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## E-COMMERCE USAGE IN THE PHARMACEUTICAL SECTOR OF ZIMBABWE


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## Abstract

This research explored the use of e-commerce in the pharmaceutical sector of Zimbabwe. More specifically, it looked at e-commerce technologies being used in the sector, uses of e-commerce technologies, usage level of e-commerce technologies, benefits and barriers of e-commerce usage. The study followed an exploratory research design wherein a questionnaire was used as the main research tool. Data was gathered from 33 pharmaceutical companies and analysed using SPSS. It was found out that slightly more than 50 percent of pharmaceutical companies had websites. Also, most popular uses of e-commerce technologies were e-mailing, generation of direct sales, provision of customer service and support, price comparison, purchasing and ordering and internal communications. In addition, the World Wide Web and instant messaging emerged as the most widely used technologies in the sector. The benefits of e-commerce usage identified include provision of high quality information needed for business operations, increasing interdepartmental and inter-organisational coordination which leads to increased productivity. Lastly, the cost of e-commerce technology equipment, absence of a company's website, complexity of e-commerce technologies and privacy related issues came out as the strongest e-commerce usage barriers in the sector.

Keywords: **e-commerce usage, e-commerce benefits, e-commerce barriers, e-commerce technologies, e-commerce in the pharmaceutical sector**

## INTRODUCTION

While much of the research regarding use of e-commerce in the pharmaceutical sector has been conducted in developed countries, little or no research has been carried out in developing countries notably in Zimbabwe. This study therefore endeavours to fill this apparent research gap by investigating electronic commerce technology uses, technologies being used, usage level, benefits and usage barriers in the pharmaceutical sector within the context of a developing country like Zimbabwe. The only research that has been conducted with regards to e-commerce usage in Zimbabwe focused mainly on SMEs. This study was conducted in Gweru by Dube, Chitura and Runyowa (2010). This research does not address key issues raised in this section hence the need to assess the usage of e-commerce in the pharmaceutical sector in Zimbabwe.

This research study is aimed at assessing usage of e-commerce in the pharmaceutical sector in Zimbabwe. This industry is a major player in the country's health delivery system through the provision of affordable, safe, effective and quality medicinal drugs. The advent of the Internet has opened a vast new frontier to marketers. The Zimbabwean pharmaceutical industry is in its infancy in this area, thus the need to assess the usage of e-commerce in the pharmaceutical industry. This research is motivated by the fact that, the impact of e-commerce on the business environment is often praised but seldom analysed with scrutiny (Delfmann, Werner and Gehring, 2002).

While most of the Zimbabwean pharmaceutical companies successfully employ a host of marketing strategies to target various types of customers, the current business and customer trends are continuously creating new challenges as well as opportunities for increasing profitability. If the pharmaceutical companies want to improve their return-on-investment, they have to adopt e-commerce technologies along with their conventional sales force of medical representatives so as to compete on a global scale. Zimbabwe currently exports pharmaceutical products to Botswana, South Africa, Namibia, Zambia, Malawi, Angola, DRC, Tanzania and the West Indies among others.

The Zimbabwean Pharmaceutical Industry is today a fair ground for both the domestic and foreign manufactures. The sector is being seriously affected by technology infrastructural challenges since many foreign manufactures are now offering their products on a global market. This is being enabled by tools such as the websites and information and communication technologies (ICT's) which facilitate them to communicate with customers worldwide. However even though they already compete on an international level, that is, the foreign players are also present in the local market. The Zimbabwean Pharmaceutical Industry is still behind in employing e-commerce strategies as a way of formulating their survival strategies. International Pharmaceutical companies are changing their marketing strategies to meet the new competitive business environment that is being driven by e-commerce.

### Research Objectives

The major objectives of this research were to determine the e-commerce technologies being used in the pharmaceutical sector of Zimbabwe, determine usage level of e-commerce technologies by the pharmaceutical sector of Zimbabwe, establish e-commerce uses by the pharmaceutical sector of Zimbabwe, determine the benefits of e-

commerce usage in the pharmaceutical sector of Zimbabwe and identify the barriers of electronic commerce usage in the pharmaceutical sector of Zimbabwe.

## LITERATURE REVIEW

### E-Commerce defined

Turban, King, Viehland and Lee (2006) define e-commerce as "the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks including the Internet." Similarly, Dutta (1997 cited in Javalgi and Ramsey, 2001) defines e-commerce as "the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks".

