UNIVERSITY OF KWAZULU-NATAL

ASSESSING THE INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN THE PUBLIC SECTOR

BY

Sanele Collen Dlamini

9262219

A dissertation submitted in partial fulfilment of the requirements for the degree of

Master of Business Administration

Graduate School of Business
Faculty of Management Studies

Supervisor: Mr A Marimuthu

2009
DECLARATION

I Sanele Collen Dlamini declare that

(i) The research reported in this dissertation, except where otherwise indicated, is my original work.

(ii) This dissertation has not been submitted for any degree or examination at any other university.

(iii) This dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

(iv) This dissertation does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
   a) their words have been re-written but the general information attributed to them has been referenced;
   b) where their exact words have been used, their writing has been placed inside quotation marks, and referenced.

(v) Where I have reproduced a publication of which I am an author, co-author or editor, I have indicated in detail which part of the publication was actually written by myself alone and have fully referenced such publications.

(vi) This dissertation does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the dissertation and in the References sections.

Sanele Collen Dlamini: 9262219
Signed ..............................................

Date 10 MARCH 2010

\[\text{ii}\]
ACKNOWLEDGEMENTS

I wish to express my sincere appreciation and gratitude to the following individuals, without whose assistance, this manuscript would not have been possible:

- Mr A Marimuthu of the School of Information Systems and Technology, University of KwaZulu-Natal (South Africa), the supervisor of this study for his supervision, reviews and guidance.
- Mr Luvuyo Keyise the Executive Manager: Information Communication Technology at South African Social Security Agency (SASSA) in Pretoria
- Mr Nhlanhla Mabaso Chief Information Officer (CIO) at the Department of Home Affairs National Office in Pretoria for granting permission to gather data from the department’s documents and interact with employees.
- The staff at SASSA and DoHA, for partaking in the study by providing the information in the survey conducted.
- Leonie Munro, Marleo’s Communication Services in Durban, for editing the text.
- Mr Stanley Malange from SASSA: Monitoring & Evaluation Unit for sharing his in-depth knowledge on the use of statistical tools
- My friend Mr Mxolisi Zondi for reviewing and assisting with the layout of this manuscript
- My wife Phumelela Virginia Dlamini, for her support, motivation and for proofreading this manuscript.
- My father Muziwoxolo and my late mother Lindiwe Dlamini, who supported and motivated me during my studies.
ABSTRACT

Information Communication Technology (ICT) is used by private sector companies to differentiate themselves from their counterparts. Some companies view ICT as a strategy enabler and through its integration have improved their service offerings and increased production.

This study assesses the integration of ICT in the South African public sector. It compares two government departments: the Department of Home Affairs (DoHA) and the Department of Social Development (SASSA). It highlights the investment these departments make into ICT, assesses the level of management at which ICT is integrated, the perception of managers towards ICT integration and the alignment of ICT processes to the departments‘ core businesses (Information Systems - Information Technology alignment). The purpose of the study is to resonate to managers in the public sector the benefits ICT can bring in their environment and to highlight the value it can contribute towards improved service delivery if implemented appropriately.

Simple random sampling was used to gather data. Questionnaires were distributed in the two departments. At DoHA 23 questionnaires were collected and used as sample and at SASSA 34 questionnaires were collected and used a sample. The descriptive and inferential statistical analysis were done and data presented in the form of tables and charts. The analysis of data shows different approaches to ICT integration in the two departments. The Department of Social Development (SASSA) placed emphasis on ICT integration at both functional and strategic levels of management. The DoHA had no clearly defined approach and a level of indecision amongst the employees was observed.

The age of respondents in the two departments had an influence in the manner ICT integration is viewed by employees. The younger respondents accepted ICT integration more readily in their environment, the older respondents reflected some resistance to ICT integration. The data presented shows that SASSA had younger employees up to the age of 49 years whereas at DoHA there were older employees up to the age of 60 years.
In both departments data presented shows that managers understood the value of ICT but due to factors such as skills shortages, fear of IT, poorly communicated plans of ICT integration and minimal investments to human resource development, the public sector still struggles to align its core business to IT projects for maximum benefits.

Some of the recommendations this study makes are:

- ICT integration to be implemented at strategic levels and cascaded down the other levels through policies and strategic documents.
- It also recommends that executives provide the necessary support to ICT and provide room for it to benefit the public sector.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Page</td>
<td>i</td>
</tr>
<tr>
<td>Declaration</td>
<td>ii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iii</td>
</tr>
<tr>
<td>Abstract</td>
<td>iv</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>vi</td>
</tr>
<tr>
<td>List of Figures</td>
<td>x</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xi</td>
</tr>
</tbody>
</table>

## Chapter One: Introduction and Background of the Study

1.1 Introduction                        | 1    |
1.2 Background to the Study            | 1    |
1.3 ICT Integration Defined in the Public Sector Perspective | 2 |
1.4 Motivation of the Study            | 3    |
1.5 Current Status in the South African Public Sector | 5 |
1.6 Focus of the study                 | 6    |
1.7 Reason for the Study               | 6    |
1.8 Problem Statement                  | 7    |
1.9 Aim of the Study                   | 8    |
1.10 Objectives of the Study           | 8    |
1.11 Research Questions                | 8    |
1.12 Research Methodology              | 9    |
1.13 Limitations of the Study          | 10   |
1.14 Breakdown of the Study            | 10   |
1.15 Summary                           | 10   |

## Chapter Two: Literature Review and Significance of Study

2.1 Introduction                       | 11   |
2.2 Service Delivery Defined in Public Sector Context | 11 |
2.3 The Role of each Department in the Public | 12 |
2.4 The Current ICT Systems in the Two Departments | 13 |
Chapter Four: Results

4.1 Introduction

4.2 Descriptive Statistics of Biographical Data
   4.2.1 Respondents’ Ages
   4.2.2 Formal education levels
   4.2.3 Work experience
   4.2.4 Number of respondents in different departments

4.3 Analysis of Dependent Variables
   4.3.1 To determine if ICT is implemented at a strategic level or at a functional level in the public sector (Objective 1)
   4.3.2 To determine the perceptions of managers towards the impact of ICT investment in the public sector (Objective 2)
   4.3.3 To determine if there are any barriers towards information systems—information technology (IS-IT) alignment in the public sector (Objective 3)

4.4 Cross Tabulations

4.5 Summary

Chapter Five: Analysis and Discussion

5.1 Introduction

5.2 Discussion
5.2.1 Results from Frequencies of Biographical Data

5.2.2 Results from analysis of dependent variables

5.2.2.1 Objective 1: To determine if ICT is implemented at a strategic level or at a functional level in the public sector

