

**THE EFFECT OF THE APPLICATION OF "E"- COMMUNICATION ON COMMERCIAL BANKING IN
ZIMBABWE**

by

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Abstract

This study investigates to what extent “e”-communication is used successfully by Zimbabwean commercial banks.

The study was done using the literature survey method and the questionnaire. The closed and open-ended questionnaires used for gathering data were administered personally by the researcher leading to 99% return rate of questionnaires.

The major conclusions from this study are that “e”-communication is widely adopted by the commercial banks in Zimbabwe, examples being the use of email, statement enquiries or bill payment services.

Recommendations drawn from this research are that commercial banks’ top management should be committed to the establishment of more effective information systems programmes and invest substantially more in Information Technology to meet the demanding needs and expectations of customers. The study could be replicated in other sectors of business in order to strengthen the reliability and validity of the results revealed here.

Key-words: “E”-communication, e-security, e-commerce, virtual organisation, business process reengineering.

Table of contents

<u>CHAPTER 1 INTRODUCTION AND THE RESEARCH PROBLEM</u>	1
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT	1
1.3 OBJECTIVES OF THE STUDY	2
1.4 PROPOSITION OF THE STUDY	2
1.5 FINDINGS FROM PREVAILING LITERATURE	2
1.6 BACKGROUND	3
1.7 ACCOUNTING, THE ENVIRONMENT AND TECHNOLOGY.....	4
1.8 BANK PROCESSES	6
1.9 RESEARCH METHODOLOGY	9
1.9.1 LITERATURE SURVEY.....	9
1.9.2 THE QUESTIONNAIRE	9
1.10 LAYOUT OF THE DISSERTATION.....	9
<u>CHAPTER 2 BACKGROUND TO "E"-COMMUNICATION</u>	11
2.1 INTRODUCTION	11
2.2 HISTORY OF "E"-COMMUNICATION.....	11
2.2.1 THE INTERNET	11
2.2.2 THE APPLICATION OF "E"-COMMUNICATION.....	12
2.2.3 "E"-COMMUNICATION IN AFRICA	14
2.3 GLOBAL ANALYSIS OF "E"-COMMUNICATION WITHIN THE FINANCIAL SERVICE INDUSTRIES.....	15
2.4 OVERVIEW OF E-BUSINESS	17
2.4.1 E-BUSINESS ADVANTAGES.....	19
2.4.2 "E"-COMMUNICATION CATEGORIES	20
2.4.3 BUSINESS MODELS.....	22
2.4.3.1 THE VIRTUAL ORGANISATION	22
2.4.3.2 THE CLICK-AND-MORTAR MODEL.....	23
2.5 TOPICAL INFORMATION TECHNOLOGY ISSUES	23
2.5.1 DIGITALISATION AND BANDWIDTH.....	24

2.5.2	KNOWLEDGE MANAGEMENT	25
2.6	TRADITIONAL VERSUS "E"-COMMUNICATION.....	25
2.6.1	TRADITIONAL COMMERCE	25
2.6.2	"E"-COMMUNICATION.....	27
2.6.3	E-COMMERCE INFRASTRUCTURE	29
2.7	ELECTRONIC PAYMENT CHANNELS	29
2.7.1	ELECTRONIC CHEQUES.....	30
2.7.2	ELECTRONIC CASH.....	30
2.7.3	ELECTRONIC PURSE	30
2.8	A CRITIQUE OF "E"- COMMUNICATION	30
2.8.1	ADVANTAGES OF "E"-COMMUNICATION AND COMPUTERISATION	31
2.8.2	DISADVANTAGES OF "E"-COMMUNICATION AND COMPUTERISATION	32
2.9	SUMMARY	33
 <u>CHAPTER 3 BPR AND ELECTRONIC SECURITY.....</u>		<u>34</u>
3.1	INTRODUCTION	34
3.2	BUSINESS PROCESS REENGINEERING	34
3.2.1	BPR METHODOLOGY.....	34
3.2.2	BUSINESS PROCESS REENGINEERING DEFINED	35
3.2.3	BUSINESS PROCESSES IN THE BANK	36
3.3	GUIDELINES FOR REENGINEERING BUSINESS PROCESSES	37
3.4	SECURITY OF "E"-COMMUNICATION AND COMPUTERISATION	37
3.4.1	PHYSICAL AND LOGICAL SECURITY	38
3.4.2	SECURITY CONCERNS IN BANKS	39
3.4.3	ELECTRONIC SECURITY CHALLENGES	40
3.4.4	INTERNAL SECURITY ASPECTS.....	41
3.4.5	EXTERNAL SECURITY ASPECTS	42
3.4.6	TECHNOLOGIES USED TO IMPROVE "E"-SECURITY	42
3.4.7	SECURITY AND "E"-COMMUNICATION.....	44
3.4.8	SYSTEM VULNERABILITY	44
3.4.9	FIREWALL AND PASSWORD PROTECTION.....	47
3.5	SUMMARY	47

CHAPTER 4 RESEARCH METHODOLOGY.....	49
4.1 INTRODUCTION.....	49
4.2 RESEARCH APPROACH AND JUSTIFICATION.....	49
4.3 POPULATION OF THE STUDY.....	50
4.4 SAMPLING.....	51
4.4.1 NON-PROBABILITY (RANDOM) SAMPLING.....	52
4.4.1.1 QUOTA SAMPLING.....	52
4.4.1.2 JUDGEMENTAL SAMPLING.....	52
4.4.1.3 CONVENIENCE SAMPLING.....	52
4.4.1.4 SNOWBALL SAMPLING.....	53
4.4.2 PROBABILITY (RANDOM) SAMPLING.....	53
4.4.2.1 SIMPLE RANDOM SAMPLING.....	53
4.4.2.2 SYSTEMATIC SAMPLING.....	53
4.4.2.3 STRATIFIED SAMPLING.....	54
4.4.2.4 CLUSTER SAMPLING.....	54
4.5 SAMPLE SELECTION AND DATA COLLECTION.....	54
4.6 QUESTIONNAIRE DESIGN.....	54
4.6.1 SHOULD THIS QUESTION BE ASKED?.....	56
4.6.2 IS THE QUESTION OF PROPER SCOPE AND COVERAGE?.....	56
4.7 DATA COLLECTION INSTRUMENTS.....	58
4.7.1 QUESTIONNAIRES.....	59
4.7.2 INTERVIEWS.....	59
4.7.2.1 PERSONAL INTERVIEWS.....	60
4.7.2.2 TELEPHONE SURVEYS.....	60
4.7.2.3 MAIL SURVEYS.....	60
4.7.2.4 COMPUTER DIRECT INTERVIEWS.....	61
4.7.2.5 E-MAIL SURVEYS.....	61
4.8 TYPES OF DATA.....	62
4.8.1 PRIMARY DATA.....	62
4.8.2 SECONDARY DATA.....	62
4.9 DATA PROCESSING, ANALYSIS AND PRESENTATION.....	62
4.10 LIMITATIONS OF THE STUDY.....	63
4.11 CONCLUSION.....	63

CHAPTER 5 RESEARCH FINDINGS AND ANALYSIS OF RESULTS.....	64
5.1 INTRODUCTION.....	64
5.2 RESPONSE RATE.....	64
5.3 RESEARCH FINDINGS FROM INFORMATION TECHNOLOGY AND "E"- COMMUNICATION OFFICIALS.....	64
5.3.1 SEX DISTRIBUTION OF RESPONDENTS.....	65
5.3.2 WORK EXPERIENCE.....	65
5.3.3 LENGTH OF TIME IN THE "E"-COMMUNICATION FIELD.....	66
5.3.4 JOB POSITION.....	67
5.3.5 "E"-COMMUNICATION CONCEPT.....	67
5.3.6 "E"-COMMUNICATION SERVICES.....	68
5.3.7 ELECTRONIC BANKING.....	69
5.3.8 "E"-COMMUNICATION PRODUCTS.....	69
5.3.9 ELECTRONIC PAYMENT CHANNELS.....	70
5.3.10 Is "E"-COMMUNICATION OF ANY SIGNIFICANCE?.....	71
5.3.11 BENEFITS OF "E"-COMMUNICATION.....	71
5.3.12 PROBLEMS OF "E"-COMMUNICATION.....	72
5.3.13 THREATS TO PRIVACY.....	73
5.3.14 SECURITY CONCERNS.....	73
5.3.15 SECURITY CHALLENGES.....	74
5.3.16 SOURCE OF SECURITY THREATS.....	75
5.3.17 SECURE AND EFFICIENT TRANSMISSION OF DATA.....	75
5.3.18 PHYSICAL SECURITY FACILITIES.....	76
5.3.19 EXISTENCE OF POLICIES FOR EFFECTIVE INFRASTRUCTURE CONTROLS.....	77
5.3.20 POLICIES FOR EFFECTIVE INFRASTRUCTURE CONTROLS.....	78
5.3.21 RESPONSIBILITY FOR "E"-COMMUNICATION.....	78
5.3.22 ROLE OF TOP MANAGEMENT IN "E"-COMMUNICATION SECURITY.....	79
5.3.23 SECURITY COSTS.....	80
5.3.24 COMMENTS ON "E"-SECURITY.....	80
5.3.25 PRINCIPLES OF RE-ENGINEERING.....	81
5.3.26 PROCESS OF RE-ENGINEERING.....	82
5.3.27 GENERAL COMMENTS ON "E"-COMMUNICATION.....	83
5.4 RESPONSES FROM ACCOUNTANTS.....	84

5.4.1	IMPORTANCE OF "E"-COMMUNICATION IN ACCOUNTING	84
5.4.2	EFFECTS OF "E"-COMMUNICATION ON TRANSACTION PROCESSING.....	85
5.4.3	BENEFITS OF "E"-COMMUNICATION	85
5.4.4	IMPACT OF "E"-COMMUNICATION ON THE USE OF BANKING PRODUCTS	86
5.5	SUMMARY	87
 <u>CHAPTER 6 CONCLUSION AND FUTURE WORK.....</u>		88
6.1	INTRODUCTION	88
6.2	RESEARCH FINDINGS AND ANALYSIS OF RESULTS	89
6.3	CONCLUSIONS	91
6.3.1	ADOPTION OF "E"-COMMUNICATION	91
6.3.2	BENEFITS OF "E"-COMMUNICATION	91
6.3.3	SECURITY CONCERNS	92
6.3.4	ADDRESSING SECURITY CONCERNS	92
6.3.5	WHAT COMMERCIAL BANKS ARE DOING TO IMPROVE BUSINESS	92
6.4	RECOMMENDATIONS	92
6.5	AREA OF FURTHER STUDY	93
 <u>APPENDIX A – COVERING LETTER.....</u>		94
 <u>APPENDIX B – QUESTIONNAIRE.....</u>		95
 <u>REFERENCES</u>		103

List of figures

Figure 1.1	A systems view of the accountant and the environment adapted from Bebbington and Gray (2003)	6
Figure 1.2	Process types adapted from Brink (2003)	8
Figure 2.1	Roles of banks in e-commerce (Source: Chicago Fed Letter March 2004)	17
Figure 2.2	Buyer's side of traditional commerce (Source: Emcmillan 2004)	26
Figure 2.3	Seller's side of traditional commerce (Source: Emcmillan 2004)	26
Figure 3.1	Classification of malicious programs (Source: Adapted from Bhasin (2003))	46
Figure 4.1	Management research question hierarchy (Source: Cooper and Schindler (2003))	55
Figure 5.1	Sex of the respondent	65
Figure 5.2	Length of time in the organisation	65
Figure 5.3	Respondents' understanding of the "e"-communication concept	67
Figure 5.4	Provision of electronic banking solutions	69
Figure 5.5	Electronic payment channels	70
Figure 5.6	Existence of benefits from "e"-communication	71
Figure 5.7	Source of security threats	75
Figure 5.8	Methods of ensuring secure and efficient transmission of data	75
Figure 5.9	Physical security features	76
Figure 5.10	Existence of corporate policies which support the establishment of effective infrastructure controls	77
Figure 5.11	Proportion of IT budget dedicated to security	80
Figure 5.12	Is "e"-communication important?	84
Figure 5.13	Benefits of "e"-communication	85

List of tables

Table 1.1	Summary of information obtained from websites by the author during March 2004	3
Table 5.1	Length of time in the "e"-communication field	66
Table 5.2	Job position of respondent	67
Table 5.3	"E"-communication services	68
Table 5.4	"E"-communication products	69
Table 5.5	Benefits of "e"-communication	71
Table 5.6	Problems of "e"-communication	72
Table 5.7	Threats to privacy	73
Table 5.8	Security concerns	73
Table 5.9	Security challenges	74
Table 5.10	Policies for effective infrastructure controls	78
Table 5.11	Responsibility for "e"-communication	78
Table 5.12	Role of top management in "e"-communication security	79
Table 5.13	Comments on "e"-security	80
Table 5.14	Most important principles of re-engineering	81
Table 5.15	The process of re-engineering	82
Table 5.16	Comments on "e"-communication	83
Table 5.17	Effects of "e"-communication	85
Table 5.18	Impact of "e"-communication on the use of banking products	86

CHAPTER 1

INTRODUCTION AND THE RESEARCH PROBLEM

1.1 INTRODUCTION

The effect of the application of "e"-communication on commercial banking in Zimbabwe is the focus of this study. This has been necessitated by the advent of the digital age, especially "e"-communication that has offered the banking sector opportunities for reduced transaction costs and improved customer service. In Financial Services Institutions (FSIs), it is noted that any technology that affects the way data can be processed has an impact upon the way that financial services are produced and delivered (Brink 2003; Bhasin 2003; Low 2000). This study highlights some pertinent aspects of "e"-communication within commercial banking in Zimbabwe.

1.2 PROBLEM STATEMENT

Most commercial banks instead of moving with technological trends through investing more resources in new technology seem to relax after initial adoption of "e"-communication programs. This probably agrees with the question posed by Preece and Laurila (2003) saying: "How does our understanding of a technology influence reconfiguration in use and how do post adoption developments influence our understanding of technology"? There is also a limited range of "e"-communication products provided by commercial banks that might not be real-time. Communication between commercial banks and their customers seems to be lacking concerning introducing "e"-communication products, as banks seem to be just imposing "e"-communication products without consulting their customers. Also of note, the commercial banks seem to have failed to realise the benefits of "e"-communication programs adopted.

1.3 OBJECTIVES OF THE STUDY

This study seeks to achieve the following objectives:

1. To establish the adoption of "e"-communication by the commercial banking sector of Zimbabwe.
2. To assess the extent at which "e"-communication has been adopted by commercial banks in Zimbabwe.
3. To establish the benefits that have been realised by commercial banks through adoption of "e"-communication activities.
4. To establish the resources committed by commercial banks with regard to implementing "e"-communication programs.
5. To investigate the challenges faced by commercial banks in Zimbabwe in implementing "e"-communication programs.
6. To assess the programs/activities put in place to mitigate impact of challenges faced by commercial banks in implementing "e"-communication.

1.4 PROPOSITION OF THE STUDY

The study proposes that, "commercial banks in Zimbabwe have adopted "e"-communication as a competitive advantage tool, although there are no tangible benefits in sight so far."

1.5 FINDINGS FROM PREVAILING LITERATURE

The findings from prevailing literature on "e"-communication and organisational change indicate that:

- "E"-communication has come into prominence with the onset of the Internet and the web especially from the latter half of the 1990's (May 2000).
- Organisations in most countries of the world have embraced "e"-communication because of the possible benefits that may accrue to them as a result (UNCTAD 2004).
- The transition from manual systems to electronic-based systems lends themselves to Business Process Re-engineering (BPR) methodologies that can be used to enhance the redesign of business processes (Champy 1996).

Chapter 1 – Introduction and the Research Problem

- The advantages in the electronic medium include cost-efficiency and speed of transaction processing.
- Electronic payments in banks have been observed to result in reduced transaction costs; are easier to record and store; and are processed at much faster speeds when compared to the traditional manual methods (Bhasin 2003).
- Organisations need to budget for security (Jolly 2003).
- Client authentication, digital certificates and data encryption are some of the instruments that may be used to make electronic transactions secure (Bhasin 2003).

1.6 BACKGROUND

Zimbabwean national papers regularly report that commercial banks are at various stages of incorporating technological instruments like electronic banking (e-banking) and e-commerce solutions into their banking operations. Though there are no definite figures on "e"-communication implementations by the commercial banks in Zimbabwe, some information is discernible from the banks' websites.

Table 1.1 shows some of the products marketed on the respective websites. Seven online products were identified on these websites.

Table 1.1 Summary of information obtained from websites by the author during March 2004.

BANKING INSTITUTION	WEBSITE	1	2	3	4	5	6	7
Agricultural Bank of Zimbabwe Ltd	www.africaonline.co.zw/agribank							
Barclays Bank of Zimbabwe Ltd	www.barclays.co.zw					X		
Century Bank Ltd	www.lcz.co.zw							
Commercial Bank of Zimbabwe	www.cbz.co.zw						X	
First Banking Corporation Ltd	www.firstbank.co.zw		X			X		X
Kingdom Bank Ltd	www.kingsec.co.zw					X		
Metropolitan Bank of Zimbabwe Ltd	www.metbank.co.zw							
NMB Bank Ltd	www.nmb.co.zw							
Stanbic Bank of Zimbabwe Ltd	www.stanbic.co.zw							
Standard Chartered Bank Zimbabwe Ltd	www.stanchart.co.zw							
Time Bank of Zimbabwe Ltd	www.timebank.co.zw			X				X
Trust Bank Corporation Ltd	www.trust.co.zw						X	
Zimbabwe Banking Corporation Ltd	www.zimbank.co.zw	X	X	X	X			

Legend:

1. Online balance inquiry
2. Online transfer of funds
3. Online bank statements
4. Online utility payments e.g. for electricity rates, rent or insurance.
5. Online annual reports
6. Online application forms for current accounts
7. Online application forms for chequebook request.

Table 1.1 shows that the usage of "e"-communication by the Zimbabwean commercial banking sector is rather limited, especially the use of a variety of online products and e-banking initiatives. A web presence of all the commercial banks in Zimbabwe is a positive step towards more web-based "e"-communication.

In its banking magazine, FirstNews (2003) First Banking Corporation reports that it has an electronic salary payment module (Paynet) that it uses to electronically transfer salaries from a company account to customer accounts. It cites some of the benefits of this transfer facility to the company and its employees as being convenience, providing management of the salary bill, allowing for increased safety – since there is no manual intervention thus reducing the incidence of fraud and, lastly, increased speed since it is digital.

Commercial banks in Zimbabwe experienced a serious shortage of bank notes during the recent past. So serious was the problem that account holders would fail to access their funds because of the shortage. These cash shortages were widely reported on in the national press as well as dedicated banking magazines (Standard 2004). In this issue of the Standard, suggestions were proposed, attempting to find solutions to this problem in the current technology offerings.

1.7 ACCOUNTING, THE ENVIRONMENT AND TECHNOLOGY

According to Eggington (1979) accounting is concerned with quantification and interpretation of past and prospective economic transactions. "The figures involved are commonly referred to as data, giving rise to the term 'data processing' to describe the mechanics of recording and summarising, particularly when electronic

equipment is used—equivalent in non-electronic jargon to double-entry bookkeeping". Brink (2003) also elaborates on this issue: "As the activities of Financial Services Institutions (FSI) for a large part consist of data processing, technology that affects the way data can be processed has great impacts upon the way financial services are produced and delivered". Therefore, transaction processing within the banking sector has to adapt to this ubiquitous environment.

The American Accounting Association (AAA) defines accounting as "the process of identifying, measuring and communicating economic information to permit informed judgements and decisions by users of the information" (Hermanson, Edwards and Maher 1992). This definition omits the recording process that is central to an organisation's accounting functions (see also Figure 1.1). Users of information in a bank as well as other stakeholder companies are varied and it is of the utmost importance that such data is accurately recorded and processed so that the reported results can be relied upon in the decision-making processes (Van der Poll 2003).

The "accounting environment" can be viewed as those economic events that can be described in financial terms (Bebbington and Gray 2001). These authors also claim that the accounting environment comprises of three types of inflows (debits) and three types of outflows (credits), namely:

- information (debtors, creditors and ownership claims),
- funds (all receipts and payments) and,
- physical resources, goods and services (labour, plant, vehicles, buildings, materials and sales).

Recording of transactions is central to the accountant's "substantive environment" within an organisation. Attributes that are not quantifiable in monetary terms are largely found in the social "substantive environment". An accountant's substantive environment and the social substantive environment attempt to depict the way information resources are deployed to deliver a certain service to the customer. The transformation feedback loop moves backwards as outputs out of the organisation (i.e. information, funds together with physical resources and goods and services), back to the accountant's substantive environment to act as inputs into the

organisation (Bebbington and Gray 2001). Figure 1.1 below shows a system view of the Accountant and the Environment.