### Pharmaceutical Sector defined

Rosa Ma Riesco Sastre (2007) notes that, "the pharmaceutical sector comprises a wide range of activities including the manufacture of pharmaceutical products, medicinal and botanical chemicals and the manufacture of soaps, detergents and other cleaning and polishing products."

### E-commerce in the Pharmaceutical Sector

Naturally, the pharmaceutical industry is perceived as a research intensive industry on one hand and a prescription driven and dependent retail medicine business on the other. Betz (1987) indicates that the pharmaceutical industry is more driven to gain competitive advantage through innovative technology. With the technological advancements, global e-commerce embraces almost every country, even though its usage varies widely among the world's populations (Javalgi and Ramsey, 2001; Murillo, 2001). This really made it necessary to conduct research on usage of e-commerce in the pharmaceutical sector of Zimbabwe, since findings obtained elsewhere are not applicable to the Zimbabwean pharmaceutical sector.

Rosa Ma Riesco Sastre (2007, p5) espouses that the pharmaceutical sector appears to have the ideal characteristics for using electronic business tools that support B2B relations (business to business) for buyers as well as sellers. Firstly, many of the products that it sells lend themselves to a simple description and exhibit a high degree of standardization. Furthermore, the specific challenges faced by the pharmaceutical sector, such as managing product recalls, is encouraging collaboration along the whole value chain. These factors increase the use of commercial and communication platforms in the sector. Finally, the global nature of the pharmaceutical sector means that companies have to sell or manufacture in diverse international markets. From the above quotation, this study seeks to establish whether or not the pharmaceutical sector is fully exploiting its characteristic in using e-commerce tools.

### Benefits of E-commerce usage in the Pharmaceutical Sector

A review of literature shows that there are many benefits that are enjoyed from usage of e-commerce. Curie (1998 cited in Owens and Beynon-Davies, 2001) indicates that there are three classes of e-commerce benefits notably, cost savings, time- savings, and quality improvements. On the contrary, Davidson and Greblov (2005) in their research in the US argue that there are two main benefits that the pharmaceutical sector derives from e-commerce usage. These benefits are the impacts of e-commerce on the sales and research and development costs. The authors conclude that usage of e-commerce

in the pharmaceutical sector leads to reduced costs of research and development and also increases sales.

On the other hand, Li and Collier, (2000) postulate that pharmacy technology drives different types of quality-related performance and affects financial performance.

Chaudhry (nd) argues that use of e-commerce in the pharmaceutical sector centres around huge gains in business transactions by using e-commerce to transmit information in order to setup an integrated network for both the industry and the users by reducing the geographical distances and making timely access to pharmaceutical information and current biotech knowledge thereby providing better services to the users and to the pharmaceutical community as a whole. Similar remarks are made by Fifield (2001) that e-procurement is predicted to offer between 20-30 per cent savings in the pharmacy procurement market. The researcher went on to say that, in the pharmacy procurement market, e-commerce is used mainly to transfer orders to suppliers and receive electronic invoicing using EDI software. In view of the above e-commerce usage benefits, this research seeks to establish whether or not the Zimbabwean pharmaceutical industry enjoys these benefits.

On the benefits of e-commerce in general, Kalakota and Whinston (1997) posit that there many potential benefits associated with the implementation of EC applications notably opening a new universe for consumers and organisations, increasing profits through better customer acquisition and retention, new information based products and services and more efficient operations. Further supporting evidence is given by Duncombe and Heeks (2005) that benefits of e-commerce can arise in many ways namely cost reduction benefits, market benefits and other competitive benefits.

Commenting on e-commerce benefits in general, Tarban et al (2010) indicate that there are three classes of benefits namely those enjoyed by suppliers or organisations, those enjoyed by buyers or consumers and those enjoyed by the society. E-commerce benefits enjoyed by suppliers include a global channel to reach customers worldwide through the Web, faster and easier entry into new markets despite the size and location of businesses, reduction of errors, operational costs, and overhead by providing online information and services to customers, increased transaction speed by automating business processes in ordering, payment, shipping and delivery, improved product analysis, since businesses are able to perform product analyses and comparisons on the Web, enhanced market analysis through online customer surveys and product market evaluations, increased real-time access to inventories, because customer orders are electronically linked through just-in-time-inventory and integrated manufacturing techniques and extended hours that is, 24/7/365 because a company is always open on the web with no over time or other extra costs.

