



**MIDLANDS STATE UNIVERSITY**

**FACULTY OF COMMERCE**

**DEPARTMENT OF BUSINESS MANAGEMENT**

**Project Title**

**An analysis of the factors affecting diffusion of ICTs amongst SMEs in the  
Hardware Retail Industry: A multiple case study.**

**Submitted By**

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*This dissertation is submitted in fulfilment of the requirements for the Bachelor of  
Commerce Honours Degree in Business Management.*

**Gweru, Zimbabwe**

**September 2014**

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## **DEDICATION**

This research is dedicated to my loving mother Dorothy Nzima, a woman full of grace and kindness; my grandparents Manasa and Delia Nzima, as well my three elder brothers Denver, Shingirai and Benjamin Chiwakira.

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I would like to acknowledge all the excellent individuals that assisted me throughout this research. Special thanks go to my academic supervisor for his unwavering commitment to the completion of this research. His guidance and advice were priceless at each subsequent stage of this research. My sponsor, Dorothy Nzima, played a major role in making this dissertation a possibility; much thanks go out to her for her support.

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## **ABSTRACT**

**THIS RESEARCH WAS CONDUCTED FOR THE PURPOSE OF IDENTIFYING THE FOREMOST FACTORS AFFECTING ICT DIFFUSION AMONGST SMALL TO MEDIUM-SIZED HARDWARE RETAILERS. HAVING EMBRACED AND IMPLEMENTED ICTS, SMES OPERATING IN THE HARDWARE RETAILING INDUSTRY STAND TO BENEFIT IN VARIOUS WAYS. HOWEVER, IT APPEARS THAT THERE IS A SIGNIFICANTLY LOW RATE OF ICT UPTAKE AND DIFFUSION AMONGST HARDWARE RETAILERS IN GWERU. THE STUDY THEREFORE SOUGHT TO REVEAL THE FACTORS AFFECTING DIFFUSION OF ICTS AMONGST SMALL HARDWARE RETAILERS. THE DIVERSE INFLUENCES DRIVING THESE FIRMS TO ADOPT OR REPEL ICTS WERE IDENTIFIED AND EXPLAINED. A CENSUS OF ALL HARDWARE RETAILERS IN THE CENTRAL BUSINESS DISTRICT OF GWERU WAS USED AS THE TARGET POPULATION. THIS POPULATION WAS COMPOSED OF OWNER-MANAGERS AND EMPLOYEES OF HARDWARE RETAILING STORES; A TOTAL OF 16 FIRMS, CONTRIBUTING A TOTAL OF 65 RESPONDENTS WERE INVOLVED. SELF-ADMINISTERED QUESTIONNAIRES AND FOLLOW-UP INTERVIEWS WERE USED TO COLLECT THIS DATA, WHICH WAS THEN PRESENTED AND ANALYSED USING DESCRIPTIVE STATISTICS. THE STUDY FOUND THAT THE MOST POWERFUL FACTORS THAT INFLUENCE ICT DIFFUSION ARE THE AFFORDABILITY, COMPATIBILITY AND EASE OF USE OF THE TECHNOLOGIES IN QUESTION. IT WAS CONCLUDED THAT ICT PACKAGES THAT SATISFIED THESE THREE NEEDS WERE MORE LIKELY TO BE RECEIVED AND QUICKLY SPREAD RIGHT ACROSS ORGANIZATIONS MORE READILY THAN THOSE WHICH DID NOT. FURTHER RESEARCH WAS RECOMMENDED AT A NATIONAL LEVEL AS THIS PARTICULAR STUDY WAS GEOGRAPHICALLY LIMITED TO THE CITY OF GWERU. SIMILAR STUDIES IN OTHER INDUSTRIES CAN ALSO BE EQUALLY EYE-OPENING.**

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# **CHAPTER I**

## **INTRODUCTION**

### **1.0 Introduction**

#### **1.1 Background of the Study**

The economic crisis facing Zimbabwe has lingered for a number of years and has holistically stifled the progressive development of the country significantly. High unemployment rates, high external debt, liquidity challenges, heavy deindustrialization and infrastructure deficits (Bandara & Monyau, 2014) are just a few of the serious economic hurdles facing Zimbabwe.

##### **1.1.1 The Collapse of the Zimbabwean Economy**

With the gradual collapse of industry, which has been characterized by the severe decline in industrial capacity utilization to as low as under 10% in 2008 and most recently 39.6% in 2013 (Bandara & Monyau, 2014), unemployment has risen to an estimated 95% (Chingarande & Guduza, 2011). However, due to disparities in definition, Zimbabwe National Statistics Agency (ZimStat) director Mr Dzinotizei Mutasa argues that unemployment can only be rightfully pegged at 11%, citing the inclusion of all paid employees, employers, own account workers and unpaid family workers in the total set of the employed population as justification (Herald, 2013)

##### **1.1.2 SMEs and Economic Recovery**

In response to this harsh economic predicament, increased attention has been given by the Zimbabwean government to the development of local Small to Medium Sized Enterprises

(SMEs) which are increasingly being recognized as catalysts to the sustainable development of economies world over.

According to (Goriwondo, 2012),

*“Small to Medium Enterprises (SMEs) occupy a key and strategic role in revitalizing the economy. It is universally acknowledged that they are effective instruments of employment creation and economic growth, which ultimately lead to poverty alleviation for the entrepreneurs themselves as well as their employees.”*

The effectiveness of SMEs in both boosting and sustaining an economy has been observed in economies such as that of India, in which SMEs alone account for up to 40% of industrial production and 35% of all manufactured exports (Uma, 2013). In Malaysia, which has an economy established mainly on the agriculture, manufacturing and service sectors, SMEs alone account for 86.5% of the total number of firms operating in these three key sectors. These SMEs are also responsible for the employment of 3.0 million of the 4.6 million workers employed in these sectors (Aris, 2007).

Small businesses in Australia have also made a huge contribution to the Australian economy and have provided almost half of industry employment which is close to 4.8 million jobs (Clark, et al., 2011). This evidence shows that SMEs are undeniably effective in contributing to the growth and sustainability of any economy.

### **1.1.3 ICTs and SME Growth**

However, if Zimbabwean SMEs are to be highly effective as economic stimuli, there is much need for them to embrace the use of Information Communication Technologies (ICTs). The use of ICTs in business will go a long way in increasing the speed of communication, boosting efficiency, ensuring a seamless transfer of information and also reducing inter-firm transaction costs among others (OECD, 2004). ICTs will help increase the overall performance of SMEs.

Despite the lack of ample statistical data relating to ICTs, developments in key sectors surrounding ICT consistently suggest the progressive diffusion of ICTs locally. For instance, internet access is a key enabler of ICT effectiveness; the total number of internet subscriptions in Zimbabwe has risen from around 4.4 million to 5.2 million all in the space of one year. The mobile penetration rate (the number of active mobile SIM cards on the market, as a percentage of the total population of the country) has also hit an all-time high at 106% (Kabweza, 2014).

A recent statistical survey by the International Telecommunication Union (ITU) has indicated that the penetration rate of mobile-broadband alone, a vital pillar of ICT, has increased amongst developing countries from 2% in 2010 to 20% in 2014 (ITU, 2014). The adoption of ICTs has been on the rise especially due to the pressing need to be able to keep up with today's fast-paced digital world.

The ease of doing business that is brought about by the use of ICTs has the potential to leverage the overall performance of a firm to new heights. However, in spite of the increasing rate of ICT diffusion in Zimbabwe, certain local businesses still appear passive in their adoption and deployment of ICTs.

#### **1.1.4 Diffusion of ICTs amongst Hardware retailers**

Hardware retailers like many other types of businesses have unique technological requirements. For example, characterized by their complex stock which consists of diverse units in great quantities, the risk of falling into poor stock management situations is high. Using manual methods, it is quite easy to mistakenly overlook certain stock movements which may very well lead to disparities in available stock and that indicated in the firms' records.

This industry is also branded by the high level of competition existing within it. Barriers to entry are minimal, and are almost only limited to availability of capital. This has led to a

gradual increase in the number of players operating in the hardware retail industry. It would be expected that firms operating in this industry would clamour for any competitive advantage that would present itself, such as that presented by the use of ICTs, however, there has been little movement in this direction.

In most cases, ICTs are present in these firms but are put to very little use by personnel; both intra-firm and industry-wide ICT diffusion levels remain low.

## **1.2 Statement of the Problem**

Having embraced and implemented ICTs, SMEs operating in the hardware retailing industry stand to benefit in various ways including faster communication, increased efficiency, accurate stock management and also reduced inter-firm transaction costs among others (OECD, 2004). However, it appears that there is a significantly low rate of ICT uptake and diffusion amongst hardware retailers in Gweru. Some of these firms are still totally unreceptive toward ICTs and those that have adopted it appear to make very minimal use of it.

There is need to look into the factors affecting the uptake and diffusion of ICTs by these firms, their intentions for adopting ICTs as well as the challenges they face in acquiring, implementing and utilization of ICTs.

## **1.3 Research Objectives**

- To determine the drivers of ICT adoption by hardware retailers;
- To establish the factors affecting diffusion of ICTs amongst small hardware retailers;
- To establish current ICT diffusion strategies in place;
- To identify alternative diffusion strategies.

## **1.4 Research Questions**

- What are the influences driving small hardware retailers to adopt ICTs?



- What are the intentions of small hardware retailers in adopting ICTs?
- What are the challenges small hardware retailers face in daily utilization of ICTs?
- What strategies can be put in place to help increase ICT diffusion amongst such small businesses?

## **1.5 Significance of the study**

The findings of this study stand to benefit a number of individuals and groups.

### **1.5.1 The Business Community**

The information that was gathered during the course of this study will be essential to both owners and managers of local SMEs. The findings of this research provide insights on the various ways through which business owners can increase the actual benefit derived from the day to day use of ICTs.

### **1.5.2 Government Bodies**

Government arms such as the Ministry of Information Communication Technology, Postal and Courier Services are able to use the information gathered from this study to come up with reforms that support increased ICT utilization amongst SMEs which will in turn boost the performance of SMEs and their contribution to economic development.

It can also contribute to the formulation of “Best Practices” in ensuring that ICT diffusion remains high in different industries as it will expose the diverse barriers to ICT diffusion as well as recommend strategies to increase ICT diffusion.

### **1.5.3 The Researcher**

This research has served as a milestone in the students’ pursuit of the Bachelor of Commerce Honours Degree as it is prepared in partial fulfilment of the same. This study has enabled the

researcher to improve their research skills and has resulted in the development of the scholars understanding of the various forces influencing ICT diffusion especially amongst SMEs.

## **1.6 Delimitations**

This study included a select sample of small Hardware retailers drawn from the Central Business District of Gweru; it was targeted at Zimbabwean SMEs, which are owned by Zimbabwean nationals. Having taken into account the cross-sectional nature of this study, there was need to consider the proximity of participants so as to minimize delays brought about by accessibility based problems.

The research was also limited to the timeframe within which the faculty had specifically predetermined and was conducted on that wise.

## **1.7 Limitations**

- The research was limited to the Central Business District of Gweru, and thus left out many other similar firms nation-wide that could have been included in the study;
- Certain targets were unwilling to participate in the research leading to disparities in the projected number of participants and the actual participants;
- Some follow-up interviews with owner-managers were cancelled as they became unavailable despite repeated attempts to get in touch with them;
- A list of potential participants obtained from the University's database of suppliers contained several hardware retailers that were either out of business or did not meet the delimitation criteria.

## 1.8 Assumptions

- Firms in the hardware retail industry of Gweru are facing challenges in the adoption and utilization of ICTs;
- The diffusion of ICTs is low amongst hardware retailers;
- Hardware retailers have a slow rate of ICT uptake.
- Little importance is attached to the diffusion of ICTs by hardware retailers

## 1.9 Abbreviations

- Ecommerce- Electronic Commerce
- ERP- Enterprise Resource Planning
- ICT- Information Communication Technology
- SME- Small to Medium Sized Enterprise
- TAM- Technology Acceptance Model
- TOE- Technology, Organization and Environment Framework

## 1.10 Definition of terms

- **Information Communication Technology**- Electronic based technology generally used to retrieve, store and package information as well as provide access to knowledge.
- **Small to Medium Sized Enterprise**- According to the Zimbabwe Revenue Authority' Finance Act Chapter 23:04, a Small-to-Medium Enterprise (SME) is any business or enterprise that scored nine points or less in terms of its employment levels, or turnover levels and or total net asset values; Points ranging from one to four are substituted into the following formula: **A+B+C**

Where:

- **A** represents the average maximum total number of full time employees during any calendar year of a business or enterprise.
- **B** represents maximum total annual turnover of a business or enterprise and
- **C** represents maximum gross value of assets (excluding immovable property) of a business or enterprise.
- The factors **A**, **B** and **C** are assigned a predetermined number of points, such that if the total sum of the formula is nine points or less the business or enterprise is an SME.