5.2.2.2. Objective 2. To determine the perceptions of managers towards the impact of ICT investment in the public sector

5.2.2.3. Objective 3. To determine if there are any barriers towards ICT-Business alignment in the public sector

5.3 Summary

Chapter Six: Conclusions and Recommendations

6.1 Introduction

6.2 Key Findings

6.3 Recommendations for Future Research

6.4 Specific Recommendations for this Research

6.5 Limitations and future research of the study

6.6 Summary

Glossary of Terms

Acronyms

References
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig 4.1</td>
<td>Age of Respondents at DOHA &amp; SASSA</td>
<td>32</td>
</tr>
<tr>
<td>Fig 4.2</td>
<td>Formal Education levels at DOHA &amp; SASSA</td>
<td>33</td>
</tr>
<tr>
<td>Fig 4.3</td>
<td>Work Experience in years</td>
<td>34</td>
</tr>
<tr>
<td>Fig 4.4</td>
<td>Work Streams of Respondents at SASSA</td>
<td>35</td>
</tr>
<tr>
<td>Fig 4.5</td>
<td>ICT As a Functional Support Compared</td>
<td>36</td>
</tr>
<tr>
<td>Fig 4.6</td>
<td>ICT As a Strategic Function Compared</td>
<td>37</td>
</tr>
<tr>
<td>Fig 4.7</td>
<td>ICT Investment Effects compared</td>
<td>37</td>
</tr>
<tr>
<td>Fig 4.8</td>
<td>Productivity increased</td>
<td>38</td>
</tr>
<tr>
<td>Fig 4.9</td>
<td>ICT Investments More for Maintenance of Existing Equipment</td>
<td>39</td>
</tr>
<tr>
<td>Fig 4.10</td>
<td>ICT Investments more for New Software Development</td>
<td>39</td>
</tr>
<tr>
<td>Fig 4.11</td>
<td>ICT Investments Created Need to Educate Employees</td>
<td>40</td>
</tr>
<tr>
<td>Fig 4.12</td>
<td>Employee Satisfaction Increased – Consequences of ICT</td>
<td>41</td>
</tr>
<tr>
<td>Fig 4.13</td>
<td>Customer Satisfaction Increased – Consequences of ICT</td>
<td>41</td>
</tr>
<tr>
<td>Fig 4.14</td>
<td>ICT Improved internal Communication</td>
<td>42</td>
</tr>
<tr>
<td>Fig 4.15</td>
<td>ICT, Non-ICT Lack Close Relationship</td>
<td>43</td>
</tr>
<tr>
<td>Fig 4.16</td>
<td>ICT does not Prioritize Well</td>
<td>43</td>
</tr>
<tr>
<td>Fig 4.17</td>
<td>ICT Fails to meet Commitments</td>
<td>44</td>
</tr>
<tr>
<td>Fig 4.18</td>
<td>ICT Does not Understand Business</td>
<td>45</td>
</tr>
<tr>
<td>Fig 4.19</td>
<td>ICT Lacks Executive Support Compared</td>
<td>45</td>
</tr>
<tr>
<td>Fig 4.20</td>
<td>ICT Lacks Management Leadership Compared</td>
<td>46</td>
</tr>
<tr>
<td>Fig 4.21</td>
<td>ICT Fails to Meet Strategic Goals</td>
<td>46</td>
</tr>
<tr>
<td>Fig 4.22</td>
<td>Budgetting Problems Prevent ICT from Achieving Goals</td>
<td>47</td>
</tr>
<tr>
<td>Fig 4.23</td>
<td>Antiquated ICT Infrastructure</td>
<td>48</td>
</tr>
<tr>
<td>Fig 4.24</td>
<td>Goals and Vision of ICT Department are Vague</td>
<td>48</td>
</tr>
<tr>
<td>Fig 4.25</td>
<td>ICT Does not Communicate Well with Other Departments</td>
<td>49</td>
</tr>
<tr>
<td>Fig 4.26</td>
<td>Resistance from Senior Executives</td>
<td>50</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4.10</td>
<td>Departments and ICT has a strategy document at SASSA</td>
<td>50</td>
</tr>
<tr>
<td>Table 4.11</td>
<td>Departments and ICT is a support function at SASSA</td>
<td>51</td>
</tr>
<tr>
<td>Table 4.12</td>
<td>Department and ICT have a strategy document at DoHA</td>
<td>51</td>
</tr>
<tr>
<td>Table 4.13</td>
<td>Departments and ICT is a support function at DoHA</td>
<td>52</td>
</tr>
<tr>
<td>Table 4.14</td>
<td>Departments and Satisfaction with Effects of ICT investments at SASSA</td>
<td>52</td>
</tr>
<tr>
<td>Table 4.15</td>
<td>Departments and Satisfaction with Effects of ICT investments at DoHA</td>
<td>53</td>
</tr>
<tr>
<td>Table 4.16</td>
<td>Departments and Productivity Increase as a consequence of ICT Investments SASSA</td>
<td>53</td>
</tr>
<tr>
<td>Table 4.17</td>
<td>Departments and Productivity Increase as a consequence of ICT Investments DoHA</td>
<td>54</td>
</tr>
<tr>
<td>Table 4.18</td>
<td>Departments and ICT Investments more for new Software Development at SASSA</td>
<td>54</td>
</tr>
<tr>
<td>Table 4.19</td>
<td>Departments and ICT Investments more for new Software Development at DoHA</td>
<td>55</td>
</tr>
<tr>
<td>Table 4.20</td>
<td>Departments and ICT investments Created a Greater Need to Educate Employees SASSA</td>
<td>55</td>
</tr>
<tr>
<td>Table 4.21</td>
<td>Departments and ICT investments Created a Greater Need to Educate Employees DoHA</td>
<td>56</td>
</tr>
<tr>
<td>Table 4.22</td>
<td>Departments and Customer Satisfaction Increased as a Consequence of ICT Investment at SASSA</td>
<td>56</td>
</tr>
<tr>
<td>Table 4.23</td>
<td>Departments and Customer Satisfaction Increased as a Consequence of ICT Investment at DoHA</td>
<td>57</td>
</tr>
<tr>
<td>Table 4.24</td>
<td>Departments and ICT Fails to meet its Commitments at SASSA</td>
<td>57</td>
</tr>
<tr>
<td>Table 4.25</td>
<td>Departments and ICT Fails to meet its Commitments at DoHA</td>
<td>58</td>
</tr>
<tr>
<td>Table 4.26</td>
<td>Departments and Senior Executives do not Support ICT at SASSA</td>
<td>58</td>
</tr>
</tbody>
</table>
Table 4.27 Departments and Senior Executives do not Support ICT at DoHA

Table 4.28 Departments and ICT Fails to Achieve Strategic Objectives at SASSA

Table 4.29 Departments and ICT Fails to Achieve Strategic Objectives at DoHA
CHAPTER ONE

Introduction and background of the study

1.1 Introduction
This study assesses the integration of information and communication technology in the public sector within the South African context. There are perceptions amongst South Africans that service delivery is lagging behind due to inefficient systems and ineffective management approach. Chapter 1 seeks to provide the background of these perceptions and highlight the format of the study to assess ICT integration in the public sector particularly in the two departments.