**Barriers of E-commerce usage in the Pharmaceutical Sector**

As regards e-commerce usage barriers, Stockdale and Standing (2004) posit that there are four categories of barriers to e-commerce usage namely lack of resources and knowledge, skills levels of employees, security concerns and e-readiness of the businesses. On the contrary, Cragg and King (1993 cited in MacGregor and Vrazalic, 2005) suggest that there are four different categories of barriers notably, education, management time, economic concerns and technical knowledge.

Further evidence of these barriers is provided by Quayle (2002) who indicates that the barriers include high e-commerce implementation costs, implementation complexity, lack of technical skills and IT knowledge among employees, lack of awareness of e-commerce benefits and security concerns. In addition to the already mentioned barriers, Ramsey, Ibbotson, Bell and Gray (2003) add on lack of senior management support. Also, over and above, security and privacy concerns highlighted before, Chaudhry (nd) postulates that legal issues are a barrier to e-commerce usage since this industry is highly regulated. Barriers, such as security, slow speed of transaction and the reluctance to try an unproven technology, are gradually overcome (MacLeod, 1997).

**Uses and usage level of e-commerce in the Pharmaceutical Sector**

Rosa Ma Riesco Sastre (2007) highlights that buying and selling activities of pharmaceutical companies are supported by commercial B2B platforms in different ways. The researcher went on to say that close to 40 percent of companies (in Europe) in the pharmaceutical sector state that they use the internet or other IT networks for purchasing goods or services, a figure slightly lower than the weighted average for all sectors. A more detailed analysis by Rosa Ma Riesco Sastre (2007) reveals that the strategic importance of online purchases is significantly limited. More specifically, only seven percent of all pharmaceutical companies in the EU-7 purchase more than 25 percent of their supplies online. Similarly, Miles (2002) indicates that whilst e-commerce is the order of the day, its use is restricted within the pharmaceutical supply chain in pharmacies, the preferred method of trading still being fax, and only the more technologically progressive pharmacies having EDI ordering and even fewer utilising EDI invoicing. Only 40 per cent of pharmacies in the north-west of England use EDI systems.

Rosa Ma Riesco Sastre (2007) highlights that buying and selling activities of pharmaceutical companies are supported by commercial B2B platforms in different ways. The researcher went on to say that close to 40 percent of in the pharmaceutical companies in Europe use the internet or other IT networks for purchasing goods or services, a figure slightly lower than the weighted average for all sectors. A more detailed analysis by Rosa Ma Riesco Sastre (2007) reveals that the strategic importance of online purchases is significantly limited. More specifically, only seven percent of all pharmaceutical companies in the EU-7 purchase more than 25 percent of their supplies online.

On the uses of e-commerce technologies in the pharmaceutical sector, Rosa Ma Riesco Sastre (2007) notes that specific tasks that the sector uses IT applications for include finding suppliers, managing requests for quotes or prices (RFQs / RFPs) and making orders are the principal uses when purchasing via internet (e-procurement).

**E-commerce Technologies in the Pharmaceutical Sector**

There is a wide range of e-commerce technologies currently being used by companies. Wind et al. (2000) note that, EDI is one e-commerce technology few pharmacists fully understand. However, other industries or sectors fully understand this technology. Dube, Chitura and Runyowa (2010) in their research in Zimbabwe found out that SMEs were using e-commerce technologies which include EDI, e-mail, internet, intranets and extranets. Further supporting evidence is provided by Rosa Ma Riesco Sastre (2007) who concludes that close to 40 percent of pharmaceutical companies use the internet or

other IT networks for purchasing goods or services.