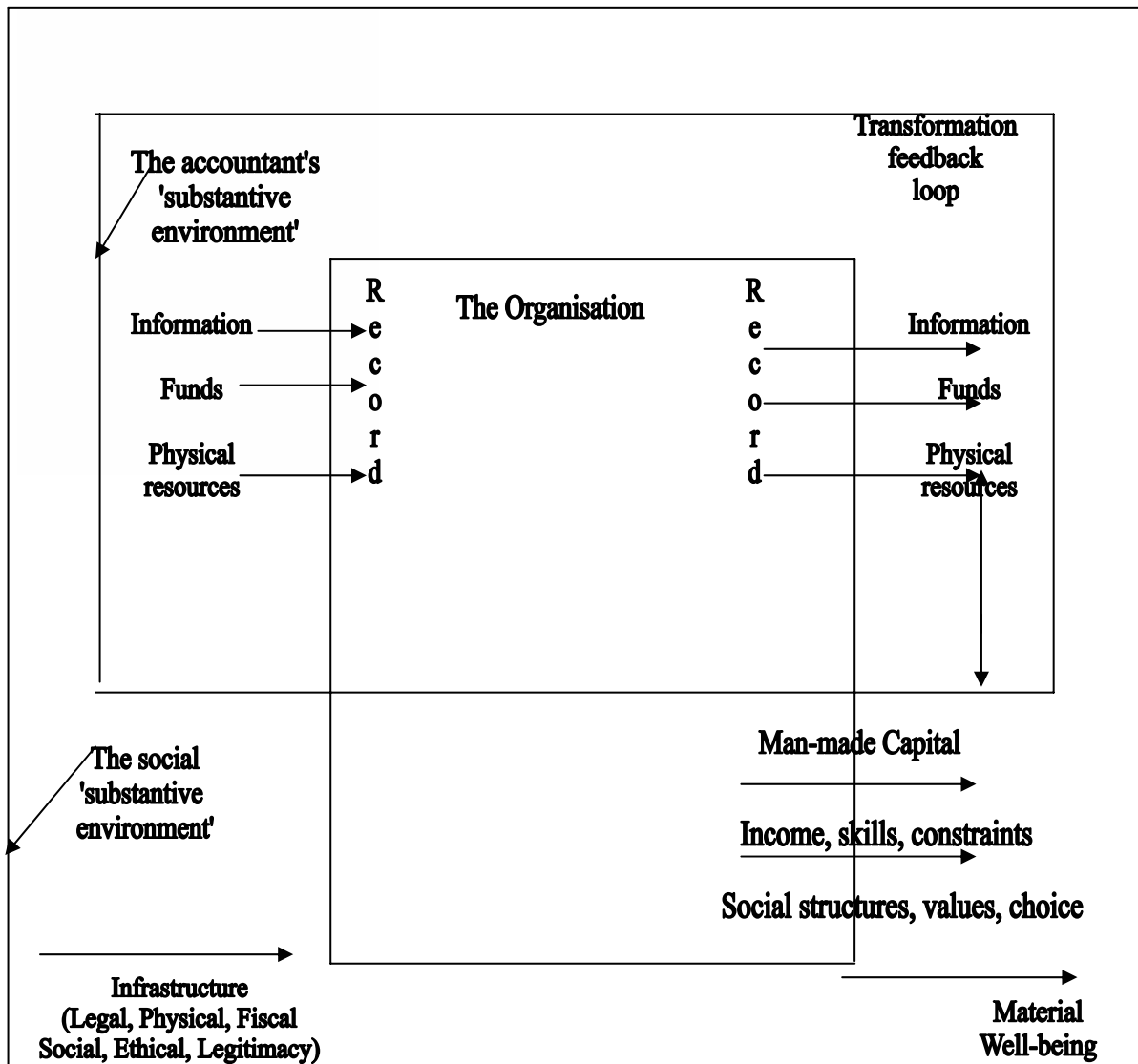


Figure 1.1 A systems view of the Accountant and the Environment adapted from Bebbington and Gray (2001)

1.8 BANK PROCESSES

The core services that banks provide are deposits (bank liabilities) and loans (bank assets). Banks provide transfer facilities for moving deposit money from one account to another one. Attributes of an attractive funds transfer service include reliability, speed, low cost and the provision of good records of transactions (Summers 1998). The declining cost of computing has been an important source of new competition in areas such as banking and telecommunications (May 2000) A good record of

transactions helps to substantially reduce the presence of errors in those transactions.

Ideally, the processing of a bank's transactions should be error-free. Errors are costly in terms of resources spent in correcting such errors and redoing the work. Errors also harm a bank's reputation, as put by Brink (2003). "Errors always affect the reputation of the operations department in the bank, and they may hurt the financial institution's profit and loss account in two ways: an increase in expenses since errors need to be corrected, and a decrease of income since customers may terminate their relationship with the bank". Errors furthermore constitute an operational risk. Operational risk was defined by the Basel Committee as "the risk of losses resulting from inadequate or failed internal processes, people and systems or from external events" (Brink 2003). In the normal processing situation, detected error normally only affects a single transaction and its consequences will be limited compared to problems detected in a process.

Summers (1998) and Brink (2003) agree that the knock-on-effect of errors in a process is far greater than the effects in a single transaction. These assertions seem to emphasise the importance of a good process design in the first place. There are different types of processes in a bank, some of which are started with a customer trigger (for example a request for a loan), while others have time-based triggers (for example the interest payments for a loan which are triggered each time the relevant payment date recurs). "Every process should ideally begin and end with the customer, to show that the customer is in control and is indeed, the only reason that the process is there" (Brink 2003). This statement probably supports the often popular customer-driven premise that "the customer is king" especially when taken in the context of banking.

Brink (2003) also discusses the impact of the Internet on financial services. He distinguishes between customer contact processes that are supported on website and business processes, which are executed in the back office of an organisation. The customer-facing processes on the website demand some kind of interactive dialogue, according to Brink.

Services to customers, depicted by the bottom layer in Figure 1.2 (Brink 2003) are made up of four constituent parts, namely information, advice, contract and use.

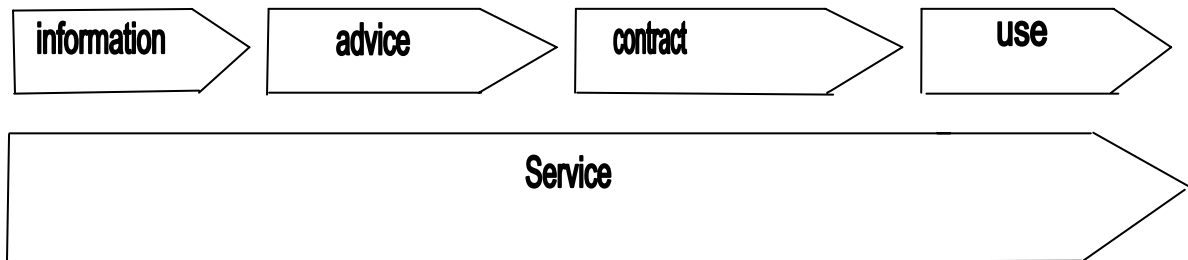


Figure 1.2 Process types adapted from Brink (2003)

Next we discuss each of the four constituent parts in Figure 1.2. We assume that a web-based service is to be designed for a commercial bank.

1. An *information* process informs customers about the service they wish to buy. Such information is fairly static, e.g. types of mortgages or loans. If this information is available on a website, it should be kept up to date.
2. The *advice* process evaluates the different options of the service in order to select the most suitable one for the customer. The cost and profit of the service are calculated, and where possible, the price and current interest rate are represented online.
3. The *contract* phase involves the drawing up and signing of the contract. A bank could let customers input contract data into an online form on the website and thereafter print, sign and send it to the bank for further processing and approval.
4. In the *use* phase, the service as laid down in the contract is delivered. This means that payments are made, stock orders executed and interest paid on loans. However, tight integration between the website and the systems is required in order to achieve satisfactory service levels.

The observations of Brink (2003) are significant because a careful design of customer processes has an impact on the service delivery of a financial institution. These factors taken together indicate that system designers need to be clear about business processes that are to be executed in response to a customer's request at the website.

1.9 RESEARCH METHODOLOGY

The research study was done using a literature survey as well as a questionnaire.

1.9.1 Literature survey

A variety of "e"-communication forms include electronic mail, Internet, and the World Wide Web (WWW). Literature about these forms of communication has been referenced in order to establish their impact on the application of commercial banking in Zimbabwe. Prevailing literature on these topics has been consulted (see reference section). Findings from such literature are given briefly in section 1.3.

1.9.2 The questionnaire

This research was conducted through the design of a questionnaire based on the study objectives. Interview questions were also designed to complement the questions asked in the questionnaire. The researcher then contacted responsible officials within each of the seventeen identified commercial banks. The contact persons were either E-banking officials or IT Managers or Marketing personnel or Public Relations persons or a nominated contact person appointed by a responsible official.

1.10 LAYOUT OF THE DISSERTATION

In chapter 2, the history and the application of "e"-communication are given. An overview of e-business is highlighted with emphasis on e-business advantages and categories of "e"-communication. Topical concepts like "click-and-mortar" models and knowledge management are also discussed. A critique of "e"-communication concludes this section.

Chapter 3 discusses business process reengineering and electronic security. The business process reengineering methodology is explained whilst BPR is defined. Business processes in a bank are examined with a view of establishing how the banking sector can improve their business process redesigns. The security of electronic transactions forms the remaining half of this section. Security is discussed with special reference to the banking sector. The main reference source for this section is Bhasin since he gives a comprehensive analysis of the Indian Internet

Chapter 1 – Introduction and the Research Problem

banking. Suggestions are made as to how electronic transactions can be made secure in the electronic medium.

Chapter 4 covers the research methodology used in the study. Research methods are explained in some detail in this section. Reasons for choosing certain approaches are justified. Both the population and the sample chosen and reasons thereof are expounded on. Questionnaire design and questionnaire administration are covered next.

Chapter 5 presents the findings of the study and a discussion of the study findings.

Chapter 6 is the final chapter that gives the conclusions on the findings as well as major recommendations of the study.

The next chapter discusses the background to "e"-communication in the form of a literature survey. It is necessary to research "e"-communication in other countries to enable the author to establish the effect of "e"-communication in Zimbabwe.

CHAPTER 2

BACKGROUND TO “E”-COMMUNICATION

2.1 INTRODUCTION

This chapter will review literature on the effect of the application of "e"-communication in commercial banking. This literature will include the history of the application of "e"-communication, a global analysis of “e”-communication within the financial service industry, an overview of e-business and other business models; electronic payment channels, advantages and disadvantages of “e”-communication. The section also discusses a global analysis of “e”-communication within the financial services industry in Africa. E-business and other business models, “e”-communication categories, recent technological developments and the concept of knowledge management are highlighted. The section concludes with a critique of “e”-communication, advantages and disadvantages of “e”-communication and computerisation. The literature to be reviewed will provide a platform on which the study findings will be discussed.

2.2 HISTORY OF "E"-COMMUNICATION

“E”-communication is culturally a product of the latter half of the 1990’s. The Internet migrated to public ownership during 1994, Netscape’s IPO was August 1995, Amazon.com’s in May 1997, and IBM launched its ‘e-business’ advertising campaign in 1997 (May 2000). And the trend is continuing into wireless application communications through Wireless Application Protocol (WAP). The effect of the application of “e”-communication, especially on commercial banking in Zimbabwe, will be the main focus of this study.

2.2.1 The Internet

The Internet started out in the 1970’s as a way for heads of defence to pass information from one computer to another in order to preserve it in times of war or crisis. Data was beginning to be stored electronically and needed to be kept safe. Panic about the ‘red threat’ (the USSR or China) gave the armed forces cause to worry about losing electronic information like missile codes. It did away with the need for central communications networks and storage by allowing computers to pass

information to other computers (Bodnar and Hopwood 1998). The idea was that if one command post was knocked out, other posts could still access the information. The original network was called ARPANET and belonged to the Pentagon.

The rise of the use of the Internet is changing the way we interact, learn, communicate and negotiate. At the same time, new consumer patterns are emerging due to the Internet and the application of “e”-communication. An increasing number of enterprises are using the Internet in order to get higher added value to their business and keep their competitiveness in the regional and global market (Bhasin 2003). The Internet and especially the Web, is one of the main driving forces for the application of “e”-communication that provides new powerful tools and possibilities of doing business.

The Internet is becoming a very important medium for making information about banking, travel and tourism services available to business. Geographic space is no longer a limiting factor for countries and continents as stated in the King Report “We as Africans have to accept, willingly or unwillingly, that we are members of a borderless world” (King Report 2002). This may assist banks in crossing boundaries as they transact with one another electronically.

The Internet has had a spectacular effect on financial services because on-line banking is more convenient and flexible than the traditional ways of dealing with money. Distribution channels for financial products have changed from traditional channels to more virtual distribution channels like Point-Of-Sale (POS), Automated Teller Machines (ATMs), PC banking and the Internet (Vuksic and Strugar 2001). Through the application of “e”-communication, banks can be in a position both to market traditional banking products more efficiently and to develop and sell new products sought by “e”-communication participants (Cotton 2002). The virtual marketplaces may allow small companies to compete with business giants, by just having a better web presentation of their products and services.

2.2.2 The application of "e"-communication

The fact that Information and Communication Technology (ICT) has a significant impact on industries and single organizations is an already established and well-

Chapter 2 – Background and “E”-communication

researched issue (Cotton 2002). Markets are changing: becoming faster, bigger, more standardized as well as segmented, and more competitive. Information and Communication Technology has a considerable impact on nearly all areas of the company’s activities, especially for companies operating in information intensive industries such as banking and hospitality sectors (Cotton 2002). Much of the application of “e”-communication activities is noticeable within the services industry and the banks are playing the major role as facilitators of the application of “e”-communication. Banks in Zimbabwe have taken advantage of the electronic medium and already are transferring funds (EFT) and salaries for some corporate clients electronically.

According to Cotton (2002), the application of “e”-communication is perceived as the next wave in the evolution of business and it is where we are all migrating. The evolution of business from mass marketing to relationship marketing marks a fundamental change in the nature of the enterprise (Procter 1998). Many companies are embracing the application of “e”-communication as a means of expanding markets, improving customer service, reducing costs, and enhancing productivity. The ability to represent data electronically in the financial services sector may see banks in Zimbabwe become major players in the application of “e”-communication.

Unlike other sectors in IT, the Internet and particularly the application of “e”-communication have continued to grow at a fast pace since 2001. Internet users world-wide grew up to 655 million by the end of 2002. Developing countries accounted for almost a third of new Internet users world-wide in 2001 (UNCTAD 2004). “E”-communication is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency, and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth’ (UNCTAD 2004) When banks make use of “e”-communication, it may be of benefit to Zimbabwe’s economic growth as Zimbabwe is a developing country.

The principal benefit of the Internet is the availability of information and its accessibility. The Internet is increasing the revenue of professional service industries

because of its vast potential in information diffusion. The way the service industries manage the balance of the physical environment and the Internet will contribute to the sustainability of their online businesses. As a result, adaptations are being made, in order to realise gains from the application of “e”-communication (Sarmiento 2000). The professional service industries such as hospitality and banking may need to perform the transition to the online medium.

UNCTAD (2004) suggests that in order to build trust and consumer confidence and to ensure privacy and the protection of consumers and intellectual property rights, appropriate laws and regulations and service standards should be established. ATM facilities and online transactions with commercial banks may have improved cash demands inside Zimbabwean banks especially at a time when cash shortages were being experienced (Standard 2004). Therefore the application of “e”-communication may have a significant impact on how business is conducted in the financial services sector of Zimbabwe.

2.2.3 "E"-communication in Africa

“E”-communication has been propelled by the coming into existence of the Internet and the web. In Africa, South Africa and Egypt have made some great strides in the implementation of “e”-communication. Senegal, a West African economy, displays characteristics closer to the rest of the African markets and represents a logical test market for the application of “e”-communication in Africa (Pyramid 2004). It has been noticed that during the last few years, African governments started lifting barriers to competition in the whole continent. Africa’s international Internet bandwidth will grow ten fold in the next five years, mostly driven by the demand for data services, an explosion in the North African traffic and the deployment of at least one submarine cable system along Africa’s coast (Pyramid 2004). In markets like Algeria and Nigeria, international backbone traffic is forecast to double annually over the next five years according to the same report.

South Africa is Africa’s largest Internet market with almost 70% of the continent’s dial-up subscriber base. The South African market is leveraged by its superior technical, social and capital infrastructure. South Africa is arguably Africa’s best hope for the successful application of “e”-communication ventures (Pyramid 2004). The

further development of “e”-communication and the expansion of the micro-lending business servicing the needs of the ‘unbanked’ majority of the population are set to enhance more growth of the sector. In Zimbabwe, there is a massive infrastructural development of fibre optic cables along the main city centres (Standard 2004). This may boost the bandwidth for the transmission of data through telecommunication channels.

2.3 GLOBAL ANALYSIS OF "E"-COMMUNICATION WITHIN THE FINANCIAL SERVICE INDUSTRIES

The application of “e”-communication is changing the way in which traditional banking is managed. Banks are realizing that in order to fully exploit the capabilities of the Internet, they must re-shape their strategies and deliver products in a more innovative manner in terms of product variety and lower prices (Groves, Biemer, Lyberg, Massey, Nicholls and Hagel III 1997) It is possible to conduct on-line, all the traditional features of banking, due to the product oriented nature of banking. Banks were driven by customer preferences to move away from traditional methods. The flexibility of the on-line banking management resulted in nearly 30% of savings for consumers. This was the motive that justified the embracing of Internet by Wells Fargo Bank (Laudon and Laudon 1998). Online retail banking simplifies the management process, has lower operating costs and offers new services that easily arrive at more customers. Online or Internet banking may be gaining popularity in Zimbabwean commercial banking.

If banks can provide what customers want and not be hampered by the legacy of complex internal structures, they will have a chance for survival and growth through the Internet (Sarmiento 2000). Over the past few years, the Internet has had a spectacular effect on financial services because it offers an unprecedented degree of information efficiency.

The new information efficiency is based on the new delivery channels that provide many advantages both to customers and to financial services firms. Pyramid (2004) estimate that in the next few years many financial firms will be paying more deliberate attention to their relationships with customers. The results of Ernest & Young survey analysed in a 1999 Special Report on *Technology in Financial*

Chapter 2 – Background and “E”-communication

Services showed that respondents increased their customer relationship management (CRM) spending by 31% in a year in which overall technology spending increased to 8%. Zimbabwean banks may take full advantage of web presentations in order to market a variety of products as well as reach more customers through “e”-communication.

Forrester Research estimates that in the United States, only 500 000 households invested on-line in 1996. At present, the number of households that conducted on-line financial transactions is about 3.3 million (Vuksic and Strugar 2001). Financial services firms continuously increased the percentage of IT budget spent on e-commerce in 1999. Commercial banks in Zimbabwe should spend a reasonable percentage of their IT budget on electronic security aspects alone.

It is argued that the Internet is chiefly a new delivery channel and not a new product. For most banks, the future of the Internet lies in how well it can be integrated with more traditional delivery channels. But in the end, profitability will depend primarily on the quality of the products and services banks deliver to their customers, not necessarily on how those products and services are delivered (Cotton 2000). More recently, banks have augmented their distribution networks with transactional web sites, which allow customers to open accounts, apply for loans, check balances, transfer funds, and make and receive payments; all this being done in the online medium. Transactional web sites may become a common and preferred modus operandi by the educated and young customers of most Zimbabwean commercial banks.

The role of banks in E-Commerce involving the buyer, the seller and the transactions is outlined in the diagram below.

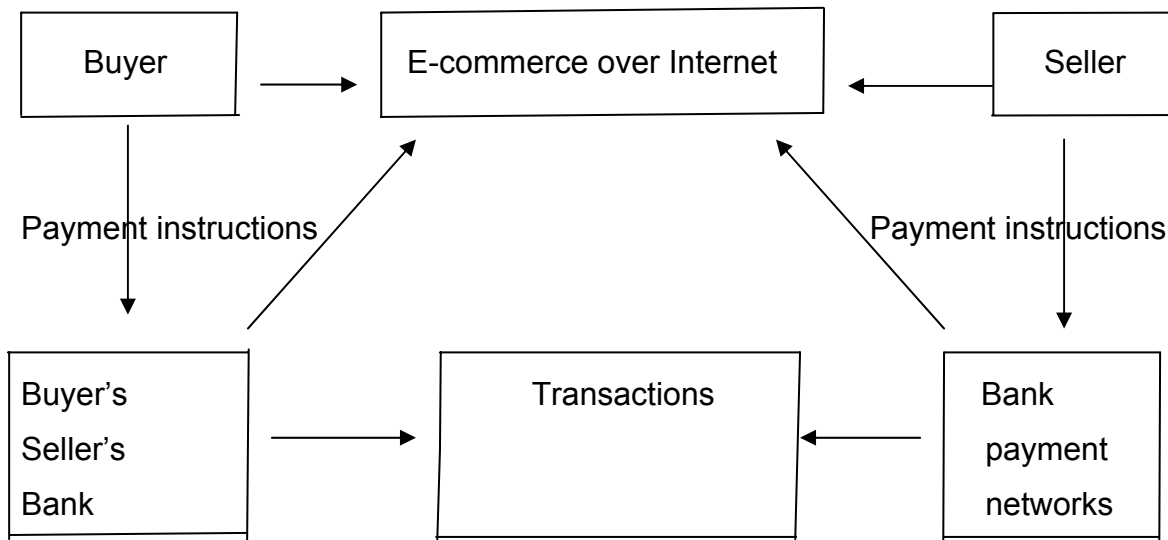


Figure 2.1 Roles of banks in e-commerce (Source: Chicago Fed Letter March 2004)

It can be seen from the above figure that banks play a central role in effecting payment instructions in most business settings.

