DURBAN UNIVERSITY OF TECHNOLOGY

EFFECTS OF FINANCIAL TRANSVERSAL SYSTEM CHANGES IN THE PRODUCTION OF EFFICIENT ECONOMICAL SERVICE DELIVERY IN THE DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS IN KWAZULU-NATAL PROVINCE

KHULEKANI JEFERY MAKHAYE

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Effects of financial transversal system changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province

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Khulekani Jefery Makhaye

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DECLARATION

This is to certify that the work is entirely my own and not any other person unless explicitly acknowledged (including citation and unpublished sources). This work has not previously been submitted in any form to the Durban University of Technology or any other institution for assessment or for any other purpose.

Signature of student: Date: 15/01/2020

Approved for final submission

Date: 15-01-2020

Dr A. Razak

RN, RM. PhD

DEDICATION

I dedicate this project to God almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared. I also dedicate this work to my family; who has encouraged me all the way and whose encouragement has made sure that I give it all it takes to finish that which I have started. To my children Siphosethu, Lihlithemba (Mamie) and Banele who have been affected in every way possible by this quest.

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ABSTRACT

Introduction

The introduction of technology has resulted in management's ability to increase the work pace or speed of service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu Natal Province amongst all the employees. The employees now mostly work at a pace determined by the technology (systems) rather than at a pace set to meet the individual's capacity.

Aim of study

The study aimed to investigating the effects of financial transversal system changes in the efficient provision of financial services by the department of Agriculture and Environmental Affairs in KwaZulu-Natal Province.

Methodology

The quantitative descriptive survey research method was used in investigating effects of technological changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs. The Sample size was 365 respondents with a response rate of 89.7% (n=290). Data was collected using questionnaires. The SPSS (Statistical Package for Social Science) version 9.0 was used to prepare and analyze data using descriptive and inferential statistics.

Results

The results of this study showed that a significant majority 89.7% (n=290) of employees have been affected by technological changes in their working environment, and 10% (n=30) of employees are less affected by technological changes in their working environment. Eighty seven point six percent (87.6%) of employees responded positively to the introduction of new technologies and the improvement of service delivery within the department, 3.4% (n=10) of the employees responded negatively and 9% (n=26) of employees were not sure if the introduction of new technologies did improved service delivery. The majority of employees (86.9%, n=252) indicated that speed of service has increased as a result of the introduction of

new technologies, with 4.1% (n=12) of employees responded negatively that the speed of service has decreased and 9% (n=26) of employees indicated that the speed of service has not changed as a result of new technologies.

Conclusion

The challenge in the production of effective service delivery in the department was achieved by assessing the network or data line used in connecting departmental financial transversal systems namely BAS, LOGIS, PERSAL and QBIX in order to produce effective and economical financial service delivery. The benefits of training for the organization includes improved organizational performance (e.g. profitability, effectiveness, productivity, operating revenue per employee) as well as other outcomes that relate directly (e.g. reduced costs, improved quality and quantity) or indirectly (e.g. employee turnover, organization's reputation, social capital to performance (Elnaga and Imran 2013:1-11).

TABLE OF CONTENTS

CHAPTER 2 LITERATURE REVIEW

CHAPTER 5 DISCUSSION AND CONCLUSIONS

List of tables / figures **Page**

List of annexures

List of abbreviations and acronyms

BAS	Basic Accounting System
BIT	Business Information Technology
CT	Computer Technology
DAEA	Department of Agriculture and Environmental Affairs
DMIS	Data Management and Information System
EA	Executive Authority
ESO	Extension Suite Online
FAO	Food and Agricultural Organization
FMS	Financial Management System
GDP	Gross Domestic Product
GFS	Government Financial Statistics
GUI	Graphic User Interface
HOD	Head of Department
HR	Human Resources
ICT	Information Computer Technology
IT	Information Technology
LOGIS	Logistical System
NMS	Network Management System
PC	Personal Computer
PSD	Public Service Delivery
PERSAL	Personal Salary System
PFMA	Public Finance Management Act
ROI	Return on Investment
SCM IS	Supply Chain Management Information System

SET	Science, Engineering and technology
SCOA	Standard Chart of Accounts
SPSS	Statistical Package for Social Sciences
TC	Technological Change
TFP	Total Factor Productivity
VCO	Voluntary and Community Organization
WHO	World Health Organization

CHAPTER 1

INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION

Technology is an important tool that businesses use in order to produce high quality products. Moreover, the introduction of technology in today's business environment has become the solution for businesses to produce quality products in a short space of time, with manager's being responsible for ensuring that skill development and training on technology is done to all system users (employees) for the business to operate in an efficient and effective manner. The combination of human power, material and technology has been an effective solution for smooth business operation in 21st century (Molinero 2012:30).

Managers see the introduction of new technologies as an important solution to breaking the barriers that have challenged organizations (Rowell 2018:24). Telecentres are narrowing the gap to overcome the digital divide between those who have and do not have ready and affordable access to the internet, thus enabling to access information about the technology they are using. Rowell (2018:25), further states that in non-manufacturing companies, there is limited connection between technology and human power. This is due to there being limited productivity in this industry, which at times leads to minimum turnover, the non-achievement of targets, indicating the need to have monitoring and evaluation systems in place for each organization to cater for the advantages and disadvantages of the newly introduced technologies.

Through the introduction of technology in the business world, it is now simple for employees to work at home instead of being in an office environment. Technology has introduced many good opportunities for employees to ensure high quality service delivery; and has also made it easy for employees to communicate with each other in discussing their daily tasks (Dasgupta et al 2011:257). Technology can also play a major role in allowing people to work in their own pace as they can make choices about when and where they work, including prioritizing how they can meet their job targets. However, incompetence amongst employees can also be due to the incorrectly utilizing technology (Rowell 2018:25).

Part of the role of technology is that it determines an organizations information needs and helps to meet them. Information is important because nearly every activity in an organization involves information processing. Advances in technology have enabled managers to spend nearly 80% of each day connecting and collecting useful information via tablets and drafting important communiques while engaging with different stakeholders in an effort to ensure that service delivery is not compromised. The advances in technology are the key to the success of each and every business currently, which has also led to increased productivity (Vitez 2019:3).

1.1.1 INFORMATION TECHNOLOGY

Information can be of various forms, including spoken, pictorial, textual and numerical. Computing and telecommunications were developed separately but both rely on digital signal processing. From the 1940s computers progressed from single-purpose machines used for scientific purposes to general-purpose commercial computers that apply to many tasks using programming languages. At the same time, telecommunications expanded from applications in radio and the telephone to include long-distance dialing, television, tape recording, microwave links and satellites. Lemke (2009) further stated that the internet has become the significant tool in the 21st Century business that every organization would not easily survive without to outplay its competitors and yield a high turnover.

Information technology has made it easy for businesses or organizations to store important information effectively. The advancement in information technology has allowed organizational members and individuals to access large amount of information at a relatively low cost. Many homes have personal computers and household devices with computer chips, which has improved communication process (Vitez 2019:3). Haag et al (2008:8), further states that understanding technology begins with gaining an understanding of how businesses function, and identifying its role in creating efficiencies and effectiveness across organizations. Typical businesses operate by functional areas often that are referred to as functional silos.

According to Manoor (2017:1), the integration of information systems or technology is determined by a range of factors for effective, efficient design and development. Business information technology (BIT) is concerned with generating income to react to its full potential.

1.2 BACKGROUND TO THE STUDY

The growing number of newly introduced technologies in the business sector has improved and maximized productivity in the workplace for at least three decades. Organizations rely heavily on technological innovation for high productivity, due to a scarcity of talent in the workplace, which requires thorough training of the workforce or system users (Bessen 2015:57).

Research has proved that the existence of businesses revolves around the correct usage of the newly introduced technologies. It can be noted that although technology is advantageous for the existence of the business, it can be risky and at times fail, which can lead to less productivity if no urgent solutions are taken instantly. Saunders et al (2012:356), stated that in order to improve service delivery employee assessment should include all their tasks and not depend on the use of computer technology.

The new generation of managers and employees are much more knowledgeable than their counterparts of a decade ago about the uses and benefits of technology. Many organizations are using information technology as a strategic asset to maintain an edge in the competitive global markets. Advances in telecommunications and networking allow people to exchange information more freely than ever. Computer based systems are available that can intelligently link, learn, and make recommendations to decision makers by applying artificial intelligence, mainly through expert systems (Kokemuller, 2017).
"*The increased use of technology means increased responsibility; e.g. typesetting, electronic files for graphics. Increased responsibility means the high possibility of increased stress. Time saved in one area is lost in another. Technology helps business operations by keeping them connected to suppliers, customers and their sale force*" (Carsen 2019:20).

1.2.1 The entry of new technology

From 2004 to 2006 four out of five (81.8%) of the public sector organizations stated that they have managed to introduce more improved technologies. Globally, these highly improved technologies varied with the size of the organization; with larger ones having introduced more advanced technologies than smaller organizations, depending on the industry. This is because larger organizations are obliged to increase productivity in order to generate more income and outplace their competitors (Dauda and Akingbade 2012).

The introduction of technology within a department can have a considerable impact, as they no longer relying on employee's manpower alone to perform their duties. Technology has played a major role in the success of organizations, as the jobs that were previously performed by hands are now done automatically by machines. The amount of paper work is reduced, as information is stored and retrieved on computer technologies when needed rather than on paper. However, technology also contributes to the unstable and competitive market (Dasgupta et al 2011). This applies to organizations in South Africa, including government departments, with the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province having moved from manual systems to advanced technologies of the Qbix (e-procurement) and Hardcat systems for asset management to improve service delivery.

1.2.2 Technological advances: past, present and future

Technological advancement has taken productivity into a positive gear for production and manufacturing organization; and highlights the importance of focusing on technology as a primary change agent. Innovative advances in technologies can either occur in leaps or incrementally, with the larger technological advances taking the limelight. There are four categories in which technology has had considerable effects:

- **Energy:** in the past 30 years ago, businesses have relied heavily on animals and human power for better productivity. This imposed difficulties for businesses due to slow pace of reaching the final product and targets as the labour force had to undergo trainings to execute their duties effectively. The introduction of energy technologies, such as solar and generators, has improved business operations in difficult times, such as during load shading, which results in businesses incurring unforeseen expenses (Elnaga and Imran 2013:11).
- **Transportation and industrial machinery:** the agriculture and farming industry has been identified as a major role player regarding trade in the past years. The use of tractors for ploughing as well as delivering agricultural products to market has created a health trade for businesses. This leads to the maximization of profit or gains for businesses and the country at large, as these products can be exported to other countries who in turn invest large amount of money in South Africa (Elnaga and Imran 2013:11).
- **Communication:** Information Communication Technology (ICT) has improved substantially and maximizes the ways in which information is conveyed between people and businesses. It has made it easy for business managers to convey important

information to their staff in various locations due to improved communication channels such as emails, faxes, telephone and mobile devices. This has improved the working relations between managers and their staff as trust is built as managers can delegate tasks easily (Elnaga and Imran 2013:11).

- **Logistics:** technological changes, particularly in the production industry, has resulted in major achievements in the 21st century businesses, which has also resulted creating new and improving existing business ventures. Many jobs that were seen as routing have been improved, with creative thinking and innovation having enabled the smooth flow in businesses operations (Elnaga and Imran 2013:11).

1.2.3 Technological advances and its implications on productivity

Measuring the impact of advanced technology on productivity can be difficult as accurate statistics are always required, which can be difficult to obtain. A number of tools are available for organizations to measure the impacts that advanced technology has on productivity, the most relevant tool for this study being the Gross Domestic Product (GDP).

The term GDP means a tool or a technique that countries utilize to measure or evaluate the value of goods and services that it produces in a specific year (Coyle 2014:10). The GDP and the Total Factor of Production (TFP) per capita can thus be said to be the tools that work together to quantify productivity of a country, and have standards that are in accordance with the micro-environmental procedure.

The TFP focuses more on technological change, unlike the GDP, which is mainly concerned with the economy of a country. It can be regarded as being concerned with advances in technology, but with greater emphasis on measuring the increases in productivity, but without increasing the use of raw material (Dale et al 2013: 2).

1.2.4 The Effects of Technological Changes on Business Environment

The rapid changes and the advances in technology has been a major boost for the 21st century business environment. Communication channels between business branches has improved, which has resulted into improved productivity as branch managers can delegate tasks to different branches simultaneously without having to meet face to face with each branch which can be costly and time consuming (Vitez 2019). The 21st century business processes have enable organizations to redirect their strategies to be more efficient. Moreover, technology advances have improved and strengthened communication channels, which make

it easier for organizations and businesses to convey information or data including between countries (Ankli and Pallian 2012:10).

Digital advances have transformed and improved the ways in which organizations carry out their tasks. The use of modern or advanced communication tools has changed the ways in which organizations function. E-mail communications have reduced the amount of written paper work used for memos, faxes and photocopying, as one email can be sent to many recipients at once. Data lines can also connect employees to organizational networks, even if they are away from their workplace and enable a rapid the response (Jones 2010:20).

The introduction of wireless network and electronical data storages has been a major achievement for 21st century businesses in ensuring that information or data is correctly conveyed and reaches its intended recipient in time. The use of internet in trading businesses has also resulted in advantages as products are posted online and are easily seen by a million of people across the world, who purchase online, which results in higher turnovers (Bessen 2015:39). Using internet cloud systems has numerous advantages and benefits for organizations that help to have competitive advantage. It enables them to reduce costs, be more responsive to customers, and increases the businesses scalability and flexibility.

Technological changes have enabled connections between businesses and their customers, which has been made easy by social media platforms. The use of social media platforms such as Twitter, Facebook, WhatsApp and Instagram as means of channeling communications within organizations has also been a notable achievement for the 21st century business, and enables the smooth flow of information even for people in different locations and regions without any delays (Bessen 2015:39).

The importance of the technological changes is that people can convey information instantly, which in turn is beneficial to the organization. Individual can add their opinion about a certain problem without any delays; which can be consolidated into a useful report that can be shared and used as an important strategy in the organization. Productivity in organizations relies on the correct usage of technology by users (employees), therefore managers must ensure that employees are adequately trained to gain the skills and obtain the information about using technology to its full capacity (Stam and Stanton 2010:24).

Finally, the introduction of advanced technology has opened a new page in the existence of businesses, with the improved speed of services leading to improved productivity, thereby a achieving the business targets and goals. Business productivity as a result of new technology will prove to be important for the existence of any organization. Technology will reduce the amount of manpower needed in businesses by providing more effective and efficient services. According to Rowell (2018:25), there are a number of reasons that result in organizations introducing new advanced technologies for improved productivity outplaying their competitors, namely to reduce of expenses or costs, maximize output and quality, and minimize manpower and paper work.