1.2 Background to the study
Over the last 20 years, Information and communications technology (ICT) has had a profound impact on the way citizens of the world live and go about their daily duties. ICT has done away with typists, telegraph operators, and many other traditional jobs and is even starting to eliminate the postman’s job. One can hardly imagine a world without a cell phone, television or the internet. Yet, little effort has been made to date, to identify, measure, document and analyze the ICT sector’s profound impact on the economy. In South Africa very little effort has been done to streamline proper implementation of ICT solutions particularly in the public sector (McBreitenbach, Aderibigbe & Muzungu 2005).

Government departments in recent times are under immense pressure to operate like private organizations. Internally, they are challenged to improve efficiency by legislative mandates or budget constraints. Externally, the public (citizens) and business exert increased pressure on government to improve the way it delivers services (Chang & Prybutok 2001).

ICT can improve organizational performance and increase its differentiation in four ways: tactically by removing technical and operational obstacles; strategically by embedding information into products, services and operations; and in terms of
information and operational dynamics using information or information technology to transform organizational operations (Gartner 2007).

Recent studies have indicated that technology and innovation are the main drivers of better economic growth attainment in the most developed countries (Vila 2005). There is a close link between productivity growth and technological progress. (Nicoletti & Scarpetta 2003; Daveri & Silva 2004).

1.3 ICT integration defined in the public sector context
ICT integration in the public sector could be defined in different ways. Some people refer to it as e-Government while others call it digital government information. Ndou (2004) presented five definitions quoted from different sources. e-Government can be defined as, the electronic interaction (transaction and information exchange) between the government, the public (citizens and businesses) and employees (Abramson & Means 2001).

e-Government is the government-owned or operated systems of information and communication technologies that transform relations with citizens, the private sector and/or other government agencies so as to promote citizens’ empowerment, improve service delivery, strengthen accountability, increase transparency, or improve government efficiency (World Bank 2001).

Fraga (2001) defined e-Government as the transformation of public sector internal and external relationships through net-enabled operations, IT and communications, in order to improve government service delivery, constituency participation, and society in general.

Tapscott (1996) defined e-Government as an internet-worked government which links new technology with legal systems internally and in turn links such government information infrastructure externally with everything digital and with everybody, such as the tax payer, suppliers, business customers, voters and every other institution in the society.
According to UNPA & ASPA (2001), e-Governance is the public sector’s use of the most innovative ICTs, like the internet, to deliver to all citizens improved services, reliable information and greater knowledge, in order to facilitate access to the governing process and encourage deeper citizen participation.

From the above definitions it is apparent that ICT integration in the public sector entails utilization of ICT equipment, systems and processes to improve efficiency and effectiveness, both internally and externally in government departments in their quest to improve service delivery to the intended recipients. These could be individuals or businesses.

1.4 Motivation for the study
Policy-makers seeking to disseminate information to the public in an accurate and timely manner must rely on ICT applications, as must a public seeking to assimilate large volumes of such information. In this sense, social sustainability can be improved only through the evolution of a knowledge-based society heavily endowed with ICTs, not only in the business arena but also in everyday life (Jitsuzumi, Mitomo & Oniki 2001).

All government departments have to engage with service recipients to ascertain their services needs, communicate their achievements and, to strategically plan for their programmes implementation. Nwokeafor (1996) quoted by Grossberg, Struwig & Tlabela (1999) stated that since ICT is a strategy enabler it can therefore become a useful tool to ensure that government departments meet their intended strategic objectives. According to Wessel, Grobbelaar, McGee & Prinsloo (2005), ICT systems are used more and more by organizations because of:

- Their speed to process transactions and produce information;
- Volume of transactions that they can process in a very short space of time;
- Their accuracy at which they process transactions into information;
- The improved quality of information they produce;
- The cost of processing information;
- Their capabilities to process complex calculations faultlessly.
Government departments deal with huge amounts of data from all service recipients that cannot be dealt with through the use of a natural human brainpower. ICT can be used as a tool, to assist departments to deal with data management, and for easy access when the managed data is required.

ICT is a key to service delivery and is one of the essential factors in promoting growth in the South African economy (Appel 2007). Masango (2005) quoted former president Mbeki, in his state of the nation address, saying government departments are gearing towards results and attempting to be more service delivery orientated.

Government plays an integral role in the country. The use of ICT within departments to fast track service delivery to the public by providing e-services, particularly in spheres such as education, health, social development and administration is highly critical. ICTs have come to be considered not just as a tool for new ways of living and doing business, but as the foundation of a sustainable society (Jitsuzumi et al. 2001).

President Mbeki, (quoted by Masango 2005), stated that the South African government is planning to improve competition in the economy, lower the cost of doing business and promote investment, and further develop high-speed national and international broadband capacity. Such engagements will result in the improvement in service delivery and ultimately enhance the economy of the country for a better life for all citizens.

Until recently, ICT investment was evaluated purely as a business concern, namely, based solely on its potential to streamline corporate operations, improve productivity and yield additional profits. However, since the United Nations Conference on Environment and Development (UNCED) in 1992 and the 3rd UN Conference on Climate Change in 1997, ‘sustainability’ has become one of the most pressing issues on the international, as well as the domestic agenda. ICT investment is now seen as a promising way to improve social sustainability (Jitsuzumi et al. 2001).
1.5 Current status in the South African public sector

In heeding the call by former President Mbeki, the South African revenue services (SARS) and the national treasury have managed to collect enough revenue through taxes and have availed adequate financial resources to all government departments to allow them to make investments for improvement and enhancements of service delivery.

The challenge that still faces South Africa is the lack of ICT skills amongst the citizens to ascertain that such financial resources are properly invested to justify the returns for the country. The government departments do not have adequately ICT skilled personnel in their employ. To date the department of education still employs human resources that drive around distributing hard copies to schools in attempting to effectively communicate with the educators. Linking schools through a network and communicating via e-mail can save on the current high mail and transport costs (Mentz & Mentz 2003). Proper implementation of internet and e-mailing services would ascertain that subject advisors themselves could communicate with educators directly and render services they are employed to do thereby reducing costs. ICT can help businesses to streamline processes, trade online, share and store information and replace low-value and repetitive work with more diverse and higher value jobs. If used correctly, ICT can help organizations cut costs and increase competitiveness (Van Zoest undated).

According to Duncan Hindle, the director-general of the department of education, in an article, *SA faces IT skill shortage*, (2006), the government has identified the shortage of suitably skilled labour as the biggest threat to the successful implementation of accelerated and shared growth initiative for South Africa (ASGISA). The shortage being most prominent in the areas of engineering, construction, sciences, management and skilled technical fields, such as IT and engineering.