Base	Range	Points	Factor
Employment levels	Up to 5 employees	1	A
	6 to 40 employees	2	
	41 to 75 employees	3	
	76 and above	4	
Annual Turnover	Up to \$50,000	1	B
	\$50,001 to \$500,000	2	
	\$500,001 to \$1,000,000	3	
	\$1,000,001 and above	4	
Gross value of assets	Up to \$50,000	1	C
	\$50,001 to \$1,000,000	2	
	\$1,000,001 to \$2,000,000	3	
	\$2,000,001 and above	4	

**Figure 1.1- Firm size determination**

**Source: Zimbabwe Revenue Authority**

- **Enterprise Resource Planning-** The ability to deliver an integrated suite of business applications.
- **Industry-wide ICT diffusion-** The dissemination of Information, Communication Technologies across an entire industry over a period of time.
- **Intra-firm ICT diffusion-** The gradual distribution of ICTs right across an organization over a period of time.
- **Incremental Change-** Technological changes within an organization that involve the updating and upgrading of existing technologies in order to enable them to line up with current standards.
- **Synthetic Change-** These changes involve technological changes that combine two existing technologies in order to come up with a new innovative purpose.
- **Discontinuous Change-** Such technological changes represent radical changes in technology which often result in a significant departure from existing technologies.

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter focuses on the different views, arguments and perspectives brought about by diverse authors on the subjects of the factors affecting ICT diffusion, the drivers of ICT adoption, as well as on ICT diffusion strategies.

#### 2.2 What is ICT uptake?

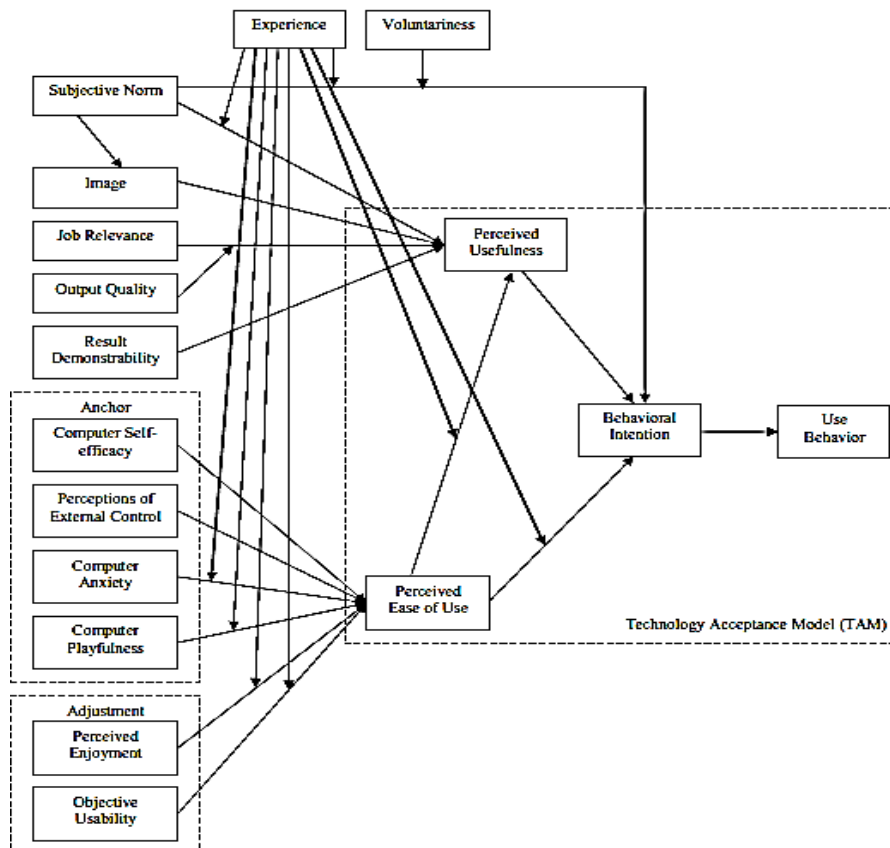
ICT uptake refers to the acceptance of particular technologies, which may include telecommunication technologies, information technologies or networking technologies (Arduini & Nascia, 2010). Different researchers have looked into the drivers of ICT adoption and in turn have developed various models and theories which have registered different levels of success and recognition within the research community. All these models however are subject to critique.

##### 2.2.1 The Technology Acceptance Model

The Technology Acceptance Model (TAM) originally developed by Fred Davis in 1985 (Chuttur, 2009) attempts to link technology acceptance (adoption) to two key factors, namely, *Perceived Ease of Use* (user friendliness of the technology in question) and *Perceived Usefulness* (the actual benefit derived from using the technology). This model has been extended over the years, Venkatesh and Davis (2000) added six sub-variables to Perceived Usefulness, namely job relevance, image, subjective norm, output quality, results demonstrability and Perceived Ease of Use. It was then renamed to TAM 2 (Sternad, et al., 2011).

TAM 2 involved an interesting gender element suggested by Venkatesh and Morris (2008). They suggested that perceived usefulness was more of a prominent factor amongst men and perceived ease of use amongst women. As the number of women in organizations continues to grow (Cameron & Butcher-Powell, 2006), there is need to take into account their patterns of decision making and incorporate them into modern models (Venkatesh & Morris, 2000).

In a further study, Venkatesh (2000) identified the determinants of Perceived Ease of Use to be computer self-efficacy, computer anxiety, computer playfulness and perceptions of external control. Venkatesh and Bala (2008) later combined TAM 2 with Venkatesh (2000) s’ model of Perceived Ease of Use determinants to come up with TAM 3 (Sternad, et al., 2011).



**Fig 2.1 Technology Acceptance Model 3 (TAM 3)**

**Source:** (Venkatesh & Bala, 2008)

### **2.2.3 Implications for this study**

The Technology Acceptance Model has interesting implications when put within the context of this study. It suggests that the acceptance or rejection of ICTs amongst local Gweru Hardware retailers is a function of the technologies' *Perceived Ease of Use* coupled with its *Perceived Usefulness*. If this model holds, it would imply that the reasons that Hardware Retailers in Gweru opt to adopt various technologies hinges essentially on how useful the organizations think the technology is, as well as how user friendly they believe the technology will be in practice.

It also introduces the aspect of gender, suggesting that there is a difference in the patterns of ICT decision making between men and women. Research has also revealed that despite less prominent educational portfolios, women appear to be able to level the playing field by performing just as well as highly skilled counterparts (Cameron & Butcher-Powell, 2006).

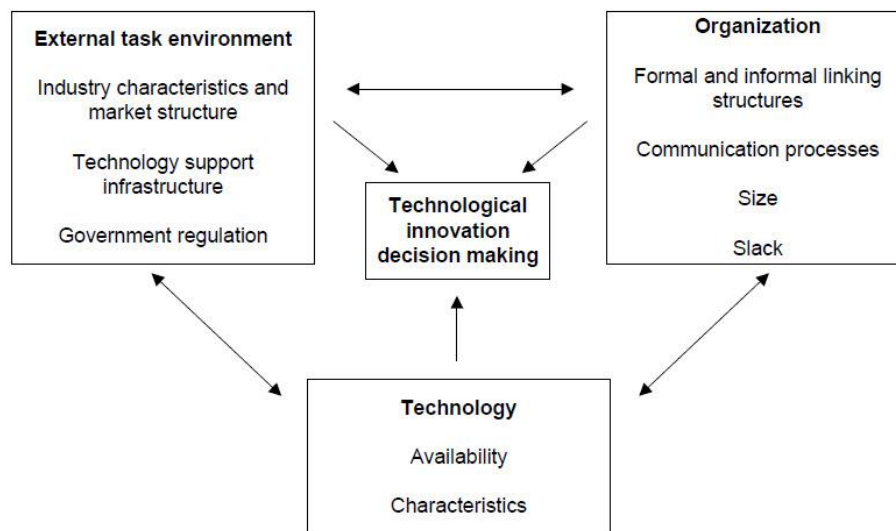
### **2.2.4 Criticisms of the Technology Acceptance Model**

The Technology Acceptance Model however seems to focus mainly on the internal environment of the organization. It neglects factors that may not be within the organization that may contribute to an organizations ability or willingness to adopt ICTs (Dishaw & Strong, 1999). Some researchers have also found that although TAM is relatively uncomplicated and simple to use, it only provides general information and does not go much into specifics (Mathieson, 1991).

In addition, (Jackson, et al., 1997) appear to have found no relationship between perceived usefulness and attitude, a big blow to the credibility of the entire TAM model. Another study by (Lucas & Spitler, 1999) found no empirical evidence for the relationship between perceived usefulness and behaviour intention. Many inconsistencies appear to exist in the use of the Technology Acceptance Model (Li, 2010).

## 2.3 Technology, Organization and Environment Theory

Developed in 1990 by Tornatzky and Fleischer, the Technology, Organization and Environment (TOE) theory has become very popular as a research framework. It takes into account three facets of an organization that determine the process it goes about in adopting a new technology (Oliveira & Martins, 2011). These facets are the Technological context, Organization context and Environmental context.



**Figure 2.2 Technology, organization and environment framework**

Source - (Oliveira & Martins, 2011)

### 2.3.1 The Technological Context

According to Baker (2012), “*The technological context includes all of the technologies that are relevant to the firm – both technologies that are already in use at the firm as well as those that are available in the marketplace but not currently in use.*” Collins et al. (1988) in Baker (2012) outline the importance of a firm's existing technologies; they suggest that a firm's present internal ICTs can act as a guide as to the choice of technological implementations that an organization can handle. New technology that is available but is not currently in use by an organization is indeed relevant as it represents the technological directions that the firm can take in future. It gives firms an idea of the direction they can take in terms of ICTs (Baker, 2012).



Three distinct types of technology are defined in the category of technologies available outside the organization, namely those prompting incremental change, synthetic change or discontinuous (radical) change (Baker, 2012). Those prompting *incremental change* are set around updates and new versions of existing technologies, making them function better and faster. *Synthetic change* refers to technologies that combine two already existing technologies innovatively to come up with a new purpose. *Discontinuous change* refers to radical change, which usually stimulates significant departures from existing technologies and methods (ibid).

Where industries face a need for incremental or synthetic innovations, they can embrace it at a more relaxed and steady pace, however, where discontinuous change is required, a quick pace of action is necessary in order to gain competitive advantage.

### **2.3.2 The Organization Context**

This refers to descriptive measures about the organization including factors such as managerial structure and size (Oliveira & Martins, 2011). An organization's context is its internal operating environment within which the organization seeks to achieve its goals (Pojasek, 2013). The Organization Context can affect ICT adoption in numerous ways. The communication processes within an organization alone can make or break innovation; top management (or owner managers in the case of small firms) consciously creating a culture that supports and condones innovation can go a long way in determining whether a firm is receptive or repulsive to innovations (Baker, 2012).

The size of an organization is also seen as a player in its adoption behaviours. However, Baker (2012) asserts that no conclusive link between size and innovation exists. Larger organizations are more likely to adopt ICTs mainly because of the availability of resources that large organizations usually have (Victoria, et al., 2012). Small businesses often have resources in limited supply hence inhibiting their adoption of new technologies. The organizational context tends to be “well-structured” and conducive to ICT in organizations that show a high level of ICT adoption.

### **2.3.3 The Environmental Context**

Tornatzky and Fleischer (1990) in Oliveira and Martins (2011) define the Environmental Context as, “...*the arena in which a firm conducts its business—its industry, competitors, and dealings with the government.*” It encompasses industry characteristics and market structure, technology support infrastructure and government regulations (Oliveira & Martins, 2011). These external influences are able to affect the way an organization perceives the need for ICTs (Angeles, 2013).

Factors such as competition encourage firms in the same industry to innovate (Baker, 2012) in order to keep up with standards set by rivals. Also, firms operating in developing trades tend to innovate more often. The presence of consultants and support personnel to offer continuous support in the event of technological failures is also a factor that influences ICT adoption in the Environmental Context (Govindarajulu & Lippert, 2006).

### **2.3.4 Implications for this study**

The TOE framework brings about a different paradigm when brought within the context of this study. It infers that hardware retailers in Gweru are moved by determinants in the technological, organizational and environmental contexts with regard to adopting ICTs.

A surface-level analysis of the local Environmental Context brings into play factors such as potentially high consultation fees charged by ICT consultants as well as ICT support personnel which may be seriously inhibiting to ICT adoptions. The environmental component also brings about the possibility of government regulation as a driver of ICT adoption, as was witnessed with the introduction of fiscalization on the 1<sup>st</sup> of October 2012 which saw numerous retail operators adopting fiscalized devices in order to remain compliant with statutory regulation. The need to maintain or acquire a competitive advantage may also be a driver of ICT adoption in this case.

The technological context for hardware retailers in Gweru entails aspects such as compatibility of ICTs with existing technological infrastructure. Some hardware retailers may choose not to adopt particular technologies due to gross incompatibility with existing technology. Adopting certain ICTs may mean replacing entire existing systems that are already in place, which may be very costly for the firms. This makes compatibility a major driver of ICT adoption.