1.3 PROBLEM STATEMENT

Technological changes in the KwaZulu-Natal Department of Agriculture and Environmental Affairs (DAEA) has played an important role specifically for employees who perform their duties using financial transversal systems such as BAS, PERSAL, LOGIS and Qbix. Managers are particularly interested in how financial transversal system changes affect employee's skills and moral abilities to undertake their daily tasks, their main concerns being based on their training needs, the budget and the time it takes for employees to adapt to changes. Employers sometimes rate financial transversal system changes as an opportunity for improving service delivery while some fear the loss of their jobs, as it improves the operational efficiency. It is therefore the managers' duty to equip employees with the necessary skills to perform their tasks and to introduce strategies to overcome technological barriers. Moreover, the lack of competitiveness between employees can also create threats for an organization in adopting the newly introduced technologies (Stam and Stanton 2010:24).

The introduction of financial transversal systems for some sectors will improve and introduce more conducive working relation and conditions, which was previously absent in some businesses, such as health and safety. Departments must therefore ensure that all newly introduced financial transversal systems are thoroughly understood by employees and appropriate ways of trainings are put in place that will not lead to compromising service delivery. This includes the introduction of the Qbix system for Supply Chain Management and Financial Management Services and the Hardcat system for Asset Management (Molinero 2012:31).

Financial transversal system changes are associated with positive and negative effects in ensuring efficient, economical service delivery within the department. Technological (systems) trainings for employees can reduce the speed of service delivery, when first introduced due to a lack of familiarity. Network breakdowns also plays a significant role in slowing down service delivery, as most of financial transversal systems within the Department of Agriculture and Environmental Affairs in KwaZulu-Natal are network linked, for example, ill functioning telephones, e-mails and fax machines, which leads to reduced productivity if it depends on the technology and appropriately trained employees (Stam and Stanton 2010:24).

The resistance among employees in adhering to new financial transversal systems can pose unforeseen challenges for senior staff members' and can affect the working relations between managers and employees. Technology sometimes imposes temptations and distractions for employees, although in many instances it results in high productivity and improved service delivery. Proper training methods on the new technologies must be provided within the Department of Agriculture and Environmental Affairs in KwaZulu-Natal to ensure productivity and service delivery are not compromised. New job opportunities will lead to the development of machine control systems and an increased labour pool for employers in the DAEA in KZN.

Strict measures must be in place to accommodate people with disabilities within the Department, and outlined in the departmental employment equity and the revised safely regulations and guidelines. Organizations rely on computer and information technology to conduct business, out-perform their competitors and operate efficiently. Computer systems analysts help organizations to use technology effectively and to incorporate quick changing technologies into their existing systems. While new technology has been introduced into the DAEA in KZN to improve the efficiency of its financial services, there is a lack of research in this area as to the actual improvement in Department's financial services.

1.4 AIM OF THE STUDY

The study aimed to investigate the effects of financial transversal system changes on the efficient provision of financial services by the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province.

1.5 RESEARCH OBJECTIVES

According to Burns and Grove (2009:165), "the objectives in a research study form a bridge between the more abstract problem and the selected research design, data collection and analysis". The objectives in relation to this study were as follows:

- To examine the challenges encountered with the network systems and its operation in the delivery of effective financial services.
- To establish the level of technology training and its application toward delivering financial services in the department.
- To determine the resistance among employees to adopting to the new technological financial systems within the department.

1.6 RESEARCH QUESTIONS

- What are the challenges encountered with the network systems and its operation in the delivery of effective financial services?
- What is the level of technological training applicable towards delivering financial services?
- What are resistances among employees in adopting the new technological financial systems within the department?

1.7 SIGNIFICANCE OF THE STUDY

It is evident that technological changes in the 21st century have had various effects on people's lives particularly in the working environment, which can result in efficient and inefficient service delivery in the DAEA in KZN. Negative, technological changes have resulted in rising unemployment rate while the introduction of robots and machines to perform tasks previously done by humans has resulted in large retrenchments, increased unemployment as well as increased productivity.

The introduction of technological changes in the modern world businesses, will also results in a rapid change for future businesses, including significant changes in long-term strategies and processes as well as organizational policies (Hampel and Martinsons 2009:58). Symbolical and significant organizational challenges will occur due to an increasing number of

competitors, technological advances, rapid growth and the introduction of new leaders and management with new strategies (Madsen et al 2005:30). Many studies have shown a significant impact on employee's attitude and behaviour towards their work that needs to be monitored, and a winning strategies implemented for successful organizational performance and output or productivity (Jones 2010:02).

The introduction of advanced technologies has resulted in the significant changes in the current business environment which is highly notable in the communication or ICT sector and the production industry (Jones 2010:02). These changes have also resulted in the reduction of the amount of paper work, which at times get lost through the shortage of neither storage nor office space. With the civilization and advancement in technology, information is now easily stored on server memories or computer boxes for retrieval when needed without any loss which may result to serious damages in the existence of the business (Hampel and Martinsons 2009:59).

With technology influencing changes in the 21st century workplace this study aims to investigate the effects of technological changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs. This study hopes to add to the body of knowledge and much needed information about the difficulties, effects, advantages and disadvantages of technology in the workplace specifically in the Department of Agriculture and Environmental Affairs (Manoor 2017:1-2).

1.8 OPERATIONAL DEFINITIONS

The following operational definitions apply:

Technological change (TC): can be defined as the creation and improvement of a tool or service or with significant features that can result to higher productivity in a short period of time if utilized efficiently and effectively. In short technological change is based on both better and improved technology. The term is synonymous with technological development, technological achievement, and technological progress (Hekkert and Negro 2011).

Public Service: A common term used in the Republic of South Africa (RSA) for all the services that are funded by the Government or public funds. Public Service can also be delivered through the Government or behalf of the Government in order to alleviate poverty

in the country, the examples of public services can be voluntary and community organization or private sector company (Volokh 2014:13)

1.9 RESEARCH ASSUMPTIONS

Technology significantly improves service delivery which is the provision of a product or service, by government to a community. The assumptions are the following:

- Technology simplifies the retrieval and storing of data or information in an easier acceptable, faster, accurately and consistent manner. The calculation and costing of data or information is also much easier and faster through technologies unlike human being who are at times commit some errors.
- Technology speeds the creation of reports and answering.
- Technology maximizes employee's capability of knowledge and understanding of the job as they are able to browse through various sites in the net to search for important information.
- Technology also improves communication channels amongst employees and businesses; this is made easier through better and highly improved network data lines that are used to convey information from one business to another.

1.10 OUTLINE OF THE STUDY

The following outlines the structure of the study:

Chapter One: Introduction and overview

The purpose of this chapter was to provide an overview of the study. This chapter starts by giving background to the research, which is followed by the research problem. The aims and objectives of the study are also given, along with an outline of the research question, significance of the study, operational definitions and the research assumptions.

Chapter Two: Literature Review

Chapter Two detailed information pertaining to the constructs under study. This literature reviews takes the reader into discovering the international and local research on technological advances.

Chapter Three: Research Methodology

This chapter outlines the selected research design and justifies the research design, setting, study population, sampling method of data collection as well as the reliability and validity of the research design. Statistical techniques that are used to analyze the data are also highlighted.

Chapter Four: Results

This chapter presented the results gathered from the questionnaire for interpretation of results to take place. Results of the study using tables and graphs are presented. Significant findings are also discussed considering the literature review and objectives of the study.

Chapter Five: Discussion and Conclusion

This chapter provides the main discussion of this research study; recommendations are made towards financial transversal systems in the Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province. Lastly suggestions are made for further research conclusion.

1.11 CONCLUSION

This chapter outlines the introduction, background of the study, aim and objectives, research question, significance of the study, operational definitions as well as the research assumptions. Chapter two will present the review of the literature used to support this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

According to O'Leary (2012:83), literature review is the provision of an overview of scholarship of a discipline by analyzing its trends and debates. Various search engines identify the aim of a literature review creating an understating of researching what has been covered and regarding a certain research study problem. O'Leary (2012:83), stated that a literature review briefly provides an understanding of what is known and not known about a research study, in order to provide the reader about how previous research study findings interlinks with the current study. This also provides the reader with an opportunity to take part and contribute in the current research study. Google scholar, journals and library materials were used to identify relevant material for this study.

2.2 NETWORK MANAGEMENT SYSTEMS AS EFFECTIVE DELIVERY OF FINANCIAL SERVICES

The Network Management Systems (NMS) play an important role in all Government Department and private companies of ensuring that financial services are delivered efficiently and effectively. It is therefore important that Departmental ICT Units ensure that these systems function, by monitoring and managing the relevant hardware and software. This will help the Network Management System managers as well as the Departmental officials update any maintenance need and or functions. The DAEA in KZN Province relies heavily on Network Management Systems to have a thorough understanding of the network and its applications for improving financial service delivery and job security (Department of Agriculture and Environmental Affairs 2010: 23).

2.3 DATA MANAGEMENT AND INFORMATION SYSTEMS

The ICT of the DAEA in KZN implemented the Agtrack System and integrate the LOGIS/ BAS information in 2010/11, with 282 projects having since been captured into the Agtrack System. Furthermore, a Material Database has been developed and populated with information, and 180 Extension Officers have been trained by Data Management and Information System staff (Information coordinator and Information Planner).

This training of Extension Officers in Information System contributed to the savings in the revenue of the Department to the value of R90, 000 (Department of Agriculture and Environmental Affairs KZN 2010). The Extension Suite Online (ESO) Development was completed on 18/10/2009 and is currently active. Extension Officers totaling 190 trained between November 2009 and February 2010. This includes skills transfer to Data Management and Information Systems staff. The intranet's former Database and the ex-combatant system assignment undertaken with the view for completion by the end of the first quarter of 2010/11 (Department of Agriculture and Environmental Affairs KZN 2010: 23).

2.4 FINANCIAL TRANSVERSAL SYSTEMS IN THE DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS

The Provincial Government of KwaZulu-Natal (KZN) relies on a number of financial systems to deliver financial service namely BAS, LOGIS, PERSAL and Qbix. The Provincial Treasury is responsible for meeting all the training needs of all government departments on financial systems including DAEA.

2.4.1 The Basic Accounting System (BAS)

During January 2001, the National Treasury, after reviewing various systems took a decision to implement the Basic Accounting System (BAS) at all National Departments utilizing FMS (Financial Management System). This allowed National treasury to consolidate government financial systems onto a single platform and allow users to become familiar with the operation of on-line transaction recording and reporting system in a Windows environment (Department of Treasury 2001:1-2).

Departments were also required to implement a 'Standard Chart of Accounts' (SCOA) that complied with Government Financial Statistics (GFS). This was fully supported by the flexibility of the BAS code structure. The implementation was used as an opportunity to convert to the new Chart of Accounts, supporting the consolidated reporting of Expenditure and Revenue per financial year in accordance with section 32 of the Public Finance Management Act (PFMA Act 1 of 1999).

2.4.2 The Logistical Information System (LOGIS)

According to Department of Treasury KZN (2010), Logistical Information System (LOGIS) was implemented to provide Government with a fair, equitable, transparent and cost effective system, thus ensuring economical, effective and efficient operations.

LOGIS compromised of two components:

(i). LOGIS Mainframe and

(ii). LOGIS Procurement Integration (Online/ WEB)

The DAEA in KZN Province utilized LOGIS to provide and manage the acquisition (procure to pay), and is integrated with BAS for real time commitments and pay advice. The Department also used LOGIS to enter operation and maintenance information for assets. Its current format was developed in 1998, to cater for governments provisioning and administration requirements in respect of the control of movable assets and stock.

The Department relied on LOGIS and the Qbix system for its procurement processes and delivering timeous financial service. The LOGIS is adoptable and flexible in use, enabling it to be implemented by government departments in order to support their procurement procedure. Procurement can be defined as the process of obtaining the right material, in the right quantity for delivery at the right time and place, from the right supplier with the right service and at the right price (Department of Treasury KZN 2010).

2.4.3 The Personnel and Salary System (PERSAL)

An integrated Human Resource (HR), Personnel and Salary System, better known as PERSAL, was designed and developed to support the implementation and application of certain HR policies and have been available since 1990. The PERSAL system is used by all National and Provincial Government departments. The system was originally specified by the Office of the Public Service Commissioner as a Personnel and Salary System (Department of Treasury 2010:2), and was implemented by National Treasury, which own the system, the expenditure related to its maintenance being provided for in their budget.

Various departments and provinces have embarked on HR Audits with the aim to obtain HR information as well as ensuring accurate information on PERSAL. Most of these initiatives were not successful in providing accurate information in the long run as they were managed and implemented as once off projects. The Department of Public Service in South Africa (DPSA) communicated to the Executive Authorities (EA's) and all provincial Head of Departments (HOD's) and emphasized the importance of accurate information. This approach had limited success because as they did not address factors such as the limited use of PERSAL as a strategic management resource and the lack of consequence for non-compliance.

The KZN DAEA utilized PERSAL system with BAS for their monthly reconciliations after month-end closure for financial reporting to Provincial Treasury as well to provide correct employee statistics within the province, which includes payroll management.

2.4.4 Qbix Supply Chain Management Information System

The Qbix Supply Chain Management Information Management Version 2.0 is a commercial software product developed under the Qbix brand. The software is a web based system with a modular design, including: Vendor Database Administration Module and Supply Chain Management Module. The Supply Chain Management Information System plays an important huge role in an organization in reducing expenditures and increasing the effectiveness of the Supply Chain Management Unit (Mclaren, Head, and Yuan 2004:207-222).

In KZN DAEA uses it for reporting purposes and reconciliation of their financial functions from various systems, namely BAS and LOGIS, to effectively improve the speed of services and eliminate any challenges based on financial service delivery.

2.5 TECHNOLOGY TRAINING

Today's workplace has been significantly impacted by technology. Previously, various jobs were done by people rather than technology. It is now relatively simple for vast amounts of information to be easily retrieved for assessment with just a click of button through the use of correct technology. Technology can be either disadvantageous or advantageous for business, making it important for management to ensure that proper strategies, plans and decision are made before installing new technology, which must also be accompanied by proper trainings. Management must acknowledge the work rate given by their employees toward improving service, which will help to eliminate any barriers arising from the introduction of new technology (Khan 2012).

To ensure best results, it is advisable therefore that business manager's upgrade their systems or technologies timeously to ensure better service delivery in their business operations System upgrades can also be used as a technique for businesses to compete with their competitors and to ensure service excellence and service delivery. Business success relies on the correct usage of technology, which should be accompanied by on-job training that will ensure that employees know what is expected of them (Invested Development 2013:1).