2.4 OVERVIEW OF E-BUSINESS

E-business has been defined in different ways by different authors. The bottom line is that e-business embraces all aspects of buying and selling products and services over the network (Norris 2001). The Aberdeen Consulting Group defines e-business as “the automation of the entire spectrum of interactions between enterprises and their distributed employees, trading partners, suppliers and customers,” while the Giga Group simply defines e-business as “the application of electronic network technologies to transform business processes” (Intel 2005). The essential characteristics of e-business are that the dealings between two parties be it business-to-business or business-to-consumer, are online transactions, and that the key commodity being traded is information.

E-business involves the complex fusion of business processes, enterprise applications, and organizational design to create a high performance business model. On the other hand, e-commerce involves buying and selling over digital media (Norris 2001). Whereas e-commerce focuses on efficiency in selling, marketing and

purchasing, e-business focuses on effectiveness through improved customer service, reduced costs, and streamlined business processes. The methodologies of BPR can assist bankers in Zimbabwe to redesign appropriate processes for the application of “e”-communication.

IBM first used the term e-business in a marketing initiative of 1997. They defined e-business as “secure, flexible and integrated approach to delivering differentiated business value by combining the systems and processes that run core business operations with the simplicity and reach made possible by Internet technology” (IBM 2005). It is important to note that to transform business into an e-business, it needs to combine the resources of traditional information systems with the vast reach of the Internet and connect critical business systems directly to critical business constituencies: customers, employees and suppliers via Internet technology. E-business does not only encompass e-commerce, but it also deals with redefining old business models with the aid of Information and Communication Technology (ICT), to maximise customer value (Norris 2001). Business Process Reengineering methodologies, as highlighted above may be employed during the transformation of business processes including those in the application of “e”-communication in Zimbabwean commercial banks.

The strength of e-business depends on the strengths of the Internet, which is the preferred technological infrastructure at present. The Internet is available all over the world, 24 hours a day, seven days a week. It is simple to use and the transaction costs for the seller and the consumer are low vis-à-vis traditional distribution channels. According to Norris (2001), the key ingredients of success in e-business include:

- Security - guaranteed safe transactions and record keeping.
- Flexibility - the ability to extend your business solution to accommodate new products and technologies.
- Integration - your site’s tools, databases and other software and scripts keep you in touch with your customers, partners and suppliers.

The application of “e”-communication is a form of e-business with variants as business-to-business and business-to-consumer, to mention but a few. A broader appreciation of e-business is found online on most “e”-communication channels (Norris 2001).

The online “e”-communication channels may enable commercial banks in Zimbabwe to transact with branches and each other in real-time mode circumventing the limitations presented by geographic space.

2.4.1 E-business advantages

Transforming a business into e-business has several advantages (Bahra 2001):

1. Global Accessibility and Sales Reach: business can expand their customer base, and even expand their product line.
2. Closer Relationships: business-to-business sellers can grow closer relationships through their linkages.
3. Free product sample: product samples can be provided fast, easily and free of charges, via the Web site.
4. Reduced Costs: business can reduce their costly production by dynamically adjusting their prices.
5. Media Breaks: the Internet reduces the number of media breaks (such as paper to electronic information, to paper, etc.) that are necessary to transport information.
6. Time-to-Market: e-business reduces time-to-market for new products/services and faster response time to changing market demands.
7. Customer Loyalty: e-business improves customer loyalty and service through easier access to the latest product or service information.

Communication of information and especially business information is increasingly becoming the basis for economic wealth and those parts that are not linked to the information superhighway are disadvantaged. The nearest we have to the global information superhighway is the Internet and it has extended to commerce and industry with millions of users worldwide exchanging everything from e-mail to multimedia (Alexander 2000). Multimedia is defined as “combining the interactivity of

a computer with a natural user interface that includes video and real images.” Multimedia offers the potential for a number of innovative applications, which help people carry out a number of tasks such as banking and e-commerce without using office space and staff time (Alexander 2000). According to Alexander, the provision of electronic marketplace within the Internet will significantly improve the productivity and competitiveness of all participating companies regardless of whether they are suppliers or customers.

2.4.2 "E"-communication categories

An e-business category is defined by the business case and not by the technology used to implement it. Given below is a list of categories of e-business, which have proved to be successful in their electronic form. It is, however, important to note that e-business could exist as a synergistical combination of many of these categories in order to exist as an enterprise (Emcmillan 2004).

- 1. E-commerce:** The traditional form of commerce is very much limited by time and space, unlike the electronic commerce. For example, a shop on the Internet, an *e-shop*, has unlimited space and time. It (e-shop) is accessible 24 hours a day and has unlimited electronic space on the screen of the customer’s computer.
- 2. E-banking:** allows customers to access their accounts and obtain a number of banking services through the Internet. Customers can view their account details, transfer funds between different accounts, order chequebooks, pay bills, order account statements, etc. This is one of the most successful online businesses and several Zimbabwean commercial banks have already moved into it.
- 3. E-learning:** also known as Internet Based Training (IBT) offers a new dimension to computerized learning. The subject matter is presented online; tests are conducted in real-time together with other students (who are also online), and the students are also able to exchange ideas and questions with the tutor. This is now very important with the evolution of the knowledge society where life-long learning has become a necessity.
- 4. E-mailing:** This part of e-business is very important, as communication is the basis of all businesses. The e-mail has actually become an integral part of the

business. The Internet, through its e-mail facility, has provided a very powerful and convenient communication channel to all businesses. This has resulted in some postal services and telecommunication companies losing their market share to e-mail. E-mails combine the strength of both telephone and letters. E-mail can contain more than just the text, but formatted documents, presentations, images, or sound (in digital form), can all be attached to an e-mail message and sent electronically as an electronic message.

5. **E-marketing:** The Internet is used to capture individual customer and react to its demand. This has enhanced the concept of Customer Relationship Marketing (CRM). All customers can be treated in their preferred ways, giving rise to the ‘one-on-one marketing’ as the standard marketing practice. E-marketing is the in-thing in this information age.
6. **E-Operational Resource Management:** This refers to management of goods and services, which are not used for production in a company, e.g. computers, maintenance, repair and operating supplies, and travel and entertainment. E-operational resource management allows companies to manage operational resources more strategically with the help of the Internet for providing a communication infrastructure between buyers and suppliers.
7. **E-supply:** This enables the supply chain partners to share and exchange supply-related information more easily and with lower costs involved. Consequently, the Internet has significantly reduced the cost of business-to-business communications related to the supply chain.
8. **E-trading or E-brokering:** Customers can now react in real-time to changes in the stock market. Everyone with an Internet bank account is able to buy and sell stocks.
9. **E-auctioning:** Consumers can make use of the Internet connection to participate in the bidding without any need to go physically to the auction house. This is cheaper as well as faster as the Internet also speeds up the bidding process.
10. **E-gambling:** The companies offering e-gambling operate gambling web-sites having full programs of games without restrictions. The gambling companies or casinos operate in those locations where gambling is legal although they are able to attract gamblers from all over the world.

- 11. E-directories** are commonly used in finding a particular service or product. The directory database is at one place but it is accessible to anyone, anywhere through the Internet.
- 12. E-engineering** enables engineers, through the Internet, to share engineering design simultaneously on their computers, and any changes made can be discussed in a collaborative manner. The new tools for collaborative developments of engineering designs make the process even more efficient and effective.
- 13. E-franchising:** The franchising companies (franchisers), allow their franchising partners (franchisees) to exclusively distribute their products on the partners’ web-sites. Often, these products can be distributed in digital form, as in the case of books, computer software, or music. Thus an organisation that is not a bookseller, may sell its books by franchising a bookseller’s web-site for selling its books.

It appears that the Internet revolution and the web have given rise to yet another “electronic” revolution with an endless list of “e”-prefixed items. “E”-communication is one such item and its impact on commercial banking in Zimbabwe is examined in this study.

2.4.3 Business models

There are basically three types of business models namely the virtual organization model, the click-and-mortar model and the brick-and-mortar model (Bahra 2001). Virtual organisations are a by-product of the application of “e”-communication in the business environment whilst the click-and-mortar models simulate the traditional brick-and-mortar models.

2.4.3.1 The virtual organisation

The term (virtual organisation) is often used to describe companies that are completely online. That is, they do not have sales offices or physical shops that customers visit. As far as the customer is concerned, the only way of contacting the company is to e-mail them, call them on the phone or visit the web-site. In this case, the offices and warehouses can be designed for function rather than aesthetics. This reduces the need for expensive premises. Consequently, virtual organisations (VO)

can reduce the price of their offerings (Cotton 2002). The problem of the VO, from the customer perspective, is that it is not possible to interact with the sales personnel and therefore they cannot negotiate face-to-face. From the merchant’s perspective, the downside of the VO is not having their personal relationships with the customer. The concept of Virtual Organisations is significant to Zimbabwean commercial banks because they may offer some of the possible options to the future.

2.4.3.2 The click-and-mortar model

This is the hybrid of the real and virtual companies. The term comes from a play on bricks and mortar representing the physical building environment, but where the click of the mouse symbolises the virtual world of the web (Cotton 2002). The Zimbabwean banks can be said to be at both the brick-and-mortar as well as the click-and-mortar levels because of elements of the application of “e”-communication. Virtual banking organisations may not be possible in Zimbabwe now because of a strained economy and runaway inflation levels.

2.5 TOPICAL INFORMATION TECHNOLOGY ISSUES

The proliferation of information and communication technologies in the twin environments of the Internet and the web is offering the business community electronic products some of which are completely new. The effect of the application of these electronic and communication technologies is discussed in this study with special reference to their impact on commercial banking in Zimbabwe.

Information and communications technologies (ICT) have been particularly influential in the services industries. The Internet makes it possible to sell a variety of services, e.g. airline tickets, financial or insurance products, customer support, data processing services or legal, health, education or software services, around the clock and from anywhere in the world. There are now a number of electronic services such as e-finance, e-banking, e-procurement, e-services, e-marketing, etc (Bhasin 2003). A number of electronic services were discussed under the section 2.4.2 on “e”-communication categories above.

The convergence of phone, camera, e-mail and the Internet is allowing operators to be creative with new services that encourage customers to spend more time and

money on their phones beyond just chatting. Mobile commerce is being enhanced by developments in the mobile cellular phones by companies like Samsung, NTT DoCoMo Inc., KDDI Corp. and Vodafone Holdings (Bahra 2001). Samsung launched a lightweight SGH-P400 and SGH-E100 latest range of mobile phones in the Middle East. This is ideal for customers looking for connectivity, performance and mobility (Bahra 2001). Wireless Application Protocol (WAP) has a capacity to reach more customers. Wireless Application Technology might in the long-term benefit many users including commercial banks in Zimbabwe since most clients own cell phones.

A number of African countries are creating new company incubators and technology parks. Mauritius is completing the first part of its Cyber City project and the Cyber Tower. Ghana has created a multimedia centre-providing infrastructure to support IT and they are planning a Technology Park in Tema FTZ. Uganda has also set up a technology incubation centre this year (UNCTAD 2004). The latest versions of Microsoft Windows operating system and office software will be available in local languages ranging from Ethiopia's Amharic to Inuktitut of Arctic Inuit under a project involving Microsoft and various universities and local governments (UNCTAD 2004) According to the same report, the mobile phones are now equipped to send and receive e-mail or access a special section of the web through WAP (Wireless Application Protocol). WAP phones access specially designed small web pages. Some users in Zimbabwe may be able to enquire for bank balances using their cell phones.

2.5.1 Digitalisation and bandwidth

Data travelling over public communication channels is increasingly being transmitted in digital form as opposed to the traditional analogue form. The size of the bandwidth affects the speed of transmission. Both sound and pictures can be transmitted more quickly and with greater clarity by digital means. The information age has moved from information delivery by analogue signal to that by digital signal; a fast and more efficient alternative. The speed by which information can be transferred electronically is affected by the bandwidth of the communication device (Emcmillan 2004). A narrow band carries less information than a broad band. Broadband technology will allow more information to be downloaded at much faster speeds. The speed of communication is one factor that is increasing rapidly.

2.5.2 Knowledge management

Knowledge Management (KM) can be viewed as the food that feeds the e-business systems. Knowledge management systems and tools are used to capture, re-use and re-purpose the relevant information to the person that needs it, preferably at a time they need it. They can be as simple as a Frequently Asked Questions (FAQ) application, providing the right information to a client in need of online customer support (Champy 1996). Many Knowledge Management systems are also based on groupware applications to share information between departments and individuals in the enterprise. These are usually easily integrated into e-business strategies and systems.

The traditional economic view of knowledge and information saw them as being one and the same. In practice, they are very difficult concepts, which complement each other (Bahra 2001). The concept of Knowledge Management needs to be understood during the design of business processes of commercial banks especially in the particular context of Zimbabwe’s commercial banking.

2.6 TRADITIONAL VERSUS "E"-COMMUNICATION

This section focuses on traditional versus electronic means of communication.

2.6.1 Traditional commerce

Commerce, or doing business, is a negotiated exchange of valuable products or services between at least two parties and includes all activities that each of the parties undertakes to complete the commercial transaction.

Chapter 2 – Background and “E”-communication

Any commercial transaction can be examined from either the buyer’s or the seller’s viewpoint as shown below (Emcmillan 2004):

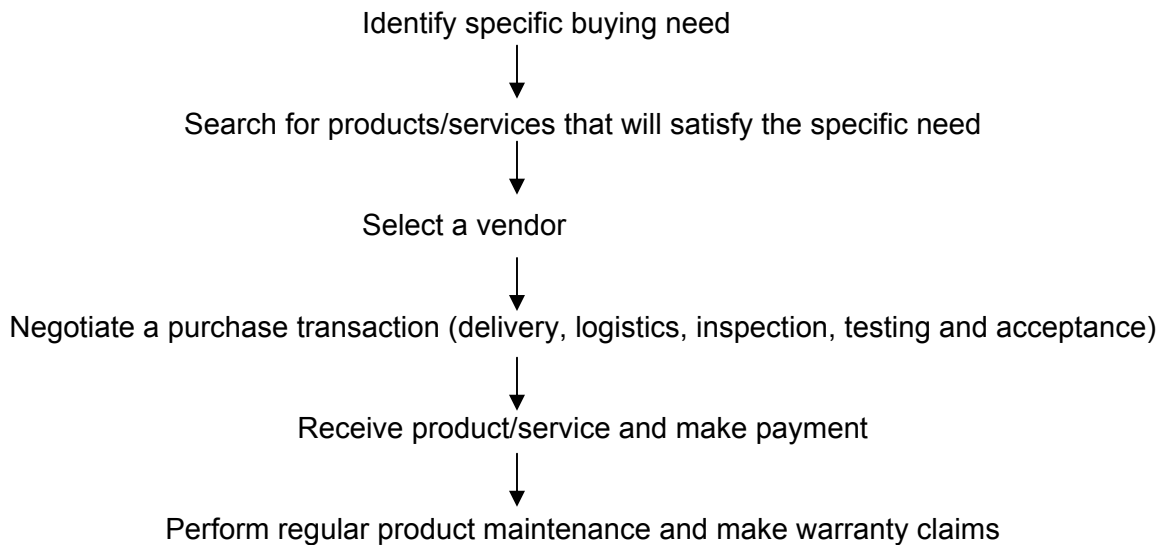


Figure 2.2 Buyer’s side of traditional commerce (Source: Emcmillan 2004)

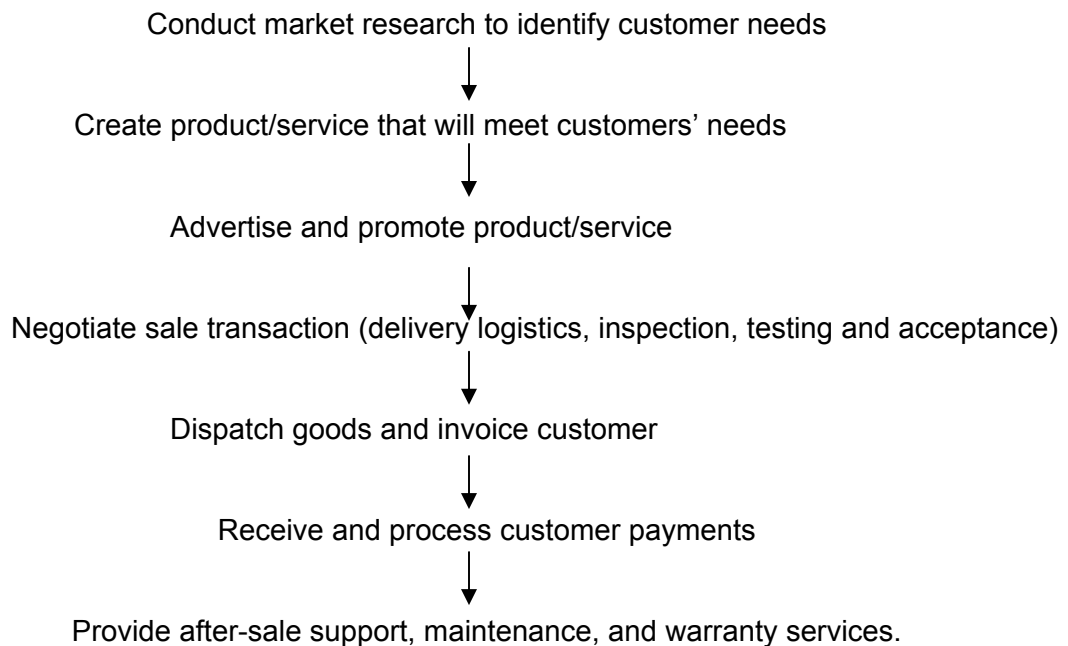


Figure 2.3 Seller’s side of traditional commerce (Source: Emcmillan 2004)

The two figures give the two perspectives both from the Buyer’s as well as from the Seller’s point of view. These analyses are important especially during the redesigns of “e”-communication models that might take place during the current technological

developments. Commercial banks in Zimbabwe may learn from analyses such as the above during their process redesigns.

2.6.2 "E"-communication

“E”-communication is a generic term used for a range of technologies that is now available to improve the effectiveness of trading relationships. It is not in itself an enabling technology (Bahra 2001). At the application level, the typical technologies include:

1. Electronic catalogues
2. Electronic funds transfer
3. Fax
4. Technical data interchange
5. Voice messaging
6. Workflow
7. Electronic data interchange (EDI)
8. Electronic mail
9. Electronic forms.

All of these are supported by appropriate telecommunications networks including the Internet. E-commerce describes the buying and selling of products, services, and information via the Internet (Bahra 2001). It is not just about online shopping, where the customer carries out a transaction with a business, (B2C – business to customer trade). It is also about transactions between businesses, B2B (business to business) exchanges. B2B is a description of the relationship a company has with its customers (Intel 2005). B2B can also be defined as exchanging of structured messages with other business partners over private networks or Internet to create and transform business relationships.

E-commerce has been around for a long time. In the early 1970s, it was referred to as EDI. Airline seats have been sold using e-commerce systems. The French public has been using an e-commerce system called Teletel since 1983 (Whitely 2000). The Internet started taking place in the early 1990s thus opening up EDI to smaller businesses and individuals. The development of the World Wide Web (WWW) in the

1990s, with the release of the first Web browser (Mosaic) in 1993, led to the beginnings of what we now think of as e-commerce (May 2000). The effect of the application of “e”-communication by commercial banks in Zimbabwe is an example of a form of electronic commerce. Electronic funds transfer, electronic forms or electronic mail may all play a part in “e”-communication in Zimbabwean Commercial Banks.

