

E-business and E-commerce applications and trends in the retailing sector in Zimbabwe

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This paper discusses e-commerce adoption trends in the Zimbabwean retail sector. Data were collected using questionnaire and interviews of 170 retailers and 73 customers selected in Harare. Zimbabwe's retail sector lags behind in e-business adoption. Key e-commerce applications were in administration, accounting, management and control systems with barcode-driven systems and debit card swipe technologies being most common. Mismatch between the demand for e-business solutions by customers and the supply of such solutions by retailers and a pronounced digital divide between multiple store and single store retailers in the areas of network technologies were identified. The impact of e-business on business processes and company productivity is positive for multiple store and minimal for single store operators. Internal work organisation, procurement costs of supply goods and quality of product and services impacts are minimal. Scope exists for improved adoption and development of e-business for Zimbabwean retailers through better policies and supportive legislation.

Keywords – E-commerce, E-business, applications in Zimbabwe, retail sector, Internet business in developing economies

I. INTRODUCTION AND BACKGROUND

The rapid development and use of information and communication technologies (ICTs), especially computerised networks and the internet by commercial enterprises has led to globalisation and time based competition. This phenomenon has made it imperative for business organisations to adopt e-commerce to be competitive and survive. This starts with concentrating on internal processes; cost reduction and increased efficiency; moves on to inter-enterprise co-operation resulting in effective supply chain management and finally matures into collaborative business whereby business communities create value by collaboration with each other through the use of open, scalable infrastructure that allows for integration within the heterogeneous business environment. In this respect, African countries like Zimbabwe lag behind, creating a digital divide because of poor ICT infrastructure and an absence of supporting and coordinated legal and policy frameworks. Unfair pricing structures by the international telecoms

companies that own the internet backbone resources are problematic [1].

The location of Zimbabwe is within the coverage areas of two geostationary communication satellites operated by International Marine Satellite (INMARSAT), Atlantic Ocean East (AOE) and the Indian Ocean West (IOW) lying 35 800 km above the earth. Other communication satellites serving the region are Communications Satellite (COMSAT) and Pan American Satellite (PANAMSAT). A Low Earth Orbit system is also in place for the coverage of rural areas with respect to the Global System of Mobile (GSM) communication but still costs too much for ordinary Zimbabweans. Accelerated deployment of communication systems in the rural areas is therefore technically feasible and this can support e-commerce [2]. The challenge is in having the necessary economic and social backbone to support e-commerce use.

There is a global trend towards adopting electronic business (e-business) solutions [3, 4] and it is in this light that the situation in Zimbabwe was studied. [5] indicates that e-business has a number of advantages which include increased efficiency in labour utilisation, improved supply chain management and communication, faster product development and speed to market, enhanced gathering and analysis of market intelligence and reduced overall costs. Banks and retailers in Zimbabwe have introduced automated teller machines (ATMs), point-of-sale (POS) systems, internet banking, mobile banking and electronic fund transfer (e.g. real time gross settlement [RTGS]). Despite these efforts adoption of e-commerce in Africa is still very low [6].

Some work on factors that influence in-house and outsourced e-business deployment among financial firms in a developing economy has been conducted. This example is based on companies in Nigeria discusses experiences among firms operating in Africa. Environmental factors were found to be key determinants of e-business use among the firms. [7] It has also been found out that investment in information systems resources can result in competitive advantages and requires strategic alignment in order to convert competitive advantages to permanently improved superior business performance. [8] It has also been noted that a plethora of anecdotal evidence exists but there little empirical evidence on the value-creating potential of e-commerce technologies. Some studies have been done to validate this assertion, for example Mahmood et al, 2008.

[9] A case study has been done to explore the attitudes and perceptions of franchise owner-operators, who are both decision maker and end user of e-business solutions, in regard to their acceptance of advanced Internet innovation and technologies for business applications. The acceptance of e-commerce and e-business solutions by smaller franchise enterprises is significantly different from that of non-franchised and larger enterprises. [10]

This work was therefore undertaken to determine the level of E-business and E-commerce adoption in Zimbabwe and contributes efforts to demonstrate the advantages of adoption of the new technology. The main objectives of the study were:

- To determine if there has been a dynamic adoption of ICT and e-business solutions in the period from year 2004 in the Zimbabwean retailing sector.
- To determine the key e-business application areas in the retailing sector.
- To determine which technologies are typically used by retailing service providers.
- To determine if there is a fit between demand for and supply of e-business solutions in the retailing market.
- To determine how pronounced the digital divide between retailers and their customers is.
- To determine the impact of e-business solutions on organisational structure, internal work processes, customer relations, supplier relations and the ability of retailers to offer products and services.