Upgrading technology can save time and expenses for business, as the system/ technology will be fast resulting in high, quality productivity.

2.5.1 Technological advancement and training

Organization need to have existing training system or training and development unit; to assist newly appointed employees to identify and correct any shortcoming and to assist employees to face the challenges arising from introducing new technology. Training needs to motivate employees to perform their duties with pride and trust, and can be a catalyst in undertaking any new tasks in the working environment (Amagada 2006:19).

According to Singh and Mohanty (2012:60), training and development can be used by organizations to develop and improve their workforce skills and efficiency. The study found that the involvement of employees in the decision making structure of the organizations, its group tasks and solving problems may result in increased productivity as a continuous and systematic process.

The training the organization offer to its employees can be regarded as long term investment not only to improve staff skills and better ways of working, but to achieve its goals and targets. It is therefore important to identify staff training requirements for them to improve service delivery and meet the need of their customers or service recipients as well as the stakeholders at large. Achievement a competitive advantage is also partly due to the presence of well-trained employees, which means that organizations should provide a variety of training programs (Sultana et al 2012:87).

Due to changes in businesses arising from the introduction of new technology, organizations are faced with a number of new challenges and risks. This indicates that the need to regularly revisit their training and development strategies to meet the needs of the staff who have work with ever changing technology, with investments based on trainings needing to be a priority for the better productivity of the organization (Farooq and Khan 2011:6).

2.5.2 Training and employee performance

In-service training contributes to all employees' performance, and improves the standard of customer care and service delivery that affects the organization ability to achieve its targets, goals and objectives. Training alone cannot be singled out as the only tool that impact on

organizational performance and employee performance, the other contributory factors are employee skills, knowledge and rewards. Employees who are regularly trained can accept most job challenges given to them, and ensure that their skills improve the organizational performance. Employees who do not regularly attend training programs may have a fear of failure and resistance to change, as they do not know what the future holds regarding their positions, and if not monitored correctly, could lead to reduced productivity, which in turn will affect organizational performance (Jagero and Komba 2012:3-6).

2.6 EFFECTS OF TECHNOLOGY ON EMPLOYMENT AND IMPLICATIONS FOR PUBLIC SERVICE

According Autor (2014:13), technology is a highly contributing factor to the way work is carried out which, has also led to less paper work through the introduction of robotic machines. Businesses rely on policies and procedures to ensure that the work is carried out in and acceptable and ethical manner. However, technology can also be a risk, with some lower level skilled employees possibly losing their jobs as they cannot cope with the fast pace brought about technology.

Highly skilled employees are at an advantage to benefit from digitalized jobs in comparison to lower skilled employees. Job opportunities may arise from mechanization that is accompanied by an increased use of tools, with technology posing some risk if not utilized correctly. Technology is also changing employment relationships between employees and managers, with the latter needing to ensure that the risks that individuals are exposed are minimized, particularly if no training is provided. When used in with other resources in an effective and efficient manner, an organization can benefit from increased productivity and thereby achieve its goals (Dauda and Akingbade 2011).

The South African government has a mandate to ensure that all departments invest appropriately in technology and receive the necessary training. Training employees on newly introduced technology will address any challenges and equip employees with any skills that have been lacking. The government also needs to provide additional actions for employees to realize the benefits of a good job. Business and government outcomes are pre-determined, and much depends on the choices governments make (The World Bank Group 2015:3)

2.6.1 Technological Opportunities

For the past two decades, the communication and production industries had benefited from considerable profits as the result of improved productivity, thanks to technological advancements. Communication channels had been improved to enhance information sharing for businesses, accompanied by advances in smart devices, such as laptops, personnel computers and smart phones, which enables businesses to convey information from between branches and employees (Frey and Osborne 2013:44).

Many digital jobs have been created in the technology industry for people who are directly involved in the ICT field and advanced users, including those who specifically utilize software and tools in performing their tasks. Significantly changes have taken place are through the utilization of digital tools, while the connection of work for all people has been made much easier by the simple mobile telephone and as well as the online work platforms. This indicates that there are benefits, with approximately from 3.6 billion people using mobile devices, which could surpass globally subscribers of mobile telephone services (Kessler et al 2014:25).

2.6.2 Digital jobs

According to Raja et al (2013:5), millions of jobs have been created in the ICT industry; which is important for both advanced and emerging economies; this has also hugely benefited the emerging economies. The Brazilian Information Technology sector had created employment opportunities rating to 16% from 2010 to 2013, and in 2014, with more than 1.3 million people being employed due to the introduction of new technology. The Indian IT sector is reported to have employed more than 3.5 million workers, of whom a third are females (The World Bank Group 2015:3-4).

According to indicative data from 2004 to 2005, on a set of G20 countries the average gross wages for computer programmers was approximately one third higher than the national averages. There is also a significant spillover effects in the industry, with digital jobs having generated many employment opportunities in different sectors. These jobs pay higher than average wages, with digital jobs industries growing faster than other industries globally (The World Bank Group 2015:3-4).

There is an anticipated growing demand for digital workers as business and government improve technologies in every component of their operations and activities, and is a result of

individuals adopting technologies across various spheres of their lives. High level skilled workers are able to access these jobs and can benefit from the opportunity. However, there is a shortfall in many countries of qualified professionals, as digital jobs require both an appropriate enabling environment for businesses and individuals to adopt technologies, innovate, and grow, and ensure that workforce developmental strategies are in place (Lee et al 2012:15).

2.6.3 Emerging challenges

Technology is likely to substitute current jobs; with a growing consensus that technology will complement workers in almost every job of the future. This entails that future jobs will be more digitalized compared to yesteryears. However, there are no clear indications as to when the changes may take place, and the speed, benefits and losses that might transpire thereafter (The World Bank 2015:5). As businesses and governments adopt improved and lower-cost technology, there is a growing concern that this could have a negative impact on employment or even lead to inequality, which could results in certain groups of people having an advantage and benefiting more than other, which can also results in personal conflict in the existence of business (Oh and Larsen 2011:134).

There are four key themes being debated namely:

- A reduced workforce due to the introduction of advanced technologies which may also results in the reduced performance appraisal and on job trainings;
- A growing inequality in the wage gap, as the highly skilled employees are at an advantage to benefit from new opportunities more than lower level employees, who are also at risk of losing their jobs;
- The type of jobs to be digitalized, which can be risky which and costly to business, as more training is required and sometimes leads to conflicts between managers and employees;
- This can also lead to divisions among employees, as those who are highly skilled will have better opportunities and access to technologies than unskilled employees (Guy et al 2014:60).

(a). Job susceptibility

Through the advancement of technology, highly skilled employees are at the advantage of being promoted into the next levels, for instance: The introduction of technologies results in

the elimination of specific types of occupations, making it important for people retrenched from their duties, to be promoted or successfully employed in other vacancies (Graets and Guy 2015:1)

(b). Polarization of job quality

According to Goos (2013:118), technology has begun polarizing the labour market as shown in current research studies. However, machines substitute for workers doing routine jobs that have been modifiable will increase in scale with the introduction of new technology.

2.7 THE NATURE OF EMPLOYMENT ITSELF IS CHANGING AND RISKIER

Technology is dramatically improving the processes and scopes of work, these changes are not only having implications on the job quality and earnings, but for the risks that individuals bear. There will also be a shift in the relationships amongst workers and employers, as micro tasks and more online work will involve short-term projects, with flexibility in the working but the desired hours bears no guarantees. Varying payments will be offered with some being much higher, than local wages, although there is not been minimum wage, little protection for workers in disputes (Brynjolfsson et al 2011:77). There are concerns about the 'virtual sweatshop' that will be created by technological platforms that are largely unregulated. Workers will also not have the possibility of organizing effectively to demand or protect their rights, as these types of platforms will be anonymous, and there might be social stigma attached to being identifies as a participant on these platforms (McKinsey 2013:21).

2.8 THE USE OF TECHNOLOGY IN AGRICULTURE

According to Ramey (2012:1), advances in technology in the agricultural sector have displayed a symbolical responsibility. Growing crops in the desert is now possible with the use of agriculture biotechnology, with technology having made it easier for plants to grow in hot situations. Plant scientists have managed to introduce protective measures with the goal of ensuring that crops can survive drought and pests.

For some farmers, technology has played an important role and helped to commercialize their businesses, farmers being able to market and sell their products online. Technology also enables consumers to receive their products in time and when still fresh, which promotes cost saving and cuts out mediators who try and buy at a low cost from farmers and sell at a profit, while the farmer has carried all the risks and costs (Ramey 2012:2).

A summarized use of technology in the agriculture and farming industry:

- **Utilisation of farm machines:** technology has made it easy for farmers to cultivate and plough hectors of land with less labour, and can enables them to reduce costs. This is because they not only rely on the use of tractors and other ploughing and harvesting technologies, but on advanced tools that have made it easy for them to measure and calculate hectors of land to work on. In agriculture, the most important factor is production, with modern technology having allowed farmers to employ less people while retaining high productivity and quality levels (Ramey 2012:3).

- **Modern transportation:** it is becoming increasingly easy for farmers to transport their products, with the use of modern transportation technology facilities. This enables farmers to ensure the supply of their products in good conditions to different markets where consumers can easily access these products (Ramey 2012:3).

- **Cooling facilities:** technology also enables farmers to use facilities such as mobile fridges, as cooling facilities to keep their products fresh as they transport them to different markets where they sell and make profits. Crops like tomatoes; lettuce just to name a few will be stored and kept fresh for long time thanks to the use of the cooling facilities (Ramey 2012:4).

- **Genetically modified plants:** using such seeds and plants enables farmers to ensure that their products will not be pest and disease resistant, the absence of which can be costly, as products become infected or are eaten and cannot be sold. Modified products, such as potatoes, have been developed to resist pests, which saves the farmers time and money, and negates the need to buy pesticides (Ramey 2012:4).

- **Develop animal feeds:** technology has also made it easy to keep farm animals healthy by enabling them to eat healthy and nutritious food that is manufactured both on and off the farm. These can have vitamins and other supplements added that ensure the good health of animals. Healthy animal leads to improved productivity, whereas the poorly fed animal make very little return as they produce very little meat, milk and fur (Ramey 2012:5).

2.9 THE IMPACT OF TECHNOLOGY IN AGRICULTURE

The current research on population projection figures indicates that in 2050, there will be nine billion people in the world (Invested Development, 2013). This will result in an estimated increased need of 70% in food production to feed everyone, making it necessary for the agriculture industry to develop strategies to grow, harvest and distribute enough food to feed the growing population. The urban population is increasingly globally, the World Health Organization (WHO) estimating that by 2050, seven out of ten people will live in a city (Christina 2013:1-5).

According to the Invested Development (2013:26), the percentage of the people employed in the agricultural sector is significantly declining as economies continue to develop. The statistics shows that a 1% increase in GDP equals a 0, 52% decrease in number of people working in agriculture, also resulting in labour force controlling the growth. The Sub-Saharan Africa and South Asia regions will have the largest number of population gains which is represented by 60% and 50% respectively, which will result in a dramatic decline as their economies progress.

Agricultural industries are very aware of their customer needs, with policies being needed that impact the whole agricultural environment. The decentralized production model shifts and the growing customer demand can be regarded as a sign of improvements in more efficient supply chains for food production and delivery in the agriculture industry (Invested Development 2013:26).

2.10 INNOVATION AND TECHNOLOGY

Technological advancement is moving at an increasing pace, while the ways in which business is conducted and changes in customer and market related needs are also changing. Globalization and the digital divide brings new changes and more role players into the world of business making it even more interesting to enter the market or the business environment, it is highly symbolical that technological advancement can play a crucial role in improving organizational performance, but this will require well trained and highly skilled employees who are also able to be innovative to achieve every tasks place upon them. This will be a notable achievement for the training and development unit in each and every organization which will improve their employee's job performance (Vitez 2019).

The introduction of advanced technology for businesses has also created a new dynamic in the ways in which tasks within the businesses or organizations are carried out. For the 21st century business, the internet alone has become the integral part of life, which is not only based on the business processes, but includes the ways in which communication is conveyed from one business to the other and how learning takes place, for e.g. e-learning for students (Lemke 2010:243).

2.11 THE IMPACT OF TECHNOLOGY ON ORGANIZATIONAL PERFORMANCE

The increase in economy and possible congestion brought about competition in some businesses limits the amount of resources to perform certain tasks. This raises concerns about the number of products being produced, as resource sharing within an organization may results in some functions having to be overlooked and even given the low priority, which may results in businesses not achieving their targets and will prove costly at times. Organizations therefore need to improve their development and training techniques to enable the smooth flow of business operations (Ongoro and Migiro 2010:93-104).

The introduction of new technologies has created uncertainty amongst many municipalities, as the managers may feel that they do not have the necessary resources to fulfil their departmental requirements. For these municipalities to effectively and efficiently implement and use these technologies, more time, trainings and employee development is required, which may increase the costs, as some important functions will have to be put on hold while employees are equipped with the necessary skills. Divisions might arise amongst departments or business units due to resource sharing, which may lead to slower and decreased productivity, resulting in a lower turnover for the organization (Ongoro and Migiro 2010:93-104).

2.12 GENDER ISSUES IN THE WORLD OF WORK VERSUS CHANGES IN TECHNOLOGY

The ongoing gender inequality in South African organizations has been highly visible in the Science, Engineering and Technology (SET) sectors; with the number of women in these sectors dropping (Ongoro and Migiro 2010:93-104)). There are three important areas to focus on for industry and services, these being women's employment niches, impact of new

technology on women, and the implications of acquiring new skills for women in an environment of changing technology.

Firstly, it has been identified that women have better employment opportunities where there is subcontracting and out-sourcing of work. This has been evident in the printing and publishing industry, where their talent, skills and experience have been utilized to full capacity. Women employed in the SET sectors are exposed to more challenges than men due to stereotypes and social attitudes to women in this field, and perceived inexperience to complete certain tasks. The introduction of robotic machines can be costly but may be a threat to women, which may also lead to their fear of failure and resistance to change, and thereby result to less productivity for the business (Ongoro and Migiro 2010).

Secondly, the introduction of new technologies has brought about changes in organizational structure and culture, which also affects the skills and job structure of the workforce, some of whom are women. As the organizational structure and culture changes, there will be less on the job trainings conducted in order to accommodate the workforce. This can lead to hiring temporary, and at times result in job rotation or even increasing the responsibilities or functions of workers. Due to the high costs that are often associated with training staff, some organizations has opted to use e-learning system as a technique to familiarize their staff about how they should conduct their tasks, this technique using multimedia elements, namely sound and videos (Manoor 2017:13).