E-commerce is an area where new ideas and new technology are emerging all the time. Understanding e-commerce includes considerations of the supply chain, customer service, and procurement and intra-business tasks. It also involves developing an understanding of competence in the underlying technology (Mougayar 1998; Champy 1996; Bhasin 2003). E-commerce comprises business processes, technology, and collaboration among stakeholders. E-commerce describes the interface between business and customer, whether that customer is a consumer, another business or a government body. In the case of commercial banks in Zimbabwe, the customer can be an individual client or corporate client contributing to e-commerce activities through “e”-communications.

The laws that regulate normal ‘conventional’ paper-based business were designed to meet the specifics of ‘conventional’ commerce. E-commerce brings with it matters that cannot be adequately catered for by these laws (Burnett 2001). To this end many Western nations have today transformed their laws to regulate these issues.

The United Nations Commission for International Trade Law (UNCITRAL) prepared a model law on e-commerce. The model defines salient e-commerce principles and is intended to act as a guideline for member nations when they adapt their domestic law to comply with the specifics of e-commerce. Zimbabwe is a member of UNCITRAL and accordingly is entitled to adopt the model either as it is or with modifications that suit its peculiar situation (Africom 2004). Such guidelines may be used by the various stakeholders including commercial banks in Zimbabwe.

E-commerce and the application of “e”-communication has become an integral part of any competitive business enterprise. The vast possibilities of the Internet have revolutionised the ways in which businesses are being done. Through e-commerce a

business enterprise can radically shift, or re-invent itself (Mougayar 1998). E-commerce started another avenue for business to pursue efficiency and quality. Zimbabwean commercial banks should strive to improve efficiency and quality through technological advancements such as “e”-communications.

2.6.3 E-commerce infrastructure

There are two types of e-commerce infrastructures, namely the Web-based and EDI (Electronic Data Interchange). The Web-based e-commerce generally involves the use of a Web browser and a ubiquitous infrastructure (the global Transport Control Protocol- Internet Protocol (TCP/IP) network known as the Internet). The browser interacts with a web server that does the transaction processing. This arrangement has been commonly used for B2C-type transactions. EDI refers to the controlled transfer of data between businesses and organisations via established security standards. EDI systems provide the vehicle for input, authentication, validation, agreement and electronic payments, all to occur in seconds over the Internet (Cotton 2002). EDI transactions have typically been used for B2B transactions. However, they are expected to decline, making strides toward Web-based transactions. All the commercial banks in Zimbabwe can design web-sites to market their products and offer limited banking facilities like balance enquiry or statement requests. This trend towards a web focus may be continued.

2.7 ELECTRONIC PAYMENT CHANNELS

Simply stated, an electronic payment is a series of processes by which value exchange is captured, verified and accepted in a secured way electronically. Electronic payments normally result in reduced transaction costs, are easier to record and store, and are processed at a faster speed when compared to most traditional manual systems (Bhasin 2003). Electronic payment channels have a positive impact on the application of “e”-communication in commercial banking, and Zimbabwean banks may incorporate electronic payment channels like the electronic funds transfer method called the Real-Time Gross Settlement System (RTGS).

2.7.1 Electronic cheques

Electronic delivery channels are transforming the manner in which cheques are presented. “Electronic cheque pertains to the use of networking services to issue and process payments that emulate cheques prevalent in the current banking environment” (Bhasin 2003). The security requirements for electronic cheques consist of authenticating the electronic cheque, supplying the originator’s public key to the receiver, and securely storing the originator’s private key. The electronic cheque may be used by banks in Zimbabwe.

2.7.2 Electronic cash

Electronic cash or digital money provides an important means to transfer money between different parties over a network such as the Internet. E-cash is a new concept in online payment systems as it combines computerised convenience with security and privacy that are an improvement over paper money (Bhasin 2003). E-cash or electronic money is created when a bank attaches its digital signature to a note promising to pay the bearer some amount of money (Bodnar and Hopwood 1998). The concept of e-cash may be of benefit in future electronic transactions.

2.7.3 Electronic purse

“An electronic wallet is a computer program that keeps track of the various keys, digital certificates, and items of information associated with electronic money” (Bodnar and Hopwood 1998). The e-purse is loaded with money that is then used to pay for any transaction through a merchant who will be equipped with a card reader. Some cards that emulate the electronic cash are being purchased from some establishments like departmental stores. Commercial banks in Zimbabwe need to be aware of such instruments since they may be used to complement cash withdrawals in the banks.

2.8 A CRITIQUE OF "E"- COMMUNICATION

“E”-communication and computerisation offer organisations both opportunities and certain challenges. Some of the benefits to be derived from “e”-communication are listed in this section.

2.8.1 Advantages of "e"-communication and computerisation

There are various advantages of “e”-communication:

A) *Cost lowering benefits*

- 1) The speed and cost savings of automation justify the use of computers to process business documents (Jolly 2003).
- 2) An “e”-communication site can significantly lower both order taking and customer service costs, which can strongly improve the bottom line of an organisation.
- 3) The reduced cost of ownership is one of the most significant incentives for implementing “e”-communication.

B) *Expanded market share and supply chain integration*

- 1) An “e”-communication setting gives customers an opportunity to reach other products on offer.
- 2) In Supply Chain Integration, the systems are fully integrated giving customers a chance for flexible operations through these systems.
- 3) In “e”-communication, many of the separate steps that normally intervene between a buyer and a seller in a commercial transaction can be integrated and automated electronically (Bhasin 2003).

C) *Advanced technological applications*

- 1) “E”-communication supports advanced design and manufacturing, capacity like just-in-time (JIT), quick response, concurrent re-engineering, all oriented towards coordinating and often integrating various aspects of the products and distribution processes, thereby improving overall end product quality (Bhasin 2003).
- 2) With automated tools, it is possible to interact with a customer in niche ways at virtually no extra cost.
- 3) Electronic banking gives customers controlled access of accounts anytime from anywhere in the world.

The advantages of “e”-communication have been subdivided into cost-lowering, expanded market share and supply chain integration as well as advanced technological applications. These advantages are however sometimes exaggerated

resulting in losses or failure. Zimbabwean banks need to carefully consider these advantages so as to ensure maximum benefit and efficiency.

2.8.2 Disadvantages of "e"-communication and computerisation

“E”-communication and computerisation bring with them certain disadvantages as well. It is important to consider these disadvantages when implementing an “e”-communication and computerisation project in an effort to mitigate the likely impact of such disadvantages.

A) Security challenges

- 1) Internet software was generally designed with security as an afterthought (Jolly 2003).
- 2) Document processing using computers is susceptible to abuse.
- 3) Cryptographic techniques and digital signatures can be technically difficult solutions to understand for people with poor IT knowledge (Jolly 2003).

B) Cost-incurring disadvantages

- 1) “E”-communication projects require major initial costs for a secure network, sophisticated hardware and software.
- 2) The introduction of “e”-communication involves a 24 hours support environment and would necessitate a dedicated pool of skilled manpower.
- 3) The training and retaining of skilled manpower within the organisation is a major cause for concern.

C) Legal and regulatory issues

- 1) Legal issues act as a major constraint to conducting “e”-communication on the Internet.

The disadvantages of “e”-communication and computerisation border around security threats, abuse of resources, technology complexity, cost challenges, legal issues as well as resource constraints. Where these disadvantages are adequately addressed, their impact on “e”-communication and computerisation may be minimised. It is important that commercial banks in Zimbabwe take cognisance of these disadvantages and possible threats so as to assure smooth operations.

2.9 SUMMARY

The purpose of the present chapter was to shed light on the development of “e”-communication by reviewing the prevailing literature on technology and organisational change. The chapter began by analysing “e”-communication from a global perspective in an attempt to assess the “e”-communication activities worldwide. “E”-communication is a subsection of e-business and hence the need to look at the overview of e-business could not be overlooked. Again, the chapter looks at topical information technology issues since these greatly affect the development of “e”-communication in any business institution. The literature on “e”-communication was analysed in detail from several authors’ perspectives and this included the advantages and disadvantages of “e”-communication and computerisation. Business Process Re-engineering (BPR) and electronic security are the theme of the next chapter. As banks are moving away from the manual system to an electronic system, BPR becomes necessary and as banks become more vulnerable, they need to improve their security.

CHAPTER 3

BPR AND ELECTRONIC SECURITY

3.1 INTRODUCTION

This chapter discusses business process reengineering methodologies and electronic security; the two concepts may be used in combination to enhance organisational performance. The application of “e”-communication by commercial banks in Zimbabwe demands careful design of processes and meticulous considerations on data security.

3.2 BUSINESS PROCESS REENGINEERING

Business process redesigns and “e”-communication are natural partners. These two instruments have the capacity to contribute to a change process such as the application of “e”-communication in commercial banking.

Business Process Reengineering (BPR) is a powerful philosophy that organisations can use to improve performance in an environment encompassing processes, people and technology (Rawland and Peppard 1996; Brink 2003; Sarmiento 2000). Sarmiento (2000) refers to processes, people and technology as the three important vectors of an organisation. These three vectors are at the heart of most “e”-communication initiatives. Concepts on BPR are discussed in this research study so that organisations can reengineer their processes in a manner that adds value to customers during the design of “e”-communication models. Zimbabwe’s commercial banks should take advantage of process redesigns especially at the point where they implement “e”-communication instruments using the Internet and the web.

3.2.1 BPR methodology

“E”-communication initiatives stand to benefit from a business process reengineering methodology, especially where the focus is on business process redesign. The Internet and the web have given rise to a new way of doing business. The value of business information has been the subject of theoretical analysis by economists (Hawker 2000). Jolly (2003) points out that merely searching for information amounts to an economic transaction, and that acts of communication are necessarily

economic events. This means that value is to be obtained not just from holding information but also in being able to communicate it easily across networks (Hawker 2000). “E”-communication models depend and rely on efficient networks for their success.

The philosophy of business process reengineering (BPR) has been around for a long time. According to Champy (1996), Taylor suggested that managers could discover the best processes for performing work and reengineer them to optimise productivity. In the early 1900’s, Fayol originated the concept of reengineering: “To conduct the undertaking toward its objectives by seeking to derive optimum advantage from all available resources.” Urwick concentrated on the idea of worker empowerment that is central to reengineering (Champy 1996). Champy (1996) assert that BPR is not a theory, but a technique; while Gates sums it up: “If the 1980’s were about quality, and the 1990’s about reengineering, then the 2000’s will be about velocity.” Perhaps this implied “velocity” would be a manifestation of the application of “e”-communication in business including commercial banking in Zimbabwe.

3.2.2 Business process reengineering defined

BPR is a performance improvement philosophy that is used by organisations to improve the way in which they do business through ‘process focus’. Business process reengineering is about redesigning processes to gain significant improvements in performance (Rawland and Peppard 1996). BPR is making ‘processes’ the main focus for organisations and may also be used by commercial banks in Zimbabwe with great success.

Rawland and Peppard (1996) associate BPR with radical performance improvement for any given process. Champy (1996) give a comprehensive definition of BPR: “BPR is the fundamental rethinking and radical redesign of business process to achieve dramatic improvement in critical contemporary measures of performance such as cost, quality, service and speed” (Sarmiento 2000). A suitable clarifying definition of BPR is the fundamental study and thorough redesign of business processes, management systems, job definition, organisational structure, and beliefs and behaviour, with the intention of attaining extraordinary performance improvements to meet customer and business demands (Sarmiento 2000). The focus in BPR is at the

process redesign level in an effort to improve performance and adding value to the product being delivered to the customer. Commercial banks in Zimbabwe may need to adopt process redesign methodologies in order to improve their performance.

3.2.3 Business processes in the bank

A business process is a sequence of tasks that delivers a predefined result to the beneficiary of the process; it ends by delivering a result to the customer. Brink (2003) states that according to Keen, “any methodology for analysing business processes must begin and end with the customer, because it is customer power that has reshaped the terms of competition.” The customer (depositor, borrower, inquirer) is both the start and end of the process (Brink 2003). In a banking setup, the processes revolve around the customer’s needs therefore customers may stand to benefit from analyses of related business processes.

Efforts can be made to improve the banking service. According to Brink (2003), one way of enhancing banking service is the reduction of or elimination of “handoffs”. A “handoff” is the processing of work – a document or the customer himself – from one workstation or process to another (Brink 2003). The processes are mostly checking, crosschecking, counter-checking, rechecking or validating the work done by other bank workers. Elimination of a handoff in this manner becomes an important tool of business process reengineering. On the other hand, excessive handoffs are symptoms of the bank’s lack of people empowerment. “E”-communication may offer commercial banks in Zimbabwe an opportunity to redesign processes with possible elimination of “handoffs”.

The phenomenon of business process redesign encompasses process reengineering, process innovation and process redesign. According to Brink, analysis and redesign of business processes using some kind of methodology can bring large rewards (Brink 2003). Champy (1996) make the point that integrated processes might operate ten times faster than fragmented ones, whilst Gerrits approach about redesign of processes in financial services distinguishes four areas: product analysis, task analysis, risk analysis and data analysis (Brink 2003). Designers of web-sites for the Zimbabwean commercial banking sector can benefit from the current BPR methodologies.

3.3 GUIDELINES FOR REENGINEERING BUSINESS PROCESSES

BPR offers the banking community opportunities to re-examine and reengineer the whole service delivery channel. Champy (1996) give some useful guidelines for reengineering any business processes. These recommendations are detailed below:

1. Business Process Reengineering must be accompanied by strategic planning, which leverages Information Technology as a competitive tool.
2. Place the customer at the centre of the reengineering effort.
3. Concentrate on reengineering fragmented processes that lead to delays or other negative impacts on customer service.
4. Business Process Reengineering must be 'owned' throughout the organisation and not driven by a group of outside consultants.
5. Case teams must be comprised of both managers as well as those who will actually do the work.
6. The Information Technology group should be an integral part of the reengineering team from the start.
7. Business Process Reengineering should be sponsored by top executives, who are not about to leave or retire.
8. Business Process Reengineering projects must have a timetable, ideally between three to six months.
9. Business Process Reengineering must not ignore corporate culture and must emphasise constant communication and feedback.

The relationship between “e”-communication and business process redesigns has not been fully exploited. This paper takes the view that those aspiring to do business process redesigns must apply the capabilities of Information and Communication Technologies and especially “e”-communication technologies. The guidelines supplied by Champy (1996) can be used by commercial banks in Zimbabwe as a point of departure.

3.4 SECURITY OF "E"-COMMUNICATION AND COMPUTERISATION

The Internet revolution has exposed businesses to certain threats and system vulnerabilities. Surfing the Web and using a computer may seem easy and yet the

same Internet that brings information, news and email can also bring threats to privacy, computer files and computer software and hardware. “Hackers, criminals and other ‘nosy’ people can gain control of your digital information” (Holden 2003). These threats constitute some of the risks to computer security especially in banks.

“E”-communication and web-based communication is forcing banks and financial institutions to find more efficient ways of working in an increasingly global market (Bhasin 2003). E-security should be continuously reviewed and improved on all communication networks. Commercial banks in Zimbabwe may need to spend a significant portion of their budget on security.

3.4.1 Physical and logical security

Security aspects pertaining to “e”-communication and the transmission of data across communication networks are discussed in the sections that follow. Security can therefore be divided into physical security and logical security. According to Jolly (2003), physical security is effected through secure doors, locks and swiping cards, whereas logical security is maintained through user identification accompanied by password entry.

There is no clear definition of electronic security. However, electronic security can be defined as policies, procedures and technical measures used to prevent unauthorised access, alteration, theft or physical damage to information systems, networks and their data (Jolly 2003). “Historically, computer security was provided by the use of account passwords and limited physical access of a facility to bona fide users. As users began to dial in from their PCs and terminals at home, these measures are being considered insufficient to prevent attacks from sophisticated hackers” (Bhasin 2003). This underlines the need to continuously monitor and improve electronic security in banks in particular.

Physical security, up to the time of the Internet, has covered all the information systems and sites against internal and external threats. Most computer rooms are located at floor levels higher than the ground floor in order to avoid disasters like floods. Access to a computer room is normally controlled by a sophisticated door and a locking mechanism that would require expensive equipment and reasonable time to

breach. Usually, both building and computer room are protected through automated alarms, with the effect that attempting to breach the building would carry a significant risk of being caught (Bhasin 2003). Electronic security though, poses serious challenges to policy makers and other stakeholders. Commercial banks in Zimbabwe should recognise the need to be secure.

3.4.2 Security concerns in banks

Physical security for banks is a must given the nature of trading in a commodity such as money. Some of the concerns that need to be addressed by the banking sector are robberies, issue of stolen or lost cards, credit card fraud, money laundering and frauds by internal staff. “There is no bank that cannot be robbed, only those that are strongly protected that softer targets are chosen instead” (Jolly 2003). Though a security system cannot be perfect, banks should make an effort to secure their operational environments. Robberies, credit card fraud and frauds by internal staff may pose a threat to Zimbabwe’s commercial banks.

Acts of fraud are prevalent in most commercial banks. Writing in the *Scottish Banker* magazine on Fraud, Mathison (2003) points out that the objective of money-laundering rules is to promote vigilance and compliance to prevent financial crime and protect the reputation of the institutions, through appropriate awareness and training initiatives. “Know Your Customer (KYC) policies are a bank’s most effective weapon against being used unwittingly to launder money.” Knowing customers and being alert to unusual transactions can help combat money-laundering schemes (Mathison 2003). Sharing information about identified frauds has been observed to prevent further fraud by the UK’s Fraud Prevention Service. Commercial banks in Zimbabwe may benefit from sharing information about local frauds.

Credit card fraud has been on the increase in banks in the UK and other countries of the world. Counterfeit is a common type of card fraud. A counterfeit card is either one that has been printed, embossed or encoded without permission from the issuer, or one that has been validly issued then altered or recoded (Mathison 2003). Lost or stolen cards can be used to purchase goods before the cardholder has reported the loss. The Internet economy makes it easy to perpetrate fraud because of the digital nature of the data. Since commercial banks in Zimbabwe are also migrating to a

digital economy, there is a need for them to be vigilant with regard to threats such as card fraud.

Fraud in the banking sector is increasingly being perpetrated by inside employees. As a result, pre-employment screening of prospective employees is strongly recommended. Such internal breaches include the disgruntled employee and the under-utilised employee who finds himself with time to experiment and investigate (Jolly 2003). Concurrent security technologies like cryptography and digital certification facilitate the provision of a safer environment. These security tools should be in place in a bank to prevent any unauthorised access and other security breaches. Screening of prospective bank employees should be done through the Allied Bankers Association of Zimbabwe.

3.4.3 Electronic security challenges

Electronic security challenges are considered to be critical for the success of most Information and Communication Technology projects. The application of “e”-communication in commercial banking faces many electronic security challenges. Bhasin (2003) gives some of the challenges posed by electronic security:

1. The things being protected do not have a physical manifestation.
2. Perfect forgeries are often possible.
3. Electronic objects often do not have a clear sense of origin.
4. The electronic objects are transient.

“Lack of security is a critical problem while dealing with confidential information and especially while conducting communication and remitting payments electronically” (Bhasin 2003). Bhasin goes on to suggest features that are necessary for secure and efficient transmission of data in “e”-communication:

1. Client authentication to make sure of the client’s identity.
2. Digital Certificates for client authentication and access control.
3. Encryption to keep data confidential and
4. Firewall to prevent unauthorised access to private networks.

The core foundation of e-security revolves around strong user authentication; once security is in place, mitigated network security risk, reduced costs, increased revenues, protected investments and greater compliance will follow (Jolly 2003). Bank transactions through “e”-communication demand adequate security for error-free and secure processing. Transaction processing through “e”-communication may have just started in Zimbabwe’s commercial banks; the demands from this medium are likely to increase in direct proportion to technological advancements worldwide.

3.4.4 Internal security aspects

Certain security measures may be adopted to improve the internal security of data in a computerised environment. Some of these measures are discussed in this section:

1. Application level security provides the organisation with adaptive security that prevents attacks, while allowing applications to function properly across the network.
2. Database level security can control permissions by allowing permissions to be granted, revoked, or denied at levels greater than just the individual object level.
3. Multi-level password might be in several parts, for instance User, Groups and User Groups. The multi-level password protection scheme can restrict employees from obtaining access to sensitive information while it allows or restricts employee access to each database module.
4. Amount limit per user group
5. Amount limit per branch
6. User defined amount limits
7. Access privileges are permissions granted to a user or group of users to perform various operations on a file or folder. Access privileges are granted by the owner of the shared item and are used to determine what other network users can do with the disk or folder and its contents. The site administrator is one such owner (Stanford 2004).
8. Flexible service configuration
9. Extensive logging facility
10. Session timeout represents the number of minutes/seconds since the session was last used.

3.4.5 External security aspects

Effective security measures may have to be put in place in order to protect it. The following security features can be utilised to mitigate external security risk:

1. Authentication
2. Two-way authentication
3. Data integrity
4. Encryption of data
5. Non-repudiation
6. Digital signatures and certification.

Both the internal and external security aspects are designed to enhance the security of “e”-communication transactions. Commercial banks in Zimbabwe should be aware of these security aspects and need to incorporate them into their process redesigns.