II. METHODOLOGY

Personal interviews were semi-structured. Despite being very expensive because of their one-to-one nature [11], interviews were used to improve data collection and avoid limitations of non response when using mail, telephone and internet surveys. The pilot test phase involved retailers' survey using e-mails from the business directories. Most got error responses and very few were responded to. A few telephone surveys were attempted, but these proved to be difficult and expensive. There were problems with the mobile networks during business hours and it took time to get the right person if available. Most of the data were therefore collected through personal interviews as a result. All interviews were held with the aid of a questionnaire. The questionnaire used in customer interviews was designed to take the least time possible to enable the collection of the relevant information with the minimum of interference with the customer's schedule.

In addition to interviews, direct observations were made. These were necessitated by the fact that some of the employees were not very knowledgeable about their systems. Observed hardware at the point-of-sale and on-the-job interviews revealed important information

concerning the type e-business application the retailer had installed. The frequency with which the customers used a particular payment system was also determined.

Data analysis was done using Microsoft's *Excel* software. This allowed for the efficient processing of the large volume of data generated from the questionnaires. Even though *Excel* is not a dedicated statistical package, it was found to be well suited for the descriptive analysis required for this study. The analysis required was usually one-dimensional (in the case of pre-filtered questions) or two-dimensional (in the cases where responses from different modules were to be co-related). This was a result of the design of the questionnaire and *Excel* proved adequate for idea analysis.

Extensive document analysis was done to complement the above methods.

III. RESULTS AND DISCUSSION

It was found out that Internet access in the retail sector was low and only 8.2% of all the companies interviewed used the Internet. The distribution was such that 30.8% of multiple store operators and only 1.5% of single store operators had access to the internet. 1.8% of those interviewed indicated that they had plans of increasing their ICT budget whilst the majority, 87.1% stated that their budget would remain the same. A summary of the responses on ICT access is summarised in Table I.

TABLE I
RETAIL: AVAILABILITY OF ICT INFRASTRUCTURE

Available ICT Infrastructure	Retail		
	All Enterprises	Single Store	Multiple Stores
Computer usage	25.3	20.6	59.0
Internet access	3.5	15.4	0.0
WWW usage	1.8	0.0	7.7
Intranet usage	8.2	1.5	30.8
Extranet usage	0.0	0.0	0.0
LAN usage	8.2	1.5	30.8
W-LAN usage	0.0	0.0	0.0
Remote Access	0.6	0.0	2.6
Wireless Access	0.6	0.0	2.6
In (%) of enterprise. All Enterprises: N=170; Single store: n=131; Multiple stores: n=39.			

The Zimbabwean retail companies are lagging behind in many ICT technologies like cellular network technology. Cell phone use is limited to the basics of telephony and message texting. The cost of the technologies is out of reach of many people. However, the adoption of e-business solutions such as e-banking has demonstrated to the general public, the feasibility of using cell phones to conduct activities such as money transfer, bill payment and other bank services online. It was also observed that there is a culture of surfing the web for product availability information, price comparison and other activities associated with shopping but not for complete e-business transactions.

Ten percent (10%) of companies studied have recruited personnel with specific information technology (IT) skills. The distribution of this overall percentage is as follows: amongst multiple store operators 38.5% have employed IT professionals whilst amongst single store operators it is only 1.5%. All the companies that reported having employed an ICT practitioner were multiple store operators. The use of online technologies is fully summarised in Table II.

TABLE II
RETAIL: USAGE OF ONLINE TECHNOLOGIES

Use of online technologies	Retail		
	All enterprises	Multiple store	Single Store
To share documents/to perform collaborative work	3.5	19.4	0.0
To track working hours and production time	3.5	19.4	0.0
To track transactions and for accounting	56.5	83.9	50.3
For e-learning	0.0	0.0	0.0
In % of enterprises. All enterprises N = 170; Multiple store n = 31; Single store n = 139			

It can thus be seen that for the majority of retailers e-business has had minimal if any impact on their internal processes, except in the area of transaction tracking and accounting where 56.5% of all enterprises use specific accounting software.

The usage of online technologies within the value chain was found to be very limited, see Table III. The economic challenges in Zimbabwe have resulted in large-scale companies' supply chains with small retailers who have limited technology. In addition the legal framework for conducting business activities such as contract negotiating online has not yet been fully developed.

TABLE III
USAGE OF ONLINE TECHNOLOGIES WITHIN THE VALUE CHAIN

Usage of online technologies within the value chain	Retail		
	All enterprises	Multiple store	Single store
Online collaboration with business partners for designing products	0.0	0.0	0.0
Online collaborating with business partners to forecast product demands	0.0	0.0	0.0
Online management of capacity/inventory	3.5	19.4	0.0
Electronic exchange of documents with customers	0.0	0.0	0.0
Online negotiation of contracts	0.0	0.0	0.0
In % of enterprises. All enterprises N = 170; Multiple store n = 31; Single store n = 139			

In absolute terms, ERP systems were most diffused, but with only 12.9% of retailers having adopted them.