The Organizational context also has vast implications. It brings to light factors such as the internal processes of the organization. Established organizational systems may prove to inhibit or encourage ICT adoption. Owner-managers also play a critical role in shaping the organizations attitude towards ICTs; where they are ignorant and passive with regard to ICTs, the organization tends to slack in adoption.

### **2.3.5 Criticisms of the Technology, Organization and Environment Theory**

There has been very little criticism surrounding the TOE theory (Baker, 2012). This lack of criticism has been attributed to the fact that the TOE framework has been labelled as a generic theory (Zhu & Kraemer, 2005); it has also been referred to as complimentary to other similar theories and has been viewed as quite aligned to other theories such as Diffusion of Innovations (Rogers, 1995).

There has been numerous research carried out using the TOE theory in determining factors affecting adoption of Enterprise Resource Planning Systems (ERPs) E-Commerce, Open systems and Websites (Oliveira & Martins, 2011) by authors such as (Chau & Tam, 1999), (Oliveira and Martins 2008) and (Pan and Jang 2008).

## **2.4 Owner-Managers and ICT Adoption**

Owner-managers play a very critical role in determining the attitude that a firm has toward ICT adoption. Van-Akkeren & Cavaye (1999), came up with a set of owner-manager characteristics that they believed to be key to determining the firms overall attitude towards

adopting ICTs. These traits include perceived benefits, computer literacy, assertiveness and perceived control.

#### **2.4.1 Perceived Benefits**

These perceived benefits are often focused on business efficiency, operational effectiveness and the need to reach out for new markets and opportunities (Beckinsale & Ram, 2006). The owner-manager has to clearly identify the benefits associated with adopting the particular technology before actually endorsing its adoption. Where there are faint or unclear benefits of adopting the technology, the owner-manager is likely to develop a passive attitude towards it.

However, actually measuring the benefits of ICTs in an organization is a relatively complex task. For example, various researchers have attempted to classify the benefits of ICTs into distinct categories which include strategic, tactical and operational benefits (Demmel & Askin, 1996). Peters (1994) presented an entirely different taxonomy and suggested Enhanced productivity, Business expansion and Risk minimization, as the most appropriate classification of ICT benefits (Love, et al., 2004).

#### **2.4.2 Computer Literacy**

Where owners-managers have a significant level of acquaintance with ICTs, they are more likely to embrace ICT adoption within the organization (Mpofu, et al., 2012). A lack of computer literacy within the organization can significantly hamper the firms' aptitude to adopt ICTs (Barba-Sanchez, et al., 2007). This scenario can be worsened in the event that technical support services from the external environment are not readily available to the firm adopting the technology (Windrum & de Barranger, 2002). As a result, owner-managers with a low level of computer literacy may be passive concerning the implementation or uptake of ICTs within their respective organizations.

### **2.4.3 Assertiveness**

Owner-managers who are viewed as more entrepreneurial risk-takers are also most likely to contribute to a firms' readiness to adopt ICTs (Mpofu, et al., 2012). The ability to make bold decisions such as adopting a technology without having total knowledge concerning its use or potential flaws contribute greatly to a firms overall ICT adoptions. When businesses make moves to take up ICTs, this is usually driven by the actions of key decision-makers who have defined a suitable ICT policy and identified significant ICT needs and accordingly allocated financial resources to enable ICT adoption (Manueli, et al., 2007). This underlines the fact that owner-managers play a significant role in determining whether or not an organization will adopt ICTs.

### **2.4.4 Perceived Control**

Certain owner-managers may also be reluctant to adopt the use of ICTs within their firms as a result of the fear of losing total control of the business (Zappala & Gray, 2006). The owner-managers' need to maintain control over the firm and avoid potential losses of the same via the adoption of ICTs prevents businesses from adopting ICTs (Mpofu, et al., 2012). The introduction of ICTs can present a certain level of autonomy which may leave owner-manager feeling insecure as they are left playing a less central role.

### **2.4.5 Implications for this study**

The owner-managers role, when put within the context of this study has a significant bearing on the research. It is brought to light that hardware retailers may be driven by the behavioural characteristics of their owner-managers in adopting ICTs. Hardware retailers that show significant ICT acceptance may be owned by more entrepreneurial, computer literate or assertive individuals, as compared to those that neglect the use of ICTs, which are more likely to be owned by less assertive, risk averse individuals.

## **2.5 Definition of ICT diffusion**

ICT diffusion has been studied widely and there is much literature surrounding the subject. The whole concept of diffusion sprouts from the early writings of Everett Rogers. This researcher defined diffusion as the process through which a particular technology goes through in being communicated to various members of a social system (Rogers, 1995). Dasgupta (1997) defines ICT diffusion slightly differently as a combination of the introduction, assimilation and permeation of ICTs across an organization. It can be said that ICT diffusion is concerned with the spread of new technology or ideas throughout an organization.

Various studies on ICT diffusion have given way to the discovery of diverse factors that affect diffusion both positively and negatively.

### **2.5.1 Factors affecting ICT Diffusion**

Previous research has led to the discovery of various factors that have an influence on the diffusion of ICTs within organization and across industries.

#### **2.5.1.1 Firm Size**

The size of an organization plays a significant role in determining the level of diffusion of ICTs it enjoys (Gono, et al., 2014). ICT related developments are very well known for their high frequency of failure (Love, et al., 2004). Introduction of new technology usually presents high risk and costs to adopting firms; naturally, larger firms are more able to bear these accompanying risks and costs due to their larger resource base (Victoria, et al., 2012). Economic theory confirms this trend, suggesting a positive correlation between a firm's size and its attitude to technology adoption (OECD, 2011)

Small firms need to be wary of these risks and ensure that they have plans in place to manage them (Hartman & Ashrafi, 2002). Firms must be able to identify the underlying risks of adopting particular ICTs and come up with effective strategies for managing these potential risks. Many times however, smaller firms may be reluctant to adopt ICTs as the process of

identifying and drafting strategies to safeguard against these risks may be cumbersome and overwhelming to the average SME.

However Teo, Tan and Buk (1997) conclude in their study on internet adoption in Hong Kong that there is a weak relationship between firm-size and ICT diffusion. Love et. al. (2004) in their study on the benefits, costs and risks of Information Technology in Australian SMEs also found a weak relationship between firm-size and ICT diffusion. These two researches however were very geographically limited as compared to those purporting a positive relationship between the two variables, which were much more spatially distributed. Certain studies have also suggested that small firms are more likely to experience a higher level of ICT adoption as they are prone to be more willing to experiment with new methods in business (Jutla, et al., 2002). Researchers remain divided as to the correlation between firm size and ICT diffusion.

#### **2.5.1.2 Available Skills**

In order to effectively make use of ICTs that have been adopted, a firm needs to have reasonably skilled personnel. This need is especially escalated when complicated technology is involved (Arvanitis, 2005). The skill-based theory of technology diffusion suggests that there is a relationship between the increasing diffusion of technology and the growth in demand for highly skilled workers (Hur, et al., 2002). This follows that for every increase in the level of technology employed by a company, there is a corresponding need for highly skilled employees.

Where skills are insufficient, organizations will be reluctant to adopt ICTs. In order to address the lack of internal skills, there may be need for intensive training to be carried out, as well as significant labour outsourcing which may also be considerably costly to the firm (Manuere, et al., 2012). On this premise, many small firms tend to find it more manageable to make do with little or no technology whatsoever.

However, in a study on ICT diffusion and skill upgrading, there was no significant relationship found between ICT diffusion and skill upgrading (Hur, et al., 2002). The outcomes of this study suggested that organizations needn't look to external sources of human capital but only need to accustom their existing workforces, via training and change management initiatives, to the use of the new technology. If hardware retailers in Gweru have technically unskilled workforces, this could seriously impede on the diffusion of ICTs; the organizations will most likely avoid implementing these ICTs in order to avoid the associated costs in the form of training and development.

### **2.5.1.3 Technological Background**

This refers to the experience in adopting and using ICTs that organizations have. It is largely a function of the age of an organization as firms that have been in operation for long will tend to have experienced past technological adoptions as compared to younger ones (Ssewanyana & Busler, 2007). Having a good background in ICT adoption greatly empowers firms to assertively embrace ICTs (ICTNET, 2012). Firms that have less experience in adopting ICTs will tend to display a more sceptical attitude towards ICTs and view them as risky, costly and potentially destructive.

With regard to SMEs, it may be worthwhile to consider the owner-managers' age in order to fully understand a firms' ICT adoption behaviours. Prensky (2001) describes the young generation as 'digital natives' and the older generation as 'digital immigrants'. The idea is that the older generation has less of an appreciation of technology and ICTs in comparison with the younger generation. Dodge et al. (2008) go on to imply that in order to increase ICT uptake in any setting, there is need to allow the younger generation to take charge.

Tusubira and Mulira (2004) categorically arranged these differences in generational reasoning into 4 age groups. These are presented on the table below;



**Figure 2.3 - 4 Generational ICT mind-sets**

<b>Generation (Age ranges have overlaps)</b>	<b>Characteristics</b>
50-60 Years	This age group has grown up with the old and traditional methods of doing things. They are often key decision makers holding much decision making power.
40-50 Years	They are slightly ICT aware, but are also conservative and entrenched in the old way of doing things.
30-40 Years	These are very dynamic and link easily to the old generation. They also have a good understanding of the organization.
20-30 Years	These have very innovative ideas and are well informed on ICTs. In technical areas, they have much information and know-how.

**Source:** (Tusubira & Mulira, 2004)

The implications of these views are particularly effective on small firms. Owner-managers who are from the older generation will be less receptive to ICTs within their organizations as they have deeply entrenched confidence in traditional manual methods. Younger owner-managers however will be most likely receptive to ICTs and hence support their adoption and diffusion within their firms.

#### **2.5.1.4 Technology Intensity**

The nature of the industry in which the firm operates has a significant bearing on its technology adoption behaviours. Arvanitis and Hollenstein (2001) argue that organizations operating in industries that employ advanced manufacturing technologies are more likely to adopt ICTs as compared to less technology intensive industries. This means that organizations operating in high tech industries experience a higher level of ICT diffusion than those in less technologically advanced industries.

The hardware retail industry can barely be classified as high tech. Most hardware retailers in Gweru are simply redistributors, and as such have a limited scope in terms of use of technology. The technology intensity factor suggests that diffusion of ICTs amongst hardware retailers is low, due to the less technologically intensive nature of the industry within which they operate.

#### **2.5.1.5 The Regulatory Environment**

The regulatory environment plays a key role in influencing ICT adoption. The effects of the regulatory environment may be detrimental to the diffusion of ICTs where it hampers the necessary adjustments necessary for ICT diffusion, or it may be positive when it reduces technological uncertainty (ICTNET, 2012). Regulations that restrict competition, for example, have been found to be a negative force acting against the diffusion of ICTs as there is less need for firms to adopt ICTs in order to remain competitive (Conway, et al., 2006).

Also, administrative burdens brought about by regulations may effectively slow down investment in ICTs prompting a decline in the diffusion of ICTs. Where regulations make ICT acquisition a slow and complicated process, firms will generally be reluctant to adopt ICTs and hence diffusion will be lowered (Conway, et al., 2006). Regulations may however prompt an increase in the diffusion of ICTs where governments make it mandatory for firms to line up with certain technological requirements, such as the fiscalization process that took place in Zimbabwe.

Regulation in Zimbabwe is somewhat suppressive on the part of ICTs. The importation of ICTs was until most recently duty-free in order to encourage local firms to be able to more affordably acquire technologies. The duty free grace was revoked in the 2014 Mid-Year Fiscal Policy Review. Policies such as the indigenization policy still hamper investment in the local ICT industry, which is seriously underdeveloped.

### **2.5.1.6 Market Characteristics**

Competition is a significant factor in catalysing ICT diffusion. As more firms are competing in a particular sector, there is an increased need to attain a competitive advantage by employing the use of ICTs (Barba-Sanchez, et al., 2007). The more organizations competing in a particular sector, the higher the rate of ICT diffusion (Arduini & Nascia, 2010). OECD (2003) adds that by adopting ICTs in such competitive industries, firms may be able to offer lower prices which will in turn increase their market share.

The influx of foreign-owned firms is also a factor that may spur ICT adoption (Keller, 2002). Foreign-owned firms are more likely to adopt ICTs as they often have a greater resource base, as well as due to the need to be competitive in the new markets. The presence of large firms in the market also leads to an increased rate of ICT adoption as smaller firms seek to remain competitive against the larger firms.

Competition has indeed increased amongst Gweru hardware retailers. Barriers of entry are minimal and this has in turn led to an increase in new entrants. This increase in competition implies an increase in the diffusion of ICTs as firms are expected to be reaching for a competitive advantage, or at least to react to moves made by other competitors.

### **2.5.1.7 Infrastructural development**

Industry-wide determinants of ICT diffusion have much to do with infrastructural development. Certain ICT adoptions may require specialized infrastructure, without which it would be impossible to adopt certain ICTs (ICTNET, 2012). Firms operating in areas that have these special infrastructural requirements will naturally enjoy a higher rate of ICT diffusion as compared to firms operating in less developed zones (Peansupap & Walker, 2005).