3.4.6 Technologies used to improve "e"-security

The external security aspects are discussed in this section. Some of the areas covered here include authentication procedures, data encryption and cryptography and digital signatures and certification.

A) *Authentication, confidentiality and integrity*

Authentication is a mechanism whereby the receiver of a transaction or message can be confident of the identity of the sender. This means that authentication verifies the identity of an entity using certain encrypted information transferred from the sender to the receiver (Bhasin 2003).

Confidentiality deals with the secrecy of the data and the guarantee that the confidentiality of the message is ensured at all points of time. Confidentiality prevents access to, or release of such information to unauthorised users. The environment must protect all message traffic. Threats to email and other network messages include confidentiality, integrity and authenticity. “An email is as public as a postcard and leaves a written record long after it has been erased” (Jolly 2003). This statement should be sufficient motivation to make all electronic messages confidential and secure.

Integrity requires that the contents of messages remain unmodified during transmission. Integrity must prevent active attacks involving the modification of data while confidentiality protects against the passive monitoring of data (Bhasin 2003).

B) Encryption and cryptography

Encryption is the mutation of information in any form into a representation unreadable by anyone without a decryption key. This is essential especially for sensitive information that must travel over public channels such as the Internet. Electronic objects can be encrypted to ensure that unauthorised persons cannot read or interpret them. “*Cryptography* provides security only to the electronic version of an object” (Bhasin 2003). Electronic security is therefore based on various cryptographic techniques.

C) Digital signature and certification

A *digital signature* is a means of positively guaranteeing the identity of the sender of the message without requiring that the message be encrypted (Bodnar and Hopwood 1998). A *digital certificate* establishes the credentials of the person doing business or other transactions on the web. A digital signature authenticates identity and gives assurance of message integrity whereas a digital certificate defines authority and authorisation (Bhasin 2003).

Non-repudiation means that the issuer cannot deny having issued a cheque when it is signed using the issuer’s private key known only to the issuer. The above instruments are some of the technologies that may be used to improve electronic security. Commercial banks in Zimbabwe will need effective security measures to assure authenticity and correctness of electronic transactions travelling over public communication channels. In order to achieve this objective, technologies used to improve electronic security may be adopted.

Data and information travelling along public electronic channels stand the risk of being unlawfully accessed, modified or stolen before it reaches its intended recipients. Client authentication procedures, data encryption and cryptography and digital signatures and certification are some of the instruments that have been designed to improve the quality and safety of “e”-communication.

3.4.7 Security and "e"-communication

The lack of business transaction security is widely acknowledged as a major impediment to the spread of "e"-communication (Bhasin 2003). In security, new vulnerabilities and countermeasures are continually evolving, hence the statement: "security is a journey and not a destination" (Jolly 2003). This view is further supported by Bhasin (2003) who asserts that security is never absolute, with security adequacy being considered as an economic decision. "There is an economic trade-off among the cost of security, expectation of loss and the cost of breaching security" (Bhasin 2003). Gordon (2003) states that sharing of information about threats and breaches of computer security lowers the overall costs of achieving any particular level of information security. Some pitfalls that exist revolve around the need to create economic incentives to facilitate effective information sharing. Zimbabwe's commercial banks should be vigilant with regard to the security of its electronic transactions. This may include sharing of information about threats and breaches of computer security with other commercial banks.

3.4.8 System vulnerability

Most UK companies that were surveyed recently spend approximately one per cent of their Information and Communication Technology (ICT) budget on security; the recommended is ten per cent in the case of financial services companies (Jolly 2003). The risks associated with providing "e"-communication services are some of the most serious facing business today (Jolly 2003). It is advisable that commercial banks in Zimbabwe should spend a substantial portion of their budget on computer security.

Intruders who are also known as hackers or crackers are a source of attacks on computer resources. "An intruder is able to gain control by pretending to be an authorised user, either by exploiting weaknesses of access control mechanism, or guessing or otherwise finding out authentication information like passwords" (Bhasin 2003). Intruders are also notorious for cyber crime. Cyber crime covers fraud of many types – hacking, industrial espionage 'viruses' and 'denial of service', organised paedophilia, intellectual property theft, money laundering and crimes of violence such as kidnap (Jolly 2003). Personnel in charge of computer resources in the commercial banking sector need to be aware of these possible threats.

There are malicious programs that carry out harmful actions to information without authorisation and knowledge of users. Some types of malicious programs need a host program in order to operate whilst others do not need a host program. The malicious programs that need a host program can be further categorised into Trojan horses, trapdoors and viruses. Bhasin (2003) makes the point that viruses are the most well known of all types of malicious programs. A virus is a program that has the ability to replicate and attach itself to other programs, and when active, it can perform the harmful actions usually within the operating system or data files or even making it difficult to use the computer system. The word virus is sometimes used loosely to include all malicious programs including logic bombs, Trojan horses and worms (Bodnar and Hopwood 1998). All the commercial banks in Zimbabwe need to have some virus protection in the form of anti-virus software.

Bodnar and Hopwood (1998) further distinguish the difference between a Trojan horse, a trapdoor and a worm. A Trojan horse is a destructive program masquerading as a legitimate one. While a trapdoor is a portion of a computer program that allows someone to access the program while bypassing its normal security. Trapdoors can exist in accounting systems or database programs or in operating systems. A worm is a type of virus that spreads itself over a computer network. The term “worm” arises from the different infected computers that will tend to resemble a worm. The classification of these computer viruses is depicted in the accompanying diagrams.

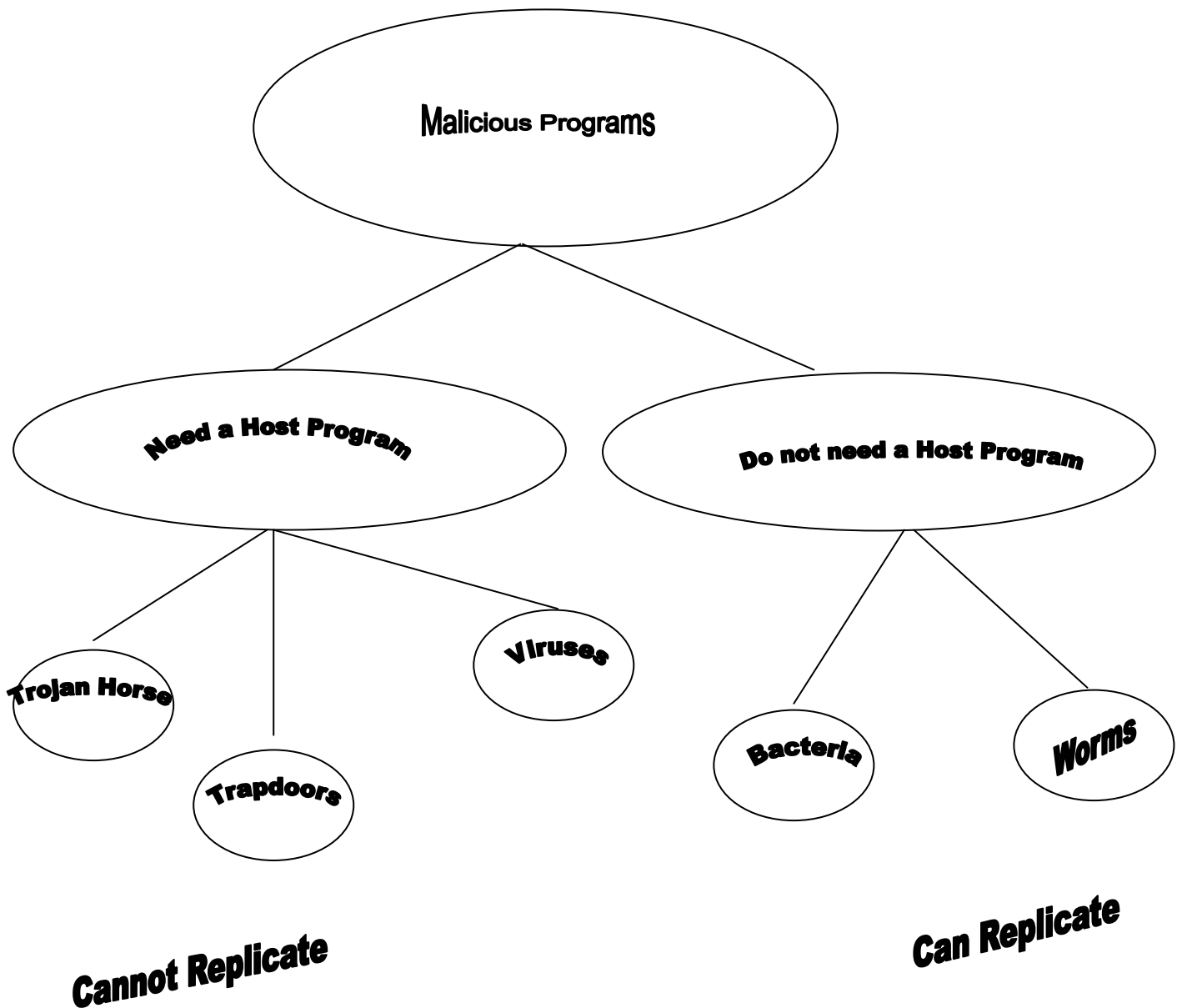


Figure 3.1 Classification of malicious programs (Source: Adapted from Bhasin (2003))

The above diagram gives a classification of malicious programs. The malicious programs have been further categorised according to whether the program needs a host or not.

In order to mitigate system vulnerability, organisations including commercial banks in Zimbabwe need to develop and implement a safe computing policy. Jolly (2003) suggests that a culture of security should be promoted within organisations as early as the recruitment process. Virus attacks can be managed by installing a reliable anti-virus solution that is updated regularly. Most anti-virus software is effective

against known viruses. Commercial banks in Zimbabwe need to have at least up-to-date anti-virus software at all times to protect them from known virus attacks.

3.4.9 Firewall and password protection

The most commonly accepted network protection is a barrier known as a firewall placed between the corporate private network and the outside world. A firewall is either a hardware device such as a router or a software package running on a specially configured computer. The basic function of a firewall is to monitor the traffic that flows between two networks and to block certain types of traffic completely (Bhasin 2003). If the firewall does a perfect job then an intruder will never access the internal protected network. Commercial banks, by the very nature of their operations, stand to benefit from the effective utilisation of firewalls.

Password based authentication has traditionally been the *modus operandi* for logging into computer systems. The consumer is assigned a login identification and password that he keys in before the session starts. In India most of the banks that have introduced Internet banking facilities provide such login identification and passwords for their customers to access their bank accounts through the Internet (Bhasin 2003). Passwords can be made safer by using a combination of alphanumeric and numerical characters and a minimum password length of eight characters. Employers should consider multi-level security, including biometric fingerprinting of employees, and access level permission should be reviewed on a frequent basis (Jolly 2003). A biometric is a measurable physical characteristic that is capable of verifying the claimed identity of an individual (Bhasin 2003). The use of a firewall, password-based authentication and biometric technologies are some of the measures that can be used to improve electronic security in the commercial banks of Zimbabwe.

3.5 SUMMARY

The chapter discusses the relevance of business process reengineering models to “e”-communication and how the commercial banking sector in Zimbabwe can utilise the models to attain competitive advantage. The business processes in a bank are examined in some detail. Security challenges within a bank are also highlighted. Suggestions are made as to how both internal security and external security can be

Chapter 3 – BPR and Electronic Security

implemented in an environment that relies on electronic transactions. The chapter also discusses electronic security issues and how they affect e-business. Chapter 4 which follows discusses the research methodology used.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter discusses the research design and methodologies that were used to collect data. It also defines the population of this study and how the data collection instruments were developed and administered.

4.2 RESEARCH APPROACH AND JUSTIFICATION

A research design is described as a series of advance decisions that, taken together, comprise a master plan or model for the conduct of the investigation (Bellenger and Greenberg 1978). A research design can further be considered a blue-print to guide the data collection, data processing and information transmission.

Research Methods are described and classified at different levels, the most basic is the philosophical level (Hughes 1994). The methodological distinctions most commonly used focus on the differences between quantitative research, which is associated with the philosophical traditions of positivism, and qualitative research, most commonly allied with the phenomenology philosophy (Hughes 1994). It is considered that consistency between the aim of a research study, the research questions, the selected research method and the philosophy of the researcher is the essential underpinning and rationale for any research project (Proctor 1998). Before any research method decision is made, understanding of the two extremes of research philosophy, that is, positivism and phenomenology need to be explored.

The positivist approach to research assumes that things can be studied as hard facts and relationships between these facts can be established as scientific laws. For positivists, such laws have the status of truth and social objects can be studied in much the same way as natural objects (Hughes 1994). Phenomenology provides an alternative to the traditions and foundations of positivism for conducting disciplined inquiry. Under phenomenology, the researcher reality is not a rigid thing; instead it is a creation of those individuals involved in the research (Hughes 1994). Reality does

not exist within a vacuum, its composition is influenced by its context, and many constructions of reality are therefore possible.

In this study, the positivism approach is adopted because according to Saunders Lewis and Thornhill (1997), it allows for:

1. Economical collection of data;
2. Clear theoretical focus for the research;
3. Researcher control of the research process ;
4. Provides easily comparable data.

4.3 POPULATION OF THE STUDY

The population is defined as the group of interest to the researcher. It is upon this group that the researcher would generalize the results of the study (Fraenkel and Wallen 1996; Labovitz and Hagedorn 1976). The population includes all individuals whom the researcher is interested in obtaining information and making inferences. Fraenkel and Wallen (1996) state that the population can be in two categories namely: the target and the accessible populations. The target population is the actual population to which the researcher would really like to generalise. However, this population is rarely available. Therefore, the population to which the researcher is able to generalise is the accessible population (Fraenkel and Wallen 1996). In this study, the population to be studied includes seventeen commercial banks in Zimbabwe.

The research subjects are information technology managers and “e”-communication staff in commercial banks. Each commercial bank is going to provide three respondents in the above-mentioned categories, which makes the study population to be fifty one respondents. Defining the population is important because it helps the researcher in selecting a sample for study (Labovitz and Hagedorn 1976). Sampling is the selection of a part (the sample) to represent the whole.

4.4 SAMPLING

The purpose of a sample is to approximate the measurement of the whole population well enough, within acceptable limits. A sample is a small part of anything designed to show the style, quality and nature of the whole (Ferber 1974). Sampling however results in two errors arising on the data that the designer must aim to minimize. These errors are inaccuracies and imprecision. Imprecision is a random error that is as a result of random chance. Inaccuracies are differences between the target population (population for which information is sought) and the sampled population (Ferber 1974). Inaccuracies can arise from the following: use of inaccurate or obsolete statistics as biased for sample, use of sampling design that excludes some units of the population and poor wording of the questions on the questionnaire.

There are two ways of choosing a sample. These are:

1. Probability sampling that ensures that the probability of each case being selected from the population is known and is usually equal for all cases (Saunders et al 1997).
2. Non-probability (non-random) sampling is such that the probability of each case being selected from the total population is unknown and cannot answer questions that require statistical inferences about the population's characteristics.

The major difference between the two methods is that probability sampling allows reliability of the sample results in approximately the population statistics under study. In non-random sampling, this assessment of reliability is not possible regardless of how careful the researcher is in selecting elements of the sample (Luck and Rubin 1987). In non-random sampling there is no guarantee that the samples represent the population being studied (Leedy 1992). The researcher should however strive to make sure that the sample is representative of the population under study, and that the outcome of the research can be relied upon.

4.4.1 Non-probability (Random) sampling

Below are some non-random sampling methods.

4.4.1.1 Quota sampling

Tanur (1992) asserts that in this method, sampling is done until a specific number of units (quotas) for various sub-populations have been selected. Since there are no rules as to how these quotas are to be filled, quota sampling is really a means for satisfying sample size objectives for certain sub-populations. Quota sampling can be considered preferable to other forms of non-probability sampling because it forces the inclusion of members of different sub-populations (Fowler 1984). Quota sampling is often used by market researchers instead of stratified sampling, because it is relatively inexpensive and easy to administer and has the desirable property of satisfying population proportions.

4.4.1.2 Judgemental sampling

This approach is used when a sample is taken based on certain judgements about the overall population (Lehto 1998). The underlying assumption is that the investigator will select units that are characteristic of the population. Judgement sampling is subject to the researcher's biases and is perhaps even more biased than haphazard sampling (Biemer, Groves, Lyberg, Mathiowetz and Sudman 1997). Since any preconceptions the researcher may have are reflected in the sample, large biases can be introduced if these preconceptions are inaccurate. This method is often used in exploratory studies like pre-testing of questionnaires and focus groups. One advantage of judgement sampling is the reduced cost and time involved in acquiring the sample.

4.4.1.3 Convenience sampling

Convenience sampling is sometimes referred to as haphazard or accidental sampling. It is not normally representative of the target population because sample units are only selected if they can be accessed easily and conveniently (Converse and Presser 1986). The obvious advantage is that the method is easy to use, but that advantage is greatly offset by the presence of bias. Although useful applications of the technique are limited, it can deliver accurate results when the population is homogeneous (Sudman, Bradburn and Schwarz 1996). Examples of convenience

sampling include the female moviegoers sitting in the first row of a movie theatre and the first three callers in a radio contest.

4.4.1.4 Snowball sampling

Snowball sampling is commonly used when it is difficult to identify members of the desired population. The method has the following stages: Make contact with one or two cases in the population, ask these cases to identify further cases and ask these new cases to identify further new cases. The main problem of this method is to make the first contact. This is usually used in highly sensitive and illegal issues like drug trafficking and drug abuse.

4.4.2 Probability (Random) sampling

In probability sampling, the sample represents the population. Normally the choice of components for the sample is by randomisation (Leedy 1992). Summarised below are the random selection methods.

4.4.2.1 Simple random sampling

This method ensures that each item in the entire population has an equal chance of being included in the sample (Wegner 1993). This method is used when it is assumed that the population is relatively homogeneous with respect to the random variable under study.

4.4.2.2 Systematic Sampling

Elements are selected from the population at a uniform interval that is measured in time, order or space (Holstein and Gubrium 1995). This method differs from simple random sampling in that each element does not have an equal chance of being selected, thus some randomness is sacrificed. Sampling begins by randomly selecting the first observation. Thereafter, subsequent observations are selected at a uniform interval relative to the first observation.

4.4.2.3 Stratified sampling

Wegner (1993) states that stratified sampling divide the population into segments or strata. Each stratum has relatively homogenous elements. Either a specific number of elements are selected at random from each stratum that corresponds to the proportion of that stratum in the population. Stratification can be worthless unless the population can be classified into strata that are homogenous in the state being investigated.

4.4.2.4 Cluster sampling

According to Groves *et al* (1997), the population is divided into clusters, where each cluster is similar in profile to every other cluster. Clusters are then randomly selected for sampling. The sampling units within these randomly selected clusters may then be randomly selected to provide a representative sample from the population. According to Keogh (1999), cluster sampling tends to be used when the population is large and spread out over a geographical area. In such cases, smaller regions or clusters can more easily be sampled.

4.5 SAMPLE SELECTION AND DATA COLLECTION

Since the study population was small (seventeen commercial banks), there was no need to conduct sampling but instead considered the whole population. Questionnaires were randomly administered to seventeen Information Technology Managers and seventeen “e”-communication operatives (staff). On the other hand, ten interviews were conducted with Accountants from these commercial banks.

4.6 QUESTIONNAIRE DESIGN

In developing the questionnaire, the researcher considered the fact that the questionnaire should be adapted to the problem and not the reverse. Thus, the questionnaire was made to be as much investigative as is possible. In this regard, the major objective of the study was to investigate “the effect of the application of “E”-Communication on commercial banking in Zimbabwe” was used as the basis for the development of the questions on the questionnaire.

The researcher used the management research question hierarchy as the foundation of the development of the questionnaire (See Figure 4.1 below).