There is still room for growth and adoption of this technology within the retail sector. The reasons for the lack of popularity of special e-business solutions include ignorance of their existence and utility. Table IV shows that the majority of retailers did not plan for the introduction of new e-business solutions in the short to medium term.

TABLE IV
RETAIL: ICT BUDGET PROJECTIONS FOR ALL ENTERPRISES

Invested in ICT in the past year	ICT Budget Projections		
	To increase (N1)	To stay roughly the same (N2)	Do not know (N3)
Invested	13.0	87.0	0.0
Did not invest	0.0	90.1	9.9
Do not know	0.0	16.7	83.3
In % of N1 = 23[1.8]; N2 = 141[82.9]; N3 = 19[3.5]; [In % of all enterprises N = 170]			

Most companies did not resort to procuring on-line. None of the single store businesses interviewed did any procuring online and only 7.7% of the multiple store businesses did.

The use of electronic data interchange (EDI) was subdued being used by 1.8% of those interviewed, all being large multiple store operators. This skewed use of EDI by large retailers is expected since costly proprietary networks are often needed. Internet based EDI was rarely used.

There was no evidence of customer/ consumer oriented e-commerce being conducted via the use of local retailer websites. This is mostly due to the unavailability of adequate funds procure such technology. Retailers' websites were found to be mostly static information sites, without the capability to offer e-commerce. The only e-commerce technology that has gained some traction in the retailing sector is swipe machines at points of sale. This allows customers to transfer funds from their bank accounts into that of the retailer using their debit cards. This is the second most popular method of payment in the country with 75% of customer interviewed reporting frequent use of it. 34.7% of retailers that reported improved internal processes for supplying services had introduced swipe technology at their points of sale.

Online sales are non-existent. Transactions, when done electronically, are done via networks owned by financial institutions and not purely over the internet. There were indications that there might be developments, spearheaded by financial institutions, which could lead to the development of online sales by retailers.

Developing a competitive edge seems to be the main driving force for Zimbabwean retailers that are adopting e-business. Single store operators seem to be heavily influenced by the actions of their peers. This is indicated

by the fact that all retailers engaged in e-business adopted it because their competitors were doing the same. The majority of multiple store operators (53.9%) implemented e-business systems to gain a competitive advantage. All businesses that did not use e-business solutions pointed out that the main hindrances to them were the lack of benefits against the implementation and operational costs. E-business technologies were deemed too expensive and complicated.

Most retailers regarded e-business as having the most significant impact in the areas of administration and accounting. This is because e-business solutions were mainly used for transaction capture and tracking. Though the impact of e-business in the areas of management & controlling, marketing, logistics and customer services was acknowledged, they were considered as being medium to low. Most businesses used electronic systems for marketing (40.5%). The overall finding was that the impact of e-business in the retail sector on business functions of the Zimbabwean retail sector has been low.

IV. FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

Based on the study, a number of recommendations and conclusions were made. These are as follows:

- **Dynamics of Adoption of ICT and e-Business since 2004:** Though there has been adoption of e-business solutions in Zimbabwe since 2004, it has not followed the global trend of being fully internet-based and allowing for mobile e-commerce. Local e-business adoption has largely been limited to funds transfer technologies hosted by financial institutions. There has not been a significant adoption of e-business solutions in the Zimbabwean retail sector.
- **Key Application Areas of e-Business:** The key application areas of e-business solutions in the Zimbabwean retail sector are administration, accounting, management & controlling. Minor but significant areas of application are logistics (mostly online procurement) and customer services.
- **Technologies Typically Used by Retailers:** Zimbabwean retailers engaged in e-business typically use bar code driven ERP systems and debit card swipe technologies for customer transactions. Larger retailers use wide area network technologies to integrate their operations in different locations throughout the country. Operations within a single building or those of a single store operator are usually integrated through the use of local area network.
- **Fit between Demand for and Supply of e-Business Solutions:** There is a mismatch between the availability of e-business technologies and their adoption by retailers in

Zimbabwe. They are not adopting swipe technologies even though the majority of customers have debit cards and are willing to use them for making in-store payments. In addition retailers are not going onto the internet, either for marketing or for online sales, whilst customers are using the internet for checking product availability and prices. Customers are willing to transact online using platforms offered by their financial institutions.

