEs.

7.1 Case Study Protocol

This instrument (interview schedule) as well as the procedures involved in conducting the research was developed by the authors and adapted mainly from Lubbe (2003:9) and Remenyi, Williams, Money & Swartz (1998:172-173) respectively. The interview structure consisted of three sections; Information about the interviewee/business, Demographic information and an Interview topic guide.

Only the interview topic guide is summarised below:

- **Organisation -** Strategic objectives, Reasons for adopting e-commerce in business
- **Internal -** Human resource, Impact of e-commerce, Customer demand & service, Reduced transaction costs, Critical success factors.
- **External –** Competition, Partnerships, Networks.
- **E-commerce adoption -** Operational issues of e-commerce, Adoption of ICT systems.
- **Environment –** Technical, Market, Brand.

8. CONDUCTING THE RESEARCH

In-depth open ended interviews were conducted over a period of about 12 months focussing mainly on causes and effects of e-commerce adoption within the ambit of the interview topic guide. Information was also collected to verify the theoretical framework developed in Paragraph 6. At least two, and in some

Table 4. Effects of e-commerce adoption: African developing countries

Impact	Advantages	Disadvantages
Egypt		
The e-commerce adoption process has highlighted a number of issues: e-Readiness is low. Improvements needed in e-leadership and information security, connectivity, human capital and e-business.	SMEs were offered opportunities for innovation and the emergence of new products and services. Small entrepreneurs were assisted to overcome information poverty. Entrepreneurs become more connected, more confident, less risk-averse, and more capable of making well-informed decisions. Empowering small entrepreneurs, e-commerce offered the potential for increasing exports, promoting growth and human development.	Large firms could get 'locked in' to technologies – high switching costs is a concern - Few PCs in management. Medium sizes firms have higher degree of awareness of ICTs in management and production - Few PCs in management. Small firms not aware of the role of ICT, e-infrastructure and human capital - Few PC in management. Mainly dial-up access for Internet connectivity.
Morocco		
Telecommunication services expansion - Two, Third Generation (3G) mobile licenses planned to be awarded in 2006 and the sale of a further 25% of Maroc Telecom in 2007. The economy has been subject to considerable liberalization in recent years and foreign investment is encouraged.	New ICT related career opportunities have arisen for especially women such as telecentres, call centres, Internet cafes and telephone booths. At the same time B2C business transaction opportunities are emerging and becoming feasible for selling of manufactured hand-made products in Morocco by woman. These new directions could lead to a global economy.	Small SME sector of mainly hand-made products not ideal for e-commerce.
Nigeria		
The best-performing SSA country in terms of ICT use and product diffusion can be exploited to benefit the ICT sector. Receipt of direct foreign investment. Teledensity rate has improved following deregulation of the telecoms industry - more government policy and support may be required to provide an enabling environment for wide e-commerce adoption.	The spread of cyber cafés in the country is assisting to popularize the Internet, which in turn will enhance e-business adoption.	Lack of knowledge about e-commerce benefits, finance IT skills & infrastructural support.
South Africa		
Only small sections of businesses and sectors adopted e-commerce. 18 % of businesses out of a possible 4 500 businesses listed on the Cape Town Regional Chamber of Commerce and Industry had e-commerce related Websites Internet sales account for less than 1 % of the volume of all airline ticket sales in South Africa, 'no-frills' airlines in South Africa report up to 75% of online travel transactions.	Online air travel business has expanded and become extremely competitive. Eight online retailers are currently dominating the online market and account for approximately 80% of all online retail sales.	Business organisational e-commerce adoption barriers identified: Negative attitudes, Lack of knowledge, Resistance to change, Lack of management commitment. Gaps remain between online shopping and the physical experience: Ability to judge quality, Ease of buying locally, Privacy & Security.

cases, three interviews were conducted, tape recorded, transcribed and case study reports compiled.

9. FINDINGS

In Table 5, the causes of e-commerce adoption in South African SMMEs are summarised using categories intervention to enable ICT and small business activities.

Similarly, in Table 6 the effects of e-commerce adoption are depicted using categories impacts, advantages and disadvantages.

The effects of e-commerce adoption in Table 6, indicates various aspects and some similarities between the five cases. Revisiting the case study reports and eliminating irrelevant and non-applicable information, thirteen adoption factors were developed as common phrases from the respective case evidence. Each of the adoption factors were again verified against the evidence obtained from the five cases, depicted in Table 7.

Some discrepancies and isolated factors appeared mainly due to the particular business sector. Therefore, only factors featuring in more than four cases were deemed to be representative, thereby reducing the adoption factors to ten, depicted in Table 8.