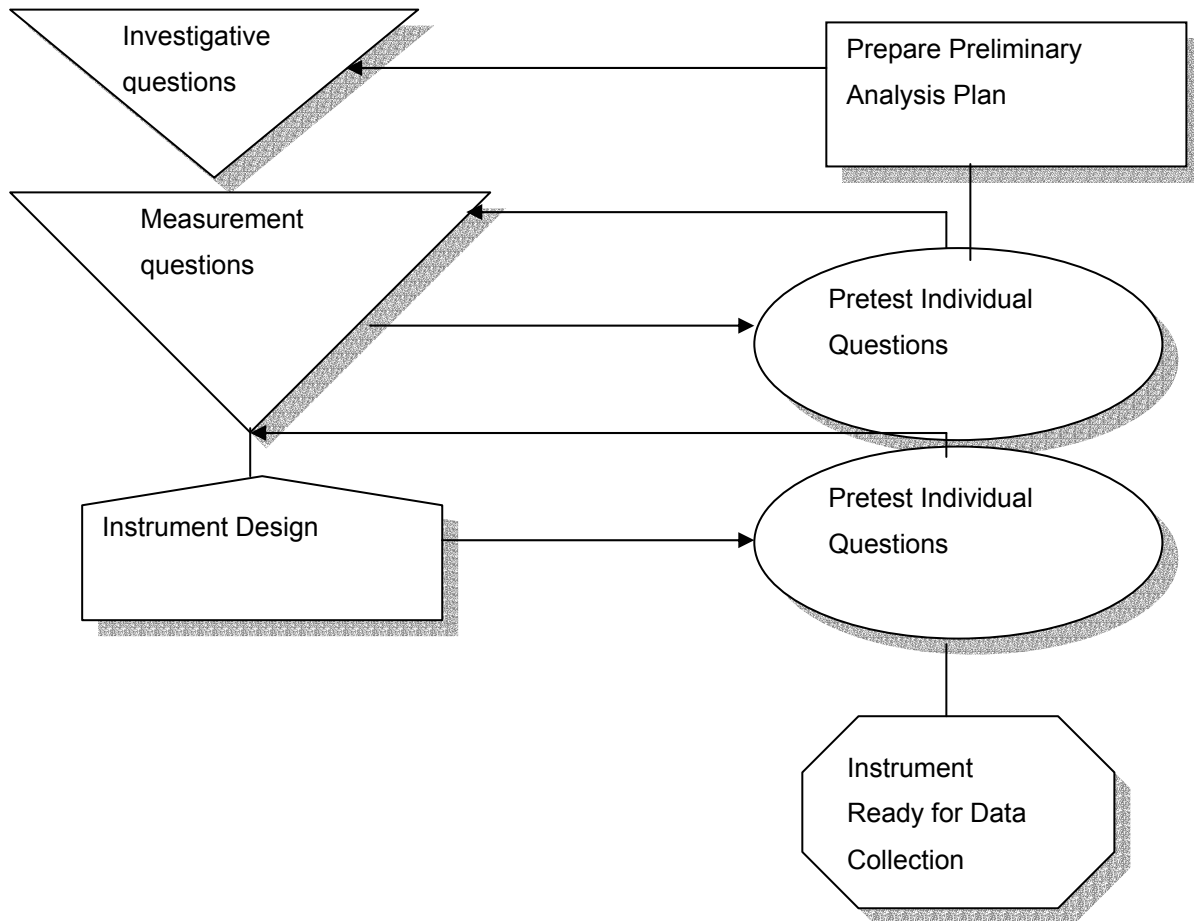


Figure 4.1 Management research question hierarchy (Source: Cooper and Schindler (2003))

There are two forms of questions that one could ask, these are investigative and measurement questions (Cooper and Schindler 2003). Investigative questions are the specific questions the researcher must answer to provide sufficient detail and coverage of the research question. Within this level, there may be several questions as the researcher moves from the general to the specific. Measurement questions are the questions that the participant must answer if the researcher is to gather the needed information and resolve the research question. Investigative questions are the core of the researcher’s information needs. In this study, the bulk of the questions were investigative in nature as they help the researcher in answering the major research question. An example of an investigative question on the questionnaire is “Question 7” which asks the respondent to explain how his/her organisation uses “e”-communication.

The next phase in questionnaire development is to construct and refine the questions. The researcher took note of the order, type and wording of the questions on the questionnaire. The researcher made sure that the questionnaire was effective by designing it to accomplish the following:

- Encourage each participant to provide accurate responses.
- Encourage each participant to provide an adequate amount of information.
- Discouraging each participant from refusing to answer specific questions.
- Discourage each participant from early discontinuation of participation.
- Leave the participant with a positive attitude about survey participation.

The following questions were used to improve the questionnaire design process:-

- Should this question be asked?
- Is the question of proper scope and coverage?
- Can the participant adequately answer this question, as asked?
- Will the participant willingly answer this question, as asked?

4.6.1 Should this question be asked?

The researcher had to challenge each question's function by asking the following: Does it contribute significant information toward answering the research question? Will its omission limit or prevent the thorough analysis of the other data? Can we infer the answer from another question? By this, the researcher wanted to have as few questions as possible to answer the objectives of the study.

4.6.2 Is the question of proper scope and coverage?

The researcher had to test this content issue by asking the following: Will this question reveal all we need to know? The researcher made sure that each question was looking at one issue at a time, that is, he made sure that he does not request too much content on one question (double barrelled questions) for example "Question 9" which says (Which "e"-communication products does your institution offer?). Precision of questions was greatly considered in the design of questionnaire. Sensitive and confidential questions were avoided in the questionnaire design as

they could affect the respondent's mood and ability. Questionnaire wording was made simple and straight forward using shared and everyday vocabulary. Where shared vocabulary lacked, the researcher had to provide an accompanying definition of the word in question for example, "e"-communication.

The validity, reliability and objectivity of the information obtained from the instruments were also considered. Generally, validity is defined as the ability of the instrument to measure what it is supposed to measure (Labovitz and Hagedorn 1976). Fraenkel and Wallen (1996) view this definition as old fashioned, instead they argue that a more accurate definition of validity revolves around the "defensibility of the inferences researchers make from the data collected through the use of an instrument". Accordingly, they argue that validity of the instruments must always be considered within the context of the inferences that the researcher makes regarding particular areas or topics.

In other words, the researcher needed instruments that would permit him to draw warranted or valid conclusions about the characteristics (perceptions, attitudes, and so on) of the individuals under study. The second consideration was reliability. According to Fraenkel and Wallen (1996), a reliable instrument is one that gives consistent results. The consistency gives the researcher confidence that the results actually represent what he/she intended to study. Reliable instruments obtain similar responses when administered to different respondents.

The researcher tried to eliminate subjectivity from the judgements he made concerning the subjects under study. The issue of objectivity refers to the absence of subjective judgements (Fraenkel and Wallen 1996). Unfortunately, objectivity is never probably attained completely. In addressing these key issues about research instruments, the researcher pre-tested the questionnaire and interview schedules before administering them at full to the sample. This was to reveal the ambiguities, poor worded questions that were too long, unclear choices and also to indicate whether the instructions to the respondents were clear (Fraenkel and Wallen 1996; Fowler 1984). Although there were merits in pre-testing research instrument, the exercise was quite demanding as the researcher had to conduct the research exercise twice. The pre-testing of the instruments was carried out with three

commercial banks (9 respondents) in Zimbabwe. The researcher shared the original instruments with experienced researchers, experienced accountants and “e”-communication practitioners for their recommendations. The feedback obtained from the pre-test was utilised in formulating the final research instruments.

In preparing the instruments, the researcher paid attention to the length and clarity of the questions (Fowler 1984; Fraenkel and Wallen 1996). In the questionnaire, both close-ended and open-ended questions were used. The close-ended questions allowed the researcher to cover a wide range of areas regarding entrepreneurial culture. Since they are simple and the respondents had to tick the appropriate answer, they were preferred to open-ended questions (Fraenkel and Wallen 1996). The disadvantages of close-ended questions were that they are harder to construct, have limited breadth of responses and require more questions to cover the research topic than the open-ended type (Labovitz and Hagedorn 1976). Open-ended questions were included to allow respondents to express their views independently. The advantages of these questions were that they allowed more freedom of response, they were easier to construct and they permitted follow-up by the interviewer. However, the disadvantages were that the respondents tended to be inconsistent in length and content across respondents, which made them susceptible to misinterpretation and were more difficult to process (Fowler 1984). Validity was the key issue and that was the reason the pre-testing of the instruments was conducted.

4.7 DATA COLLECTION INSTRUMENTS

The researcher used questionnaires and interviews as methods of collecting data. The research instruments were expected to provide the desired results. Questionnaires were administered to thirty-four individuals (that is, seventeen information technology officers and seventeen electronic banking tellers from the commercial banks while interviews were conducted with ten information technology managers from the commercial banks. The questionnaires were sent to respondents using e-mail whilst others were hand delivered to the respondents. E-mails were used, as they are cheap and fast. On the other hand, questionnaires were also given to everyone as a way of confirming the researcher’s seriousness on getting the questionnaires back. The researcher had to make several follow ups for the respondents to complete the questionnaires. Both physical, e-mail and phone follow

ups were made to try to remind respondents to at least create time to complete the questionnaires. The follow up was done to increase the response rate as evidenced by this study's response rate.

Some respondents were always saying that they were busy and could not waste time filling questionnaires, while others due to lack of care lost the questionnaires. The researcher had to kindly explain and ask the respondents to find time to complete the questionnaires. This approach worked to some but others were not as co-operative. The researcher had to look for another way of increasing the response rate. He had to ask for about 10 minutes from the remaining respondents in order to do an interview administered questionnaires where the researcher had to ask questions from the questionnaires in an interview manner and filling the questionnaires himself. This method worked and pushed the response by about 26% more.

4.7.1 Questionnaires

The researcher used the questionnaire as a data collection instrument because of its applicability to the survey research design (Labovitz and Hagedorn 1976). The major advantage of using this instrument was that it could be administered to a large number of people at the same time (Fraenkel and Wallen 1996). This was ideal for this study because the researcher wanted information from all commercial banks in Zimbabwe. This method proved to be cost-effective and convenient in collecting data. In order to ensure clarity, the researcher pre-tested the instruments before administering them. The aim was to identify questions that could be ambiguous and clarify them. The disadvantages of this method is that it has got a very low response rate and also that the researcher is not available to provide clarity in those areas that are not explicit to respondents.

4.7.2 Interviews

The advantages of using the interview technique approach are that the respondents can expand on areas of interest. In the interview technique, respondents use non-verbal cues such as facial expression to emphasise responses, (Fraenkel and Wallen 1996). Seven interviews were conducted, five of them with authorised dealers and two with auction system management. However, the main disadvantage of the interview technique is that it is time-consuming.

4.7.2.1 Personal interviews

An interview is called personal when the Interviewer asks the questions face-to-face with the Interviewee (Keogh 1999). Personal interviews can take place in the home, at a shopping mall, on the street, outside a movie theatre and so on. According to Cook and Campbell (1979), the advantages of personal interviews are: the ability to let the Interviewee see, feel and/or taste a product, the ability to find the target population and longer interviews are sometimes tolerated. However, the disadvantage of personal interviews is that they usually cost more per interview than other methods.

4.7.2.2 Telephone surveys

Irwin (1999) reports that surveying by telephone is the most popular interviewing method in the USA. This is made possible by nearly universal coverage (96% of homes have a telephone). Telephone surveys have the following advantages (Irwin, 1999):- people can usually be contacted faster over the telephone than with other methods and skilled interviewers can often elicit longer or more complete answers than people will give on their own to mail or e-mail surveys. Duncan and Duncan (1994) list the following disadvantages of telephone surveys: many people are reluctant to answer phone interviews; the growing number of working women often means that no one is home during the day when you sample products by phone. The researcher used the telephone to make initial and subsequent contacts with most of the respondents.

4.7.2.3 Mail surveys

With the mail survey method, the researcher sends a questionnaire to the Interviewee by mail and encloses a return envelope (Pedhazur and Schmelkin 1991). Using the return envelope, the Interviewee sends back the completed questionnaire after a reasonable time interval. It is suitable when the target population from which primary data is required is large. Mail surveys have the following advantages (Wegner 1993): they are the least expensive, the questionnaire can include pictures, something that is not possible over the phone and mail surveys allow the respondent to answer at their leisure. Mail surveys have the following disadvantages (Shadish Cook, and Campbell 2002): they take longer than the other methods and in

populations of lower educational and literacy levels, response rates to mail surveys are often too small to be useful.

4.7.2.4 Computer direct interviews

These are interviews in which the Interviewees enter their own answers directly into a computer (Duncan and Duncan 1994). They can be used at malls, trade shows, offices, and so on. The computer direct interview method has the following advantages (Wegner 1993): the virtual elimination of data entry and editing costs, more accurate answers to sensitive questions can be obtained, interviewer bias is eliminated and response rates are usually higher. The disadvantages of computer direct interviews are (Irwin 1999): the interviewees must have access to a computer and as with mail surveys and computer direct interviews may have serious response rate problems in populations of lower educational and literacy levels.

4.7.2.5 E-mail surveys

With this method, soft copies of a questionnaire are sent to a sample of respondents (Wegner 1993). The reasons for conducting the research are explained to participants and what is hoped to be achieved; confidentiality of the information is assured and a deadline for the return of the questionnaire is given.

The advantages of e-mail surveys are: e-mail surveys are both very economical and very fast, more people have e-mail than have full Internet access, an e-mail questionnaire can gather several thousand responses quickly and there is practically no cost involved once the set up has been completed (Pedhazur and Schmelkin 1991). However, e-mail has the following disadvantages (Irwin 1999): the researcher must possess (or purchase) a list of e-mail addresses, some people will respond several times or pass questionnaires along to friends to answer, e-mail surveys cannot be used to generalize findings to the whole populations and e-mail surveys cannot use other automatic techniques that can enhance surveys the way Web page surveys can.

4.8 TYPES OF DATA

4.8.1 Primary data

According to Tanur (1992), primary data is collected specifically for a project. Primary data is expensive to collect, but it is important, as it is possible to formulate structured and unstructured questions that focus on the study topic. The information is crucial to the research project as it specifically addresses issues of interest to the study area (Jancowincz 2003). In this study, primary data was obtained from questionnaires and structured interviews.

4.8.2 Secondary data

Secondary data are data gathered and recorded by someone else prior to (and for a purpose other than) the current project (Wegner 1993). Zikmund (1991) suggests that secondary data has the following advantages: data is already available, data is highly accessible and less expensive to obtain. However, secondary data has the following disadvantages: data may not be relevant to the current study, data may be outdated and inappropriate for the current purpose, accuracy of the data cannot be determined because the source may be unknown, one may not be able to correct errors and bias in the data, and collation errors may arise. In this study, no secondary data was used.

4.9 DATA PROCESSING, ANALYSIS AND PRESENTATION

In processing the data, the researcher first coded the questionnaires as they were received from the respondents. Then a data entry template was designed in Microsoft Excel 2000 and data was entered. After data entry the researcher cleaned the data to remove inconsistent responses by running frequency tables in the Statistical Package for Social Sciences (SPSS). The final stage was data analysis using SPSS version 10. The data was analysed and interpreted using statistical principles like frequencies, percentages and mean. The information is presented using tables, graphs, charts and testing of hypotheses to enable easy comparison and clear projection of the situation. These findings are laid out in chapter five, together with their detailed discussion.

4.10 LIMITATIONS OF THE STUDY

The study coincided with the turmoil in the Zimbabwean financial services sector and the respondents were not willing to talk to an outsider, as they were feeling very insecure. They thought that this researcher was doing some market intelligence. Some respondents thought that the researcher was from the Reserve Bank of Zimbabwe intending to do some Information Technology audit. Other respondents could not respond to questionnaires because of the confidentiality clause in the contracts. So it was a mammoth task trying to convince them that this was only for academic purposes and nothing else. The researcher had to obtain a letter of assurance from his employer ZESA Holdings assuring the respondents that in deed the researcher worked for ZESA and not the Reserve Bank of Zimbabwe. The employers also revealed to them that the researcher is doing a MCom and their responses were part of the fulfilment of the degree programme. The shortage of fuel in Zimbabwe was another limitation as it became difficult to hand deliver and collect questionnaires from the respondents. The researcher had to improvise by using public transport to move around in collecting questionnaires rather than using his own vehicle.

4.11 CONCLUSION

Despite the drawbacks of the methodology, the researcher is satisfied that the methodology used adequately fits into and achieves the objectives of this study. The next chapter presents the results of the study, and discusses the various issues as observed from the primary sources of data.

CHAPTER 5

RESEARCH FINDINGS AND ANALYSIS OF RESULTS

5.1 INTRODUCTION

This chapter presents the findings of the study and discussion of the study findings. These findings and discussion are the basis on which conclusions and recommendations of the study are going to be made.

5.2 RESPONSE RATE

The study population consists of 51 respondents. Questionnaires were sent to 34 Information Technology Managers and “e”-communication” operatives. Of the 34 questionnaires sent out, 23 were successfully completed and returned, representing a response rate of 68%. Seventeen interviews were conducted with Accountants from the 17 commercial banks. All the interviews were successful, resulting in a response rate of 100%. The average response rate (combining questionnaires and interviews) is 84%. The high response rate is explained by the ability of the researcher to make follow-ups on the respondents and setting up appointments well in advance.

5.3 RESEARCH FINDINGS FROM INFORMATION TECHNOLOGY AND "E"-COMMUNICATION OFFICIALS

The sex distribution of respondents was examined in order to establish the demographics in the “e”-communication industry. The results are shown in Figure 5.1.

5.3.1 Sex distribution of respondents

Figure 5.1 shows the distribution by sex of respondents.

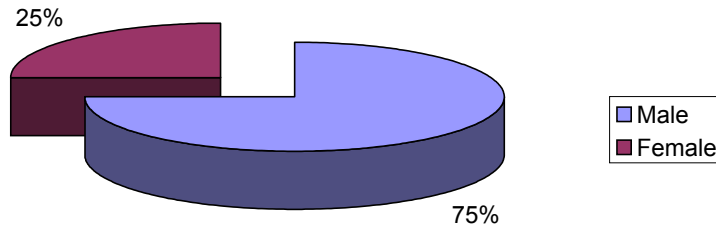


Figure 5.1 Sex of the respondent

The majority of respondents are males (75%) and females make up the remaining part (25%). Thus, most information and “e”-communication officials are males.

5.3.2 Work experience

The time that respondents have been in a particular organisation can be a measure of the level of experience within those persons.

The length of time respondents have been in their organisations is summarised in Figure 5.2 below.

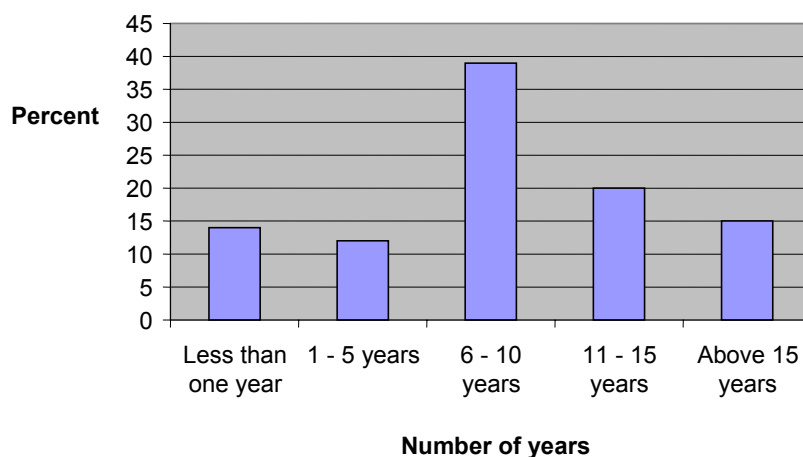


Figure 5.2 Length of time in the organisation

Research results reveal that most respondents have a work experience of between 6 and 10 years (39%), then 11 to 15 years (20%), above 15 years (15%), less than one

year (14%) and finally, 1 to 5 years (12%). This implies that the majority of the respondents have extensive work experience and might have more information on the use of “e”-communication on the service delivery of commercial banks in Zimbabwe.

5.3.3 Length of time in the "e"-communication field

Respondents’ length of time in the “e”-communication field is shown in Table 5.1 below.

Table 5.1 Length of time in the “e”-communication field

Time period	% of Respondents
Less than 1 year	14
1 – 5 years	15
6 – 10 years	42
11 – 15 years	16
Above 15 years	13

About forty-two percent of the respondents have been in the “e”-communication field for between 6 and 10 years, then less than 11 – 15 years (16%), 1 – 5 years (16%), less than 1 year (14%) and above 15 years (13%). This means that the majority of respondents have been in the “e”-communication field for relatively long periods and hence, are likely to provide valuable information since it is their field of expertise.

5.3.4 Job position

The job position of the respondent in the organisation defines what is expected of the individual and the nature of the associated “e”-communication involvement.

Table 5.2 below shows the job positions of respondents in their organisations.

Table 5.2 Job position of respondent

Position	% of Respondents
IT Manager	71
Manager – Development	64
Card Centre Manager	58
Software Applications Manager	53

Study results show that most of the respondents occupy the post of IT Manager (71%), then Manager – Development (64%), Card Centre Manager (58%) and lastly, Software Applications Manager (53%). Therefore, the majority of respondents are IT managers with their organisations and as a result, they have the technical expertise on the use of “e”-communication.

5.3.5 "E"-communication concept

Responses on respondents’ understanding of the “e”-communication concept are shown in Figure 5.3 below.