Rosa Ma Riesco Sastre (2007) commenting on the use of technology indicates that SMEs in the pharmaceutical sector have little interest in more sophisticated electronic business tools. Chaudhry (nd) posit that e-commerce technologies include electronic funds transfer, supply chain management; Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

## RESEARCH METHODOLOGY

In view of the lack of sufficient research in this area of study, particularly in the context of a developing country like Zimbabwe, an exploratory research design was considered the most suitable approach. In addition, this research design was adopted given the exploratory nature of the research question. This study employed both primary and secondary data collection methods in order to assess the pharmaceutical manufacturers, wholesalers and retailers (pharmacies) on the usage of e-commerce. A questionnaire was used in the study to gather primary data. Questions included uses, technologies, benefits and barriers to e-commerce usage. The respondents were asked to rank and comment on different questions. This was used to determine the weight or the importance of each question towards assessing the usage of e-commerce in pharmaceutical sector of Zimbabwe. The questionnaires included a combination of both structured and semi-structured questions. The questionnaire was validated by pre-testing it with a sample of five pharmaceutical companies. Some of the questions were adopted from studies by Dube, Chitura and Runyowa (2010).

The questionnaires were distributed to pharmacy managers, IT managers and marketing managers of pharmaceutical manufacturers and wholesalers who were randomly selected to assess the use of e-commerce in their firms. One respondent was chosen from each firm. The data was gathered from pharmaceutical manufactures, pharmaceutical wholesalers and pharmaceutical retailers.

As regards the population size, MCAZ (2009) indicates that there are 419 registered pharmaceutical companies in Zimbabwe. The companies are broken down as follows, 106 are pharmaceutical wholesalers, 302 are pharmacies and 11 are pharmaceutical manufacturers. Geographically Harare holds 65%, Bulawayo 22%, Chitungwiza 3% and other areas having the remaining 10% of the total population.

The sample size for the study was calculated using stratified random sampling. The justification for using this sampling technique was primarily based on clear strata in the population and the need to ensure that each is fairly represented. Table 1 below shows population and sample sizes.

Table 1: Population and Sample Sizes

| | Manufacturers | Wholesalers | Retailers |
|---|---|---|---|
| Population size | 11 | 106 | 302 |

| | | | |
|---|---|---|---|
| Final Sampling size | 1 | 10 | 29 |

A total of 40 questionnaires were distributed to various pharmaceutical manufacturers, wholesalers and pharmacies. The actual numbers are shown in the table above. A total of 33 were received back, giving a response rate of 82.5 per cent.

## PRESENTATION AND DISCUSSION OF RESULTS

Research findings seem to suggest that 30.3 percent of the respondents indicated that they had been in business for a period ranging from six to ten years. This is shown in Table 2 below. This finding points to the fact that most (27) pharmaceutical companies have been in business for a longer time except for only six which have been in business for five years and below. Also, there are no new companies that entered the sector recently suggesting that there might be some entry barriers of some kind.

Table 2: Profile of Respondents

| Survey Question | Response | Code | Frequency (N) | % |
|---|---|---|---|---|
| Business age | < 1 | 1 | 0 | 0 |
| | 1-5 years | 2 | 6 | 18.2 |
| | 6-10 years | 3 | 10 | 30.3 |
| | 11-15 years | 4 | 8 | 24.2 |
| | 15+ years | 5 | 9 | 27.3 |
| Total | | | 33 | 100 |

**Uses of e-commerce technologies**

In an attempt to establish the uses of e-commerce technologies in the sector, respondents were asked to establish the current uses of e-commerce technologies in their companies. Table 3 below presents a summary of the e-commerce uses in the pharmaceutical sector.

Table 3: Current use of E- Commerce Technologies

| E-commerce application/activity | N | Freq (N) | % |
|---|---|---|---|
| Own Company Websites | 33 | 17 | 52 |
| E-Mail | 33 | 31 | 94 |
| Marketing/ Advertising | 33 | 12 | 36 |
| Generating Direct Sales | 33 | 24 | 73 |
| Providing Customer Service and Support | 33 | 20 | 61 |
| Visiting Other Websites | 33 | 14 | 42 |
| Electronic Banking | 33 | 4 | 12 |
| On-line Database Services | 33 | 1 | 0.3 |
| Price comparison, purchasing and ordering | 33 | 25 | 76 |
| Internal Communications | 33 | 18 | 55 |
| Data Transfer | 33 | 9 | 27 |

| | | | |
|---|---|---|---|
| Tele working | 33 | 0 | 0 |

As is shown in Table 3 above, a high percentage (94 percent) of the respondents use e-commerce applications for e-mailing their suppliers and customers in regard with orders and providing product catalogues to the customers that is to provide information about products and/ or services that they offer. In addition, 76 percent of the respondents use e-commerce technologies to compare supplier price information, place or request orders on line and purchase required products from their chosen supplier. These uses are to some extent congruent with the definition of e-commerce coined by Ramsey et al (2001) who notes that e-commerce involves sharing of business information and maintaining business relationships. However, these findings are not tallying with Berzt's findings that the pharmaceutical industry is more driven to gain competitive advantage through innovative technology (Bertz, 1997).