The department of home affairs is currently struggling with fraud prevention systems with illegal immigrants fraudulently getting South African identity documents and passports. If there is proper implementation of ICT solutions that tackle fraud prevention such intense fraudulent activities can then be eradicated.
The department of transport recently struggled with the implementation of an ICT solution, namely the electronic national traffic information system (eNATIS) and such failure costs the tax payers an exorbitant amount of money.

The above cases highlight that the lack of ICT skilled personnel in state departments causes poor implementation of ICT projects despite the availability of the financial resources.

1.6 Focus of the study
The study seeks to emphasize and highlight the benefits of ICT integration in line with the current status of service delivery in the South African public sector. In this study the researcher assesses various factors that can hinder ICT integration in a work environment. This study also looks at the general constituency of the two departments used as case studies and compares their officials’ perspectives to ICT integration in each department.

1.7 Reason for the study
The main purpose of this study is to conscientise government officials of the benefits that can be derived from proper implementation and integration of ICT programmes in the public sector which include:

- reduction of manual and paper-intensive forms;
- more effective work processes;
- greater transparency;
- effective governance procedures to ensure the optimum use of the departments’ overall resources (Wessel et al. 2005).

This study also recommends the strategy to be adopted when integrating ICT in the public sector environment as well as providing reasons for such. Departments that have integrated ICT utilising different approaches and at different levels are compared including highlighting the investment each department makes towards ICT in terms of
infrastructure deployment and skills development amongst the employees. For the purpose of this study two government departments were assessed, namely:

- The Department of Home Affairs (DoHA);
- The Department Social Development (SASSA).

The findings of the study might assist the government officials to improve service delivery through proper ICT integration. Improved service delivery has positive economical implications for the country in general and results in an efficient and effective public sector services, with employees feeling that they are fulfilled because of the services they render, and, the service recipients should be satisfied with the standards of the services. Improved service delivery should boost the confidence of the service recipients towards the government of the day which can result in positive political implications.

1.8 Problem statement

For the purpose of this study, the researcher focuses on two state departments, namely DoHA and SASSA. The former has generally been perceived negatively in terms of service delivery. South African citizens in general have had questions ranging from delayed receipt of their identity documents, illegal immigrants in the country causing economic constraints which resulted in the xenophobic attacks in 2008, fraudulent activities such as people swapping identities, people declared dead while alive and other related cases. These questions have therefore raised concerns generally in terms of service delivery within this department in relation to its mandate.

On the other hand, statistics reveal that SASSA has remarkably improved in service delivery. The government currently provides social grants to over thirteen million beneficiaries countrywide, to the value of R70-billion per annum (SASSA Annual Report 2007).

This study assesses whether ICT could be instrumental to bridge the gap and deal with such significant differences in service delivery in the two departments. To highlight these
causes the study compares the management level at which ICT is integrated; assesses the general perceptions amongst the individual employees, particularly managers within these departments starting from the chief information officers down to assistant managers; assesses ICT-business alignment within the departments and looks into investments they make into ICT systems. In order for the study to make meaningful recommendations the researcher has the following aim, objectives and research questions as listed below:

1.9 Aim of study
This study aims to conscientise public sector officials of the benefits that ICT can bring into their work environment if enough resources can be availed. This study also aims to reflect the role ICT can play in the public sector to improve the standard of services.

1.10 Objectives of study
This study sets about to achieve the following objectives:

- To determine if ICT is implemented at a strategic level or at a functional level in the public sector.
  This was achieved by prompting the respondents to answer questions 1 and 2 from section B of questionnaire
- To determine the perceptions of managers towards the impact of ICT investment in the public sector.
  This was achieved by prompting the respondents to answer questions 3, 4, 5, 6, 7, 8, 9, and 10 from section B of the questionnaire.
- To determine if there are any inhibitors towards ICT-business alignment in the public sector.
  This objective was achieved by prompting respondents to answer questions 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 from section B of questionnaire.

1.11 Research questions
- What is the level of ICT integration in the public sector?
This question intends to assess the level of management at which ICT is currently integrated in the public sector. The study, in the subsequent chapters, based on the responses from this question will recommend the level at which ICT integration should take place in the sector for it to make meaningful impact and improve service delivery in the South African society.

- What are the perceptions of managers in the public sector about ICT integration? According to Cronje et al. (2004), managers are the key drivers of performance in any organisation. The question seeks to establish the different perceptions of managers towards ICT integration in their environments. It is such perceptions that can either allow ICT to play a meaningful role in the public sector or be declared wasteful expenditure. McCauley et al. (2004), speaks of business leaders taking advantage of ICT and being more supportive to employees encouraging them to take risks and be innovative in their organizations. Managers can only do such with the right perceptions of ICT integration

- Are there any barriers towards ICT-business alignment in the public sector? This question intends to assess hindrances that may be causing ICT integration to fail in the sector. In order for the study to make meaningful conclusions and relevant recommendations such barriers or hindrances must be understood and possible solutions be recommended.

The study was conducted in the city of Pretoria in South Africa. Data were collected from the head offices of the two departments, DoHA and SASSA.

1.12 Research methodology
To achieve the above objectives, literature was reviewed to establish what research was conducted on the topic before. Questionnaires were distributed as tools to gather data. For the purpose of putting this study into context, data was only collected from the two government departments. Data gathered was analyzed using STATA (Statistical Analysis Software) from which comparisons of different variables were done to enable the
researcher to derive conclusions and make sound recommendations on the topic. The results are presented in graphical format using XLSTATA program.

1.13 Limitations of the study
The following limitations apply to this study:

- The sample sizes from the two departments were small and there was insufficient representation to be able to draw valid conclusions from the research to influence the entire sector.
- The study was conducted only in the head offices of the two departments and as such disregarded the eleven provincial offices of each department.
- Due to the bureaucratic nature of the South African government, the information from the two departments took too long to reach the researcher and the data presented may have changed since the start of the study.

1.14 Breakdown of the study
The remainder of this study is as follows.

- Chapter 2 - Literature review and significance of the study.
- Chapter 3 - Research design and research methodology.
- Chapter 4 - Data presentation and limitations of the study.
- Chapter 5 - Analysis and discussion.
- Chapter 6 - Recommendations and conclusions.