Thirdly, the innovations in technology mean that there is a considerable need for changing skills, which is where women are more disadvantaged than their male counterparts. Women in the workforce are at times seen as vulnerable and at risk when new and advanced technologies are introduced, as they are often employed in lower skills jobs. Another important issue in technological change is that it leads to the down grading or deskilling of women, when they are unable to keep up with technological changes that cater for the needs of the business. Organization are advised to conduct thorough investigation regarding the causes of the gender gaps and inequality, this being important with the introduction of new technologies in the organization, which also leads to women having less chances on jobs compared to males (Manoor 2017:14).

2.13 TECHNOLOGICAL CHANGE ON WORK AND WAGES

Technological change has increased the demand for specialized skills and has supported new work practices in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal. This has resulted into two most important paradoxes:

- The paradox of productivity: there is a symbolical affects imposed on productivity by new technologies, which are more evident at the firm or organizational than the national level.
- The paradox of wage inequality: there is a significant increase in wages for the workforce that utilizes advanced technology at the national compared to the provincial level (Manoor 2017:12).

2.14 STRATEGIES FOR IMPROVING SERVICE DELIVERY

The process mainly used to combine and re-arrange information and skills in order to create new ideas for business is referred to as technological advancement (Dauda and Akingbade 2011:12). This can be said to have both negative and positive effects on organizational performance and structure, and implies that there is a significant relationship between advancement in technology and employee performance.

Technologies may lead to increased productivity or even improved performance if combined with different resources such as human resources, or if utilized correctly. The performance of employees or the workforce is therefore said to create a link or linkage with advancement in technology. Advancement in technology can be better monitored correctly by the daily level of productivity as a result of training provided to employees (Dauda and Akingbade 2011:12)

2.14.1 Motivation and technological advancement

Saeed and Asghar (2012:61) stated that a motivated employee is the happy employee one, and they are encouraged to produce more by giving 100% effort to their job. An individual who is not motivated has the possibility of being retrenched or not receive a promotion in the near future. Motivation in an organization needs therefore to be promoted to encourage employees to work hard. Motivation should work hand in hand with performance appraisal, which is based on rewarding excellence or good performance in a form of bonuses and promotions and is an important factor that promotes performance, being a driven force for individuals.

For an organization, motivation can be said to be the most useful tool, as it changes human resources into helpful actions that increases the positivity of the organizational existence. Motivation increases and develops employee skills, which are considerable advantage for achieving its goals and targets. It can also lead to good or positive behavior within the organization, promotes efficient performance management for employees, making it important for managers to become aware as to what motivations are relevant for employees that can lead to positive performance (Ali et al 2012:126).

It can be difficult for employees to perform at their utmost best level if no motivators are put into place and if the working environment is not conducive. There are two categories of motivation namely: extrinsic (bonuses, types of compensation) and intrinsic (verbal appreciation), both of which can have a considerable effects in employee's performance Motivation can therefore be a very important factor that drives employees to be more productive (Chintalloo and Mahadeo 2013:16).

2.14.2 Motivation and employee performance

It is evident that people who are motivated feel important and are willing to contribute in a way that is beneficial to the organization, and may go beyond their scope of work. The feeling of being treated with respect and dignity for the effort ensures that employees give 100% towards achieving organizational targets and goals. Motivation improves and encourages change management by ensuring that the organizational culture facilitates employees to work with a sense of pride and belief, knowing that they are trusted and appreciated by their superiors. The most important and notable dimensions that contributes to the success of an organizations are improvements in performance and raising standards. These dimensions can be used to measure employee performance, which will ensure that they are well stationed, and are allocated jobs and responsibilities based on their skills and capabilities (Rudge 2011:8).

One of the primary responsibilities of managers is to assess their employees' performance, as their evaluations influence promotions, demotions, transfers, and dismissals, and the salary increases that employees receive. Managers usually have to explain their decisions in regard to their subordinates, who may disagree with them in at least some respects, with a record of their achievements and actions being important to substantiate any decisions (Rudge 2011:8).

2.15 THEORETICAL FRAMEWORK

According to Burns and Grove (2009:39) theoretical framework can be defined as that structure in research that facilitates or even give an improved support of the theory. These theories are created in the view of giving explanations, predict and to give a clear meaning of a research objective(s). A good theoretical framework outlines the important variables that are clearly linked to a problem and highlights the strongest links amongst variables (Sekaran and Bougie 2013:78)

The basic features in a theoretical framework are as follows:

- The variables in relation to the study must be clearly stated
- A conceptual model explaining relationships amongst variables must also be outlined
- There must also be a given reasons as to why there must be a relationship amongst the existence of the variables.

2.16 THEORETICAL FRAMEWORK: PORTER'S FIVE FORCES - PESTEL

Porter's five forces framework is better known as an important tool for analyzing the competition of the business. This framework was first published on Harvard Business review in 1979, and associated with its originator Michael E. Porter. According to Porter (1979), these forces can be referred to microenvironment, as they consist of the forces close to the existence of the company which affects its ability to serve its customers and make profit. A change in any of the forces normally requires a business unit to re-assess the market place given the overall change in the information.

According to Bozas (2011:28), PESTEL analysis comprised of six most common micro-environmental factors that companies can rely on in order to understand their interaction with the organization. The six macro-environmental factors are P-Political, E-Economic, S-Social T-Technology, E-Environment and L-Legal. PESTEL analysis is better known as an external strategic analysis that can be utilized when conducting market research, it outlines and overview of many macro-environmental factors that a company has to take into consideration.

Below are the purposes of PESTEL detailing how these factors affect financial transversal system changes in the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province. For this study only the three factors T-Technological, P-Political and E-Economic factors will be discussed as they affect the government of the Republic of South Africa which is where this study was conducted.

2.16.1 TECHNOLOGICAL FACTORS

These factors relate to innovation in technology and the factors that affect financial transversal system changes in the provision of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province. As a result of technological advancement, employees can now access financial transversal systems (BAS, LOGIS and PERSAL) in any of the offices within the province by logging on the network using their credentials, which automatically link them to the Citrix server of the department. Technology has become the driving force for innovation that leads to sustainable business growth.

2.16.1.1 Frame of reference in relation to the study: QBIX

Qbix is a South African developed product that has been designed mainly for the South African Public sector, including National Government Departments, Provincial Government Departments, Municipalities and other institutions. The software has been designed to work with the cloud computing environment, and therefore has a minimum impact on existing information technology infrastructure. Moreover, similarly to Qbix, the Supply Chain Management Information System (SCM IS) can be implemented on the internet or intranet, which allows users to access the system software from remote locations (McLaren et al 2004:207-222).

As a frame of reference in relation to the study through its being a web based system, Qbix Supply Chain Management Information System through via software, allows for the synchronization and reconciliation of financial functions from transversal systems (BAS and LOGIS) into a single process after midnight batch run, which improves the speed of financial services resulting in high productivity within the department. Most notable, is that the system can be easily accessible even in the remote location, despite the regions and districts of the

DAEA being situated in different areas in KZN Province, there need to be no interruption in financial service delivery in accessing the system.

The software completely automates the entire Supply Chain Management process, has been programmed to ensure adherence to the legislative framework that exists with the public sector, is simple to use due its logically designed graphical user interface (GUI), is able to consolidate an institutions information in real time and analyze performance at a summarized level, or drill down how to identify problem areas which helped in reducing budgetary expenditures and increase effectiveness.

2.16.2 POLITICAL FACTORS

Political factors may be classified as all those factors that regulate the extent to which government affect some businesses. For example, in South Africa, we know that strikes and riots for needs by the citizens can affect the operation of government, which may also lead to economic loss. Political factors that relates to this study are data protection law, environmental law, competition regulation, health and safety law, tariffs, corruption level education law bureaucracy, freedom of the press, trade control, tax policy (tax rates and incentives), government stability and related changes and government involvement in trade unions and agreements. These factors may also lead to slowness in financial service delivery through the involvement of employees to strikes.

2.16.3 ECONOMIC FACTORS

Economic factors determine the performance of the economy and that directly impact the government operations. We are aware that South African inflation rates are very high compared to other countries globally this therefore affects the prices of products and services which may lead to changes in the buying power of customers. At this current state, South African interest rates, foreign exchange, economic growth is very poor, leading to retrenchments. This is putting pressure on government to freeze vacant positions, implement early retirements as well as cutting-off of performance bonuses as a strategy to minimize government expenditures.

2.17 CONCLUSION

This chapter outlined the literature review as a background in relation to the study. It detailed the uses of technology in agriculture, the effects of technology in agriculture and the impact of technology in organizational performance. It further described the strategies for improving

service delivery based on different improvement strategies, and outlines the theoretical framework of the study which also discussed Porter's five forces and the frame of reference. Chapter 3 presents the research methodologies used to undertake this study.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter covers the research methodology used in this study and includes descriptions of the research design, setting, population, target population, sampling and sampling technique, sample size and selection criteria, research instrument, data collection process, data analysis, validity and reliability, limitation and ethical consideration of the study. Methodology is regarded as the processes used, these being based on how the research study is conducted, and consists of theoretical and philosophical components, with the mindset of which direction and what implications can arise for the methods chosen (Saunders et al 2012:674). The methodologies used are presented, with a description of the quantitative method used to investigating effects of technological changes for providing efficient financial services in the South African Department of Agriculture and Environmental Affairs in KwaZulu-Natal (KZN) Province.

3.2 RESEARCH DESIGN

According to Grove et al (2013:195) "a research design is the blue print for conducting a study since it maximizes control over factors that could interfere with the validity of the study's finding." This study used a quantitative research design method to answer the research questions. According to Leary (2017:89) descriptive research usually purports to create an imagery description of a set of consumers, a market, or a set of experiences, this study made use of descriptive research. Results were summarized using tables, graphs and descriptive statistics to describe central positions. Descriptive statistics presented the data in a more meaningful way, to set the interpretation of results.

"Quantitative research is defined as the investigation of phenomena that lends itself to precise measurement and quantification (Pilot and Beck 2012:739).' Grove, Burns and Gray (2013:23), define quantitative research as a formal, objective, systematic process implemented to obtain numerical data for understanding aspects of the world. A quantitative design was used in this study so as to get the different views from a large number of participants in the two different setting of this study. Quantitative research method was used to address the research objectives by collecting quantitative data.

3.2.1 MOTIVATION FOR CHOOSING THE DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS

The Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province was chosen for this study based to its vision and mission statement, which is directed to ensuring that there is poverty alleviation in the province which can be fulfilled through improved financial service delivery to the public. This has also led to the researcher choosing the DAEA in KZN and employees in the Finance Directorate based on the vision and mission which are directed at poverty alleviation in the province through financial service delivery. To fulfill the mandate as outlined in the vision and mission statement of the department, employees in the Finance Directorate were chosen for this study as they are the main users of financial transversal systems in their daily operations.

The employees in the Financial Directorate are largely affected by network breakdowns (citrix) in the department which lead to total shutdown of their daily operations as they have difficulty to login on the their financial transversal systems (BAS, LOGIS and PESAL) which also lead to interruption of financial service delivery. These employees are highly affected by financial transversal system changes compared to other Directorates as they cannot perform their daily operations which range from capturing financial transactions, analyzing of financial reports and printing of financial reports due to network breakdown as their systems are network linked.

3.2.2 VISION AND MISSION STATEMENT OF THE DEPARTMENT

- **Vision:** an inclusive, sustainable and radically transformed agricultural sector that builds thriving communities in balance with nature.
- **Mission:** to advance sound agricultural practices that stimulates comprehensive economic growth, food security and advancement of rural communities.

3.3 STUDY SETTING

The study was conducted at three regions that falls under the Department of Agriculture and Environmental Affairs in KZN. The first was the Northern Region, which has five district offices: UThungulu, UMzinyathi, UMkhanyakude, Zululand and Amajuba District. The second was the Southern Region with two district offices: UThukela and Sisonke District,

and the third was the Head Office located in Cedara on the north-western outskirts of the city of Pietermaritzburg, which is responsible for overall coordination.

3.4 POPULATION

Serakan and Bougie (2013:240) stated that the whole group of individuals, events, or things of interest under which the researcher intends to investigate is referred to as a study population. The population in this study comprises of 3056 permanent staff members and 794 contractual employees making a total of 3850 participants. The study population, according to Shuttleworth and Wilson (2019), is defined as all elements that in a given context may include individuals, objectives or subjects that meet the inclusion criteria. The study population, also known as the study objects, consists of individuals, groups, organizations, human products and events or conditions.

3.4.1 TARGET POPULATION

Target population for this study were all individuals both permanent and contract who work in the Finance, Assets and Supply Chain Management components were affected to participate in this study. These employees in particular have been affected by changes in the systems the Department utilizes for the activities namely capturing of financial transactions, recording, capturing and printing of purchase orders and printing of financial reports.

3.5 SAMPLING METHOD

According to Bryman et al (2015:170), as well as Creswell (2014:36), sampling is the segment of the population that is selected for investigation. There are two types of sampling techniques, probability and non-probability. Non-probability sampling technique was used for this research. Non-probability sampling is where the study determines what elements to include in the sample. Non-probability includes convenience sampling, snowball sampling, quota sampling and judgmental sampling (Aarker et al 2011:349). Convenience sampling method was used in this study. Convenience sampling method makes it easier and faster to obtain information, it is also a cost-effective method. Therefore, the non-probability sampling technique was used to identify participants for this study. All the employees who met the inclusion criteria and willing to participate in the study could do so.

3.6 SAMPLE SIZE

According to Christ (2012:20) a sample is a subset of the population which is utilized to estimate the characteristics of the entire population. The size of the sample in this research study was 385 respondents, which comprised of 10% of the total population which was sufficient for controlling sampling errors as well as appropriate and accurate information (Green and Salkind 2012:106). The Human Resource Section was contacted to establish and provide the statistical report on all staff who works in the Finance, Supply Chain Management and Assets Management section and for their names to be provided.

3.6.1 Inclusion criteria

The inclusion criteria for this study were:

- Employees who use the financial transversal systems namely BAS, LOGIS, HARDCAT and Qbix to perform their daily duties.
- Permanent and contractual staff involved in the Finance, Assets and Supply Chain Management of the Department.
- Staff who has been in the organization when the financial transversal systems were changed.

3.6.2 Exclusion criteria

The exclusion criteria for the study were:

- Employees who do not use financial transversal systems to perform their daily duties in the Department of Agriculture and Environmental Affairs in KZN.