Gweru as a city lags behind in key ICT infrastructural developments when compared to other Zimbabwean cities such as Bulawayo or Harare. Technologies such as high speed Optic Fibre internet as well as Fourth Generation (4G) connectivity is limited or unavailable. This goes

on to show how the lack of infrastructural development in Gweru may be hampering ICT diffusion amongst local hardware retailers.

#### **2.5.1.8 City-size**

Downes and Greenstein (2002) address the effects of city-size on ICT diffusion; they concluded that city-size has much to do with the level of ICT diffusion. Costs of service provision in small cities appeared to be higher as there is a minimum population at which certain ICT service providers are willing to set up in a new market (Downes & Greenstein, 2002).

Gweru's population is relatively low, thereby suggesting that certain low-cost ICT service providers may find it unprofitable to settle in Gweru. This in turn makes ICT adoption costs relatively high and may consequently hamper the diffusion of ICTs.

#### **2.5.1.9 Organizational ICT Policy**

The presence of an ICT policy within an organization goes a long way in aiding the diffusion of ICTs. There is need for companies to put in place a policy that governs the direction and roles of ICTs within the organization (Tusubira & Mulira, 2004). This is one of the methods of ensuring efficient adoption, utilization and diffusion of ICTs (El Harbi, et al., 2014). With an ICT policy, an organization is able to make decisions concerning ICTs that are integrated with organizational objectives.

This then implies that companies that have an ICT policy in place are more likely to enjoy a higher level of ICT utilization and diffusion. Without an organizational ICT policy, there is little chance that significant ICT decision might be made.

### **2.6 ICT diffusion strategies**

ICT diffusion strategies refer to plans that can be put in place in order to maximize the adoption of ICTs right through a targeted population. According to Guba (1968), a diffusion


strategy refers to, “...some action plan which will result in the innovation involved coming to the attention of those practitioners who ought to know about it.” This goes on to say that innovators, in addition to bringing about new technologies, also have to come up with strategies that promote or make known their innovations to targeted groups (Lieven & Gino, 2002). A number of strategies can be put in place in order to enhance ICT adoption.


### 2.6.1 Introduction and Communication Strategy

A study by Lieven and Gino (2002), revealed that the reason for many disappointments in the adoption of new technologies and innovations was in what they called “bad introduction-and-communication-strategy”. They pointed out that it was imperative for innovating companies to single out the “most interested” companies that are most likely to derive much benefit from the new innovation, and cater their communication (or marketing) strategy specifically to convince them to adopt this new technology (Lieven & Gino, 2002).

Also, referring to Rogers (1995) classification of adopter categories (i.e. innovators, early adopters, early majority, late majority and laggards), Piper (2005) emphasizes the role of each adopter category in the communication process. As ICTs are implemented by earlier adopter groups, successive groups are encouraged to also adopt the technology as those having already adopted the technology play the role of “change agents”, encouraging non-adopters to cave and accept the technology (Piper, 2005).

**Figure 2.4 - Role of Communication in the Acceptance of Innovation**

		<b>Innovators</b>	<b>Early adopters</b>	<b>Early Majority</b>	<b>Late Majority</b>	<b>Laggards</b>
<b>Phase 1: Intro</b>	<b>Mass media</b>  <b>More specific, personal campaigns</b>	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding
<b>Phase 2: Diagnosis</b>		Convincing	Convincing	Convincing	Convincing	Convincing
<b>Phase 3: Decision</b>		Decision	Decision	Decision	Decision	Decision
<b>Phase 4: Implementation</b>		Behaviour	Behaviour	Behaviour	Behaviour	Behaviour

 = readiness > resistance

**Source:** (Lieven & Gino, 2002)

### **2.6.2 Training and Skills Development Strategies**

Lack of skills has a great effect on ICT adoption (Manuere, et al., 2012). The availability of trained employees within an organisation and more so within the country facilitates the acceptance of new ICT (Gono, et al., 2014). The availability of skilled personnel, both within and outside an organization have a huge bearing on its decision to adopt an innovation. Sharma and Yetton (2007) in Gono et al. (2014) suggest that training is one of the most significant interventions that lead to increased user acceptance and system success.

According to Barba-Sanchez et al. (2007),

*“The adoption of continuous training solutions can play an important role in increasing the awareness of the huge potentialities of ICTs for concrete situations; in this way employees, managers, and entrepreneurs can acquire a learning culture, integrating the training in their work activities and understanding in depth the potentialities of communication and information tools.”*

A study on ICT adoption in Nigerian firms led to the conclusion that managers and employees need to undergo continual training due to the fact that ICTs are constantly changing, with new updates and revisions constantly sprouting (White, et al., 2014). Strategies that emphasize training and skills development are thereby highly necessary in order to positively affect ICT adoption.

### **2.6.3 Continuous Support Strategies**

Such strategies involve guaranteeing consumers with intervention and support in the case that the technology that has been adopted fails (Ssewanyana & Busler, 2007). Such interventions make businesses more likely to adopt a new technology as fear of its failure is eased in the light of proper support from skilled personnel. Offering continuous support to firms adopting a new technology allows them to feel much freer in experimenting and utilizing the new technology (Guba, 1968). Support need not be indefinite, but can span up to a certain point where the consulting firm is sure that the adopter has mastered the new technology (White, et al., 2014).

#### **2.6.4 Cost Reduction Strategies**

In a study which meant to examine the extent of adoption and usage of ICT in Ugandan firms, it was found that 67% of respondents cited expensive hardware as a barrier to ICT adoption as 78% cited expensive software (Ssewanyana & Busler, 2007). The influence of high cost on ICT adoption has long been a debate amongst researchers. Panagariya (2000) in Manuere et al. (2012) cited high set-up costs as a major barrier for ICT implementation. Strategies that minimize set-up costs, or at the least offer credit terms to adopters may be effective in increasing adoption with regard to implementation costs (Manuere, et al., 2012).

#### **2.7 Chapter Summary**

This chapter has been centred on reviewing literature produced by past researchers on the subject of ICT diffusion. It revealed a number of models, frameworks and factors that have been brought forward by various studies in a bid to better understand the various forces that influence ICT adoption in organizations. The following chapter will focus on presenting the research methodology to be used.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

The following chapter is dedicated to defining the research design, sampling methods, the population under-study, various research instruments as well as the data collection methods to be used during the course of this research.

#### **3.1 Research Design**

According to Park and Mauch (2003:123), "...research design is a total plan for carrying out an investigation." It is meant to show the stage by stage course of actions via which objective, reliable and valid information will be obtained (Mauch & Park, 2003). The researcher used the descriptive research design.

##### **3.1.2 Descriptive Research Design**

Descriptive research is about describing how reality is (Jong & van der Voordt, 2002). Its main thrust is on describing prevailing circumstances rather than explaining them. It is best suited for research that intends to describe the characteristics of a particular situation under study. Its objective, according to Robson (2002:59) is, "...to portray an accurate profile of persons, events or situations."

##### **3.1.2.1 Justification of Descriptive Research Design**

In a similar study on ICT diffusion, Peansupap & Walker (2005) used this research design as their research focused on understanding how diffusion occurs. The descriptive research



design is well suited for quantitative research (Robson, 2002) and hence was a good choice of research design for this particular study. It was also ideal for this particular study as it enabled the researcher to identify trends of ICT diffusion, pick up clues about causes of these trends (Grimes & Schulz, 2002) and from them recommend strategies to increase ICT diffusion in accordance with the research objectives.

### **3.1.3 Mixed Methodology**

A mixed methodology involves the use of both quantitative and qualitative techniques in combination (Yin, 2003). Quantitative and qualitative techniques are highly compatible and offer the researcher the ability to choose the appropriate technique to more effectively answer particular research questions (Saunders, et al., 2009).

#### **3.1.3.1 Quantitative Techniques**

Quantitative research focuses mainly on the use of numerical measurement or mathematical models (Peansupap, 2004). This research took a quantitative approach and used quantitative data to identify factors leading to the adoption and usage of ICTs amongst hardware retailers.

#### **3.1.3.2 Qualitative Techniques**

Qualitative data is all data that is not numeric, and has not been quantified (Saunders, et al., 2009). The use of qualitative data allowed the researcher to gain valuable insights on the behavior, experiences and motivations of owner-managers with regard to the adoption, use and diffusion of ICTs within their organizations.

#### **3.1.3.3 Justification of using Mixed Methodology**

The use of both quantitative and qualitative methods enabled the researcher to answer research questions more accurately. Questions regarding industry-wide ICT diffusion required the use of quantitative methods, as a large number of respondents were involved and

there was need to generalize the findings to the entire industry. However, intra-organizational diffusion required more qualitative methods, using semi-structured interviews to gather information on the thoughts, behaviors and attitudes influencing the ICT decisions that firms in the hardware retail industry were making.

### 3.2 Population

Banerjee and Chaudhury (2010) state that a population is an entire group from which some information is required to be ascertained. The target population of this research comprised of the staff and ownership of hardware retailers operating in the Central Business District of Gweru. A list of all such operators could not be readily obtained from the local authorities, therefore as suggested by Saunders, et al., (2009) one was compiled building from a hardware suppliers list obtained from the University.

**Table 3.1-Projected Number of Participants**

	<b>Number of Respondents</b>
<b>Owners / Managers</b>	27
<b>Employees</b>	81
<b>Total</b>	<b>108</b>

### 3.3 Census

A census refers to a complete enumeration of all items in the population (Kothari, 2004). It has also been defined as the collection and analysis of data from every possible case or group member in a population (Saunders, et al., 2009). It involves including all elements of a population in the research.

### **3.3.1 Justification of using a census**

There is need to consider the size of the target population when choosing a sampling technique. According to Morris (2004), for small populations, it is advisable to use the entire population in order to achieve accuracy. In a similar study, and presented with a similarly small sample (consisting of 10 organizations), Dzingirai (2012) made use of a census and cited data accuracy as a justification for the same.

For the purposes of this study, the target population was relatively small and manageable. It consisted of a total projected 108 respondents who were to be considered in the study. If a sample were to be selected from this already small population, the extent to which the results from this study are generalizable to other contexts would be diminished (Saunders, et al., 2009). Also, In order to avoid inconsistencies caused by sampling error, which refers to the differences between the population and the sample brought about mainly by the chosen participants (Fridah, 2002), a census was deemed as best for this study.

### **3.4 Sources of Data**

In order to maximize on available data throughout the research, the researcher made use of both primary and secondary sources of data.

#### **3.4.1 Secondary Data**

Secondary data is data collected by any other individual for purposes outside that of the research in question (Boslaugh, 2012). This study involved the use of secondary data in the form of;

- A Supplier Database obtained from the university;
- Online Business Directories.

These helped the researcher identify and locate hardware retailers around the CBD of Gweru.

### **3.4.2 Justification of using Secondary Data**

The use of secondary data in this research enabled the researcher to make use of existing records and databases to more effectively locate hardware retailers in the CBD of Gweru as opposed to manually recollecting the data from scratch. As such, the researcher had less chances of omitting potential participants in the research.

### **3.4.3 Primary Data**

Primary data consists of data that are collected by the researcher directly from participants (Cornegay & Segal, 2013). The researcher collected primary data through questionnaires as well as follow-up semi-structured interviews.

### **3.4.4 Justification for using Primary Data**

This study was targeted at small enterprises which often have very few records kept unlike large enterprises which are required by law to produce company records (Todd & Lumpkin, 2014). In light of this, it was necessary for the researcher to collect primary data. Also, primary data enabled the researcher to collect original material directly relevant to the research questions.

## **3.5 Data Collection Instruments**

The researcher made use of interviews and questionnaires to get information from the local hardware retailers' customers, employees and owners.

### **3.5.1 Questionnaires**

Questionnaires can be defined as techniques of data collection in which every respondent is required to respond to a uniform set of questions in a prearranged order (Saunders, et al., 2009). These were used to collect data from chosen participants. Both open-ended and closed

questions were used. Open ended questions ensured that participants were able to express their personal views without predetermined responses as well as to ensure that the researcher gleans as much relevant qualitative data as possible.

Different questionnaires were drafted for employees and owners. Information required from owners included information concerning strategic decisions such as reasons for adopting ICTs and ICT diffusion strategies employed by the organization. Employees were asked questions that were more centered on the day to day utilization of ICTs as well as the operational challenges faced in its usage.

### **3.5.2 Pilot testing of Questionnaires**

This questionnaire was designed for this particular study. In order to test reliability, a pilot test was conducted involving the staff and ownership of one firm out of the entire population. Relevant adjustments were to be made to the questionnaire following this pilot test.

### **3.5.3 Justification of using Questionnaires**

Questionnaires are suitable for descriptive research (Saunders, et al., 2009) as they effectively enable researchers to describe existing phenomena. The use of questionnaires enabled the researcher to collect both quantitative and qualitative data through the combined use of open and close ended questions. This also gave respondents the opportunity to fill in the questionnaires at a relaxed pace, allowing them time to give thought to their responses without the pressure associated with directly facing the researcher.