1.15 Summary
In chapter 1 a clear background has been provided to lay the foundation for the study and to guide the study in terms of the required breakdown. Chapter 2 will summarise previous research on this topic and this will be used to provide theoretical basis of this study.
CHAPTER TWO
LITERATURE REVIEW AND SIGNIFICANCE OF STUDY

2.1 Introduction
In order to put this study into context this chapter discusses the background of each of
the two identified departments: The Department of Home Affairs (DoHA) and the
Department of Social Development (SASSA). The following aspects are assessed:
• Service delivery definition in the public sector context.
• The role or mandate of each department in the public sector.
• The current ICT systems in the two departments.
• The current investments made into ICT by each of the two departments.
• Different organizational levels
• The ICT-business alignment in organisations
All of the above aspects are compared to highlight the differences and to relate them to
improvements or challenges in service delivery and the impact on the country's economy.
Also, in this chapter the researcher looks at published material in terms of a literature
review to ascertain what has been done by other researchers in this and related topics, to
draw some similarities and differences, and to make meaningful recommendations in the
later chapters. This chapter also discusses in detail the significance of the study to reflect
the benefits of ICT integration or e-Government.

2.2 Service delivery defined in public sector context
Service delivery in the public sector can be defined as an act of providing the required
needs or resources to the citizens in a manner that is coordinated, cost effective and
justifyable (Ngema 2004). The process of delivering the service is rated by the recipients
as to whether it is up to or below the required standards: the standards being determined
by the urgency of the required need and sometimes even bench-marked from other
countries' public sector standards. The better the standards of service delivery, the faster
the economic growth for the country and the better the lives of the citizens (Ndou 2004).
Improved service delivery in the DoHA would therefore broadly refer to timeous distribution of identity documents, effectively and efficiently dealing with immigration and emigration matters, and eradicating doubt of fraudulent activities in the society. (Department of Home Affairs, Annual Report 2006/07).

Improved service delivery in SASSA would be defined as paying the right grant to deserving citizens at the right time all the time, and in the process, eradicating poverty amongst the citizens (SASSA, Annual Report 2007/08).

2.3 The role of DoHA and SASSA in South African Society

According to the Department of Home Affairs’ Strategy Document 2006/11 it executes or participates in the following mandates:

- Civic services
  - Births, marriages and deaths administration.
  - Identity documents and identification administration.
  - Citizenship.
  - Travel documents and passports administration.

- Immigration and emigration

The role of the DoHA reveals that the department deals with a vast amount of citizens’ information handling, which it manipulates, to render efficient and effective services to the citizens.

SASSA deals with administration of quality social security services, cost effectively and timeously using appropriate best practices by:

- Developing and implementing policies, programs and procedures for effective and efficient social grants administration system.
- Paying the right grant amount, to the right person at the right time and at the most convenient place that he/she may choose.
- Delivering innovative, cost effective and efficient services to individuals, their families and community groups via multi-and easy access channels using modern technology (SASSA, Strategic Plan 2007/08 – 2009/10).
SASSA is tasked by the legislature to ascertain that South African (SA) citizens who qualify to be paid grants get paid the right grants, at the right time and at the right place all the time (SASSA Strategy Document 2006/11). From this mandate it is clear that the level of efficiency and high standards of service delivery is critical for the department. ICT integration can therefore ensure that all the regions, districts and local areas in SA, where deserving citizens are located, are accessible and all the right grants paid at stipulated times. This then reflects that the department deals with huge amounts of information which with ICT integration to enable the department’s strategy to improve the standard of service delivery.

SASSA has effectively improved the service standards: they now pay grants to 13 million SA citizens who qualify for grants as compared to prior to 1994 when only a fraction of this number received grants (South African Social Security Agency: Annual Report 2007/08).

2.4 The current ICT systems at DoHA and SASSA

DoHA currently has implemented ICT systems to ascertain internal and external service provision. The system that is currently used for external service delivery is the integrated electronic document management system (IEDMS). The main objectives of the IEDMS are to implement an effective, real time, online solution that will cater for automated document management processes from capture (scanning and indexing) to business transaction completion (workflow) resulting in the overall improvement of business process efficiency (DoHA, Strategy Document 2006/11).

Other intended operational benefits of IEDMS include digitising all departmental documents, reducing a manual paper-driven environment, improving service delivery to clients and eradicating storage problems (DoHA, Strategy Document 2006/11).

For the internal systems the department relies on what is sometimes referred to as the legacy systems that are predominantly managed by the national treasury and the Department of Public Administration Services (DPSA) on behalf of most of SA government departments. These systems include:
• PERSAL (payroll and human resource management system),
• LOGIS (logistical information systems), and
• BAS (basic accounting system) (DoHA Strategy Document 2006/11).
The mere fact that legacy systems are managed centrally for most departments presents limitations and forces the departments to conform with fixed standards set by DPSA which therefore hinder innovation and may have restraining effects on service delivery.

For connectivity purposes the DoHA, like most other government departments, relies on services provided by SITA (State Information Technology Agency). This may present challenges of congestion of the network, namely the prescribed fixed bandwidth, security risks and timeous network interference.

SASSA currently has implemented several ICT systems in their environment including:
• The management information systems (MIS).
The system’s main purpose is to handle multitudes of data and allows easy accessibility whenever required. It is a computer-based system that allows different database systems to be integrated. MIS supports managerial decision-making by providing regular structured reports on organizational operations (BNET Business Dictionary).

• Enterprise resource planning (ERP)
ERP is a computerised system that enables effective and efficient internal (payroll and human resource) and external (service providers and stakeholder) environments management (Simchi-Levi, Kaminsky & Simchi-Levi 2003).

• Virtual private network (VPN)
VPN is a network connectivity system that enhances security, reduces interference, increases bandwidth for large sized documents to be processed and, allows multiple functions on the network, without compromising quality (MTN Network Solutions 2007).
• Electronic document management system (EDMS)

EDMS is a computerised system used for data archiving and file storage. It allows for easy accessibility whenever required (SASSA Strategy Document 2006/11).

• Improved grant application process (IGAP)

SASSA’s core business is payments of the eight grant types in the country. One of the key challenges might be to deal with the qualification criterion for different grants amongst the 13 million recipients. IGAP is a system that assists SASSA manage the qualification criterion for all recipients. The system does medical assessments, reduces duplications and improves integrity through enforcing compliance with legislative prescripts (SASSA Update Magazine April 2009).

2.5 The current investments into ICT

DoHA still relies on legacy systems for internal environment management and on SITA to manage its external network (WAN) which comes at discounted rates. The bulk of the ICT budget within DoHA therefore will be for IEDMS which amounts to about 10% of the department’s overall budget (DoHA, Strategy Document 2006/11).

SASSA on the other hand has an ICT branch, with specialists human resources in different fields of ICT, and has to maintain all its ICT systems independently from national treasury or SITA. The ICT branch at SASSA receives the biggest budget in comparison with the other internal branches. Since 2006 the ICT branch receives 20% (about R500 million) of the department’s budget for maintainance of existing systems and to further implementing new projects with a vision of modernising the public sector in SA.

2.6 Different levels in organisations

In organisations there are levels of accountability and responsibility, the strategic or sometimes called top management level, and the functional level, which includes tactical management and operational management levels (Cronje et al. 2004).
The strategic level in an organisation is accountable to the owners of the organisation. The responsibilities at this level include setting of the business strategic objectives and doing the necessary planning to enable the organisation to achieve the set objectives taking into account the internal and external environments of an organisation (Wessel et al. 2005).