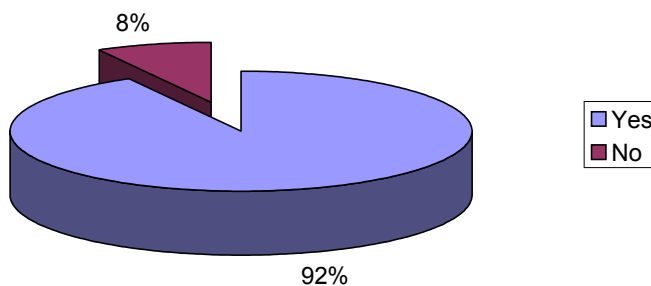


Figure 5.3 Respondents’ understanding of the “e”-communication concept

The majority of respondents (92%) understand the “e”-communication concept and the rest do not (8%). This means that most respondents appreciate the “e”-communication concept.

5.3.6 "E"-communication services

Responses on the “e”-communication services offered by commercial banks in Zimbabwe are shown in Table 5.3 below.

Table 5.3 “E”-communication services

Service	% of Respondents
E-mail	100
Point Of Sale/ATM	100
Internet	93
Front end and back end processes	88
EDI (Paynet)	83
Tele-banking	65
Internet banking	54

Commercial banks offer the following services: e-mail (100%), Point Of Sale/ATM (100%), Internet (93%), Front end and back end processes (88%), EDI (Paynet) (83%), Tele-banking (65%) and Internet banking (54%). Therefore, e-mail, POS and Internet are extensively used by Zimbabwe’s commercial banks. This result is in line with world trends as reported by UNCTAD (2004) that Internet and particularly “e”-communication have continued to grow at a fast pace since 2001 with Internet users growing up to 655 million by end of 2002 and developing countries accounting for almost a third of new Internet users world wide in 2001. Pyramid (2004) also reports that Africa’s international Internet bandwidth will grow ten fold in the next five years, mostly driven by the demand for data services.

5.3.7 Electronic banking

Study results on the electronic banking solutions offered by commercial banks are shown in Figure 5.4 below.

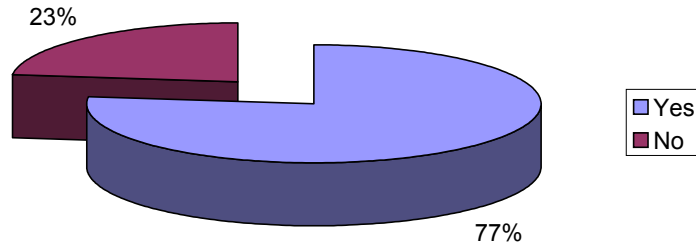


Figure 5.4 Provision of electronic banking solutions

Most commercial banks offer electronic banking solutions (77%) while the rest (23%) do not. Thus, commercial banks are keenly embracing the “e”-communication concept. This result is similar to the observation by Barnes and Hunt (2001) that an increasing number of business transactions are now taking place electronically. Moreover, Vuksic and Strugar (2001) make the point that on-line banking is more convenient and flexible than the traditional ways of dealing with the money.

5.3.8 "E"-communication products

“E”-communication products offered by commercial banks are summarised as in Table 5.4 below.

Table 5. 4 “E”-communication products

Product	% of Respondents
Statement Enquiries	93
Bill payments	85
Point of Sale terminals	80
Account transfers	76
Telebanking	63
Internet banking	57
Armchair banking	52

Research results reveal that the majority of commercial banks offer the following products: statement enquiries (93%), bill payments (85%), Point of Sale terminals (80%), account transfers (76%), Telebanking (63%), Internet banking (57%) and Armchair banking (52%). Therefore, most banks offer statement enquiries, bill payments services and Point of Sale terminals. This result is consistent with the observation by Barnes and Hunt (2001) that an increasing number of business transactions are taking place electronically due to the convenience of accessing bank accounts on their office computers, obtaining statements and transferring money between accounts from the comfort of offices.

5.3.9 Electronic payment channels

Figure 5.5 below summarises the electronic payment channels used by commercial banks.

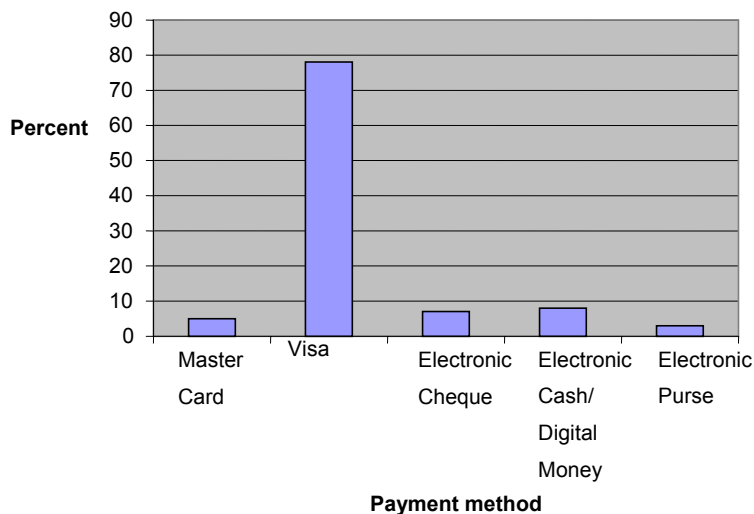


Figure 5.5 Electronic payment channels

According to respondents, the most widely used method of payment used by Zimbabwe's commercial banks is Visa (78%), then electronic cash/digital money (8%), electronic cheque (7%), Master Card (5%) and electronic purse (3%). This implies that most commercial banks use the Visa payment method.

5.3.10 Is "E"-communication of any significance?

Responses on whether commercial banks are deriving any benefits from “e”-communication are shown in Figure 5.6 below.

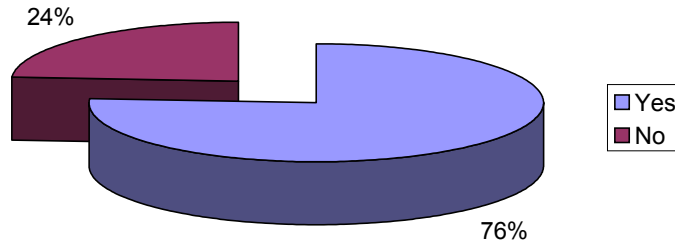


Figure 5.6 Existence of benefits from “e”-communication

Study results reveal that most commercial banks benefit from the use of “e”-communication (76%) while the rest do not (24%). Therefore, “e”-communication is of much benefit to commercial banks as reported by Cotton (2002) that “e”-communication has a considerable impact on nearly all areas of the company’s activities, especially for companies operating in information intensive industries such as banking.

5.3.11 Benefits of "e"-communication

Research results on the benefits of “e”-communication are shown in Table 5.5 below.

Table 5.5 Benefits of “e”-communication

Benefit	% of Respondents
Easy access to money	79
Reduced queues in banking halls	74
Effective communication with customers	69
Revenue generation	65
Technology gives a competitive edge	63
Generate new business through partnerships with other businesses	58
Cost savings	56

The major benefit of “e”-communication is easy access to money (79%), reduced queues in banking halls (74%), effective communication with customers (69%), revenue generation (65%), technology gives a competitive edge (63%), generation of new business through partnerships with other businesses (58%) and cost savings (56%). Therefore, “e”-communication” allows easy access to money, reduces customer waiting times, and improves communication with customers. The benefits mentioned above give an organisation a competitive edge over others as reported by UNCTAD (2004) that “e”-communication allows businesses and entrepreneurs to have a competitive edge over others. Coulson-Thomas (2003) also suggests that “e”-communication results in improved customer service.

5.3.12 Problems of "e"-communication

Study results on the problems of “e”-communication are shown in Table 5.6 below.

Table 5.6 Problems of “e”-communication

Problem	% of Respondents
Unauthorised users compromise confidentiality, integrity and availability of sensitive information	92
Huge cost of security	87
High rate of technical obsolescence in IT related hardware and software	74
Low user interface	65

The main problem of “e”-communication is difficulty to authenticate users (92%); huge cost of security (87%), high rate of technical obsolescence in IT related hardware and software (74%) and low user interface (65%). This implies that the advancement of “e”-communication is hampered by security threats and the huge security bills, since, as Jolly (2003) found out, Internet software was generally designed with security as an afterthought. Furthermore, he notes that “e”-communication projects require major initial costs for a secure network, sophisticated hardware and software.

5.3.13 Threats to privacy

Table 5.7 below summarises responses on the threats to privacy brought about by “e”-communication.

Table 5.7 Threats to privacy

Threat	% of Respondents
Illegal access and use of confidential information	78
Data alteration and destruction	73
Software piracy	65
Information going to unintended people	61
Penetration attacks and vulnerability attacks	52

The main threat to privacy introduced by “e”-communication is illegal access and use of confidential information (78%), then data alteration and destruction (73%) and software piracy (65%), information going to unintended people (61%) and penetration and vulnerability attacks (52%). Thus, use of “e”-communication is hampered by illegal access and use of restricted information. Bhasin (2003) suggests that lack of security is a critical problem when dealing with confidential information and especially while conducting communication and remitting payments electronically.

5.3.14 Security concerns

The security concerns brought about by “e”-communication are shown in Table 5.8.

Table 5.8 Security concerns

Concern	% of Respondents
Very high cost of identifying and maintaining vulnerabilities of the infrastructure	81
Illegal access by foreign users	76
Virus attacks	75
Customer resistance to secure procedures of distributing passwords	69

Most respondents are worried by the high cost of security (81%), illegal access by foreign users (76%), virus attacks (75%), inability to validate customers during transactions (74%) and customer resistance to secure procedures of distributing passwords (69%). This implies that the major security concern is its high cost (security) and illegal access by unauthorised users. Bhasin (2003) reports that security is never absolute and its adequacy is considered as an economic decision.

5.3.15 Security challenges

The security challenges posed by electronic security in commercial banks are summarised in Table 5.9 below.

Table 5.9 Security challenges

Challenge	% of Respondents
Ensuring that the integrity of the firewall is maintained and no hackers can access the internal networks	85
Ensuring that the security patches or updates for the operating systems and associated anti-virus products are up-to-date	82
Protection of passwords from 'wrong' people	77

The majority of respondents cite maintenance of the integrity of the firewall as a security challenge (85%), keeping security patches or updates for the operating systems and associated anti-virus products up-to-date (82%) and protection of passwords from 'wrong' people (77%). Therefore, the major security challenge is maintaining the integrity of the firewall. This result concurs with the argument by Bhasin (2003) that if the firewall does a perfect job then an intruder will never reach the internal protected network. Moreover, Holden (2003) argues that security is vital because hackers might gain control of your digital information.

5.3.16 Source of security threats

Study results on the source of security threats are shown in Figure 5.7 below.

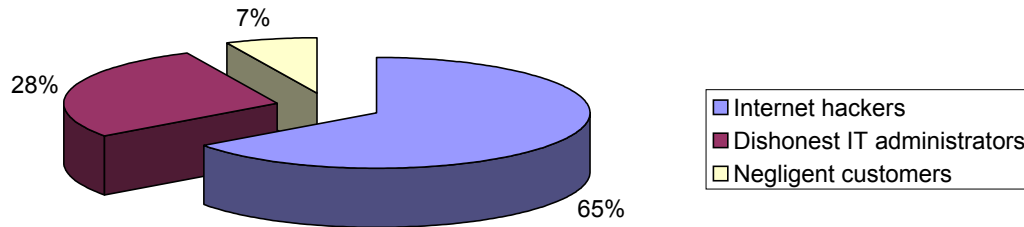


Figure 5.7 Source of security threats

According to respondents, Internet hackers are the major source of security threats (65%), then dishonest IT administrators (28%) and negligent customers (7%). This means that Internet hackers threaten the security of “e”-communication as reported by Holden (2003) that hackers constitute some of the risks to computer security. Bhasin (2003) also reports that hackers are a source of attacks on computer resources.

5.3.17 Secure and efficient transmission of data

Responses on the features used by commercial banks to ensure a secure and efficient transmission of data in “e”-communication are shown in Figure 5.8.

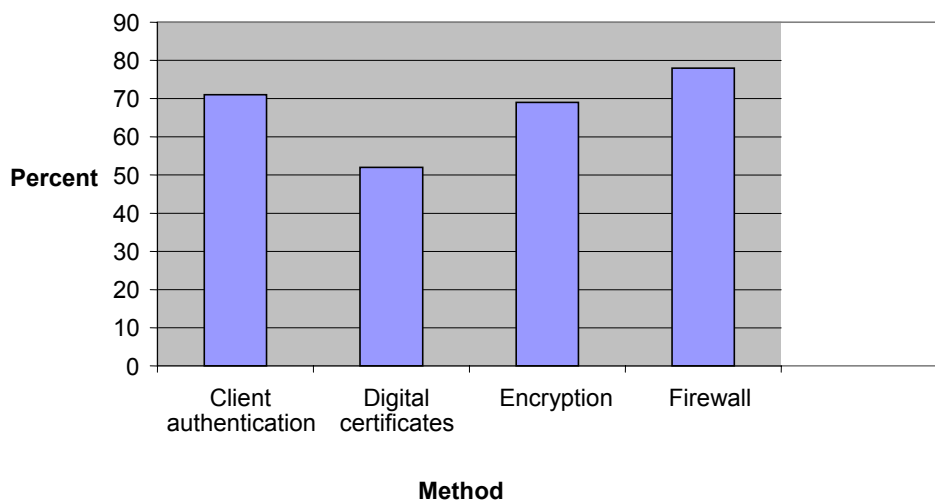


Figure 5.8 Methods of ensuring secure and efficient transmission of data

The majority of respondents use firewall (78%), client authentication (71%), encryption (69%) and digital certificates (52%). Thus, most commercial banks use firewall to ensure secure and efficient transmission of information. This result is consistent with the observation by Cotton (2002) that a firewall is the most commonly accepted network protection barrier. Timmers (1999) also concurs and suggests that client authentication using encryption is essential especially for sensitive information that must travel over public channels such as the Internet.

5.3.18 Physical security facilities

Figure 5.9 below shows responses on the physical security facilities used by commercial banks to protect information that is electronically transmitted.

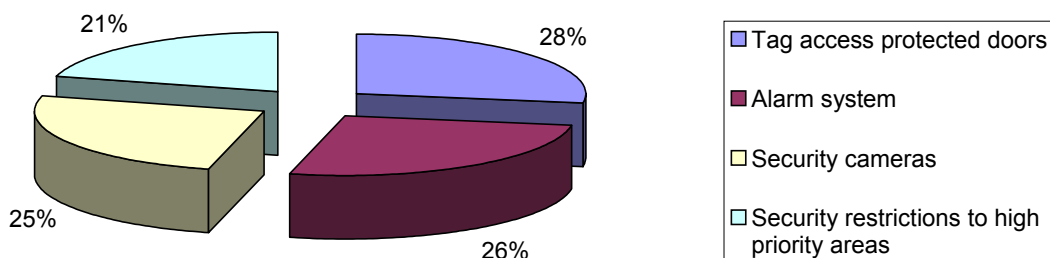


Figure 5.9 Physical security

Study results reveal that the following physical features are used by commercial banks to ensure security of electronic information: tag access protected doors (86%), alarm system (82%), security cameras (79%) and security restrictions to high priority areas (65%). Therefore, tag access protected doors and alarm systems are the major physical security features used by commercial banks. Buffam (2000) reports that access to a computer room is normally controlled by a sophisticated door and locking mechanism. Furthermore, Holden (2003) emphasises that physical security for banks is a must given the nature of trading in a commodity such as money.

5.3.19 Existence of policies for effective infrastructure controls.

Figure 5.10 below shows responses on whether there are corporate policies that support the establishment of effective infrastructure controls.

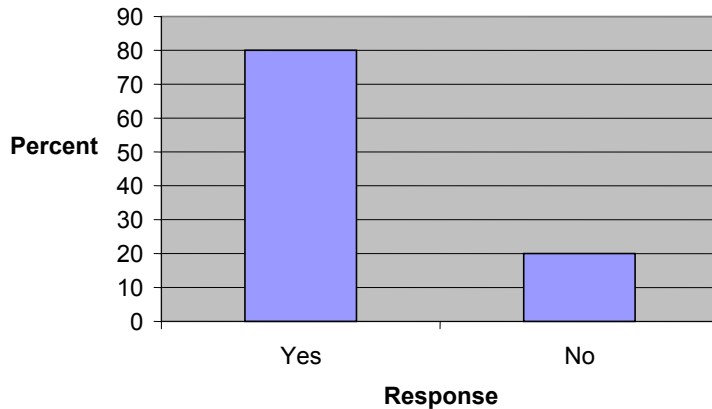


Figure 5.10 Existence of corporate policies which support the establishment of effective infrastructure controls

Most commercial banks have corporate policies (80%) while the rest do not (20%). This means that the majority of commercial banks have designed corporate policies that enhance security of “e”-communication as suggested by Anderson (2000) that the success of information security systems depends on support for controls from everyone in the organisation, starting at the highest levels. Jolly (2003) also emphasises that security consists of policies, procedures and technical measures that prevent unauthorised access, alteration, and theft or physical damage to information systems, networks and their data.

5.3.20 Policies for effective infrastructure controls

Responses on the corporate policies which support the establishment of effective infrastructure controls are shown in Table 5.10 below.

Table 5.10 Policies for effective infrastructure controls

Policy	% of Respondents
Policy which limits “firewall” access to selected people	86
Policy which limits Internet access to specified people	74
Information security policy	69

According to respondents, commercial banks draft policies which limit access to “firewall” (86%) and Internet (74%) to specified persons and Information security policy (69%). Therefore, most commercial banks ensure that infrastructure controls are efficient by drafting policies that limit access to the “firewall” and the Internet. These results fall in line with the argument by Lindup and Reeve (2000) that to be effective, security must be considered from the level of corporate policies, which influences business controls, which in turn affect system controls.

5.3.21 Responsibility for "e"-communication

Research results on the people responsible for quality in commercial banks are shown in Table 5.11 below.

Table 5.11 Responsibility for “e”-communication

Department	% of Respondents
I.T. Department	90
IT Enhancement Committee	83
Executive Directors	79
Marketing department	74

The responsibility for “e”-communication in most commercial banks lies with the I.T. Department (90%), IT Enhancement Committee (83%), Executive Directors (79%) and for the rest, with the Marketing department (74%). This implies that in most

cases, the I.T. department is the custodian of “e”-communication. Champy (1996) suggest that the IT department and top executives should take responsibility for quality.

5.3.22 Role of top management in "e"-communication security

Table 5.12 below summarises responses on how top management is involved in “e”-communication security.

Table 5.12 Role of top management in “e”-communication security

Role	% of Respondents
Setting up policies	78
Monitor implementation via audit reports	73
Authorisation of users	65
Approves implementation of the security policy	52

Research results reveal that top management is responsible for setting up policies (78%), monitor implementation via audit reports (73%), authorisation of users (65%) and approves implementation of the security policy (52%). Therefore, the major role of top management in “e”-communication security is setting up security policies. Anderson (2000) reports that the success of information security systems depends on support for controls from everyone in the organisation, starting from the top management.

5.3.23 Security costs

Responses on the proportion of commercial banks' Information Technology budget that is dedicated to security are shown in Figure 5.11 below.

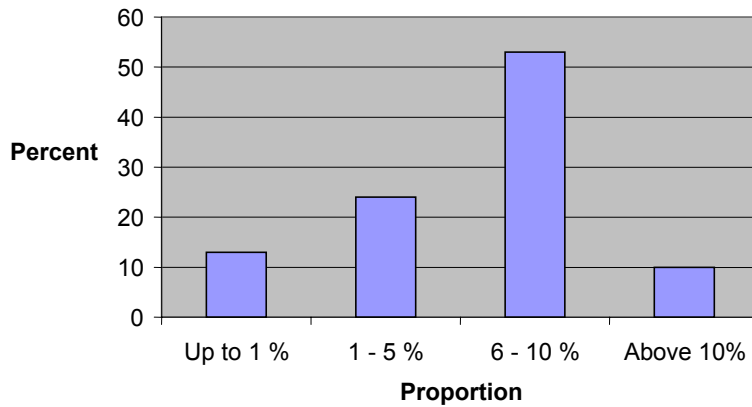


Figure 5.11 Proportion of IT budget dedicated to security

Most commercial banks spend between 6 and 10 percent of their budget on security (53%), then 1 - 5 % (24%), up to 1 % (13%) and above 10% (10%). This means that the majority of commercial banks spend a significant proportion of their IT budget on security. Jolly (2003) reports that most of the surveyed UK companies spend approximately one per cent of their Information and Communication Technology (ICT) budget on security. Thus, relative to UK companies, Zimbabwe's commercial banks spend more money on security.

5.3.24 Comments on "e"-security

Respondents' comments on "e"-security are shown in Table 5.13 below.