Lastly, results seem to suggest that very few companies are using e-commerce technologies for e-banking, on-line databases services and tele-working. This tally with findings by Rosa Ma Riesco Sastre (2007) who posit that, SMEs in the pharmaceutical sector have little interest in more sophisticated electronic business tools. In this case, e-banking, on-line databases services and tele-working are regarded as complex technologies.

**Electronic commerce usage level**

In order to establish the e-commerce usage level, e-commerce users were asked to rate the perceived usage of e-commerce technology in their organisations on a three point Likert scale ranging from 1 (low) to 3 (high). Their responses of are summarized in table 4 below.

Table 4: E-Commerce usage level summary

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Low | 15 | 45.5 | 45.5 | 45.5 |
| | Moderate | 12 | 36.4 | 36.4 | 81.8 |
| | High | 6 | 18.2 | 18.2 | 100.0 |
| | Total | 33 | 100.0 | 100.0 | |

To establish the rank order for perceived e-commerce usage, the frequency rating percentage of each usage rank recorded was computed. A variable with a frequency percentage larger than the others was regarded as important to deriving the e-commerce usage in the pharmaceutical sector. On the basis of the respondents who considered their e-commerce usage rank, it emerged that most players in the sector perceive their e-commerce usage as low. This finding is congruent with a study by Miles (2002) who indicates that whilst e-commerce is the order of the day, its use is restricted within the pharmaceutical supply chain in pharmacies.

Further, research findings appear to suggest that e-commerce applications currently being used by pharmaceutical companies are entry-level technologies according to

according to adoption ladders promulgated by Van Akkeren and Cavaye (1999). It is self evident from this finding that the Zimbabwean pharmaceutical sector has the much need foundation upon which complex e-commerce technologies can be installed.
Therefore, the usage of e-commerce by pharmaceuticals in Zimbabwe can be described as in its infancy. This is similar to research findings by Dube, Chitura and Runyowa (2010), even though their research focused on small to medium enterprises in Gweru.

**Benefits of electronic commerce usage**
In an attempt establish benefits of e-commerce usage, pharmaceuticals using e-commerce were asked to rate the importance of perceived benefits in influencing their decision to adopt and use the technology on a five point Likert scale ranging from 1 (not important) to 5 (very important). Their responses are summarized in table 5 below.

Table 5: Rank order of perceived E-commerce benefits

| Rank | E-commerce benefit | N | %[1] | Mean | SD | Var |
|---|---|---|---|---|---|---|
| 1 | Better quality information | 33 | 91.7 | 3.52 | 0.870 | 0.758 |
| 2 | Flexibility | 33 | 11.1 | 2.79 | 1.193 | 1.422 |
| 3 | Reduced lead time in production | 33 | 6.3 | 2.09 | 0.765 | 0584 |
| 4 | Cost saving | 33 | 13.9 | 2.85 | 1.372 | 1.883 |
| 5 | Forecasting | 33 | 5.6 | 2.06 | 1.144 | 1.309 |
| 6 | Resource Planning | 33 | 5.7 | 2.12 | 0.740 | 0.547 |
| 7 | Better operational efficiency | 33 | 8.3 | 3.18 | 1.014 | 1.028 |
| 8 | Reduced inventory level | 33 | 5.6 | 2.55 | 1.092 | 1.193 |
| 9 | More accurate costing | 33 | 2.8 | 2.52 | 0.972 | 0.945 |
| 10 | Increase interdepartmental coordination | 33 | 25 | 3.67 | 1.09 | 1.29 |
| 11 | Increased coordination with suppliers and customers | 33 | 16.7 | 3.45 | 1.121 | 1.256 |
| 12 | Increased sales | 33 | 16.7 | 2.91 | 1.44 | 2.03 |