The functional level refers to levels below the strategic level; usually referred to as middle and junior management levels. These levels are accountable to the strategic level with their main tasks being operational matters of an organisation where middle management focuses on the tactical planning and controlling of the activities according to the objectives set by the top management. The junior management level controls the daily activities and functions of the organisation (Wessel et al. 2005).

In the case of the public sector structures, strategic level refers to executive level and functional level refers to directorship level (middle management) and assistant directorship level (junior management).

### 2.6.1 Strategic level integration

ICT integration at a strategic level in this study refers to ICT being represented at top management level of the department which can influence ICT-related decisions at that level.

ICT integration at a strategic level gives the organization an edge over its counterparts and improves the way it conducts its business. ICT remains of strategic relevance for firms as long as it enables innovation (Koellinger 2006).

ICT at strategic level enhances the capability of firms to transfer, collect and manage a great amount of information. This results in a substantial reduction in costs associated with information gathering and utilization activities within an organization (Carbonara, Buiter, Steenkamp & van der Walt 2004). The US government, for instance, hopes to use systems integration to reduce the amount of information collected from citizens, to rationalize internal bureaucratic processes, to reduce compliance costs and to offer citizens much more holistic, comprehensive services (Salmela & Turunen undated).
Earlier research on this topic reveals that ICT is a strategy enabler and gives the organization leverage over others. Nwokeafor (1996) (as quoted by Grossberg, Struwig, and Tlabela1999)) states that African countries have improved people’s quality of life. He continues to say that with applications, strategic planning, public education, public-private partnerships and regional co-operation, most African countries today are utilizing the emerging communication technology to advance modernity and overcome fragmentation. Grossberg et al. (1999) say access to information and communications technologies is becoming increasingly critical for African communities’ participation in economic and political life at national, international and global levels. Advances in electronic communication networks have created enormous opportunities for developing countries. A sizeable number of African countries have already made progress in their internet links that have put them on the global connectivity map.

ICT has the potential to transform the relationship between citizens and public sector organizations by improving the standards of the public services delivered by the departments to the citizens, but this can only be achieved if it is clear what ICT is being used for and that appropriate ICT infrastructure is used. Experience in Britain revealed that as the rate of growth of investment in ICT rose it became a major stimulant for economic growth and a direct contributor to growth in labour productivity (Dolton & Makepeace 2004). Studies in the Cambridge, a sub-region of the UK, also revealed that there is a link between the existence of a cluster of information communications technology-based companies in the sub-region and the area’s fastest growth rate and the lowest unemployment rate in the eastern region (Jonas & Gibbs 2003).

South Africans lack clarity about what high-quality public services look like. There is an urgent need to articulate a clear vision of better services to public service workers and citizens alike. South Africans have over the years just accepted what the government departments presented to them as services. Proper integration of ICT should enable both citizens and public sector employees to compare the standards of services with the other countries’ services and as such understand the standards of services they deserve. Leaders
of organizations must take responsibility for understanding and managing the potential of ICT, and the risks of its failures.

According to the *White Paper on Science and Technology* (1996) the ability to maximize the use of information is now considered to be the single most important factor in deciding the competitiveness of countries as well as their ability to empower their citizens through enhanced access to information. Information empowers people, enables them to lobby, monitor policy, learn, collaborate, campaign and react.

South Africa is now a global player therefore a need to expose its citizens to the global village trends is imperative; this need can only be managed at strategic levels of departments for it to make business sense to the objectives of the departments.

### 2.6.2 Functional level integration

ICT integration at a functional level, in the context of this study, refers to ICT being viewed as a support function and is not represented at top management levels of the departments. At this level ICT strategic intents have no influence at all to the business approach of the department but are only used as a means to an end. ICT integration at this level would mean hardware maintenance and software downloads to desktops and laptops. According to Reich & Benbasat (2000) the level of connection between business and IT planning processes will positively influence the level of alignment.

Frameworks, methodologies and tools have been developed to support the objectives of the SIS (Strategic Information Systems) era, yet the mechanisms through which organizations achieve repeated and sustained value from IT has received scant attention (Peppard & Ward 2004). This then says a lot of work has been put in to change the mindsets of executives in organizations to view ICT beyond functional support units, but still not much benefit is derived from ICT.
2.7 The perceptions of managers towards the impact of ICT investment in government

The role of managers in any organisation involves planning activities, organising resources, providing direction to resources and controlling the use of such resources. (George & Jones 2006). It has become widely accepted that the performance and success of any organisation depends on the quality of its management (Cronje, du Toit, Motlatla, & Marais 2004). Managers in organizations have a critical task to ensure that resources are available for the organization to be productive. The resources required in organizations range from human, financial, infrastructure, tangible and intangible resources.

ICT is a resource that organizations require for different reasons in their environments. ICT systems assist organizations keep up with the ever changing environments which organizations operate under. Managers in organizations require information provided by ICT systems to identify opportunities and threats in their environments and make informed decisions to meet the set targets (Wessel, et al. 2005).

Management tasks, both in the private and the public sector, are the same; the difference lies in the objectives to be achieved. Private organizations are profit driven whereas public sector or government departments are service delivery driven. Good performance of managers in a government department would be categorized by improved service delivery, satisfaction of citizens and costs savings with minimum resources input.

Managers in the public sector have some perceptions towards what ICT investment in departments would make. Some of these perceptions, which are germane to this study, are presented below.

2.7.1 Productivity increases as a consequence of ICT investment

There is a general perception that investment into ICT equipment and systems results in an increase in productivity in the private sector or improved services delivery in the public sector. Improved service delivery will only result if ICT integration is combined with other factors, such as skills amongst the employees, education and training to enable innovation. ICT usage combined with innovative activity are positively related to productivity growth at the firm level (Koellinger 2006).
The ultimate responsibility for using ICT more effectively, to improve workplace productivity, resides with the executives and staff of an organization: public and private sector alike. It is up to managers to exploit the fruits of ICT integration and translate them into more productive use of their ICT assets (McCauley et al. 2004).

2.7.2 ICT investments more for maintenance of existing equipment or for new software development
In South African government departments the aspect of education and skills development is not prioritized when ICT is integrated. The decision-makers may approve investments in software and hardware but neglect human resource development. ICT investments in general can enable the process of innovation if the implementation of new ICT succeeds, the routines are changed and the new system is actually utilized (Koellinger 2006).