3.7 RESEARCH INSTRUMENT

According to Trochim and Donnelly (2016:120) primary data collection refers to data constructed specifically for the research at hand. Questionnaires are convenient and appropriate to the study being conducted. Based on the literature review, the researcher was able to develop the questionnaire that was forwarded to respondents in the Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province. The content of the literature review as well as the objectives helped to inform the researcher in developing the measuring instrument. Questionnaires were utilized as the measuring instrument to assist in

determining the effects of financial transversal systems in the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province. Various methods can be used to obtain data from respondents. Some methods consist of focus groups, email surveys and personal interviews. However, questionnaires incur lower costs in terms of finance and time spent sending out mails and receiving of the questionnaire via electronic mail.

Questionnaires are simple, easy to understand for respondents to complete. However, one very important disadvantage of a questionnaire is the way respondents answers it; hence the respondent could answer the questionnaire dishonestly. To counter this disadvantage the questionnaire were completed based on anonymity as the respondents were not asked to provide any personal details or information. The respondents were only required to select from certain options, provide their opinion and indicate their level agreement for various statements. Yes and No questions were used to form the questionnaire.

3.7.1 Construction of the questionnaire

To reduce question design errors during construction of the questionnaire, the following descriptors were used:

- Sensitive questions that might offend the respondents were avoided.
- Lack of ambiguity, vagueness and jargon was avoided (Trochim and Donnelly 2016:121).

3.7.2 Types of questions utilized

The questionnaire was designed using the literature review as a foundation and the research objectives were used to build the purpose and structure of the questionnaire. Questions were developed in simple and understandable terms to ensure that target population is able to answer the questions on the field of study. The questionnaire consisted of four sections with a total of 23 questions, with data presented on scaled option.

Section A: This section consisted of four items pertaining to the demographics of the respondents (age, gender, location and years in service) which were requested for descriptive statistical analysis purposes. The development of questions in this section was made by

taking into consideration the target population and the research objective of the study. This section consisted of five multiple choice questions.

Section B: The development of the questions in this section was made using research objectives and the literature review. The research objectives used in this section to design a questionnaire were as follows:

- Objective 1. Challenge for effective service delivery : 5 Questions
- Objective 2. Level of technology training : 8 Questions
- Objective 3. Resistance among employees : 5 Questions

3.8 VALIDITY AND RELIABILITY

According to Shuttleworth and Wilson (2019:2), validity refers to the extent to which an instrument "actually reflects the abstract construct being examined". Validity can therefore be illustrated as ensuring the accuracy and completeness of the instrument in terms of ensuring that it correctly measures what it was designed or created for (Landy and Conte 2013:77). In order for an instrument to be classified as valid it has to comply with all the standards and procedures of the criterion, for face and content validity. For this study, the validity of the instrument was assured by complying with the standards and procedures set in the face and content validity.

3.8.1 Face validity

According to Oluwatayo (2012:391-400), this refers to the extent to which the instrument measures has played the role it was intended to play or measure. This will therefore aid the researcher in ensuring that there is clarity in the readability of the questionnaire as the study instrument.

3.8.2 Content validity

This refers to the extent to which the layouts of an instrument correctly outline the content for the concept being measured. Oluwatayo (2012:391-400) further stated that the information about the research study is verified and or tested by the professionals in the research environment. The questionnaire was divided structured into the three research Objectives of the study, which accurately measured what it was meant to measure. Before utilizing the

instrument for data collection, it was pilot tested on ten respondents to check its content and validity.

3.8.3 Reliability

According to Shuttleworth and Wilson (2019:1), reliability is the quality that a particular instrument will possess that has an element of being trustworthy to perform consistently well any duty that it is assigned to carry out at any given time. Reliability can also be referred as the consistency of an object to measure what it has been developed for; it is also relatively easy to obtain information because it is in a simple number format or version (Oluwatayo 2012:391-400). Moreover, it can be said to be the instrument that can be used with trust of dependent as it can produce effective results if used repeatedly to measure the same object, individual and or a study.

3.9 PILOT STUDY

Prior to using a questionnaire to collect data it should pilot tested (Saunders et al 2012:451) and refined if necessary to establish if the respondents are encountering no challenges in answering the questions and recording the data. Moreover, it serves the purpose of assessing and or verifying the questions, its validity and most importantly, the accuracy and reliability of the information gathered with a temptation to skip this important step. According to Cope (2015:196-197), pilot studies are not designed for case studies without which the researcher has no way of knowing whether the questionnaire will succeed.

It is highly recommended that the numbers of individuals included must be sufficient to obtain a variety of views or responses that will be useful to the researcher in constructing the questionnaire or instrument. For many researchers, the minimum number of individuals selected to participate in the pilot study is 10 (Cope 2015:196-197). In this study, pilot testing of the questionnaire was conducted to 10 participants who indicated issues related to font size used needed to be enlarged and that the questionnaire consisted of more close-ended questions.

Based on the common queries from the respondents, adjustment to the questionnaire had to be made. The researcher had to make changes to the questionnaire to accommodate respondents understanding what the researcher is trying to ask. The researchers contact

number was made available for respondents to ask any art of the questionnaire not understood by the respondent. The data which was collected in the pilot study was correlated with previous studies and was used to select reliable items for use in the final questionnaire. Below is an illustration of the pilot study results conducted in this study.

3.10 DATA COLLECTION PROCESS

Data can be collected in a variety of ways, in different settings – field or laboratories – and from variety of sources. Questionnaires can be self-administered and or forwarded via emails or electronically administered (Sekaran and Bougie 2013:116). Once ethical approval was obtained from Durban University of Technology Faculty of Management Sciences Research Ethics Committee and the Department of Agriculture and Environmental Affairs in KwaZulu-Natal, the regional manager of each office was contacted and an appointment made to meet with them to explain the study. The researcher made arrangements with managers to meet with relevant staff at each of the district offices to explain the study to them and request their participation.

The researcher requested 15 minutes of their time to complete the questionnaire. The managers were informed that questionnaires will be sent via e-mail and that they have to distribute the questionnaire to relevant members. Once this list had been obtained, it was provided to IT section with the request that the questionnaire be distributed to respondents via the departmental e-mail system called outlook. The researcher collected the questionnaire from the managers after two weeks.

3.11 DATA ANALYSIS

Data analysis refers to methods used to analyze the data to enable it to become information that can be interrogated, and involves three concurrent sub-processes of data reduction, data display, and drawing and verifying conclusions (Saunders et al 2012:669). All fieldwork culminates in the analysis and interpretation of a set of data, be it quantitative survey data, experimental recordings, historical and literary text, qualitative transcripts or discursive data.

Landy and Conte (2013:56) stated that quantitative methods are based on numerical results that are obtained on data arising from tests, rating scale, questionnaires and physiological measures. An excel spreadsheet was utilized for storing data on all scaled items that were

coded on the questionnaire. The independent statistician assisted in performing the statistical analysis of data that was later analyzed utilizing the Statistical Package for Social Sciences (SPSS version 9.0).

For section A, the demographic details, the data was analyzed using descriptive and inferential statistics. For Section B, C and D (Objectives 1-3), the participants selection of scoring was presented using graph and tables, analyzed, summed with averages and means and the statistical analyses done.

3.11.1 Descriptive statistics

According to Kent (2007:296) descriptive statistics use data collection and analysis techniques that measure central tendency, variation and correlation. Data display and data summaries are components of what is commonly known as descriptive statistics. Descriptive statistics was used to describe effects of financial transversal system changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs in the KwaZulu-Natal province.

3.11.2 Inferential statistics

According to Muratovsk (2016:200) inferential statistics are techniques that allow one to use sample data to generalize about the target population from which the samples are drawn. Chi-square, correlation analysis and cross tabulations, were used to draw inferences.

3.11.3 Correlation analysis

Pearson's correlation was used in this study to measure the degree of linear association. The value of Pearson's can fall between 0 (no correlation) and + or – 1 (strong correlation).

3.11.4 Chi-square test

Chi-square test is used to statistically assess the significance of association between two variables. If the statistic value for the chi-square test of independence is greater than 0.05, it indicates that the relationship between the observed and predicted frequencies is poor or there is no relationship at all thus, the null hypothesis will not be accepted. A significance

difference is shown with $p < 0.001$. The association between two variables is considered significant if the p-value is less than 0.05 (Crow and Wiles 2008:1).

3.12 LIMITATIONS OF THE STUDY

The study was confined to the KwaZulu-Natal: Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province and did not include other provinces and therefore no representative of all DAEA staff nationally. The study focused on the employees who performed their duties using financial transversal systems namely BAS, LOGIS, HARDCAT and Qbix. An additional limitation was that the number of responses to the questionnaire survey could have affected the results, and that in the absence of knowing the staff levels, their level of engagement with the system could not be established.

3.13 ETHICAL CONSIDERATIONS

It is highly recommended that before conducting any research study appropriate procedures need to be adhered to that must be treated with professionalism, legal and social obligation directed at the respondents. According to May (2011:40), there are 10 important points relating to ethical considerations: participants must not be exposed to danger, their dignity be put first, consent obtained, protection of privacy, confidentiality, anonymity, fees to be disclosed, honesty and transparency, avoidance of biased information and exaggeration. The following ethical considerations were adhered to in this study in order to uphold the moral integrity

.

Permission to conduct the study: Before the researcher began his data collection the study/ proposal went through several processes before permission was obtained. The researcher submitted the proposal and the questionnaire to the Research Committee of the Faculty of Management Sciences, Durban University of technology, for ethical clearance and the permission was obtained on 1 December 2014 (Annexure A). This permission thereafter allowed the researcher to request and obtains permission from the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province to conduct the study within the Departmental premises (Annexure B).

Participant consent: Participants were required to provide written informed consent before they could participate in the study (Annexure C). The researcher thereafter ensures that the

signed consent forms were kept safely and separate from the completed questionnaire this was done in adherence to the processes of data collection as well as data analysis which was based on ensuring the anonymity of respondents. The covering letter was later utilized accompanied by the informed consent form (Annexure C), voluntarily all respondents signed these forms to ensure that there is right to privacy on their side.

Anonymity and confidentiality: According to May (2011:40), there is a respect based to them to remain anonymous in this study. The conditions of anonymity does not only apply to the written responses but it also applies to the usage of information collection tools such as cameras, tape recorders, even the use of collecting information or data face-to-face or interviews is included in the anonymity of this study. The researchers had to number all the questionnaires to ensure that there is no loss and are maintained in the correct sequence they are from the receipt from regions.

Confidentiality, according to May (2011:41), refers to the promise that is directed to individuals which is simply targeted to inform them that they are protected into participating to the research study and that their identity will not be linked to any information they contributed into the study. Confidentiality thereafter serves the purpose of providing that surety to respondents that their identity could not be identified in any form and or disclosed without their permission. This study has fulfilled that promise as the respondent's identities were kept privately and no one could ever identify them.

Confidentiality was insured in this study as the data collected and information given was only for the researcher to utilize for the purpose of this study.

Right to privacy: Privacy, according to May (2011:41), could be stated as that freedom extended to individuals to decide and or determine as to when they will be able to share or not share the information to others. This simple implies that the participants have a choice to decide on time as well as there is any willingness to share or not share their information.

3.14 CONCLUSION

This chapter covered the crucial research methodology aspect. The aim of this chapter was to review and explain the method in which data collection was collected and investigated. The research design, target population, and ethnics of this study were clearly defined. In this

chapter the aspects of validity, reliability, anonymity, confidentiality and ethics were also discussed clearly indicating how these were addressed. The study findings will be discussed in detail in Chapter Four.

CHAPTER 4

PRESENTATION OF RESULTS

4.1 INTRODUCTION

This chapter presents the study results aimed at investigating the effects of financial transversal system change on the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province. The research methodology was discussed in Chapter Three. In this chapter, the results and findings obtained from the data collection is presented and discussed. A questionnaire was a primary tool that was used to collect data and was distributed to respondents mainly of which were the employees of the Department of Agriculture and Environmental Affairs who were affected by financial transversal system changes. The data collected from the respondents was analyzed using the SPSS Version 9.0. The results include the descriptive statistics in the form of graphs, cross tabulations and other figures for the quantitative data that was collected. Inferential techniques include the use of correlations and chi-square test values, which are interpreted using the p-values.

4.2 RESPONSE RATE

In total the sample of 385 respondents who received the questionnaires, 290 respondents returned it in time, which equates to 89.7% response rate. The demographic data was analyzed using descriptive statistics (number and percentage) while inferential statistics were used analyze the data for the three study objectives, these being T-test to infer statistical significance. The respondents were notified that questionnaire needed to be completed as soon as possible, for the researcher to analyze the data and present the results.

Tests used in the analysis of the study are as follows:

- Descriptive statistics including means and standard deviations, where applicable. Frequencies are represented in tables or graphs
- Chi-square goodness-of-fit-test: A univariate test, used on a categorical variable to test whether any of the response options are selected significantly more/ less often

that the others. Under the null hypothesis, it is assumed that all responses are equally selected.

- Chi-square test of independence: Used on cross-tabulations to see whether a significant relationship exists between the two variables represented in the cross-tabulation. When conditions are not met Fisher's exact test is used.
- Kruskal Wallis Test: Non parametric equivalent to ANOVA. A test for several independent samples that compares two or more groups of cases in one variable.
- Binomial test: Tests whether a significant proportion of respondents select one of a possible two responses. This can be extended when data with more than 2 response options is split into two distinct groups.
- Pearson's correlation: Correlations measure how variables or rank orders are related. Pearson's correlation coefficient is a measure of linear association.

4.3 DEMOGRAPHICS OF RESPONDENTS

In this section, presentation of results which includes demographics of respondents is provided. This includes biographical data, location, gender, age and duration working in the Department

Table 4.1. The findings represent a true reflection on the current status of the employees at the Department of Agriculture and Environmental Affairs (DAEA) in KwaZulu-Natal (KZN) Province, as it is a very female-dominated department using financial transversal technological to perform their duties.

Almost half the staff (46%) n=146 were located at Head Office Cedara, with 11.8% more women than men participating. The largest age cohort was in the 31-40 age group (40.3%) n=117 with nearly 50% being 41 years and older. One fifth (22%) had worked for 5 years and less, while 42.5% had been there for more than 10 years (see table 4.1 below).

Table 4.1 Participants demographic details (n=385)

		No.	%
Location	Head Office: Cedara	146	46
	South Regional Office: Hilton	102	35
	Northern Regional Office: Richards Bay	54	19
Gender	Male	128	44.1
	Female	162	55.9
Age	Under 21	0	0
	21 - 30	31	10.7
	31 - 40	117	40.3
	41 - 50	95	32.8
	51 - 60	46	15.9
	60 or over	1	0.03
Duration working in the Department	0 – 2 years	14	4.8
	3 – 5 years	50	17.2
	6 – 10 years	103	35.5
	11 – 15 years	75	25.9
	16 – 20 years	46	15.9
	21 years and above	2	0.7

The results on statics analysis as presented in figure 4.1 below, showed that the Department of Agriculture and Environmental Affairs (DAEA) in KZN Province is female dominated as presented by 55.9% which is more than their male counterpart at 44.1%. The largest age cohort was in the 31-40 age group (40.3%) compared to other age groups. This symbolized that the department is more concerned with service delivery as these employees are self-motivated to work hard in the quest for promotions for the next levels.