%[1]- percentage of the respondents who considered the benefit as important

In order to establish the rank order for perceived e-commerce benefits, the mean rating of each statement was computed. A variable with a mean larger than three was regarded as important. On the basis of the percentage of respondents who considered the benefit important or very important, the strongest benefit to emerge was better quality of information (91.7%) and followed by increased interdepartmental coordination. These findings are in sharp contrast to the commonly held view by Kaynak, Tatoglu and Kula (2005) that pharmaceutical suppliers are generally more concerned with obtaining immediate short term benefits from innovative technology such as e-commerce technology. The contrast comes in the sense obtaining better quality information and increased coordination with suppliers and customers are not short-term benefits. This result certainly raises an important issue, that is, perceived e-commerce benefits drive or influence the usage of e-commerce technologies in the pharmaceutical sector. The implication is that if pharmaceuticals do not perceive e-commerce benefits then they will not use the technology. This is evidenced low usage level of e-commerce technologies in the sector.

**E-commerce usage barriers**
In order to establish e-commerce usage barriers, pharmaceutical companies were asked

to rate the applicability of e-commerce barriers in influencing their decisions and operations. Table 6 compares the mean scores and ranks for experienced barriers to e-commerce usage by pharmaceuticals.
The results indicate that the external barriers are neither considered important nor they are frequently encountered, while internal barriers are considered to be more important. The Likert scale ranging from 1 (not important) to 5 (very important) was used.

Table 6: Rank order of perceived E-commerce usage barriers

| Rank | E-commerce barrier | N | %[2] | Mean | SD | Var |
|---|---|---|---|---|---|---|
| 1 | Cost of e-commerce technology equipment | 33 | 76.4 | 3,36 | 1.194 | 1.426 |
| 2 | Absence of a company website | 33 | 79.5 | 3.55 | 1.252 | 1.568 |
| 3 | Lack of technical knowledge | 33 | 70.6 | 2.97 | 1.132 | 1.280 |
| 4 | Complexity of e-commerce technologies | 33 | 79.4 | 3.45 | 1.201 | 1.443 |
| 5 | Privacy related issues | 33 | 79.4 | 3.42 | 1.119 | 1.252 |
| 6 | Lack of technical infrastructure | 33 | 35.2 | 2.18 | 1.103 | 1.216 |
| 7 | Internet connection failures | 33 | 38.2 | 2.27 | 1.098 | 1.205 |
| 8 | EC does not fit with the way our customers do business | 33 | 26.5 | 2.15 | 1.253 | 1.570 |

%[2] - percentage of respondents who considered the barrier as important

The procedure used to rank benefits was also used to rank barriers. The barriers such as cost of e-commerce technology equipment, absence of a company website, complexity of e-commerce technologies and privacy related issues have means more than three, hence were considered strong inhibitors to e-commerce adoption and usage. Results also suggest that most of the pharmaceutical companies (approximately 79 percent) regard absence of a company website, complexity of e-commerce technologies and privacy related issues as the strongest barriers to e-commerce usage.

Research results regard privacy related issues as one of the strong barriers to e-commerce usage. Findings by Stockdale and Standing (2004) and MacLeod (1997) attest to this result. Corresponding result were also reported by Chaudhry (nd) and Quayle (2002) wherein they regarded privacy related issues as an e-commerce usage barrier. However, Cragg and King (1993 cited in MacGregor and Vrazalic, 2005a) suggest that there are four categories of barriers and privacy or security concerns are not among the four.

Further, research findings also rate the costly nature of e-commerce usage as a strong barrier to usage of this technology. Similarly, studies by Owens and Beynon-Davies (2001), Ramsey et al (2003), Looi (2003) and Bolongkikit, Obit, Asing, and Tanakinjal (2006) found cost as a major inhibitor to e-commerce usage. Conversely, this contradicts with results by Walczuch, van Braven and Lundgren (2000) and Simpson and Docherty (2004) who found costs as not being a barrier to the adoption of electronic commerce usage.

In our findings, absence of a company website emerged as the strongest barrier to e-commerce usage in the pharmaceutical sector.

However, this result does not correspond with any findings in literature. For example, Chaudhry (nd), Stockdale and Standing (2004), Dube, Chitura, Runyowa (2010) and Owens and Beynon-Davies (2001) have reported on other barriers to e-commerce usage except lack of company website. These scholars might have neglected this issue since in most countries especially in developed countries owning a website is not a major issue. In addition to the above discussion, scholars like Ramsey et al (2003) and Chaudhry (nd) reported on other inhibiters such as lack of senior management support and legal issues. However, these barriers were not regarded as barriers to e-commerce usage by the pharmaceutical sector in Zimbabwe. This corresponds with the study by Dube, Chitura, Runyowa (2010) wherein these barriers were not even considered.