- **The Digital Divide between Retailers:** There exists a pronounced digital divide between multiple store and single store retailers, especially in the areas of network technologies (LAN, WAN and internet access). This digital divide exists in terms of both actual access to network infrastructure and the knowledge and appreciation of the use and benefits of such technologies. Single store enterprises lag far behind multiple store operators in this area.
- **Digital Divide between Customers:** The digital divide between customers in the urban areas is not that pronounced. However there is a low penetration of debit cards in the rural areas.
- **Impact of e-Business on Retail Business Functions:** The impact on business processes depends on the size of the enterprise. For larger multiple store operators the impact has largely been positive whilst for smaller single store operators e-business has had hardly any effect at all. Generally e-business had no effect on the internal work organization of retail enterprises regardless of their size. It also had minimal influence on the costs of procurement of goods cross the retail sector. Across the whole sector the influence on quality of product and service was conceived as being minimal to none. The impact on company productivity tended to be dependent on the type of enterprise. Multiple store enterprises generally considered the impact of e-business as being positive on their productivity whilst single store operators regarded it as having minimal effect on company productivity.

The following recommendations are therefore made:

- **Improve ICT Infrastructure to Allow for Widespread Access:** The Zimbabwean Government and private sector players in the telecommunications and information technology sectors need to engage in coordinated programmes to promote the rolling out of the necessary ICT backbone infrastructure. This infrastructure can include wireless technologies and connection to the fibre optic backbones to enable the whole country to be networked at a relatively lower cost. Such infrastructure can substantially increase access to company

networks and to the Internet by ordinary citizens assisting to reduce the digital divide especially between urban and rural areas. It could also increase demand for e-business. The Government would have to remove restrictive tariff controls imposed on telecommunication companies and reform legislation in the ICT sector to allow for constructive competition. This would encourage telecommunication companies to expand their networks and encourage e-business.

- **Encourage and promote the standardisation of computer languages used in supply chain management:** Using a shared language is a must in developing and improving relationships between all supply chain partners. It is important, for the computer languages used in logistics, in more advanced supply chain management (SCM) integration to transmit universal and open standard electronic labels.
- **Design a regulatory base on privacy within regional countries, aimed at integrating the emerging aspects tied to technological development:** This can be done for the Southern African Development Community (SADC) and Common Market for Eastern and Southern African (COMESA) countries. Customer privacy assumes fundamental significance in e-business management since the new technologies often imply the collection and processing of a large quantity of information provided by either the consumers (essentially personal/ sociological) or by the retailers (behavioural). This is in order not only to protect consumer rights and the subsequent restraints on e-business tools, but also to avoid risks that lead to the excessive congestion of information for the operators concerned.
- **Dismantling barriers presented by e-business for small retailers:** Small retailers are the largest retailing business category in Zimbabwe. They offer a high potential for the adoption of e-business solutions. Small business access to new technologies can be favoured by initiatives that optimise hardware investments and information infrastructure. For example, the promotion and coordination of technology buying groups, cooperative arrangements for technology investment, provision of government advisory and consultancy services specifically dedicated to the implementation of e-business and active, effective and efficient engagement with associations that represent retailers and small business like the Retailers Association of Zimbabwe can enhance adoption rates.
- **Promote IT and e-business training and motivation opportunities:** The retail sector in Zimbabwe was found to be imbued with a

culture that does not fully support e-business. They consider it a cost rather than an investment. In this regard, more knowledge of the effects and sustainability of e-business initiatives can be imparted through education and training. The promotion of a more widespread ICT culture in the retail sector is therefore advocated.

- **Implementing and Raising Awareness on a Regulatory Structure for e-Commerce:** The legal and security aspects associated with e-commerce are mainly concerned with the handling of sensitive information and data. Regulations and compliance should be guaranteed to protect consumer privacy and rights.

In conclusion, it is noted that this study resulted in very useful information. A stratified sampling approach to selecting interviewees throughout the country and beyond the capital city Harare will most probably produce a more accurate representation of the nature of e-business in the country. Identifying the most appropriate contact person in an organisation who was knowledgeable about e-business on both the technical and financial levels proved to be difficult. This resulted in the collection of incomplete data which might have affected on the results. In addition most organisations were unwilling to give information that they deemed to be sensitive. For example data on budgets and values of orders received or sent online was not always fully available.

Another factor that might have introduced bias in the results is the prevailing economic situation in Zimbabwe. The economic environment was very unfavourable to the use of e-business at the time of the study given the unstable economic environment. The behaviour of customers during this time cannot be confidently assumed as a true reflection of the future. Natural behaviour and the trends observed during the time of the study might be misleading.

Overall though, the methodology was comprehensive enough to enable collection of useful data that were analysed to build reasonable information on e-business trends in the Zimbabwean retail sector. The findings add to the body of knowledge pertaining to the introduction of information and communication technologies and e-commerce in emerging and challenged economies. The recommendations similarly have possible applications in other countries. The study provides a basis for similar research in the same sector and in other sectors in any country.

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