### **3.5.4 Interviews**

Interviews have been defined as resolute dialogues between a minimum of two people (Saunders, et al., 2009). Interviews can be categorized into 3 categories, namely structured interviews, unstructured interviews and semi-structured interviews (Yin, 2003).

### **3.5.4 Semi-Structured Interviews**

The researcher made use of semi-structured interviews, which involved the researcher following a schedule of prepared questions but at the same time, deviating where necessary in order to maximize the depth of information obtained (Adams, et al., 2008). These interviews acted as follow-ups to the questionnaires which had been issued to managers and owners. Semi-structured interviews were highly adequate for this research mainly because of its case study nature (Yin, 2003), which allowed for more time to be spent focusing on individual participants. Focus was set on owner and managers who were more likely to give intelligent and informed responses.

These interviews were carried out mostly on company premises, save for 3 interviews which were carried out telephonically as owners were not locally available.

### **3.5.5 Data Collection Procedure**

Questionnaires were the priority and were issued first, this is mainly because it would take time for respondents to complete these questionnaires. A period of 3 working days was allowed for respondents to complete the questionnaires. It is advisable that respondents complete questionnaires at a relaxed pace in order to prevent them from giving random answers (Yin, 2003), which may compromise research findings. Questionnaires were issued at each of the participating firms, to all willing employees and management.

As soon as questionnaires were delivered, follow-up interview appointments were also made with owners and managers. The researcher briefed these chosen participants on the study prior to arriving for the actual interview.

### **3.6 Data Presentation**

Data collected from the field was carefully examined, revised and verified so as to facilitate for the presentation of this data. It was presented on tables, which serve as an express, distinct and simple way of presenting data (Adams, et al., 2008).

### **3.7 Data Analysis**

The analysis of data comprised of descriptive statistics, which catered for the analysis of quantitative data that had been collected and deductive techniques, which focused on analyzing qualitative data. Data was analyzed and was by inference, generalized to the population of hardware retailers.

#### **3.7.1 Descriptive Statistics**

Descriptive statistics enable one to describe and compare variables numerically (Saunders, et al., 2009). Such statistical methods which can be used to describe a variable involve various methods which fall under either measures of central tendency or dispersion. They are mainly concerned with the actual data that has been collected, and unlike with inferential statistics, are intended for situations in which a researcher has access to the entire population (Yin, 2003).

These were particularly useful for this study as the research is concerned with the entire population of hardware retailers in the CBD and not a sample. They enabled the researcher to effectively present and describe data in a more meaningful way.

#### **3.7.2 Deductive Techniques**

Deductive techniques enabled the researcher to interpret results beginning from broader general information, and narrow it down to a more specific, particular and individual context (Dzingirai, 2012). Where information cannot be statistically analyzed, deductive techniques

play a key role in deducing or inferring findings. Use of the deductive technique also enabled the researcher to connect his research into the current body of knowledge concerning ICT diffusion (Saunders, et al., 2009). Also, using this technique, the researcher did not have to begin from scratch, but was able to build from existing analytical frameworks (Saunders, et al., 2009) constructed by previous scholars.

### **3.8 Validity and Reliability**

Although no research can be 100% accurate (Yin, 2003), measures must be employed to reduce the amount of inaccuracy by taking measures which maximize validity and reliability (Saunders, et al., 2009).

#### **3.8.1 Validity**

The validity of data refers to whether or not particular research findings are truly representative of what they appear to be descriptive of (Adams, et al., 2008). In order to ensure a high level of validity, questionnaires were designed to ensure maximal anonymity, so as to warrant that responses were not modified so as to avoid stigmatization or future victimization. Participants were also guaranteed that the gathered data would be destroyed immediately after the research to ensure that it does not end up in the wrong hands.

#### **3.8.2 Reliability**

Reliability is concerned with whether or not the data collection and data analysis techniques employed will produce regular findings (Saunders, et al., 2009). Unlike validity which deals with ensuring representativeness of responses, reliability focuses on consistency. Robson (2002) suggests that different responses to questionnaires may be obtained when they are answered at different intervals or in different moods or settings, this is known as participant error. In order to minimize these possibilities, questionnaires were collected directly from participants and were not collected by any person other than the researcher. Respondents were guaranteed of this so as to ensure that their responses were most accurate and true. The idea was to ensure that questionnaires were completed in a most accurate and raw fashion.



### **3.9 Ethical considerations**

According to Mauch & Park (2003), there is need to protect human subjects as well as to report on the various procedures intended to be used to do so. The researcher took into account the possible harm that could be done not only to individuals but to organizations throughout the research and employed preventative measures.

A major factor bearing significant ethical weight was the aspect of confidentiality. Information had to be handled with great care and held in confidence (Beins & MaCarthy, 2012). Information given by one organization was not to be leaked or given to members of other organizations or to the general public. Questionnaire responses were to be handled likewise and anonymity was granted to all respondents. Following the completion of the study, all data collected from the relevant organizations was destroyed.

### **3.9 Chapter Summary**

This chapter described the methodology that was used by the researcher in carrying out the study. The research design, the sampling methods, sample size and procedures, the population, research instruments used and the data collection procedures were described and justified. After collection of this data, data analysis was commenced.

## CHAPTER IV

### DATA PRESENTATION AND ANALYSIS

#### 4.0 Introduction

This chapter is concerned with laying out the data which has been collected from the field. This data, which has been collected for the sole purpose of accomplishing the objectives of this research, will be the basis upon which conclusions of this study will be based. The data will be analysed and presented in logical order so as to show what factors influence the uptake and diffusion of ICTs by hardware retailers.

#### 4.1 Questionnaire and Interview Response Rate

Table 4.1 Questionnaire Response Rates

<b>Participants</b>	<b>Planned Amount</b>	<b>Questionnaires Actually Issued</b>	<b>Questionnaires Returned</b>	<b>Response Rate (%)</b>
Owner/Managers	27	25	19	76
Employees	81	69	46	66
$\Sigma$	<b>108</b>	<b>94</b>	<b>65</b>	<b>69</b>
		<b>Interviews Scheduled</b>	<b>Interviews Held</b>	<b>Response Rate (%)</b>
Owner/Managers		12	8	67%

A total of 94 questionnaires were distributed to chosen participants from a total of 16 organizations and 65 of them (69%) were returned. A 76% response rate was achieved from questionnaires issued to owners and managers which was very satisfactory considering the fact that (Baruch, 1999) cited a 35% response rate as being reasonable for studies involving top management. A relatively lower response rate of 66% was achieved from employees

which was equally acceptable. Of the 12 interview appointments made with managers, only 8 were achievable.

Reasons for the disparities in planned amount of questionnaires to issue and the actual number issued were errors in enumerating the target population as well as some participants being unreachable despite repeated attempts to get in touch with them. Interview response rate was affected by last minute changes from interviewees who travelled or became unreachable for reasons undisclosed.

Non-responding participants contributed to the decline of the overall response rate. Unplanned trips, lost questionnaires and “cold feet” were among the reasons cited for not returning questionnaires on agreed dates. An extra day was allowed for respondents who had plainly forgotten to fill in the questionnaire which led to the redemption of 7 more.

## **4.2 Demographic Findings**

Data was collected using both questionnaires and semi-structures interviews. These findings are presented in the tables that follow.

### **4.2.1 Gender of participants**

**Table 4.2 Gender of participants**

<b>Gender</b>	<b>Total Number</b>	<b>Percentage</b>
<b>Male</b>	42	64%
<b>Female</b>	23	36%
<b>Σ</b>	<b>65</b>	<b>100</b>

64% of respondents were male as compared to 36% who were female. It was noted that the greater portion of female respondents were at employee level and the gist of owner manager

respondents was from the male group of participants. This can be closely linked to the findings on the level of education of female participants against that of men.

#### 4.2.2 Level of Education

**Table 4.3 Education of participants**

<b>Level of Education</b>	<b>Males</b>	<b>Females</b>	<b>Total</b>
O'Level	11	8	<b>19</b>
A'Level	12	4	<b>16</b>
Diploma	8	2	<b>10</b>
Degree	5	3	<b>8</b>
Postgraduate	3	1	<b>4</b>
Not Applicable	3	5	<b>8</b>

The level of education attained by participants differs between men and women. The women appear to have lower qualifications as compared to their male counterparts. This is most likely due to social inequalities that have generally hindered the education of women in Zimbabwe as well as elsewhere in the developing world (Beena & Mathur, 2012). These same disparities have influenced the involvement and efficacy of women in the use of ICTs, there are significantly fewer women who are highly skilled in the use of ICTs in comparison to men (Joseph, 2013).

#### 4.2.3 Age Groups of Respondents

The bulk of employee respondents was within the 20-30 year old cohort. However, owner managers were mostly 50 years and above. This has potentially significant effects on the diffusion of ICT within organizations. Prensky (2001) describes the young generation as 'digital natives' and the older generation as 'digital immigrants'. The idea is that the older generation has less of an appreciation of technology and ICTs in comparison with the

younger generation. Dodge et al. (2008) go on to imply that in order to increase ICT uptake in any setting, there is need to allow the younger generation to take charge.

However, the data showed that owner managers mostly occupy the 45 years or older cohort, which suggests that hardware retailers are mostly run by an older generation which impliedly has less of an appreciation of ICTs.

**Table 4.4 Ages of participants**

<b>Age Group (years)</b>	<b>Frequency</b>
20-30	29
31-40	12
41-50	11
50+	13
$\Sigma$	<b>65</b>

#### **4.2.4 Company Size**

The implications of company size on ICT diffusion have been presented by various authorities. The prevailing argument is that larger firms are more likely to be able to bear the risks and costs associated with ICT adoption as compared to smaller firms (Victoria, et al., 2012). The majority (56%) of participating firms fell under the 0-10 employee cohort. Only one hardware retailer had more than 30 employees, a follow up interview revealed that this figure was including employees from other branches nationwide. This was also the case for most firms which registered a higher number of employees as well as the tendency to count family members who helped out at the store despite not being formally employed there.

**Table 4.5 Number of employees in participating firms**

<b>Number of employees</b>	<b>Number of Firms</b>	<b>Percentage</b>
0-10	9	56%
11- 20	4	25%
21-30	2	12%
30+	1	7%

With the majority of participating firms having fewer than 10 employees, it follows that the hardware retail industry is characterized by having mostly small and micro firms.

#### **4.2.5 Companies with ICT Policies**

A total of 6 companies (35%) responded positively to having an ICT policy in place. The remaining 10 companies (65%) responded negatively to having any ICT policy. Companies with ICT policies are more likely to make significant progress in the direction of ICT diffusion as compared to those without. An ICT policy enables companies to make guided, intelligent and strategic ICT decisions as it provides decision-makers with a framework for making ICT related decisions (Tusubira & Mulira, 2004).

**Table 4.6 Respondents with ICT Policies**

	<b>Frequency</b>	<b>Percentage</b>
<b>Companies with ICT Policies</b>	6	35%
<b>Companies without ICT Policies</b>	10	65%

Data gathered from management and ownership during follow up interviews revealed that certain managers feel that ICT policies are rather unnecessary for their small firms, hinting on the possibility of developing ICT policies later on in the growth of their firms. Some managers expressed how they felt that the development of such policies was unrealistic and not useful for small businesses and asserted that they had rather enjoy the freedom of

flexibility outside any binding documents. A few managers were unaware of what ICT policies were and only communicated their views after brief explanations.

Managers whose firms had ICT policies however pointed out that there is much need for small firms to have set standards on their position towards ICTs. Among the reasons for their opinions, interviewees stated how the policy guides ICT related decision making and prevents the possibility of making unsubstantiated impulsive ICT purchases which often prove to be costly.

#### **4.2.6 Company size and ICT policy**

As firm size decreased, the presence of ICT policies was also decreasing. This suggests that smaller firms have little concern over ICT related issues as larger firms appeared to be more receptive and strategically prepared for ICT related movements. ICT diffusion is least likely to occur amongst firms that have no established position towards ICT via the presence of a detailed policy (Tusubira & Mulira, 2004). Small firms are less likely to be interested in making significant ICT decisions as ICTs may be considered too costly.

**Table 4.7 Firms with ICT policies according to size group**

<b>Number of employees</b>	<b>Number of Firms with ICT Policies</b>
0-10	9
11- 20	2
12-30	1
30+	1

#### 4.2.7 Age of company

The majority of participating firms were relatively younger firms having been in operation for under 5 years. The oldest firms were classified in the 6-10 year category. The younger firms appear mainly to be “post-dollarization” start-ups which were formed as a response to the upward trend in the economy brought about by the introduction in the multi-currency system.

**Table 4.8 Participating company age ranges**

<b>Age Group (Years)</b>	<b>Frequency</b>
Below 5	13
6-10	3
11-15	-
15+	-

#### 4.2.8 Company Age and ICT Policy

Firms that have been in operation for a longer period of time have a higher level of experience and a richer technical background (Ssewanyana & Busler, 2007). The longer a particular firm has been in existence, the more experience it has with regard to ICTs. Younger firms however are still sceptical about ICTs and may not be readily open to making any major ICT driven decisions.