**E-commerce technologies used in the pharmaceutical sector**

For the purposes of answering the research question which aimed to determine the e-commerce technologies that are being used by the companies that are within the pharmaceutical sector, the respondents were asked to indicate on a given list which one they had in place in their organisations and their responses are summarised in Table 7 below.

Table 7: E-commerce technologies used

| Technology | Frequency | Percent |
|---|---|---|
| EDI | 8 | 24.2 |
| WWW | 22 | 66.7 |
| TPS | 11 | 33.3 |
| IM | 19 | 57.6 |
| OTP | 4 | 12.1 |
| EFT | 8 | 24.2 |

Respondents were asked to indicate the e-commerce related technology which they use. Of the 33 respondent pharmaceutical organizations, 32 are at least using e-commerce as evidenced by their usage of at least one form of e-commerce related technology that was presented to them. Research findings reveal that all pharmaceuticals use personal computers (PCs) for their e-commerce transactions and that the World Wide Web is the technology that is most popular within the sector as the pharmaceuticals use it for e-mailing and also web enabled social networks for example Skype is used to communicate with raw material suppliers. However the use of other e-commerce technologies like Electronic Data Interchange (EDI), Electronic Funds Transfer (EFT) and Online Transaction Processing (OTP) was much lower.

The finding that use of e-commerce technologies like EDI, EFT and OTP was much lower supports the view by Rosa Ma Riesco Sastre (2007) that the pharmaceutical sector has little interest in more sophisticated electronic business tools. Further supporting evidence is presented by Wind et al. (2000) who note that, EDI is one e-commerce technology few pharmacists fully understand. In addition to this Rosa Ma Riesco Sastre (2007) reports that close to 40 percent of pharmaceutical companies use

the internet or other IT networks for purchasing goods or services. Research findings seem to suggest that 24 percent of the companies are using EDI.

This is a very low figure when compared to study by Breen and Crawford (2005) wherein it was found out that 58 percent of the pharmacies in the survey were using EDI.

## SUMMARY AND CONCLUSION

This research sought to determine e-commerce technologies, e-commerce uses, usage level of e-commerce activities, the benefits of e-commerce usage and the barriers of electronic commerce usage in the pharmaceutical sector of Zimbabwe. The research followed an exploratory research design wherein a questionnaire was used as the main research tool. The data was collected from 33 pharmaceutical companies and was then analysed using SPSS.

Research findings would suggest that although technology is progressing and more electronic technologies are now available, the pharmaceutical industry has not adopted some of these technologies. The results indicate that there is a more positive response to using the word wide web and instant messaging by the pharmaceutical sector. Other technologies being used though with lower usage rate include EDI, EFT, TPS and OTP. On this note, it was therefore concluded that the pharmaceutical sector is using mainly entry-level e-commerce technologies.

The benefits identified are that e-commerce provides high quality information to pharmaceutical companies. Apart from that, e-commerce was also found out to be important in facilitating interdepartmental coordination which leads to increased productivity. The other e-commerce benefits discussed in the paper were of course being enjoyed by pharmaceutical but were considered as not very important. These include benefits include increased sales, better operational efficiency, reduced inventory level, more accurate costing, flexibility, reduced lead time in production, cost saving, forecasting and resource planning.

Research results also suggest that there are only four strong barriers to e-commerce usage namely the cost of e-commerce technology equipment, absence of a company website, complexity of e-commerce technologies and privacy related issues. The rest of the barriers were however considered as not very important. These barriers include, e-commerce does not fit with the way our customers do business, lack of technical infrastructure, lack of technical knowledge and Internet connection failures.

## RECOMMENDATIONS

From this research it is recommended that companies in the pharmaceutical sector need to adopt complicated e-commerce technologies as soon as possible if they are to remain competitive in this global village. These technologies can only be adopted if and only if the companies in the sector change their attitudes and perceptions for the better towards e-commerce. This is crucial because it emerged out most companies do not perceive the benefits associated with e-commerce usage. Lastly, policy makers are recommended to put in place the necessary technological infrastructure because this is the foundation upon which the e-commerce applications are built on.

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