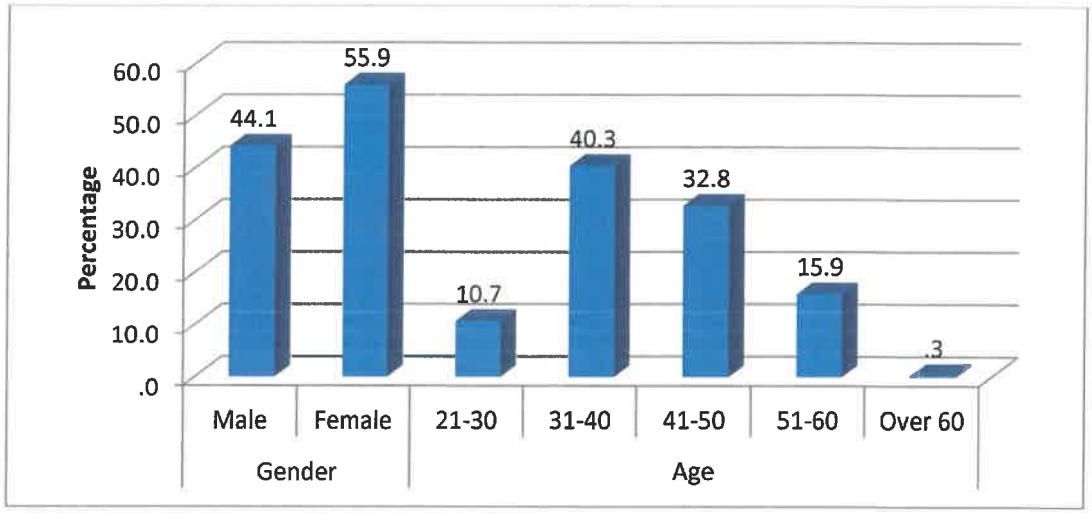

Figure 4.1: Gender and age

The analysis of the data as presented in figure 2 below, showed that a significant majority of employees have been working for a department for more than 6-10 years which equates to 35.5%, followed by 11-15 years in service at 25.9%, 3-5 years at 17.2%, with 0-2 years at 4.8% and the employees who have worked in the department for more than 20 years is represented by 0.7%.

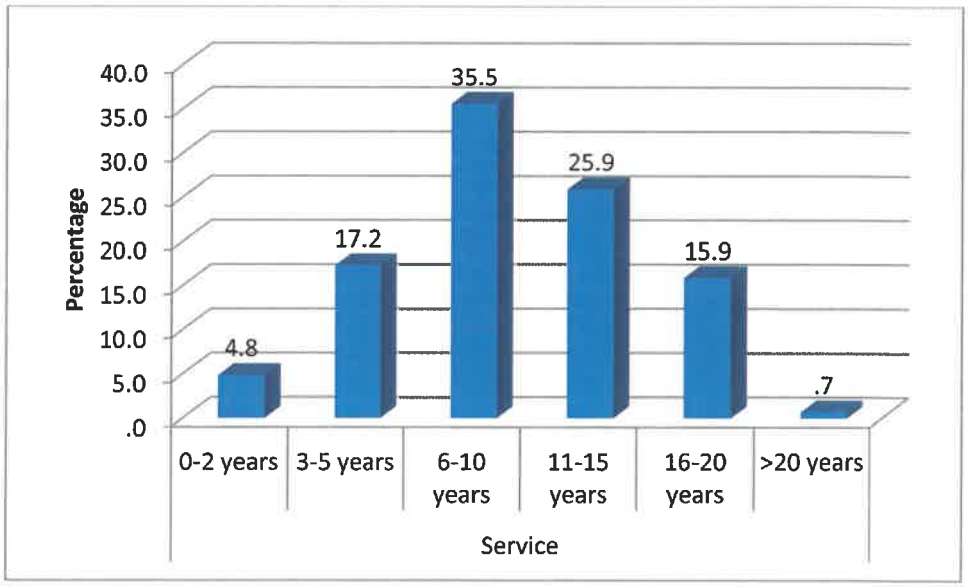

Figure 4.2: Age and years in service

4.4 Objective 1. To examine the challenges encountered with the network systems and its operation in delivering effective financial services within the department.

The analysis of the data showed that a significant majority 89.7% (n=260) of employees have been affected by technological changes in the working environment, and 10.3% (n=30) are less affected by technological changes in their working environment. The category of work that the participants were involved in ranges from: capturing on financial systems, printing of reports, authorizing and analyzing of financial transactions. The binomial test showed that significant 90% have been affected by technological changes in their work environment ($p<0.005$). Table 4.2 depicts technological changes.

Table 4.2: Technological changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	260	89.7	89.7	89.7
	No	30	10.3	10.3	100.0
	Total	290	100.0	100.0	

The data analysis on the introduction of technology showed that there was a positive response 87.6% (n=254), negative response 3.9% (n=10) and 9% (n=26) were unsure that the introduction of technology has improved service delivery. A significant number believe that the introduction of new technology has improved service delivery ($p<0.005$). Table 4.3 depicts the introduction of technology.

Table 4.3: Introduction of technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	254	87.6	87.6	87.6
	No	10	3.4	3.4	91.0
	Not sure	26	9.0	9.0	100.0
	Total	290	100.0	100.0	

4.5 Objective 2: To establish the level of technology training and its application toward delivering financial services within the department.

As presented in Table 4.4, the study showed that 56.6% (n=164) of employees received training on the new technological systems to perform their duties, and 43.4% (n=126) did not received the training. The majority of employees who have benefited more on these trainings are females compared to males; this is because the department is female dominated. There was a positive impact on financial service delivery as a result of trainings received by employees within the Department; this has also resulted in many employees being promoted to higher positions based on their performance. The results showed a significant 57% have received training ($p<0.30$).

Table 4.4: Level of trainings and its applications toward financial service delivery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	164	56.6	56.6	56.6
	No	126	43.4	43.4	100.0
	Total	290	100.0	100.0	

Table 4.5 is a depiction of network systems as a challenge on financial service delivery. Of the 290 respondents, 59.7% (n=173) of employees stated that network systems impact negatively on financial service delivery as they cannot perform their daily financial functions that they were employed for in the Department which includes the printing of reports, capturing and authorizing of financial transactions, whereas 5.2% (n=12) of employees have a positive response regarding network systems as they can do their daily functions ranging from paperwork and filing even if there is a network failure, and 35.2% (n=26) of employees were not sure. A significant number indicated that network systems have a negative impact on financial service delivery as a result of the introduction of technology with Chi-square value ($p<0.0005$).

Table 4.5: Network systems as a challenge to financial service delivery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	173	59.7	59.7	59.7
	Positive	15	5.2	5.2	64.9
	Not sure	102	35.2	35.2	100.0
	Total	290	100.0	100.0	

4.6 Objective 3.To determine resistance among employees in adoption of new financial systems within the department

The majority of employees (76.9%, n=173) as depicted in Table 4.6, indicated that there is an increased resistance among employees in adoption of new financial systems within the department as a result of fear of losing their jobs as they believe that many of the tasks will be performed by robotic machines rather than by hands, with 14.1% (n=15) responding that the resistance in adoption of new financial systems has decreased as they have received necessary trainings and 9% (n=26) reporting that there is no significant change. A significant number (n=173) think that resistance among employees has increased which impact negatively on financial service delivery with a Chi-square value of $p < 0.0005$.

Table 4.6: Determination of resistance among employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Increase	173	76.9	76.9	76.9
	Decrease	15	14.1	14.1	91.0
	Not Sure	26	9.0	9.0	100.0
	Total	290	100.0	100.0	

Table 4.7: illustrates the correlation between gender and working conditions. Cross tabulation between gender and working conditions showed that 67.9% (n=110), of the females responded positively in comparison to 49.2% (n=63) of males. The negative response in males was higher 7.8% (n=10) in comparison to females 3.1% (n=5) and 43% (n=55) of males were unsure in comparison to females at 29.0% (n=47).

Table 4.7: Correlation between gender and working conditions

			conditions			
			Yes	No	Not sure	Total
gender	Male	Count	63	10	55	128
		Expected Count	76.4	6.6	45.0	128.0
		% within gender	49.2%	7.8%	43.0%	100.0%
		Std. Residual	-1.5	1.3	1.5	
	Female	Count	110	5	47	162
		Expected Count	96.6	8.4	57.0	162.0
		% within gender	67.9%	3.1%	29.0%	100.0%
		Std. Residual	1.4	-1.2	-1.3	
Total		Count	173	15	102	290
		Expected Count	173.0	15.0	102.0	290.0
		% within gender	59.7%	5.2%	35.2%	100.0%

The cross tabulation between gender and technological changes showed that 16.4% males and 5.6% (n=9) of the females responded negatively to technological changes. Table 4.8 depicts gender and technological changes.

Table 4.8: Correlation between gender and technological change

			tech_changes		
			Yes	No	Total
gender	Male	Count	107	21	128
		Expected Count	114.8	13.2	128.0
		% within gender	83.6%	16.4%	100.0%
		Std. Residual	-.7	2.1	
	Female	Count	153	9	162
		Expected Count	145.2	16.8	162.0
		% within gender	94.4%	5.6%	100.0%
		Std. Residual	.6	-1.9	
Total		Count	260	30	290
		Expected Count	260.0	30.0	290.0
		% within gender	89.7%	10.3%	100.0%

The cross tabulation between location and technological introduction showed that 14.8% (n=8) of the males and 2.0% of females responded negatively about the introduction of new technology in their location, in the provision of effective and efficient financial services. Table 4.9 depicts the correlation between location and technological introduction.

Table 4.9: Correlation between location and technological introduction

			tech_intro			
			Yes	No	Not sure	Total
location	1	Count	41	8	5	54
		Expected Count	47.3	1.9	4.8	54.0
		% within location	75.9%	14.8%	9.3%	100.0%
		Std. Residual	-.9	4.5	.1	
	2	Count	90	2	10	102
		Expected Count	89.3	3.5	9.1	102.0
		% within location	88.2%	2.0%	9.8%	100.0%
		Std. Residual	.1	-.8	.3	
	3	Count	123	0	11	134
		Expected Count	117.4	4.6	12.0	134.0
		% within location	91.8%	.0%	8.2%	100.0%
		Std. Residual	.5	-2.1	-.3	
Total		Count	254	10	26	290
		Expected Count	254.0	10.0	26.0	290.0
		% within location	87.6%	3.4%	9.0%	100.0%

The cross tabulation between location and speed of services showed that 11.1% (n=6) males felt that the speed of services has decreased in comparison to 3.9% (n=4) females and 20.4% (n=11) of males were unsure. Table 4.10 illustrates the correlation between location and speed of services

Table 4.10: Correlation between location and speed of service

			speed_service			
			Increased	Decreased	No change	Total
location	1	Count	37	6	11	54
		Expected Count	46.9	2.2	4.8	54.0
		% within location	68.5%	11.1%	20.4%	100.0%
		Std. Residual	-1.4	2.5	2.8	
	2	Count	91	4	7	102
		Expected Count	88.6	4.2	9.1	102.0
		% within location	89.2%	3.9%	6.9%	100.0%
		Std. Residual	.3	-.1	-.7	
	3	Count	124	2	8	134
		Expected Count	116.4	5.5	12.0	134.0
		% within location	92.5%	1.5%	6.0%	100.0%
		Std. Residual	.7	-1.5	-1.2	
Total		Count	252	12	26	290
		Expected Count	252.0	12.0	26.0	290.0
		% within location	86.9%	4.1%	9.0%	100.0%

The cross tabulation between location and working conditions showed that 16.7% (n=9) of the males and 5.9% (n=6) of the females responded negatively, with 25.9% (n=14) males and 38.2% (n=39) the females unsure if the working conditions are conducive for them to perform their work. Table 4.11: Illustrates the correlation between location and working conditions.

Table 4.11: Correlation between location and working conditions

			conditions			
			Yes	No	Not sure	Total
location	1	Count	31	9	14	54
		Expected Count	32.2	2.8	19.0	54.0
		% within location	57.4%	16.7%	25.9%	100.0%
		Std. Residual	-.2	3.7	-1.1	
	2	Count	57	6	39	102
		Expected Count	60.8	5.3	35.9	102.0
		% within location	55.9%	5.9%	38.2%	100.0%
		Std. Residual	-.5	.3	.5	
	3	Count	85	0	49	134
		Expected Count	79.9	6.9	47.1	134.0
		% within location	63.4%	.0%	36.6%	100.0%
		Std. Residual	.6	-2.6	.3	
Total		Count	173	15	102	290
		Expected Count	173.0	15.0	102.0	290.0
		% within location	59.7%	5.2%	35.2%	100.0%

The cross tabulation between age and training showed that 56.6% (n=164) of employees have received training on the newly introduced technology compared in the department, with 43.4% (n=126) of employees having not received training. Table 4.12: Illustrates the correlation between age and training.

Table 4.12: Correlation between age and training

			training		
			Yes	No	Total
age	21-30	Count	8	23	31
		Expected Count	17.5	13.5	31.0
		% within age	25.8%	74.2%	100.0%
		Std. Residual	-2.3	2.6	
	31-40	Count	55	62	117
		Expected Count	66.2	50.8	117.0
		% within age	47.0%	53.0%	100.0%
		Std. Residual	-1.4	1.6	
	41-50	Count	66	29	95
		Expected Count	53.7	41.3	95.0
		% within age	69.5%	30.5%	100.0%
		Std. Residual	1.7	-1.9	
	51-60	Count	34	12	46
		Expected Count	26.0	20.0	46.0
		% within age	73.9%	26.1%	100.0%
		Std. Residual	1.6	-1.8	
	Over 60	Count	1	0	1
		Expected Count	.6	.4	1.0
		% within age	100.0%	.0%	100.0%
		Std. Residual	.6	-.7	
Total		Count	164	126	290
		Expected Count	164.0	126.0	290.0
		% within age	56.6%	43.4%	100.0%

The cross tabulation between age and working conditions showed that a significant number of employees as presented by 59.7% (n=173) felt that the working conditions are conducive enough for them to perform their duties. With 5.2% (n=15) of employees felt that the working conditions were not conducive for them to fully perform their duties and 35.2% were unsure whether the working conditions were conducive for them or not to fully perform their duties. Table 4.13 depicts age and working conditions.