This trend was observed in the data that was collected from participants; a significant increase in the number of companies that had ICT policies was noticed as the age of companies rose. The age of a company can therefore be seen to have a significant effect on ICT diffusion.



**Table 4.9 Firms with ICT policies according to age group**

<b>Company Age</b>	<b>Companies With ICT Policy</b>	<b>Companies Without ICT Policy</b>
0-3years	2	6
4-6years	2	2
7-10years	3	1
$\Sigma$	<b>7</b>	<b>9</b>

### **4.3 Internet Presence**

To determine whether companies have an established online presence, respondents were asked if their companies had working, up-to-date websites as well as representation on various social media networks. Findings showed that respondents had a relatively high online presence with regard to social networks; their stated uses for these networks were centred on communicating with customers.

There was however a significantly lower number of participating companies that had working websites. This could be attributed to the fact that social media network accounts are free whereas websites are costly to set-up and maintain. This trend suggests that small hardware retailers are not particularly willing to invest finances in creating an online presence

**Table 4.10 Companies represented on Social Networks**

<b>Social Network</b>	<b>Companies Represented</b>	<b>Companies Unrepresented</b>
Facebook	10	6
Twitter	5	11
LinkedIn	4	12
Pinterest	2	14
Others	3	-

Amongst the responses listed by hardware retailers on their uses for social media, none of them mentioned paid advertising services, such as those offered by Facebook. Their uses of social media were limited to the free services provided by social networks.

**Table 4.11 Uses of Social Media**

<b>Uses of Social Media</b>	<b>Frequency</b>
Communication	14
Audience Building	12
Entertainment	4
Watching Competition	9
Paid Advertising	2
Sharing Ideas	4

Interview findings on internet presence revealed that most managers had an appreciation for the internet and the benefits it has for business. The ease of communication brought about by the internet was particularly hailed by most interviewees who felt that they could not make do without the internet. However, the tables turned quickly when the subject of websites was introduced. Few managers appreciated the potential of e-commerce as well as the marketing potential of having a website, some out-rightly stating that they were not willing to pay “hard earned cash” for a website.

Interviewees viewed social media as a platform for marketing and communicating with customers. Most managers were totally unaware of paid advertising packages offered by websites such as Facebook. Those that were aware either stated that they had plans underway to make use of them, or that they doubted the effectiveness of such social media advertising campaigns in creating actual sales.

#### 4.4 ICT based training

From a total of 16 companies, 6 (40%) responded positively to having held ICT training at a certain point; 10 (60%) indicated that they have not held any ICT training at all. Continuous training has a significant bearing on the diffusion of ICTs as it builds user confidence and allows trainees to develop further interest in ICTs (Gono, et al., 2014).

From the 6 companies, the following differences in the frequency of training sessions were indicated.

**Table 4.12 Frequency of ICT training**

Frequency of training	Number of respondents
<b>Monthly</b>	2
<b>Quarterly</b>	1
<b>Twice a year</b>	1
<b>Yearly</b>	2

#### 4.5 ICTs and Relative advantage

Of the 46 employee respondents, 29 (63%) indicated that ICTs had actually made their work easier. The remaining 17 (37%) indicated that the use of ICTs did not make their work easier.

**Table 4.13 ICTs as ease of work**

Have ICTs made your job easier?	Frequency	Percentage
<b>Yes</b>	29	63%
<b>No</b>	17	37%

Relative advantage is a key determinant of ICT diffusion; users of ICTs need to continuously notice and experience the benefits of employing ICTs over traditional manual techniques (Bonaccorsi, et al., 2005).

#### 4.6 ICT Utilization

With regard to ICT utilization, it was found that 24 respondents (52%) felt as though ICTs were being put to effective use in their organizations. The remaining 22 (48%) indicated that they believe ICTs could be put to better use within their respective organizations.

**Table 4.14 ICT Utilization**

Are ICTs being adequately used in your workplace?	Frequency	Percentage
<b>Yes</b>	24	52%
<b>No</b>	22	48%

#### 4.7 Attitude towards ICTs

When asked whether they would welcome more technology within their organizations, 26 respondents (57%) indicated that they would welcome more technology. The remaining 20 respondents (43%) were against the introduction of more technology.

**Table 4.15 Attitude towards ICTs**

Would you welcome more ICTs in your workplace?	Frequency	Percentage
<b>Yes</b>	26	57%
<b>No</b>	20	43%

#### 4.8 Descriptive Statistics

The descriptive measures employed below are mainly the mean and standard deviation. The mean is a measure of central tendency which is used to measure the arithmetic average

(Saunders, et al., 2009) of a list of scores. However, where scores tend to deviate from the mean, the Standard deviation is used as an index to describe the distance with which they deviate around the mean. Having taken into account the standard deviation, the minimum (min) and maximum (max) columns represent the extremes to which scores may vary from the mean.

**Table 4.16 Factors Affecting ICT diffusion**

<b>Variable</b>	<b>Responses</b>	<b>Mean</b>	<b>S.D</b>	<b>Min</b>	<b>Max</b>
Perceived Benefits	<b>19</b>	<b>2.94</b>	<b>1.4327</b>	<b>2</b>	<b>4</b>
Compatibility	<b>19</b>	<b>3.42</b>	<b>0.90159</b>	<b>3</b>	<b>4</b>
Ease of Use	<b>19</b>	<b>3.21</b>	<b>0.78733</b>	<b>2</b>	<b>4</b>
Affordability	<b>19</b>	<b>3.78</b>	<b>0.71328</b>	<b>3</b>	<b>4</b>
Availability of technical support	<b>19</b>	<b>2.94</b>	<b>1.17727</b>	<b>2</b>	<b>4</b>
Organizational Culture	<b>19</b>	<b>2.89</b>	<b>1.28646</b>	<b>2</b>	<b>4</b>
Company Growth	<b>19</b>	<b>2.94</b>	<b>1.17727</b>	<b>2</b>	<b>4</b>

From the factors presented in the questionnaire, the highest scoring factors included Affordability and Compatibility which both scored a maximum of 4 (influencing ICT diffusion to a greater extent) and minimum of 3 (Neutral). The least significant factors according to the findings were Perceived benefits Company Growth and Availability of technical support, which all scored a mean of 2.94 and a minimum and maximum of 2 and 4 respectively.

Respondents also added the factors “durability”, “self-service” and “Permanence and upgradeability”. Follow up interview data defined durability as the strength and toughness of ICTs and how long they can last without breaking down given continuous use. Self-service referred to the degree to which ICTs can be repaired or maintained in-house without involving any third parties. Permanence was defined as how long a technology will last before it becomes obsolete and replaced by a new technology.

**Table 4.17 Factors influencing ICT adoption**

<b>Variable</b>	<b>Responses</b>	<b>Mean</b>	<b>S.D</b>	<b>Min</b>	<b>Max</b>
Trend-setting	19	2.84	0.89834	2	4
Government regulation	19	3.15	1.06787	2	4
Increase efficiency	19	2.89	0.87526	2	4
Competitive advantage	19	3.31	1.00292	2	4
Marketing efforts of suppliers	19	2.84	0.95819	2	4

With regard to factors affecting decisions to adopt ICTs, the need to gain a competitive advantage was cited as the most significant factor and scored a mean of 3.31. The least significant factors were trend-setting and marketing efforts of ICT suppliers. All variables scored a deviation minimum value of 2 and a maximum of 4.

Respondents added Company growth and Change management to these factors, stating later in an interview that certain technologies are only practical in larger firms such as accounting or stock management software. Change management was said to be key in influencing adoption as some managers first considered the effects that ICT adoption would have on the employees prior to actually implementing it.

**Table 4.18 Uses of ICTs by hardware retailers (Management Response)**

<b>Variable</b>	<b>Responses</b>	<b>Mean</b>	<b>S.D</b>	<b>Min</b>	<b>Max</b>
Stock Control	19	2.89	1.04853	2	4
Accounting	19	3.36	1.06513	2	4
Marketing	19	2.89	0.87526	2	4
Entertainment	19	2.89	1.10024	2	4
Data Capturing and Storage	19	3.05	0.91127	2	4
Communication	19	3.79	0.85498	3	5

Based on management's responses on the uses of ICTs by their firms, Communication was the dominant use scoring a mean of 3.79, a minimum of 3 and a maximum of 5. The least significant uses were Stock control, Marketing and Entertainment which all scored a mean of 2.89, a minimum of 2 and a maximum of 4.

Time-keeping and forecasting were added by respondents. With regard to forecasting, interview data revealed that packages like Microsoft Excel could be used for projecting future sales based on prevailing trends.

**Table 4.19 Uses of ICTs by hardware retailers (Employee Response)**

<b>Variable</b>	<b>Responses</b>	<b>Mean</b>	<b>S.D</b>	<b>Min</b>	<b>Max</b>
Stock Control	46	2.95	1.05318	2	4
Accounting	46	3.43	0.95705	2	4
Marketing	46	3.12	0.95002	2	4
Entertainment	46	2.96	1.07407	2	4
Data Capturing and Storage	46	3.00	0.86923	2	4
Communication	46	3.39	0.93043	2	4

Employee responses on the uses of ICTs within their organizations implicated accounting as the most significant use scoring a 3.43 mean, a minimum of 2 and a maximum of 4. Based on management opinions, accounting scored a mean of 3.36. The least chosen use of ICTs was Stock control, which scored a mean of only 2.95.

**Table 4.20 Factors affecting ICT utilization**

<b>Variable</b>	<b>Responses</b>	<b>Mean</b>	<b>S.D</b>	<b>Min</b>	<b>Max</b>
Ease of Use	46	3.46	0.93587	3	4
Observability	46	3.48	1.0053	2	4
Relative Advantage	46	2.96	1.07407	2	4
Usefulness	46	3.28	0.88602	2	4

In response to which factors affect their utilization of ICTs, employees selected Observability, which is the visibility of results produced by using ICTs to third parties (Chuttur, 2009) as the highest rated factor scoring a mean of 3.48. Unexpectedly, the least cited factor was relative advantage (significance over previous manual methods) scoring a mean of only 2.96.

“Health issues”, better put as health and safety was stated as an additional factor. Employees may be unwilling to use certain technologies for fear of health related effects.

#### **4.9 ICT Diffusion Strategies**

During the interviews, owner-managers were asked to provide details as to the current diffusion strategies they are employing within their firms; a number of interesting strategies were identified. Incentive methods were implied by a certain manager who claimed to be offering his staff rewards based on how well they used the technology. The manager offered employees who were forthcoming towards ICTs more responsibility. The interviewee emphasized that this responsibility didn't mean promotion and that the idea was to create the illusion amongst employees that their increased use of ICTs would increase their odds of promotion.

Lack of tolerance towards old methods was also a strategy that was mentioned. The particular interviewee stated that the organization was "absolutely intolerant" to employees who would deviate from using new ICTs to using old methods. This was said to have dealt with scenarios in which ICTs were underused due to employees falling back onto traditional methods.

A particularly unique strategy was one in which the manager deliberately associated lack of ICT usage with lack of education and backwardness. The manager consciously created a culture which looks down upon traditional manual methods and upholds technology use. This way, employees would be unwilling to be badly labelled due to their technology averseness and hence would tend to be receptive towards the use of ICTs.

Some interviewees however stated that they had no ICT diffusion strategies in place, citing reasons such as having "better things to focus on" within the organization. They asserted that there was no need to have any plans in order to influence ICT diffusion, but that it would simply be dependent on whether or not the company is ready for diffusion or not.

#### **4.10 Challenges in ICT utilization**

Respondents listed a number of challenges that they experienced in the use of ICTs on a daily basis. Power outages were almost characteristic of all respondents. Respondents stated how



the inconsistent power supply was hampering their utilization of ICTs. In the face of power outages, employees have to resort to manual methods so as to keep operating. Sales have to be receipted manually and stock has to be accounted for in like manner.

Some ICTs were criticized for being too complicated. Employees stated that the speed at which they could accomplish a task using technology was seriously compromised when the equipment was complicated, thus defeating the purpose of ICTs. Employees stated how they would be easily deterred to using their traditional methods when a technology proved to be too hard to use.

Relating to point of sale software, a certain response brought to light the aspect of customizability. The concern was that certain ICTs are not designed to fit into organizations, but force organizations to fit into them. Further investigation revealed that the Point of Sale system being used by the particular respondents firms did not allow for the employee to customize the details printed on the receipts hence it had to be done manually in ink.

In contrast to the responses from management on the frequency of training held within their organizations, employees constantly brought up the issue of lack of training, and inconsistency in training. Certain respondents brought to light that training sessions were often scheduled, but however rarely followed through. This lack of training significantly affects the speed at which employees are able to grasp and accustom themselves to ICTs in the organization.

#### **4.11 Chapter Summary**

Data collected from the field was presented and analysed in this past section. Responses from follow-up interviews were also incorporated therein and expounded upon. The data collected gives first hand insights into the factors that are affecting ICT diffusion amongst hardware retailers. The data was sufficient enough to address the research questions and was hand in line with the objectives. The following chapter will build on these results and culminate to a conclusion of this study.