Table 5. Causes of e-commerce adoption trends: Cases of South African SMMEs

Intervention to enable ICT	SMME business activities
Case A	
Initially only telephone and facsimile considered sufficient Guests started demanding more ICT services – Internet & PCs Outsourced ICT & Website No internal IT expertise	Owner managed – 2 Partners Less than 20 employees
Case B	
Moved from manual mail order to online order system Outsourced ICT & Website Website content management system Limited internal IT expertise	Owner managed Less than 20 employees
Case C	
Cape Town city council (CCC) required services CCC collection of account arrears Internal ICT expertise	Management owned – CEO & 5 Partners/Directors Less than 100 employees
Case D	
Purchased ICT System Outsourced ICT & Website No internal IT expertise	Owner managed Less than 20 employees
Case E	
Utilising ICT to effect cost saving Bought in ICT partner company Quick to market – competition looming	Management owned – CEO & 4 Partners/Directors Less than 200 employees

Table 6. Effects of e-commerce adoption trends: Cases of South African SMMEs

Impact	Advantages	Disadvantages
Case A		
Expanded market share Website serves as online brochure & e-commerce site	Partial funds deposited before providing service International network Online booking & virtual markets Manage business from anywhere, anyplace	None detected Slow Internet access into South Africa
Case B		
First to market in SA in electronic component sector Utilising ICT to automate systems Global market	Funds deposited before providing service (pre-paid) Extensive catalogue combined with e-commerce site	Users not e-ready Online competition Slow internet access - Broadband needed to scan Website
Case C		
Utilising ICT to effect cost saving & system automation	Predictable cash flow- low and high seasons Funds deposited before providing service (pre-paid) Long contracts with municipalities, now nationally	Business expansion determined by rate of installation of e-dispensers Users not e-ready
Case D		
Same ICT system to automate entire business First to market in Cape Town in Bag sector	Entire e-commerce system and operation cheaper than new warehouse Extensive catalogue combined with e-commerce site Transaction finalised by credit card before delivering	Users not e-ready Product not ideally suited to online trading Slow internet access - Broadband needed to scan Website
Case E		
Market shake-up Utilising ICT to effect cost saving & system automation Leading LCA sector	Funds deposited before providing service (pre-paid) Automated systems No legacy systems to maintain, no royalties	Business expansion determined by external factors- fuel, interest rates & legislation Competition, new entrants to market Slow internet access - Broadband needed to spend sufficient time on Website

Table 7. e-Commerce adoption factors: Cases of South African SMMEs

#	Factor Description	Cases				
		A	B	C	D	E
1	User-friendly Web interface	√	√	√	√	√
2	Top management support	√	√	√	√	√
3	Maintaining strong links with customers	√	√	√	√	√
4	Ensuring customer acceptance	√	√	√	√	√
5	Providing up-to-date information, including prices	√	√	√	√	√
6	Regular promotions	√	√	√		√
7	Customers can track bookings via Ref. number	√	√	√		√
8	Providing support service from Web site	√	√	√	√	
9	Good technical infrastructure for fast processing	√	√		√	√
10	Open system, anyone may access to conduct business	√	√	√		√
11	Evidence of maintaining good trading partner relationships	√	√			
12	Powerful Web site with strong search engine		√			
13	When using a shopping cart, users can store its contents for later use		√	√		

Table 8. e-Commerce adoption factors for SMMEs

1	User-friendly Web interface
2	Top management support
3	Maintaining strong links with customers
4	Ensuring customer acceptance
5	Providing up-to-date information, including prices
6	Regular promotions
7	Customers ability to track orders via Ref. number
8	Providing support service from Web site
9	Good technical infrastructure to enable fast processing
10	Open system, anyone may access to conduct business

10. CONCLUSION

From the results of the research reported in this paper, it is evident that Internet usage is increasing and that e-commerce adoption in African countries tend to follow similar trends. The e-commerce adoption factors listed in Table 8 provides a guideline for e-commerce adoption for SMMEs. These factors were found to be applicable to SMMEs in South Africa, competing in the global economy - evident from the findings of the case studies. Although certain assumptions had to be made, for example the particular definitions chosen to develop the e-commerce working definition, case selection and assumptions made regarding the adoption factors. Table 8 represents the outcome based on the research activity conducted and reflects the essential e-commerce adoption factors. Furthermore, the authors are aware that the ten factors are not necessarily fixed in the given ranking and may differ in the context of other studies, applications or different market sectors. Finally, the list of ten e-commerce adoption factors could be used by SMMEs, consultants or web developers to serve as a guideline in an e-commerce SMME environment.

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ENDNOTES

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