2.7.3 Customer satisfaction as a consequence of ICT investments
In the traditional model of public service delivery, the procedures are long, time consuming and lack transparency. A business or individual that wishes to obtain a license or a permit has to fill out a number of application forms, has to visit a number of different offices and spend a considerable amount of time. If a citizen wishes to be issued with a certificate, or any other official document, he or she has to travel to the central government office, go to different offices and spend a lot of time for a simple service. The consequences are high costs and citizen and business dissatisfaction. An e-Government initiative, on the other hand, which puts government services online, thereby reducing the bureaucracy, offers round the clock accessibility, fast and convenient transactions, and, obviously enhances the quality of services, in terms of time, content and accessibility (Ndou 2004).

2.7.4 Internal communication improved as a consequence of ICT investment
Internal communication refers to the use of ICT to improve the efficiency and effectiveness of internal functions and processes of government by interrelating different departments and agencies. Thus, information can flow much faster and more easily
among different governmental departments, reducing processing time, paperwork bottlenecks, and eliminating long, bureaucratic and inefficient approval procedures. Internet-working among different governmental departments improves internal efficiency by enabling time reductions for using, storing and collecting data, reduction of labor costs and information handling costs, as well as the speed and accuracy of task processing (Ndou 2004).

The public needs to be encouraged to use ICT-enabled alternatives, such as online services, where possible. Staff needs to know how ICT might benefit them and be given the space to help make it work. Departments need more information about how best to use ICT to improve choice and efficiency, and to create high-quality services. According to Carayannis & Popescu (2005) the role of ICT is particularly for facilitating the creation of new business models, improving resource planning and the design, production, finance, and marketing and sales activities within organizations. All of these are equally important. However, for ICT to be effectively deployed as engines of economic development existing IT skills-gap, both in developed and developing countries, must be addressed. The DOT FORCE 2002 as quoted by Mutula & Brakel (2007) emphasized human resources development through systematic training and education as critical if countries have to reap digital dividends.

The International Labor Organization (2001) (as quoted by Mutula et al. 2007) states that countries with the right mix of skills stand a better chance of becoming important locations in global markets. However, for maximum gains to emerge, the development of essential ICT skills is necessary because without such skills the technologies can neither be maintained nor adapted to local use.

2.8 Barriers to ICT - business alignment in government

ICT – business alignment refers to the integration of information communication technology into business activities to enable managers to access the processed data to enable them to make informed, accurate and quick decisions providing an edge for the business against its counterparts (Wessel et al. 2005).
Earl (1983) & (1993) as quoted by (Luftman, Lewis & Oldach undated) say that organizations find it difficult or impossible to harness the power of ICT for their own long-term benefit even though there is world wide evidence. In the public sector the value of the integration is known but the implementation is still a challenge due to some barriers. The mostly highlighted inhibitors in the sector are discussed below.

2.8.1 Lack of skills
In general, ICT skills are a major barriers in ICT-business alignment in most countries. McCauley, Lofthouse, Kekic & Kenny (2004) quoted on a report from the Economist Intelligence Unit and said that weaknesses in managerial skills and technology awareness, and the lack of an innovation culture, hamstring European enterprises in their attempts to put ICT to productive use.

2.8.2 Lack of business understanding by ICT units,
Lack of ICT knowledge by senior management and the failure of IT and business management to work together effectively were cited as the two main barriers to maximizing the benefits of ICT (McCauley et al. 2004).

2.8.3 Lack of support from the executives,
It is incumbent on executives to ensure, through training and other mechanisms, that their managers are fully aware of the potential benefits of an ICT investment (McCauley et al. 2004). It is up to business leaders to take advantage of this more supportive environment to encourage risk-taking and innovation in their organizations. According to Luftman et al. (1993) business executives have to provide direction for ICT initiatives.

2.8.4 Poor prioritization by ICT
Luftman et al. (1999) define prioritization as firms being able to incorporate technology into their strategies in a timely manner so that they do not fall behind competitors. They go on to say, ICT on its own cannot provide value but business policies must translate
into priorities and projects for the ICT unit. It is critical for the organization to emphasize on this partnership to ensure that correct ICT priorities are set. Some of the inhibitors of ICT integration that have been discussed by other researchers are relevant to this study. In addition consideration is given to potential barriers such as:

- Lack of achievement of set goals by ICT, and
- Setting of vague goal by ICT.

2.9 Significance of the study

The aim of this study is to conscientise government department officials of the value ICT can bring in their day-to-day business. The study assesses the current strategies in the public sector using strategic documents to establish ICT integration; noting the non inclusion of ICT at strategic level by reflecting the management structures of each organisation. The respective budgets for each department are highlighted and by so doing the investment each department makes into ICT and the effects thereof, are noted. All returns from business investments are business returns and must be communicated in terms of business performance (Gartner 2007).

The significance of this document in a nutshell is to resonate the value of ICT in the public sector in relation to the investments or budgets set aside for it within the sector and the level at which ICT is integrated within the structure of each department. The study highlights the value ICT brings, if strategically integrated and, the lack of such value, if integrated at an operational or functional level.

It serves as a motivation for government departments to leverage on ICT to improve service delivery and ultimately improve the economy of the country and people’s lives. The study touches on the concept of service delivery highlighting the definition and how or when it is said to have improved.

This study addresses three key questions listed below:

- What is the level of ICT integration in public sector?
- What are the perceptions of managers in the public sector about ICT integration?
- Are there any barriers to ICT-business alignment in the public sector?
2.10 Summary
In this chapter it has been shown that a lot of work has been done on this topic and other related topics over the years but only a few studies focus on the South African context. The reviewed literature emphasises that government departments should be managed in the same way as private sector companies; the difference being the intended objectives. The latter means departments must differentiate themselves from their counterparts by providing improved services at minimal cost. The review suggests ICT integration is a key to attaining this differentiation in the public sector.

Chapters 3 provides a detailed methodology used in this study to assist in assessing the status of ICT integration in government departments in South Africa focusing on the two identified departments.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
In this chapter the research methodology is described in terms of design, methods, population, instruments and procedures used for data collection as well as procedures used for data analysis. The research design assists the researcher to draw meaningful conclusions and make recommendations in subsequent chapters.

3.2 Research design
3.2.1 Type of study
A quantitative research approach is used for this study. It is comparative in nature based on two departments. The researcher collected and analysed data from the departments of Home Affairs (DoHA) and Social Development (SASSA).

The questions in the study are closed-ended. The findings in this study are presented in charts, tables and graphs derived from statistical tests such as cross tabulations and frequencies.

3.2.2 Comparative study
Comparative research entails specimens or cases which are similar in some respects but differ in other respects. These differences become the focus of examination. The goal is to find out why the cases are different. In this study the Department of Home Affairs (DoHA) and the Department of Social Development (SASSA) are both South African state departments governed by the same constitution and serving the same society. The differences noted between the two cases are the significant recorded improved service delivery in one and the concerns pertaining to poor service delivery raised about the other. The study seeks to establish whether ICT integration has any role to play in terms of the noticeable differences. This study assumes that the difference lies in the respective
departments' approaches of integrating ICT within their environments. The study compares the two departments in relation to:

- Levels at which ICT is integrated.
- Management perception towards ICT integration.
- ICT-business alignment in public sector.