Table 4.13: Correlation between age and working conditions.

			conditions			
			Yes	No	Not sure	Total
age	21-30	Count	15	0	16	31
		Expected Count	18.5	1.6	10.9	31.0
		% within age	48.4%	.0%	51.6%	100.0%
		Std. Residual	-.8	-1.3	1.5	
	31-40	Count	59	7	51	117
		Expected Count	69.8	6.1	41.2	117.0
		% within age	50.4%	6.0%	43.6%	100.0%
		Std. Residual	-1.3	.4	1.5	
	41-50	Count	66	6	23	95
		Expected Count	56.7	4.9	33.4	95.0
		% within age	69.5%	6.3%	24.2%	100.0%
		Std. Residual	1.2	.5	-1.8	
	51-60	Count	32	2	12	46
		Expected Count	27.4	2.4	16.2	46.0
		% within age	69.6%	4.3%	26.1%	100.0%
		Std. Residual	.9	-.2	-1.0	
	Over 60	Count	1	0	0	1
		Expected Count	.6	.1	.4	1.0
		% within age	100.0%	.0%	.0%	100.0%
		Std. Residual	.5	-.2	-.6	
Total		Count	173	15	102	290
		Expected Count	173.0	15.0	102.0	290.0
		% within age	59.7%	5.2%	35.2%	100.0%

The correlation between service and technology change showed that a large amount employees presented by 89.7% (n=260) felt that they have been affected by technological changes in their working environment. With only 10.3% (n=30) of those employees stated that they were not affected by technological changes in their working environment when performing their daily duties. Table 4.14 depicts service and technological changes.

Tale 4.14: Correlation between service and technology introduction

			tech_changes		
			Yes	No	Total
service	0-2 years	Count	8	6	14
		Expected Count	12.6	1.4	14.0
		% within service	57.1%	42.9%	100.0%
		Std. Residual	-1.3	3.8	
	3-5 years	Count	42	8	50
		Expected Count	44.8	5.2	50.0
		% within service	84.0%	16.0%	100.0%
		Std. Residual	-.4	1.2	
	6-10 years	Count	93	10	103
		Expected Count	92.3	10.7	103.0
		% within service	90.3%	9.7%	100.0%
		Std. Residual	.1	-.2	
	11-15 years	Count	72	3	75
		Expected Count	67.2	7.8	75.0
		% within service	96.0%	4.0%	100.0%
		Std. Residual	.6	-1.7	
	16-20 years	Count	43	3	46
		Expected Count	41.2	4.8	46.0
		% within service	93.5%	6.5%	100.0%
		Std. Residual	.3	-.8	
	>20 years	Count	2	0	2
		Expected Count	1.8	.2	2.0
		% within service	100.0%	.0%	100.0%
		Std. Residual	.2	-.5	
Total		Count	260	30	290
		Expected Count	260.0	30.0	290.0
		% within service	89.7%	10.3%	100.0%

The correlation between service and training showed that 56.6% (n=164) have received trainings on the newly introduced technology. With 43.4% (n=126) responded that they have not received any training on the newly introduced technology within the department. Table 4.15 illustrated the correlation between service and training.

Table 4.15: Correlation between service and training

			training		
			Yes	No	Total
service	0-2 years	Count	11	3	14
		Expected Count	7.9	6.1	14.0
		% within service	78.6%	21.4%	100.0%
		Std. Residual	1.1	-1.2	
	3-5 years	Count	20	30	50
		Expected Count	28.3	21.7	50.0
		% within service	40.0%	60.0%	100.0%
		Std. Residual	-1.6	1.8	
	6-10 years	Count	41	62	103
		Expected Count	58.2	44.8	103.0
		% within service	39.8%	60.2%	100.0%
		Std. Residual	-2.3	2.6	
	11-15 years	Count	53	22	75
		Expected Count	42.4	32.6	75.0
		% within service	70.7%	29.3%	100.0%
		Std. Residual	1.6	-1.9	
	16-20 years	Count	37	9	46
		Expected Count	26.0	20.0	46.0
		% within service	80.4%	19.6%	100.0%
		Std. Residual	2.2	-2.5	
	>20 years	Count	2	0	2
		Expected Count	1.1	.9	2.0
		% within service	100.0%	.0%	100.0%
		Std. Residual	.8	-.9	
Total		Count	164	126	290
		Expected Count	164.0	126.0	290.0
		% within service	56.6%	43.4%	100.0%

The cross tabulation between years of service and the speed of services showed that employees as represented by 86.9% (n=252) felt that the speed of services has increased due to the introduction of new technology, which has resulted in improved financial services in the department. With 4.1% (n=12) of employees responded that speed of service has decreased with the introduction of technology due to a number of trainings conducted which

was costly and time consuming. Only 9.0% of employees were unsure if the is any change in speed of service within the department derived from the introduction of new technology. Table 4.16 depicts the correlation between years of service and speed of service.

Table 4.16: Correlation between years of service and the speed of service

			speed_service			
			Increased	Decreased	No change	Total
service	0-2 years	Count	9	2	3	14
		Expected Count	12.2	.6	1.3	14.0
		% within service	64.3%	14.3%	21.4%	100.0%
		Std. Residual	-.9	1.9	1.6	
	3-5 years	Count	40	0	10	50
		Expected Count	43.4	2.1	4.5	50.0
		% within service	80.0%	.0%	20.0%	100.0%
		Std. Residual	-.5	-1.4	2.6	
	6-10 years	Count	92	3	8	103
		Expected Count	89.5	4.3	9.2	103.0
		% within service	89.3%	2.9%	7.8%	100.0%
		Std. Residual	.3	-.6	-.4	
	11-15 years	Count	65	7	3	75
		Expected Count	65.2	3.1	6.7	75.0
		% within service	86.7%	9.3%	4.0%	100.0%
		Std. Residual	.0	2.2	-1.4	
	16-20 years	Count	44	0	2	46
		Expected Count	40.0	1.9	4.1	46.0
		% within service	95.7%	.0%	4.3%	100.0%
		Std. Residual	.6	-1.4	-1.0	
	>20 years	Count	2	0	0	2
		Expected Count	1.7	.1	.2	2.0
		% within service	100.0%	.0%	.0%	100.0%
		Std. Residual	.2	-.3	-.4	
Total		Count	252	12	26	290
		Expected Count	252.0	12.0	26.0	290.0
		% within service	86.9%	4.1%	9.0%	100.0%

Table 4.17 depicts the cross tabulation between years of service and the working conditions showed that 59.7% (n=173) of employees felt that there is an improved and conducive working conditions, with 5.2% (n=15) stated that working conditions has not improved and 35.2% of the employees were unsure if the working conditions has improved or not.

Table 4.17 Correlation years of service and working conditions.

			conditions			
			Yes	No	Not sure	Total
service	0-2 years	Count	7	0	7	14
		Expected Count	8.4	.7	4.9	14.0
		% within service	50.0%	.0%	50.0%	100.0%
		Std. Residual	-.5	-.9	.9	
	3-5 years	Count	22	5	23	50
		Expected Count	29.8	2.6	17.6	50.0
		% within service	44.0%	10.0%	46.0%	100.0%
		Std. Residual	-1.4	1.5	1.3	
	6-10 years	Count	49	6	48	103
		Expected Count	61.4	5.3	36.2	103.0
		% within service	47.6%	5.8%	46.6%	100.0%
		Std. Residual	-1.6	.3	2.0	
	11-15 years	Count	60	2	13	75
		Expected Count	44.7	3.9	26.4	75.0
		% within service	80.0%	2.7%	17.3%	100.0%
		Std. Residual	2.3	-1.0	-2.6	
	16-20 years	Count	33	2	11	46
		Expected Count	27.4	2.4	16.2	46.0
		% within service	71.7%	4.3%	23.9%	100.0%
		Std. Residual	1.1	-.2	-1.3	
	>20 years	Count	2	0	0	2
		Expected Count	1.2	.1	.7	2.0
		% within service	100.0%	.0%	.0%	100.0%
		Std. Residual	.7	-.3	-.8	
Total		Count	173	15	102	290
		Expected Count	173.0	15.0	102.0	290.0
		% within service	59.7%	5.2%	35.2%	100.0%

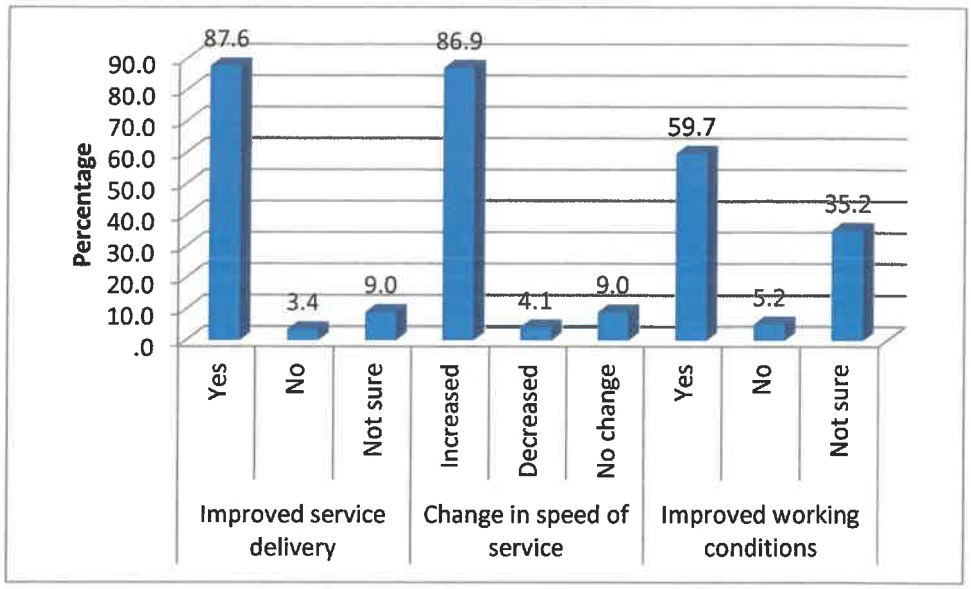

Figure 4.3: Improved service delivery, change in speed of service, improved working conditions

4.6.1 Improved working conditions

A significant number of employees represented by 59.7%% as illustrated in figure 4.3 stated that the introduction of new technologies has improved working conditions, with 5.2 % of the employees thinking that the introduction of new technologies has not improved working conditions, 35.2% of employees are unsure if the introduction of new technologies has improved the working conditions.

4.6.2 Improved service delivery

The employees from the Department of Agriculture and Environmental Affairs who utilize financial systems namely BAS, LOGIS, PERSAL and Qbix had varying opinions about the improvement of service delivery. About 87.6% of employees indicated that "yes" there is an improved financial service delivery in the department that is the result of the introduction of technologies, with 3.4% of employees feeling that there is no improved service delivery in the department. A slight majority of employees represented by 9.0% are unsure if there is any improvement in service delivery as the result of the introduction of new technologies.

4.6.3 Change in speed of service

The majority of employees presented by (86.9%, n=252) indicated that speed of service has increased as a result of the introduction of new software, with 4.1% (n=12) responding that the speed of service has decreased and 9% (n=26) reported that there is no significant change.

4.7 CONCLUSION

This chapter presented the findings of the data collected from the 385 questionnaires that had been administered of which 290 questionnaires were successfully answered. The questionnaire responses were analyzed through descriptive statistical techniques using SPSS. The majority of the respondents sampled were females in comparisons to the males. The findings presented related to the demographic characteristics, technological changes, training, network systems as a challenge for financial service delivery, resistance among employees, improved service delivery, change in speed of services and improved working conditions.

The analysis showed that a significant 90% of employees have been affected by technological changes in their working environment. A significant number believe that introduction of new technologies has improved service delivery. In the next chapter, the conclusions and recommendations with regards to these findings will be discussed.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

5.1 INTRODUCTION

The purpose of this chapter is to make conclusions on what was established in the previous chapter, and to provide recommendations based on the research results. The aim of this study was to determine the effects of financial transversal system changes in the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province. The conclusions are drawn based on reviewed studies and the analyzed data which provide answers to research objectives that are presented in Chapter One. The section that follows presents the summary of the study.

5.2 DISCUSSION OF FINDINGS

The discussion focuses on the following objectives:

- To examine the challenges encountered with the network systems and its operation in the delivery of financial services.
- To establish the level of technology training and its application towards delivering financial services in the department.
- To determine resistance among employees to adoapting to the new technological financial systems with the department.

5.3 Objective 1: To examine network systems as a challenge in the production of effective financial service delivery

The current study revealed that 89.7% (n=260) of employees have been affected by financial transversal system changes in the working environment. It is noted that network breakdown played a huge role in compromising service delivery within the department as financial transversal systems (BAS, LOGIS and PERSAL) are network linked and connected. Dauda & Akingbade (2011) stated that when network systems are used with other resources in an effective and efficient manner, an organization can benefit from increased productivity and achieve its goals. The challenge in the production of effective financial service delivery in the

department was measured by assessing the network or data line used in connecting departmental systems namely BAS (Basic Accounting System), Qbix (e-procurement), PERSAL and LOGIS in order to produce effective, economical financial service delivery. According to Saunders, Lewis and Thornhill (2012:565), the network or data lines are the nodes or boxes that are joined by means of lines even with arrows in a way to draw the relationship.

Technology can become essential to work, but then fail at the worst possible moment. For this and other reasons, it is important to consider how the organization would cope when some or all technology components are unavailable. For example, in addition to storing the mailing list in a database, the list would be printed periodically. Saunders, Lewis and Thornhill (2012:356), state that modern uses of structured observation do not have to rely on computer technology to improve service delivery. Structured observation is still used as a tool to assess the way in which workers in modern workplaces carry out their tasks.

5.4 Objective 2: Level of training and its application toward service delivery

This study showed that a significant number of employees presented by (n=164) 56.6% received on the job training on the newly introduced financial technologies in order to perform their duties efficiently and effectively, with (n=126) 43.4% of employees having not received training. Hence the department is female-dominated with 55.9% and 44.1% males; this implies that more females have received training on the newly introduced technologies compared to males. In the 21st century business, training and development is seen as the most important factor for the existence of each and every business as it improves the ways in which asks are carried out which is beneficial for both the employee and organization. Another important key benefit of training for the organization is the shaping of the organizational structure and culture into a positive direction (Athanasios and Chatzimouratidis 2012:62).

5.4.1 Benefits of training for organizations

The most important advantage and benefit of training and development can be that trained employees can be their own supervisors compared to those who did not have any training. Trained employees will work effectively compared to those not trained, because of the skills, knowledge and positive attitude toward work. For employees, training will provide a sense of pride and confidence toward their job, which will also reduce the amount of fear and errors which will thus lead to acceptance of new challenges. Organizations will save a lot of money if investments are based largely on training and development as this will save the organization from hiring new employees timeously, which lack skills and experience (Athanasios and Chatzimouratidis 2012).