## **CHAPTER V**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Introduction**

The data gathered from the field was highly insightful and has brought to light significant knowledge that had previously been overlooked. Past research on ICT diffusion which this study has much relied on, has been both confirmed and challenged by the data gathered in this research. This chapter will address these confirmations and disparities as well as make for an intelligent conclusion of this study.

#### **5.1 Summary of Findings**

The data collected and analysed enables the researcher to make the following summaries.

##### **5.1.1 The drivers of ICT adoption**

Hardware retailers in the Central Business District of Gweru have cited the need to create a competitive advantage as the most prominent driver of ICT adoption. The industry within which they operate has no significant barriers to entry, meaning that competition is high and growing. Government regulation was almost equally weighted, with some citing fiscalization as the one trigger that led to subsequent adoption of ICTs within their organizations. Government regulation was not viewed as a burden, but as a catalyst to the level of ICT diffusion that the hardware sector can enjoy.

Of less importance to hardware retailers was the need to be trend-setters. Most respondents indicated that trend-setting was the least of their concerns in adopting ICTs. The main thrust

of adopting ICTs was mainly set around surviving against competition, as well as compliance with the government so as to avoid the consequences of the same.

### **5.1.2 Factors affecting ICT diffusion**

Based on the findings of this research, the diffusion of ICTs is mainly hinged on the affordability of ICTs. Much emphasis was made by certain respondents on their unwillingness to deal with hefty costs in implementing ICTs. Where ICTs are made affordable, these firms are highly likely to further adopt ICTs. Organizational culture however was of dramatic unimportance to respondents with regard to the diffusion of ICTs. The main belief underlying this trend was that the organization would eventually have to bend in order to accommodate ICTs and that the culture would have to be reshaped to adapt to the changes.

Compatibility was also of significant effect. Where new technologies are not compatible with existing ones, the switching costs may be too high for consideration. Respondents stated the importance of permanence of ICT as a major factor affecting the diffusion of ICTs; there is much concern over just how long a technology will remain relevant especially given the rate at which technology advances.

### **5.1.3 Current ICT diffusion strategies in place**

Certain hardware retailers have managed to creatively employ a number of strategies that are targeted at increasing the diffusion of ICTs. These include a type of reward system, which is based on creating the idea that employees who use ICTs in an exemplary manner are likely to be promoted. In this case, the use of ICTs does not actually warrant any actual promotion, but gains the exemplary employee respect and increased responsibility from management.

Another strategy was one of strict intolerance to employees who are not receptive to new technology. This particular strategy entails applying a “no nonsense” approach to employees who fall back into employing traditional methods of doing their jobs. This harsh attitude is meant to discourage employees from developing counter-productive attitudes against ICTs.

In addition, a culture-based strategy was also identified in which managers deliberately influence the creation of a culture that upholds ICT receptiveness and ridicules old manual methods. Labels and nicknames are attached to non-receptive personnel. In order to avoid the stigma, employees will tend to increase their receptiveness towards ICTs.

#### **5.1.4 Challenges in ICT utilization**

From the data collected, a number of challenges facing employees in their utilization of ICTs were exposed. Inconsistencies in electrical power supply were a major factor. ICT users assert that in the absence of power supply, there is need for them to fall back onto the manual methods that were used prior to the adoption of ICTs. This is a practice that slows down the speed of business significantly. There was also much dissatisfaction with the frequency of training on ICT usage. Employees stated how they have often had to learn how to use ICTs by trial and error with no formal training. Some managers reportedly go on to blame employees for being “slow and inefficient”; this has affected the effectiveness with which they use ICTs.

The complicated nature of certain ICTs is a problem within itself for users. Certain employees reported that some ICTs are unnecessarily complicated to use, leading to serious losses of time in trying to perform even the most basic tasks. Complaints were also raised with regard to customizability, where ICTs don’t allow users to customize certain aspects of the package to suit the particular organization.

## **5.2 Conclusions**

The findings of this study have brought the researcher to a number of conclusions.

### **5.2.1 Adoption of ICTs**

The technology acceptance model suggests two variables, “perceived ease of use” and “perceived usefulness” as the key determinants of ICT adoption (Sternad, et al., 2011). However the findings of this study only found a substantial effect on ICT adoption by

perceived ease of use. There was little concern over perceived usefulness reported by respondents. These findings are in unison with the findings of Jackson, et al., (1997) who found that there is no significant relationship between perceived usefulness and the standpoint of adopters. In a different study by Lucas and Spitler (1999), no empirical evidence was found to support any effect on adoption intentions by perceived usefulness.

Government regulations are also key drivers of ICT adoption amongst hardware retailers. There is a high level of response to government regulation due to the need to remain compliant. This study revealed government regulations as an aid to the adoption of ICTs. Where the government makes strict ICT compliance demands, organizations are pushed to adopt. However these initial “forced” adoptions, according to respondents, are the key to kindling a series of future adoptions.

The Technology, Organization and Environment (TOE) model provided a series of factors affecting ICT adoption which the findings of this study support (Oliveira & Martins, 2011). It comes closest to describing the ICT adoption factors affecting hardware retailers. TOE suggests that factors in the external environment such as government regulation and market factors like competition have a bearing on ICT adoption (Baker, 2012). These assertions were confirmed in this study as there were numerous responses from participants which rated both competition and government regulation as significant determinants of ICT adoption. TOE also states that the organizational aspect of firm size has a significant effect on ICT adoption (Pojasek, 2013). Respondents stated that it was pointless to adopt certain ICTs when their firms are at such an early stage of growth having only a few employees.

The TOE model also implicates factors surrounding the technological environment within which a firm operates as significant to its ICT adoption behaviours (Oliveira & Martins, 2011). In accordance with this, participants of the study indicated how concerns over the permanence of technologies determines their adoption behaviours. Concerns were centred on how long technologies would last before being replaced by a new technology altogether.

In a nut-shell, the main drivers of ICT adoption amongst hardware retailers are evidently Competition, Government regulation, Technology ease of use and Permanence of these ICTs.

These factors are the most prominent drivers of ICT adoption to hardware retailers in the city of Gweru.

### **5.2.2 Diffusion of ICTs**

Diffusion of ICTs was attributed to a number of factors based on the findings of this research. The most significant factor affecting the diffusion of ICTs was found to be the affordability of ICTs. Business owners and managers seemed to be highly concerned with the costs associated with ICTs. The affordability element goes beyond the cost of initially acquiring ICTs but also includes the running costs of these various ICTs. Where maintenance and service cost are high, the diffusion of ICTs will be significantly lower. This is in accordance with studies held by researchers such as Ssewanyana & Busler (2007), who found that running costs of ICTs are a significant barrier to ICT diffusion as well as Manuere et al. (2012) who found that setup costs impede on ICT diffusion as well.

Compatibility was also a significant factor affecting ICT diffusion. It is concerned with whether new technologies are compatible with either existing technologies, or the current systems employed by the organization. Hardware retailers appear to appreciate technologies that build on one another, complementing other existing technologies in order to arrive a point of integrated functionality. Technologies that totally violate existing systems are not particularly friendly to ICT diffusion.

Ease of use also registered as an important factor affecting ICT diffusion. The user friendliness of technologies was seen to be highly influential with regard to diffusion of ICTs. Where existing ICTs have proven to be complex and difficult to understand and master, the tendency for ICTs to be welcomed throughout the organization is consequently compromised (Venkatesh, 2000). Hardware retailers appreciate technology that is both user-friendly and easy to master.

To sum up these findings, it can be said that ICT diffusion amongst hardware retailers in the CBD of Gweru is mostly influenced by Affordability of ICTs, Compatibility with existing

systems and the Ease of use of these technologies. Where these factors are carefully taken into account, a meaningful change can be made on ICT diffusion amongst hardware retailers.

### **5.2.3 Current ICT diffusion strategies**

In order to encourage the diffusion of ICTs within their organization, owner-managers have come up with various strategies. Such strategies involved the use of incentive systems. The incentives involved creating an elusive belief that employees who were “pro-ICT” are more likely to be promoted than resistive employees. Managers awarded employees who were receptive and supportive of ICTs with responsibility and respect as compared to those who were against ICTs. This eventually leads to a workforce that is highly receptive to ICTs.

Owner-managers also used an approach that involved employing a zero-tolerance approach towards employees who hailed traditional methods over new technology. Managers were strict on employees, making it mandatory for the entire workforce to be adept on the use of ICTs within the organization. This method was reportedly effective and created an ICT friendly culture within the organization.

An interesting strategy discovered in this study involved attaching much stigma to the use of traditional manual methods. Employees who used traditional methods and shunned ICTs were constantly stigmatized in the most humorous ways. This was done with the deliberate intention of discouraging employees from using these manual methods. Over time, the workforce generally preferred to use technology over traditional methods resulting in the creation of an environment ripe for ICT diffusion.

However, it is important to note at this stage that a minority of owner-managers found no importance in having any ICT diffusion strategies. Their views were mainly in line with ICT diffusion as a force that need not be kindled, but rather be allowed to take root as the organization became ready for the changes brought about by ICTs.

## **5.2.4 Recommendations**

The findings of this study have brought the researcher to a number of interesting conclusions. In this light, a number of recommendations have been developed for SMEs operating in the hardware retail sector, for Government and for ICT vendors and service providers on the ways in which ICT diffusion can be stimulated and catalysed amongst hardware retailers and potentially amongst the SME sector at large.

### **5.2.4.1 Intra-firm ICT diffusion**

These strategies are targeted at increasing the internal rate of ICT diffusion by hardware retailers.

Change management initiatives can be introduced within organizations to help manage the dynamic change brought about by the introduction of ICTs. Prior to the introduction of new technology, managers ought to think through the changes that are implied by the induction of technology. Organization-wide implications of ICT uptake must be considered in order to help managers create an integrated strategy as to how to introduce these new technologies to the organization. After developing an all-inclusive picture of the changes that the new technology will bring, managers can then make plans to deal with the various potential barriers that can be expected. This is bound to reduce the level of resistance from employees, as well as other unforeseen hurdles.

Training and development must be carried out consistently for users of ICTs, especially where significantly complicated technology is involved. Users of ICTs must be allowed to get accustomed to the new technology with minimal pressure from management so as to ensure that a negative attitude is not developed against new technologies. Users must have the chance to practise and experiment with technology so as to increase their efficacy in the usage of these ICTs.



Managers also ought to develop health and safety policies that are in the best interest of employees. Factors such as excessive computer usage or exposure to radiation and other harmful elements need to be taken into account so as to come up with a satisfactory health and safety blueprint. Where users are uncomfortable with the implications that ICT usage has on their health, care must be taken to address these concerns and come to a common understanding.

#### **5.2.4.2 Industry-wide ICT diffusion**

These strategies are focused on stimulating ICT diffusion at an industry level.

Government plays a key role in encouraging ICT diffusion in the hardware retail industry. Regulations and policies are key to determining the actions of firms operating in various industries with regard to ICTs. There is need for government to introduce policies that increase the affordability of ICTs to small firms in industry. Inhibitive policy which has a detrimental effect on ICTs, such as the recent levy of customs duty at a rate of 25% on mobile handsets in the Mid-term Fiscal Policy Review (2014), need to be minimized.

There is need to ensure that industries have uninterrupted access to power. The inconsistency in electricity supply has led to some firms shunning ICTs, which mostly depend on electricity, and reverting to manual methods of operation. Given consistency in power supply, there is a greater chance that confidence can be developed in ICTs as their true results can be more clearly observed with continuous uninterrupted use.

ICT vendors also play a key role in increasing industry-wide ICT amongst hardware retailers. There is need to develop systems and technologies that are built with the aspects of compatibility, upgradeability and durability in mind. Hardware retailers are concerned with the amount of time they can use a technology before it either breaks down or becomes obsolete. ICT vendors need to develop products that assure users durability and robustness. However, in the event of breakdowns, they must endeavour to offer continuous and affordable technical support. The affordability of ICTs is also a factor that can be addressed by ICT vendors and service providers. There is need to bear in mind that SMEs operating in

the hardware retail industry are highly concerned about costs and in line with that develop packages that are in line with cost-reduction.

Fully customizable packages need to be developed especially with regard to software. There is need to ensure that end-users can easily customize software configurations to suit their particular business without much effort. Lack of customizability was found to be a barricade to ICT diffusion as some owner-managers reported that they had to modify their firms to suit the new technology rather than have the technology complement the firm.

Responses from owner-managers also indicated that their decisions to adopt ICTs had very little to do with the marketing efforts of ICT vendors. Increasing awareness amongst hardware retailers via the use of advertising may very well increase the rate of ICT uptake. ICT vendors need to invest more in marketing their products and services to hardware retailers so as to increase ICT diffusion at industry level.