Table 5.13 Comments on "e"-security

Comment	% of Respondents
"E-security" is dynamic and constant reviews are necessary to keep data secure from new threats	78
Top management should be committed to establishment of a more effective information systems security program	65
Increase user awareness	53

Study results reveal that commercial banks should be up-to-date with regard to security trends (78%), top management should be committed to establishment of a more effective information systems security programme (65%) and user awareness should be increased (53%). This implies that being up-to-date on global security trends is vital. These results concur with the observation by Bhasin (2003) that bank transactions through “e”-communication demand adequate security for error-free and secure processing. In agreement, Jolly (2003) argues that in security, new vulnerabilities and countermeasures are continually evolving hence the statement: “security is a journey and not a destination”.

5.3.25 Principles of re-engineering

Table 5.14 below shows responses on the most important principles of re-engineering.

Table 5.14 Most important principles of re-engineering

Principle	% of Respondents
Processes	85
People	80
Technology	73
Education	67
Raw materials	51

The most important principle of re-engineering is processes (85%), then people (80%), technology (73%), education (67%) and raw materials (51%). Sarmiento (2000) refers to processes, people and technology as the three vectors, which are at the heart of most “e”-communication initiatives.

5.3.26 Process of re-engineering

Study results on how the issue of re-engineering is considered by commercial banks are shown in Table 5.15.

Table 5.15 The process of re-engineering

Method	% of Respondents
By strategic planning, which leverages IT as a competitive tool	89
By making it everyone's responsibility	85
By involving the IT group as an integral part of the re-engineering team from the start	80
By sponsoring it through long term senior executives	78
By concentrating on re-engineering fragmented processes that lead to delays or other negative impacts on customer service	74
By placing the customer at the centre of re-engineering effort	71
By forming case teams comprised of both managers as well as those who will actually do the work	65
By putting a timetable to Business Process Re-engineering process	58
By not ignoring corporate culture and emphasising on constant communication and feedback	53

The following ways are used in re-engineering: by strategic planning, which leverages IT as a competitive tool (89%), by making it everyone's responsibility (85%), by involving the IT group as an integral part of the re-engineering team from the start (80%), by sponsoring it through long term senior executives (78%), by concentrating on re-engineering fragmented processes that lead to delays or other negative impacts on customer service (74%), by placing the customer at the centre of re-engineering effort (71%), by forming case teams comprised of both managers as well as those who will actually do the work (65%), by putting a timetable to Business Process Re-engineering processes (58%) and by not ignoring corporate culture and emphasising on constant communication and feedback (53%). Thus, leveraging IT as a competitive tool and making the process of re-engineering everyone's responsibility

are the ways in which re-engineering is considered by commercial banks as recommended by Champy (1996) that business process re-engineering must be accompanied by strategic planning, which leverages IT as a competitive tool.

5.3.27 General comments on "e"-communication

Respondents' comments to commercial banks concerning "e"-communication are summarised in Table 5.16 below.

Table 5.16 Comments on "e"-communication

Comment	% of Respondents
"E"-communication requires change in the organisation	75
Real benefit comes with volumes and few incremental costs	72
Initial capital expenditure can be prohibitive	63

"E"-communication requires change in the organisation (75%), real benefit comes with volumes and few incremental costs (72%) and initial capital expenditure can be prohibitive (63%). This implies that implementation of "e"-communication requires a change of mindsets for the whole organisation. Sarmento (2000) suggests that adaptations are necessary in order to realise gains from "e"-communication.

5.4 RESPONSES FROM ACCOUNTANTS

5.4.1 Importance of "e"-communication in accounting

Study results on whether "e"-communication is of importance to the accounting function of commercial banks are shown in Figure 5.12 below.

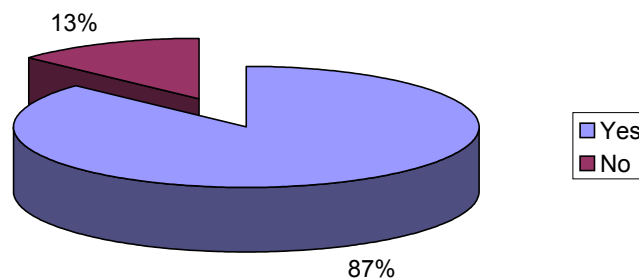


Figure 5.12 Is "e"-communication important?

The majority of respondents indicate the importance of "e"-communication (87%) while the rest (13%) do not. This means that "e"-communication is of significant importance to accounting. The Chicago Fed Letter (2004) argues that through "e"-communication, banks can be in a position both to market traditional banking products more efficiently and to develop and sell new products sought by "e"-communication participants. Moreover, Alexander (2000) observes that the principal benefit of "e"-communication is the availability of information and its accessibility. However, Jolly (2003) argues that "e"-communication requires major initial costs for a secure network, sophisticated hardware and software. Moreover, he observes the need for a dedicated pool of skilled manpower.

5.4.2 Effects of "e"-communication on transaction processing

Table 5.17 below shows responses on the effects of "e"-communication on transaction processing by commercial banks.

Table 5.17 Effects of "e"-communication

Effect	% of Respondents
Reduction in slack time and timely processing of transactions to support decision making	87
Cost saving	78
Standardisation in processing reduces errors	73
Enables intact processing and easy updating of transactions	65

"E"-communication results in timely processing of transactions (87%), cost saving (78%), reduction of errors (73%) and easy updating of transactions (65%). Thus, "e"-communication results in quick processing of transactions as reported by Jolly (2003) that the speed and cost savings of automation justify the use of "e"-communication. Furthermore, "e"-communication can significantly lower both order taking and customer service costs, which can strongly improve the bottom line of an organisation (Emcmillan 2004).

5.4.3 Benefits of "e"-communication

Figure 5.13 below shows responses on the benefits of "e"-communication to the accounting function of commercial banks.

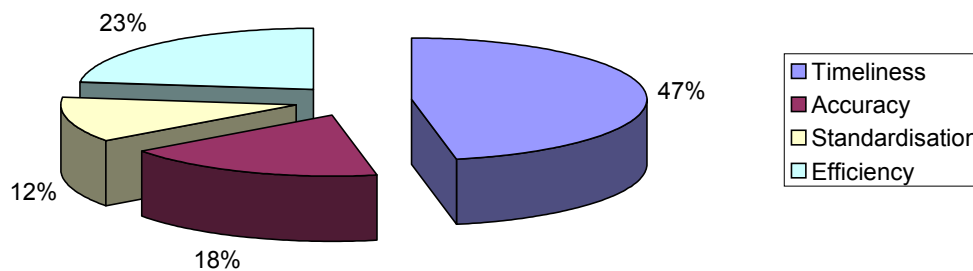


Figure 5.13 Benefits of "e"-Communication

Study results reveal that the major benefit of “e”-communication is timeliness (47%), then efficiency (23%), accuracy (18%) and standardisation (12%). This implies that “e”-communication saves time and improves efficiency of businesses. However, Jolly (2003) reports that cryptographic techniques and digital signatures can be technically difficult solutions to understand for people with poor IT knowledge and also, that document processing is susceptible to abuse.

5.4.4 Impact of "e"-communication on the use of banking products

Study results on the impact “e”-communication on the use of banking products by customers in relation to accounting are shown in Table 5.18 below.

Table 5.18 Impact of “e”-communication on the use of banking products

Impact	% of Respondents
Performance can be measured by product and each product’s profitability can be ascertained	79
Decision on which product to promote or phase out are made in an informed manner	65
Easy access to all banking information reduces congestion in banking halls	52

Performance can be measured by product and each product’s profitability can be ascertained (79%), decisions on which product to promote or phase out are made in an informed manner (65%) and easy access to all banking information reduces congestion in banking halls (52%). This means that Information and Communication Technology (ICT) has a considerable impact on nearly all areas of the company’s activities, especially for companies operating in information intensive industries such as banking and hospitality sectors (Cotton 2002). This impact has been largely driven by the recent and concurrent advances in the Internet and the World Wide Web.

5.5 SUMMARY

This chapter has presented the research findings and discussion on “e”-communication in the Zimbabwean banking sector. The specific areas discussed include the appreciation of “e”-communication principles, use of “e”-communication in the Zimbabwean banking service, “e”-communication products in Zimbabwe, the benefits of “e”-communication and problems of “e”-communication. Security concerns brought about by the use of “e”-communication are also discussed. This chapter provides the basis on which discussion, conclusions and recommendations will be made in the next chapter.

CHAPTER 6

CONCLUSION AND FUTURE WORK

6.1 INTRODUCTION

The preceding chapter concentrated on data presentation and analysis. This chapter focuses on presenting a summary of the study as well as drawing conclusions from the findings and making recommendations to the users on the research, as well as to future researchers on similar topics.

A) Economic benefits of "e"-communication

- When commercial banks in Zimbabwe use “e”-communication, it may be of benefit to Zimbabwe’s economic growth as Zimbabwe is a developing country.
- Zimbabwe’s commercial banks should strive to improve efficiency and quality through technological advancements such as Information and Communication Technologies (ICT).
- Zimbabwe’s commercial banks need to carefully consider advantages of “e”-communication and computerisation so as to ensure maximum benefits and efficiency.

B) BPR and "e"-communication

- Zimbabwe’s commercial banks should take advantage of process redesigns especially at the point where they implement “e”-communication instruments using the Internet and the web.
- Designers of websites for the Zimbabwean commercial banking sector can benefit from the current BPR methodologies.
- BPR is making ‘processes’ the main focus for organisations and may also be used by commercial banks in Zimbabwe.

C) Electronic security

- Commercial banks in Zimbabwe should recognise the need to be secure.
- Commercial banks in Zimbabwe need to spend a significant portion of their budget on security.
- Since commercial banks in Zimbabwe are also migrating to a digital economy, there is a need for them to be vigilant with regard to threats such as card fraud and money laundering.
- Commercial banks in Zimbabwe may benefit from sharing information about known local frauds.

D) Wireless application protocol and "e"-communication

- WAP technology might in the long-term benefit many users including commercial banks in Zimbabwe since most clients own cell phones.
- Some users in Zimbabwe may be able to enquire for bank balances using their cell phones.
- The concept of Virtual Organisations is significant to Zimbabwe's commercial banking because it may offer some of the possible options to the future.

6.2 RESEARCH FINDINGS AND ANALYSIS OF RESULTS

The study findings are summarised below.

- a) Commercial banks in Zimbabwe appreciate the "e"-communication concept as evidenced by its wide adoption. The main products used are statement enquiries, bill payments services, Point of Sale terminals, E-mail, Automated Teller Machines and Internet. All the commercial banks in Zimbabwe have designed websites to market their products and some offer limited banking facilities like balance enquiry or statement requests. This means that the majority of respondents have been in the "e"-communication field for relatively long periods and hence, are likely to provide valuable information since it is their field of expertise. Therefore, the majority of respondents are IT managers with their organisations and as a result, they have the technical expertise on

the use of “e”-communication. This means that most respondents appreciate the “e”-communication concept.

- b) Online “e”-communication channels have enabled commercial banks in Zimbabwe to transact with branches and each other in real-time mode. Zimbabwe’s commercial banks have incorporated electronic payment channels like the method called Real-Time Gross Settlement System (RTGS). Most commercial banks offer electronic banking solutions (77%) while the rest (23%) do not. Thus, commercial banks are keenly embracing the “e”-communication concept. An increasing number of business transactions are taking place electronically due to the convenience of accessing bank accounts on their office computers, obtaining statements and transferring money between accounts from the comfort of offices. This implies that most commercial banks use the Visa payment method. “e”-communication has a considerable impact on nearly all areas of the company’s activities, especially for companies operating in information intensive industries such as banking. Therefore, “e”-communication” allows easy access to money, reduces customer waiting times, and improves communication with customers.

- c) “E”-communication results in quick processing of transactions, saves time and improves efficiency of businesses. To mitigate security challenges they face, most commercial banks in Zimbabwe use firewalls to ensure secure and efficient transmission of information. This implies that the advancement of “e”-communication is hampered by security threats and the huge security bills, since, as Jolly (2003) found out, Internet software was generally designed with security as an afterthought. Thus, use of “e”-communication is hampered by illegal access and use of restricted information. This implies that the major security concern is its high cost (security) and illegal access by unauthorised users. Therefore, the major security challenge is maintaining the integrity of the firewall. This result concurs with the argument by Bhasin (2003) that if the firewall does a perfect job then an intruder will never reach the internal protected network. Moreover, Holden (2003) argues that security is vital

because hackers might gain control of your digital information. This means that Internet hackers threaten the security of “e”-communication as reported by Holden (2003) that hackers constitute some of the risks to computer security.

- d) Commercial banks in Zimbabwe spend on average 10% of their IT budget on security.
- e) All the commercial banks in Zimbabwe had some virus protection usually in the form of anti-virus software.
- f) To improve business, commercial banks are leveraging IT as a competitive tool and making the process of re-engineering everyone’s responsibility. The main thrust of re-engineering is on processes.

6.3 CONCLUSIONS

The major objective of this study was to investigate the application of “e”-communication on the service delivery of commercial banks in Zimbabwe. The following conclusions have been drawn from the research findings.

6.3.1 Adoption of "e"-communication

Commercial banks appreciate the “e”-communication concept as evidenced by its wide adoption. The main products used are statement enquiries, bill payments services, Point of Sale terminals, E-mail, Automated Teller Machines and Internet. In making payments, commercial banks mainly use the Visa Card. The Information Technology department is the custodian of “e”-communication.

6.3.2 Benefits of "e"-communication

Commercial banks consider that they derive much benefit from the adoption of “e”-communication, that is, it allows easy access to money, reduces customer-waiting times and improves communication with customers. Accountants highlight that “e”-communication results in quick processing of transactions, saves time and improves

efficiency of businesses. Moreover, it makes measurement of product performance and profitability easy.

6.3.3 Security concerns

The use and advancement of “e”-communication is mainly hampered by illegal access and use of restricted information. Commercial banks indicate that Internet hackers and computer viruses are the main threats to the security of “e”-communication and also highlight that they spent a significant proportion of the Information Technology budget on security.

6.3.4 Addressing security concerns

To arrest security challenges they face, most commercial banks use firewall to ensure secure and efficient transmission of information. However, maintaining the integrity of the firewall is also a cause for concern. In terms of physical security, commercial banks rely on tag access protected doors and alarm systems are used. Moreover, the banks have designed corporate policies that enhance security of “e”-communication. The policies mainly limit access to the “firewall” and the Internet. Also, the banks try to keep up-to-date on global security challenges.

6.3.5 What commercial banks are doing to improve business

In order to improve business, commercial banks are leveraging IT as a competitive tool and making the process of re-engineering everyone’s responsibility. The main thrust of re-engineering is on processes.

6.4 RECOMMENDATIONS

In order to realise the benefits of “e”-communication, commercial banks are recommended to do the following:

1. Top management in commercial banks of Zimbabwe should be committed to the establishment of a more effective information systems programme. This makes it easier for the whole organisation to be committed to “e”-communication, as management will be leading by example. The amount of

money on the banks' budget dedicated to information technology should be increased to meet the needs and expectations of the information super highway.

2. "E"-communication is dynamic and regular reviews are necessary to keep data secure from new threats. The commercial banking staff should be kept abreast of the world developments on electronic security; this could be done through workshops and seminars.
3. Commercial banks should increase user awareness on the "e"-communication products on offer. Users need to know what the product is they are supposed to use, when they are supposed to use the product, where they should use the product and why they should use the product. Any associated benefits of "e"-communication products should be clearly spelt out so that users can make informed decisions.
4. This study could be replicated in other sectors of business in order to strengthen the reliability and validity of the results revealed here.

6.5 AREA OF FURTHER STUDY

A further study is recommended in this area that should evaluate the benefits of "e"-communication to Zimbabwean commercial banks and their clients against the worldwide benefits trend. The effect of identity management on banking is part of the work that I will need to do in the future. Identity management has strong links with the management of security, trust and privacy; and traditionally, it has been associated with account maintenance and the control of login access. Identity management can be defined as the set of processes, tools and controls that are associated with the creation, maintenance, utilisation and termination of a digital identity for people to enable secure access to systems and applications.

APPENDIX A – COVERING LETTER

48 Shaneragh Road

Mandara

Harare

Phone 011 611 982

As part of my Masters of Commerce degree in Accounting with the School of Accounting at the University of South Africa, I am conducting a research study. The topic of the study is: THE EFFECT OF THE APPLICATION OF “E”-COMMUNICATON ON COMMERCIAL BANKING IN ZIMBABWE.

I am therefore kindly appealing for your assistance by providing information through this questionnaire. The results of this research will be of great importance to commercial banks, other stakeholders and the academic community. Your response will be treated as confidential and will not be used for purposes other than those intended for this research.

Your co-operation and contribution is greatly appreciated

Yours faithfully

T Kashora

MCom Student

APPENDIX B – QUESTIONNAIRE

QUESTIONNAIRE FOR INFORMATION TECHNOLOGY AND “E”- COMMUNICATION OFFICIALS IN COMMERCIAL BANKS

Introduction

Electronic communication (“E”-communication) basically refers to the use of computer technology in enhancing efficiency in business transactions involving inter alias, any trade transaction for the supply or exchange of goods or services; distribution agreements; commercial representation or agency; factoring; financing; banking; insurance; exploitation agreements; joint ventures and other forms of industrial or business cooperation; carriage of goods or passengers by air, sea or rail and the sale, distribution and production of goods. It basically advances the efficiency of business transactions between consumers and business organisations, transactions within firms (intra firm) and processes between firms (inter-firms) through various means such as electronic exchange of information from business computer to business computer using electronic data interchange (EDI), electronic mail (e-mail) and electronic funds transfers, to mention but a few.

May you please answer or respond to the following questions to the best of your knowledge and opinion.

SECTION I: GENERAL INFORMATION

What is your sex?

Male

Female

How long have you been in the organisation?

Less than one year

1 – 5 years

6 – 10 years

11 – 15 years

Above 15 years

How long have you been in the “e”-communication field?

Less than one year

1 – 5 years

6 – 10 years

11 – 15 years

Above 15 years

What is your position in the organisation?

SECTION II: IMPLEMENTATION OF “E”-COMMUNICATION IN COMMERCIAL BANKS

Do you understand the concept of “e-cmmunication”?

Yes

No

Appendix B - Questionnaire

Does your organisation implement and use “e-communication?”

Yes

No

Explain your answer to Question 6 above

Do you offer electronic banking solutions?

Yes

No

What “e”-communication products does your institution offer?

Which of the following electronic payment channels does your institution offer?

Master Card

Visa

Electronic cheque

Electronic cash/digital money

Electronic purse

Does your organisation derive any benefits from “e”-communication?

Yes

No

Appendix B - Questionnaire

If your answer to Question 11 above is Yes, what are the benefits?

Are there any de-merits to your organisation of adopting and using “e”-communication?

Yes

No

If your answer to Question 12 above is Yes, what problems does your organisation face in using “e”-communication?

SECTION III: SECURITY OF “E”-COMMUNICATION AND COMPUTERISATION AT YOUR ORGANISATION

What threats to privacy does “e”-communication bring to your organisation?

What are the security concerns for your institution that are brought about by “e”-communication?

Appendix B - Questionnaire

What security challenges are posed by electronic security in your organisation?

What is the source of security threats?

Which of the following features does your organisation use to ensure a secure and efficient transmission of data in “e”-communication?

- Client authentication
- Digital certificates
- Encryption
- Firewall
- Other, specify _____

What physical facilities are available in your organisation to ensure that there is enough security to information that is electronically transmitted in your business?

Are there any corporate policies, which support the establishment of effective infrastructure controls?

- Yes
- No

Appendix B - Questionnaire

If your answer to Question 20 above is yes, what are the policies?

Who is responsible for “e”-communication in your organisation?

How is top management involved in “e”-communication security in your organisation?

What proportion of your organisation’s Information Technology budget is dedicated to security?

Up to 1%

1 – 5%

6 – 10%

Above 10%

Other, specify _____

What comments do you have to your institution with respect to E-security?

SECTION IV: BUSINESS PROCESS RE-ENGINEERING

Business process re-engineering is a performance improvement philosophy, which is used by organisations to improve the way in which they do business through focusing on processes.

Which of the following are the most important principles of re-engineering?

- Processes
- People
- Technology
- Raw materials
- Education

How does your organisation re-engineer or consider the issue of re-engineering?

- By strategic planning, that leverages IT as a competitive tool
- By placing the customer at the centre of re-engineering effort
- By concentrating on re-engineering fragmented processes that lead to delays or other negative impacts on customer service
- By making it everyone's responsibility
- By forming case teams comprised of both managers as well as those who will actually do the work
- By involving the IT group as an integral part of the re-engineering team from the start
- By sponsoring it through long term senior executives
- By putting a timetable to Business Process Re-engineering process
- By not ignoring corporate culture and emphasising on constant communication and feedback

Appendix B - Questionnaire

What other comments do you have on your organisation concerning “e”-communication?

End of Questionnaire
Thank you for your invaluable time

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