On the job training can be utilized as a tool or technique that aid employees to acquire more knowledge about their area of responsibilities. Training will demonstrate practical experience of the job for employees compared to bookish knowledge which will take more time to perfect and convey to action. It is highly recommended that organizations allow their employees to participate on the on-job training programs so as to learn practical ways of doing their tasks. Training employees can also be used as a technique to reduce costs in the organization as they convey their skills and information to their counterparts (Jagero and Komba 2012).

5.4.2 Training methods

There are two types of training methods or techniques that can be mentioned in this study namely the on-site and the off-site programs, these training methods have its own subtypes. In this study 56.6% of employees received trainings, they first received training based on the on-site training methods. This type of training introduces the junior staff or employees to experienced employees in a bid to learn more and improve their skills. Organizations are mandated to ensure that employees undergo or are introduced in the on-job training before moving further to a more formal training. Some departments or organizations has decided against conducting the on-job training even thou it is beneficial to the employees, because some employees have a fear of losing their original position which at time sees them not giving their 100% effort on these programs. It is very important to note that training give employees better understanding about their jobs which is then transferred to high productivity and turnover for the organization (Elnaga and Elmran 2013).

5.4.3 Job Rotation

Employees who are rotated have a better opportunity to improve and develop new skills compared to those remaining in a single job. For employees to fully benefit from job rotation, three to six month period must be allocated on each individual or employee to fully understand the key performance area of that new job. The main purpose of this kind of training is therefore to improve and develop employees to be future managers (Landy and Conte 2013:291).

5.4.4 Apprenticeship

Apprenticeship is a formal program used to teach a skilled trade. Apprenticeship can be said to be different from internship as it is directed into training and employ individuals who already know which type of job they want to do. The main purpose of this program is to ensure that trainees sign the contract and given an opportunity to learn skills related to their career paths. It is a training program that is normal run for six years on-the job training after which an individual or trainee is granted or handed a formal qualification as well as a relevant skills on that field. Apprenticeship is specifically directed to careers such as manufacturing as well as construction (Landy and Conte 2013:290).

5.5 Objective 3: Resistance among employees in the adoption of new technologies

Landy & Conte (2013:584) stated that the barriers in relation to organizational change are targeted to both the employees and the organization at large. The barriers to organizational change which are targeted on the individual perspectives can be as follows:

- The change that arises from inflation in the country which can be said to be an economic fear causing employees to resist change. Inflation can lead to retrenchments and or job loss in the country resulting to high rate of unemployment and poverty.
- As technology is changing drastically in the 21st century business, employees are in fear of not knowing what will happen tomorrow about their jobs hence they then resist themselves to adopt new technologies
- New technologies can also meant the loss of social relationships between employees hence certain tasks will be performed by robotic machines rather that human power.

Many of these barriers were included under the umbrella of "trust in management." The organization usually emphasizes the positive outcomes of proposed change. The question is whether they can be believed. Trust in management turned out to be a significant predictor of resistance to the change and consequent outcomes, such as satisfaction with a commitment to the organization.

Quick and Nelson (2009:63) states that, there are many steps that managers can implement or put into action in order to assist employees adjust to technological changes. Managers in organizations or departments must invite employees to take part in decision makings especially those that are directed to technological change because they are users of technology. This will work as a strategy in place to assist employees to be updated about changes related to their area of responsibilities, which reduce the amount of resistance to change they might have. Employees are the main technology users. It is therefore important to involve them in the early stages to perform these tasks as it will lead to smooth flow of operation within the organization.

5.6 The statistics on resistance of employees in adoption of new technologies

The significant number of employees in the department has shown their resistance in adopting the newly introduced and more advanced technologies. As has stated before that huge resistances that arises from employees in adopting new technologies ranges from economic fear, fear of unknown and fear of altered social relationship just to name the few, but the most notable and common resistance in the department arises from the lack of trainings to equip employees with the skills and confidence to perform their daily tasks.

This is symbolical to the departmental statistics which shows that 56.6% (n=164) of employees has received training compared to 43.4% who has not received training. Based on this statistics, the interpretation is that there is a very small difference between the trained and untrained employees in the department. This then gives us the difference of 13.2% which is between the trained and untrained employees, which therefore entails that even though there are trainings in the department but are not enough to carter for every employees especial the system users who are largely affect by the introduction of new technologies.
Since this is a female dominated department, it therefore relatively easy for females to be nominated for trainings compared to males. This therefore causes conflicts and resistances

among employees which in turn compromise service delivery as males particularly have slim chances of being nominated to attend trainings.

5.7 LIMITATIONS OF THE STUDY

This study only focuses on the effects of financial transversal system changes in the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in the KwaZulu-Natal Province. The study was limited to a sample of three hundred and ninety five respondents who were affected by financial transversal system changes in their work environment. The study was confined in the KwaZulu-Natal Province, and no any other province in South Africa.

5.8 RECOMMENDATIONS FOR FURTHER RESEARCH

In light of the findings from the study, further research is recommended in the following areas:

- The study only focused on the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province respondents, regarding financial transversal system changes. A possible broader research study may be conducted in other public sector organizations within the KwaZulu-Natal Province to establish the effects of financial transversal system changes on service delivery.

- A follow up study be conducted to investigate any changes in relation to examining network systems, assessing of the level of training and its implications, as well as determining of resistance among employees in adopting new software systems.

5.9 CONCLUSION

This chapter concludes this research study and all objectives are attained. In conducting this study, the researcher has the aim of examining network systems; assess level of training and its application and to determine resistance among employees in the adoption of new technological systems within the Department. The important finding derived from the study research objectives indicated that a large number of employees represented by 89.7%, stated that they are mostly affected by technological changes in their working environment, which at time compromises service delivery as network breakdown results in a standstill to financial system, and users cannot utilize the systems (BAS, PERSAL, LOGIS, HARDCAT and Qbix).

This finding signifies that the aim of the study which was to investigate the effects of financial transversal system changes in the production of efficient economical service delivery in the Department have been achieved as the study statistics indicated that 89.7% of employees are affected by the introduction of technological changes, meaning training needs of the employees must be taken into an urgent consideration, this will also reduce resistances among employees on the adoption of new technologies and also reduce the conflict between females and males which at times compromised service delivery.

This study will therefore benefit the department in various ways but most importantly by improving service delivery and eliminate the steady flow of operations as the management has to come up with the well documented plan of action and strategies to overcome the barriers derived from the introduction of the new technologies in the department in order to uplift the name of the department, which is supported by the spirit of "Batho Pele". The Training and Development Unit under Human Resources Management (HRM) Section has to come up with various and improved training programs and methods for officials who will be directed to equip and cater for both female and males.

This chapter concludes the study on the effects of financial transversal system changes in the production of efficient economic service delivery in the Department of Agriculture and Environmental Affairs in KwaZulu-Natal Province.

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Annexure

A

Permission from Management Sciences: Faculty Research Ethics Committee Durban University of Technology

DUT
DURBAN
UNIVERSITY OF
TECHNOLOGY

RESEARCH
ETHICS
COMMITTEE

MANAGEMENT SCIENCES: FACULTY RESEARCH ETHICS COMMITTEE (FREC)

01 December 2014
167 Zwartkop Road
Pietermaritzburg
3200
Student No: 20102565
FREC No: 73/14FREC

Dear Mr KJ Makhaye

MASTERS DEGREE IN TECHNOLOGY: BUSINESS ADMINISTRATION

TITLE: EFFECTS OF TECHNOLOGICAL CHANGES IN THE PRODUCTION OF EFFICIENT ECONOMICAL SERVICE DELIVERY IN THE DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS

Please be advised that the FREC Committee has reviewed your proposal and the following decision was made: Ethical Level 1 -Full Approval

Approval has been granted for a period of one year, after which you are required to apply for safety monitoring and annual recertification. Please use the form located at the Faculty. This form must be submitted to the FREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the FREC according to the FREC SOP's.
Please note that ANY amendments in the approved proposal require the approval of the FREC as outlined in the FREC SOP's.

Yours Sincerely

Prof N Dorasamy
Chairperson: FREC

Annexure

B

Permission from the Department of Agriculture and Environmental Affairs to conduct the study within the Departmental Premises

agriculture
& rural development
Department:
agriculture
& rural development
PROVINCE OF KWAZULU-NATAL

KZN Department of Agriculture & Rural Development
Private Bag X9059, Pietermaritzburg, 3200

Enquiries: Ps C.B. Sibiya
Tel: 033-3559249 or Cellphone number 082 301 9471
Toll-Free: 0800 000 996
Email: callcentre.agriculture@kzndae.gov.za
Website:

20 YEARS OF FREEDOM

Mr K.J. Makhaye
167 Zwartkop Road
Pietermaritzburg
3200

Dear Sir

PERMISSION TO CONDUCT RESEARCH WITHIN THE DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

I have pleasure informing you that permission is granted to conduct research on **"The effects of technological changes in the production of efficient economic service delivery in the Department of Agriculture and Rural Development"**

Your permission has the following conditions:

i. Your study must be presented by your Supervisor before the bursary committee for noting;
ii. Your research will only commence once this office has received confirmation of your ethic clearance;
iii. Ensure that you adhere to all government's prescripts including all departmental policies and procedures;
iv. Ensure that you inform the Department through Directorate: Human Resource Capacity Development before you commence your research;
v. Your study efforts should be included in your personal development plan as part of your performance agreement, and
vi. The Department must approve any publication or paper before it is published.
vii. The Department of Agriculture and Rural Development will not be able to provide any resources towards your study.

I take this opportunity to wish you well on your study

Acting Head of Department
Ms GJ Majola 8/4/2015

Annexure

C

Information Letter

DUT DURBAN UNIVERSITY OF TECHNOLOGY

Faculty of Management Sciences

Department of Public Management & Economics

Date: 17 October 2014

Dear Participant

I, **Khulekani Jefery Makhaye**, a Masters student at the University of Technology invite you to participate in a research study entitled Effects of technological changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs. The primary objective of this study is to examine network systems as a challenge in the production of effective service delivery in the Department of Agriculture and Environmental Affairs.

Through your participation I hope to assess the effects of technological changes in the production of economical service delivery in the Department of Agriculture and Environmental Affairs. The results of this study are intended to identify challenges and possible solutions to close gaps in order to ensure that technological changes do not effects the public service delivery expectations.

Your participation is this study is voluntary. You may refuse to participate or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in this study. If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed below.

This survey should take you about 15 minutes to complete. Thank you for taking time to complete this survey.

Yours faithfully

K.J Makhaye

Contact Details: 0765662418

Supervisor
Contact Details: 0837867282

Annexure

D

Questionnaire

QUESTIONNAIRE

INSTRUCTIONS

In completing this survey, as an official of the Department you will be asked questions focusing on the effects of technological changes in the production of efficient economical service delivery in the Department of Agriculture and Environmental Affairs. Please complete this questionnaire by ticking the appropriate box as means of rating the effects of technological changes in your working environment.

Section A. Demographic details

Q1. Please indicate your location

Head Office	Cedara	
South Regional office	Hilton	
Northern Regional Office	Richards Bay	

Q2. Mr/Mrs/Miss/Rev/Dr: _____

Q3. Please indicate whether you are

Male ☐

or Female ☐

Q4. What is your age?

Under 21 ☐
21 – 30 ☐
31 – 40 ☐
41 – 50 ☐
51 – 60 ☐
61 or over ☐

Q5. How long have you been working in the Department?

0 – 2 years	
3 – 5 years	
6 – 10 years	
11 – 15 years	
16 – 20 years	
21 years and above	

Section B. To examine network systems as a challenge in the production of effective service delivery in the Department of Agriculture and Environmental Affairs.

Q6. Have you been affected by technological changes in your working environment?

Yes ☐

No ☐

If "Yes" please briefly explain:

_____

_____

_____

_____

Q7. Do you think the introduction of new technologies in the Department has improved service delivery?

Yes ☐

No ☐

Not sure ☐

If "Yes" please briefly explain

_____

_____

_____

_____

Q8. Is the network breakdown a challenge in slowing financial service delivery in the department? Please explain:

_____

_____

_____

Q9. Please rate the speed of financial services within the department as a result of the newly introduced software?

Improved ☐

Not Improved ☐

No Change ☐

Q10. Do you think the network breakdown contribute to poor working conditions within the department?

Yes ☐

No ☐

Not Sure ☐

Section C. To establish the level of technology training and its application toward delivering financial services in the department

Q11. Did you receive ant training on the newly introduced technology?

Yes ☐

No ☐

Q12. If "Yes", is it helping you in improving service delivery in the Department?
Briefly Explain:

_____

_____

Q13. Do you think the training on the newly introduced software system will help in improving financial service delivery? Briefly Explain:

_____

_____

_____

Q14. Is the training on the newly introduced software system will improve the quality and standard of work?

Yes ☐

No ☐

Q15. Is the length of training on the newly introduced software enough for you to understand the software system and apply that skill on your daily tasks?

Enough ☐

Not enough ☐

Not sure ☐

Q16. Do you think the training carters for all challenges encountered in using the newly introduced software system? Briefly Explain:

_____

_____

_____

Q17. In your opinion, do you think that employees were given enough opportunities to attend training on the newly introduced software in the department?

I agree ☐

I disagree ☐

Not sure ☐

Q18. Did the department conducted further assessments after training on the newly introduced software?

Yes ☐

No ☐

Not sure ☐

Section D. To determine resistance among employees to adopting the new technological systems within the department.

Q19. Do you think that resistance among employees in adopting new technological systems affect financial service delivery within the department?

Yes ☐

No ☐

Not Sure ☐

Q20. In your opinion, what are the main causes of resistance among employees in adoption of newly introduced software in the department?

Fear of the unknown ☐

Fear of failure ☐

All of the above ☐

Not Sure ☐

Q21. Are employees at fear of losing their jobs through the introduction of new technological systems in the department?

Yes ☐

No ☐

Not Sure ☐

Q22. If your answer is "Yes" in question 21 above, briefly explain:

_____

_____

_____

Q23. What sort of mechanism do you think the department should apply in reducing resistance amongst employees within the department? Briefly explain to support your answer:

_____

_____

_____

Thank you for taking time to avail yourself for the survey. The information you provided is confidential and very important in helping me to evaluate of the "Effects of financial transversal system changes in the production of efficient economic service delivery in KZNDAE. The information you provided will be combined with information from a large number of other employees into a study report in a manner that your individual identity cannot be identified.