#### **5.4 Suggestions for further research**

This research was geographically limited to the city of Gweru and to the hardware retail industry. A look at the trends affecting ICT diffusion amongst SMEs at a national level would be eye-opening. Further research may also be undertaken on the differences between ICT adoption behaviours amongst SMEs against those of large organizations.

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## Appendices

### Appendix A Questionnaire

My name is R112824T, a student of Midlands State University. As a part of my pursuit of a Bachelor of Commerce Business Management Honours Degree, I am carrying out a research project. This research is on “*The Factors Affecting Information Communication Technology (ICT) Uptake in the Hardware Retail Industry of Gweru*”. Please take some time to complete it. Any information you give via this questionnaire will be held with utmost confidentiality.

**Please tick the boxes you feel best describe your opinion/situation, and fill in the gaps where provided. Thank you for your support.**

#### Section A - Demographic Information

**1. Please indicate your gender? :**

Male   
Female

**2. What is your highest academic qualification? :**

O'Level   
A'Level   
Diploma   
Degree   
Postgraduate

**3. Please indicate your age group? :**

20-30years   
31-40years   
41-50years   
Above 50years

4. How many employees does your company have? : \_\_\_\_\_

5. How long have you been in business?

- Under 5 years
- 6-10 years
- 11-15 years
- 15 years and above

6. Does your company have an ICT policy?

- Yes
- No

7. Does your company have a website?

- Yes
- No

If Yes, is it up to date and functioning? : \_\_\_\_\_

How often is the website updated? : Weekly  Monthly  Quarterly   
Yearly  Other: \_\_\_\_\_

8. What social media platforms is your company represented on?

- LinkedIn
- Twitter
- Facebook
- Pinterest

Other: \_\_\_\_\_

**Note: The key for the following question is as follows:**

- 1- Never Use It For This    2- Rarely Use it For This    3- Used It Here and There  
 4- Use it Often    5- Use It Very Often

On a scale of 1-5, what best describes your uses for Social Media as an organization?		1	2	3	4	5
a.	To keep an eye on competition					
b.	To build an audience of followers for your business					
c.	To make use of paid advertising features					
d.	For entertainment purposes					
e.	To share ideas with others					
f.	For communication purposes					

Any other uses? : \_\_\_\_\_  
 \_\_\_\_\_

**9. Have you held any special training on ICT usage?**

- Yes   
 No

**10. How frequently is ICT training held within you organization?**

- Monthly   
 Quarterly   
 Twice a Year   
 Yearly

Other: \_\_\_\_\_

**11. Does your company have an ICT budget?**

Yes

No

**12. What kinds of ICTs do you have in your organization? :** \_\_\_\_\_

\_\_\_\_\_

**b. When did you adopt these ICTs? :** \_\_\_\_\_

**c. Where did you source these ICTs from? :** \_\_\_\_\_

\_\_\_\_\_

**Note: The key for the following question is as follows:**

1- Never Use It For This

2- Rarely Use it For This

3- Use It Now and Then

5- Use it Often

5- Use It Very Often

13.	On a scale of 1-5, what do you use ICTs for in your organization?	1	2	3	4	5
a.	Stock Control					
b.	Accounting					
c.	Marketing					
d.	Entertainment					
e.	Data capturing and storage					
f.	Communication					

**Any other uses? :** \_\_\_\_\_

\_\_\_\_\_

**14. What challenges does your organization face in the day to day use of ICTs? :** \_\_\_\_\_

\_\_\_\_\_

**Section B- Please tick where appropriate**

**Note: The key for question 15 is as follows:**

- 2- Less significant                      2- Insignificant                      3- Neutral                      4- Significant  
 6- More significant

<b>15.</b>	<b>How significant were the following factors in influencing your decisions to adopt ICTs?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>a.</b>	To be trend-setters in your industry					
<b>b.</b>	Government demands					
<b>c.</b>	To increase efficiency within your company					
<b>d.</b>	Pressure from your competitors					
<b>e.</b>	Marketing efforts of ICT suppliers					

**Any other? Specify:** \_\_\_\_\_  
 \_\_\_\_\_

**Note: The key for question 16 is as follows:**

- 1- Very Low Extent                      2- Less Extent                      3- Neutral                      4- Great Extent  
 5- Very Great Extent

<b>16.</b>	<b>On a scale of 1-5, to what extent are the following factors affecting ICT diffusion within you company?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>a.</b>	The benefits brought about by ICTs over traditional methods.					
<b>b.</b>	The compatibility of ICTs with our values, beliefs and existing systems.					
<b>c.</b>	The user friendliness of ICTs.					
<b>d.</b>	The affordability of ICTs.					
<b>e.</b>	The availability of local technical support in the event of system failures.					
<b>f.</b>	Our organizational culture and its receptiveness towards ICTs.					
<b>g.</b>	The growth of our organization.					

Any other factors? Please Specify: \_\_\_\_\_

17. Do you have any further comments to make on the factors that affect ICT diffusion amongst hardware dealers? : \_\_\_\_\_

Thank You for Your Support

## Questionnaire 2

Please tick the boxes you feel best describe your opinion/situation, and fill in the gaps where provided. Thank you for your support.

### Section A- Basic Information

1. Please indicate your gender? :

Male

Female

2. What is your highest academic qualification? :

O'Level

A'Level

Diploma

Degree

Postgraduate

3. Please indicate your age group? :

20-30years

31-40years

41-50years

Above 50years

4. How long have you worked for this company? : \_\_\_\_\_

Note: The key for the following question is as follows:

- 1- Never Use It For This      2- Rarely Use it For This      3- Used It Here and There
- 7- Use it Often                      5- Use It Very Often

5.	On a scale of 1-5, what do you use ICTs for in your organization?	1	2	3	4	5
a.	Stock Control					
b.	Accounting					
c.	Marketing					
d.	Entertainment					
e.	Data capturing and storage					
f.	Communication					

Any other uses? Please Specify : \_\_\_\_\_

\_\_\_\_\_

6. Has the use of these ICTs made your job any easier?

Yes

No

Please explain why? : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Do you think ICTs are being used adequately in your company?

Yes



No

If **NO**, please explain why?: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**8. How would you rate the importance of technology within your working environment?**

- Very Low
- Low
- Average
- High
- Very High

Please explain why: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**b. What kind of technologies do you think your company needs to get? :** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**9. What Challenges do you face in your daily utilization of ICTs? :** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Section B- Please tick the most appropriate response**

10.	How would you rate the importance of each of these factors in determining how much you use ICTs?	Very Low	Low	Average	High	Very High
a.	They must not be hard to use.					
b.	The results I produce by using ICTs must be clearly visible to others.					
c.	They must be significantly more effective than previous methods.					
d.	They must make my job easier.					

**Any other factors? Please specify:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**11. Do you have any further comments on ICT usage in your organization? :** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Thank You for Your Support**

## **Appendix B**

### **Interview guide**

This interview guide will be used during the face to face interviews that will be held with chosen participants. It will complement the questionnaires issued by acting as a follow-up and allow the researcher to ask further questions and seek clarification. This is a semi-structured interview, the direction of the interview will not strictly be determined by this guide and may be allowed to drift into areas of interest to this study.

1. Have you adopted any Information Communication Technologies within your organization?
2. What drove you to adopt these ICTs?
3. What were the greatest challenges that you faced in adopting and implementing these ICTs?
4. Have you seen significant benefits following your adoption of ICTs?
5. What are the day to day challenges you face in utilizing ICTs?
6. Would you consider furthering your technology as an organization?
7. What strategies do you have in place to stimulate ICT diffusion in your company?
8. In your opinion, what do you think are the greatest barriers to ICT diffusion in your industry?

## Appendix C

### Hardware Retailers in Gweru

#	COMPANY NAME	CITY	TAX CLEARANCE VALIDITY	CONTACT NUMBER	CONTACT PERSON	AREA OF SPECIALISATION
1	Best solution enterprises	Gweru	30/06/2013	04-775671	Chisi	Hardware
2	Hardmonds	Gweru	30/06/2013	08644 086 135	Mukorera	electrical hardware
3	Betteryeild Trading	Gweru	30/06/2013	054-221527	M Duve	electricals/hardware
4	Brooke Mining &Industrial	Gweru	30/06/2013	04-669524	Nyesu	Hardware/protective clothing
5	Buchwa Iron Mining	Gweru	nil	055 62401	Boniface CD Jana	Hardware
6	Build Eassy	Gweru	30/06/2013	054-229134/5	Mutendera	hardware
7	Builders Depot	Gweru	30/06/2013	0778 125 778	Gutu	electricals and hardware
8	Built Easy	Gweru	30/06/2013	054-229134	Mr Ruvingo	hardware and electricals
9	Builttec Pvt Ltd	Gweru	30/06/2013	09-62316	Muchiriri	hardware/protective /stationery
10	C.C Engineering Supplies	Gweru	30/06/2013	0772 547 410	Chikwira C	Hardware
11	C.E.W	Gweru	30/06/2013	04-799700	Mhlanga	electrical and hardware
12	Catbarbo investments	Gweru	30/06/2013	unknown	C Bobo	electricals/hardware/stationery
13	Chanko Enterprises	Gweru	30/06/2013	0773 998 212	N Nsingo	Electricals & hardware
14	Condub Pvt Ltd	Gweru	30/06/2013	054-224206	Gavi	electricals and hardware
15	Confide Pay pvt Ltd	Gweru	30/06/2013	04-791113	S Tsandukwa	Hardware/Plumbing
16	Cosform Electrical Pvt Ltd	Gweru	30/06/2013	0772 964 83	Mkanganiki	hardware and electricals
17	Country Bolts and Fasteeners	Gweru	30/06/2013	0712 895 064	J Sanganai	Hardware
18	Crumble zone investments	Gweru	30/06/2013	0773 191 106	Ndaidzwa	hardware/electricals
19	Crumnet Investments	Gweru	30/06/2013	0772 347 094	Mfunga	hardware/cleaning material/statnry
20	Dabble Enterprises	Gweru	30/06/2013	068-27583	Musaidzi	hardware /protective clothing
21	Distinct Enterprises	Gweru	30/06/2013	0772 419 764	unknown	Pharmaceutical/Hardware
22	Draylon Investments	Gweru	30/06/2013	054-225020	Lunga	electriacsl/hardware/prtctive clo
23	Earnwel marketing	Gweru	30/06/2013	04-305358	zodwa	electricals and hardware
24	Fedin Trading (Pvt) Ltd	Gweru	30/06/2013	09-61193	P Manzera	Agriculture, Hardware, Building
25	Fullcap investments	Gweru	30/06/2013	09-79358		electricals and hardware
26	G P Hardware & Electrical	Gweru	30/06/2013	09-888116	W Makonya	Electricals & building materials
27	G.T.I. Electrical & Hardware	Gweru	30/06/2013	054-221570	Mr Mapasure	Electrical & Hardware
28	Gastrom investments	Gweru	30/06/2013	054-225202	Gwatiringa	Hardware/stationery /electricals

## Appendix D

### Data Sets

#### Factors Influencing ICT adoption

Variable	Responses
Trend-Setting	2 4 3 2 5 4 3 4 2 4 3 4 2 4 5 3 2 3 4
Government regulation	3 2 4 3 2 1 2 4 3 4 3 2 3 4 3 5 3 4 5
Increase efficiency	3 2 4 3 2 4 3 2 4 3 3 1 2 3 4 3 4 2 3
Competitive advantage	3 3 3 3 2 4 2 3 4 2 4 2 4 2 3 1 4 3 2
Marketing efforts of suppliers	4 3 2 4 2 3 4 2 3 4 2 4 3 2 1 2 3 4 2

#### Uses of ICTs by hardware retailers

Variable	Responses
Stock Control	4 3 2 3 1 3 4 2 3 1 3 2 4 3 5 3 2 4 3
Accounting	3 2 4 3 5 4 2 4 3 2 4 5 3 2 4 5 3 4 2
Marketing	3 2 4 3 2 4 3 2 4 3 3 1 2 3 4 3 4 2 3
Entertainment	4 3 2 4 3 2 1 3 4 2 3 4 5 3 2 1 3 2 4
Data Capturing and Storage	3 2 3 4 2 3 4 3 2 4 2 3 4 5 3 2 3 4 2
Communication	4 3 2 3 4 5 4 3 4 5 4 3 4 4 3 4 5 5 3

#### Factors Affecting ICT diffusion

Variable	Responses
Perceived Benefits	1 5 3 2 4 1 4 3 5 3 2 4 1 2 5 4 2 4 1
Compatibility	5 3 4 3 3 2 4 2 4 3 4 5 3 4 3 4 3 4 2
Ease of Use	3 2 4 2 3 4 3 4 4 2 3 4 2 3 3 4 4 4 3
Affordability	5 3 4 4 3 4 3 4 3 4 3 5 4 4 3 5 4 3 4
Availability of technical support	3 2 4 1 3 2 4 2 4 2 4 2 4 1 4 5 2 3 4
Organizational Culture	4 5 4 5 2 1 3 2 1 3 4 2 3 4 2 4 2 1 3
Company Growth	4 2 5 3 4 2 4 2 4 1 3 4 2 3 4 2 4 2 1