3.3 Statement of the research problem
The private sector has used ICT to enable their strategies, to differentiate themselves from their competitors and to improve their services and product offerings. The public sector has been lagging behind and as such there is still some questions raised by citizens on the quality of services rendered by some government departments. This study investigates the integration of ICT in the public sector to establish whether the investments made towards it translate to benefits and whether there are any barriers to integration and to assesses the perception of managers as outlined in the literature reviewed.

3.4 Aim and objectives
3.4.1 Aim
This study aims to conscientise public sector officials of the benefits that ICT can bring into their work environment if enough resources can be availed. This study also aims to reflect the role ICT can play in the public sector to improve the standard of services.

3.4.2 Objectives
This study sets about to achieve the following objectives as is reflected in the following sections of the questionnaire:

- To determine if ICT is implemented at a strategic level or at a functional level in the public sector.
  This was achieved by prompting the respondents to answer questions I and 2 from section B.
- To determine the perceptions of managers towards the impact of ICT investment in the public sector.
This was achieved by prompting the respondents to answer questions 3, 4, 5, 6, 7, 8, 9, and 10 from section B.

- To determine if there are any barriers to ICT-business alignment in the public sector.

This objective was achieved by prompting respondents to answer questions 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22 from section B.

3.5 Sampling

Sampling is a process of selecting units, for example people or organizations, from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Trochim, 2006). Sampling is a technique of selecting a suitable representative part of a population for the purpose of determining parameters or characteristics of the whole population (Mugo, undated).

Due to the small size of the population for this study, no particular sampling method was used but questionnaires were distributed to all employees at management levels at DoHA and SASSA head offices.

3.6 Sample size

Data were collected from the two departments using administered written questionnaires which were distributed only to managers in both departments. Since this target population were only 45 from SASSA and 30 from DoHA, the entire population was targeted for this study.

The number of questionnaires distributed at the DoHA equaled the number of the population which was 30. The number of questionnaires collected was \( n = 28 \): three (\( n = 3 \)) were incomplete and two (\( n = 2 \)) were spoiled. Thus 23 (\( n = 23 \)) could be used for data analysis.

The population size at the SASSA was 45. The number of questionnaires distributed in this environment equaled the number of the targeted respondents. The total number of
questionnaires collected was 42 (n = 42) of which 5 (n = 5) were incomplete and 3 (n = 3) were spoiled. Thus only 34 (n = 34) could be used for data analysis.

3.7 Data collection method
To systematically collect data for usability to derive meaningful conclusions and make relevant recommendations a data collection method must be used. Carmen (2009) enumerates different types of data collection methods:

- using available information,
- observations
- interviewing (face-to-face),
- administering written questionnaires,
- focus group discussions, and
- projective techniques, mapping and scaling.

In this study two data collection methods were used: written questionnaires were administered and use was made of available information.

3.8 Data collection tool
The data for this study were collected using multiple sources and techniques (Soy, 1997). The research was carried out through a process of analysis of available information and administering written questionnaires.

- Administered written questionnaires
Data were collected from SASSA and DoHA officials respectively using questionnaires. A questionnaire sent electronically (e-mailed) to DoHA via the office administrator who was requested to print hardcopies for random distribution to officials at management levels. The completed hardcopies of the questionnaire were collected on the due date and submitted in one batch to the researcher. In SASSA questionnaires were distributed randomly as hard copies to individual officials at management level within the ICT branch and other branches and collected at the due date by the researcher himself.

- Available information
Annual reports and strategy documents for the periods 2006 to 2011 were used as sources of readily available data for comparison. From the annual reports data that related to structural positioning of ICT and budget allocations done for ICT related investments were compared.

The organizational structures were analyzed to determine the level at which ICT is posted in the organization. This assisted to determine whether ICT sits at a strategic or functional level in each department. The budget allocation documents were analyzed to determine the investment each department makes into ICT.

- Literature review
Leedy and Ormrod (2005) describe the review of literature as the section in a research document that provides the theoretical perspective and previous research findings regarding the problem at hand. They continue to say its function is to look again at what has been done in areas similar to one's own area of investigation. In this study the researcher also used literature review to determine what has been done on the topic by previous authors: conclusions and recommendations are based on the analysis of the data and the reviewed literature.

3.9 Construction of questionnaire
Questionnaires as tools of data collection should be constructed in a certain coherent format. The questions should be structured so that they are short, simple, unambiguous and provide clear instructions.

The questions in the questionnaire in this study were closed-ended. The reason for use of closed-ended questions was to guide respondents on a set of responses to choose from, to respond to the key questions, and to enable easy control of data collected.

The questions in the questionnaire follow a specific sequence: from general information seeking questions to more specific information seeking questions. This sequencing keeps a respondent attentive and facilitates the smooth flow of a respondent’s progress through the questionnaire.
3.10 Questionnaire pre-testing, validation and reliability

Pretesting, validation and ensuring reliability of data measuring tools is critical in any study.

3.10.1 Pre-testing or pilot testing

Pilot testing is conducted to detect weaknesses in the design and instrumentation, and to provide proxy data for selection of a probability sample. It should, therefore, draw subjects from the target population and simulate the procedures and protocols that have been designated for data collection (Blumberg, Cooper & Schindler, 2005).

The questionnaire was first pre-tested amongst twelve colleagues at the researcher’s place of employment. The type of pre-test administered was the participating pre-test where respondents were made aware that they were conducting a pre-test. This was done to ensure that they interpreted the questions and openly raised concerns if there were any.

3.10.2 Validity

Validity of measuring instruments is defined by Leedy and Ormrod (2005) as an extent to which the instrument measures what is supposed to be measured. In this study the following validity tests were considered:

- External validity
  
  External validity refers to the data’s ability to be generalized across persons, settings and times (Blumberg, et al: 2005). The feedback from the respondents of the pilot test suggested that the external validity for the questionnaire in meeting its objectives of assessing the factors as identified in the literature review was good.

- Internal validity
  
  Internal validity refers to the ability of the instrument to measure what it is purported to measure (Blumberg, et al: 2005). The feedback from the pilot test allowed the researcher to refine the questions that had some ambiguity so that the final questionnaire could be understood by the respondents.
3.10.3 Reliability
Reliability is the consistancy with which a measuring instrument yields a certain result when the entity measured has not been changed (Leedy & Ormrod, 2005). In this study the questionnaire was not tested for reliability.

3.11 Data analysis method
To analyse the data collected statistical programs XLSTATA and STATA were utilised. The following techniques were used to generate the output presented in the next chapter:
Descriptive statistics to generate graphical output which included the use of
• Bar charts
Cross tabulations to generate tabular outputs which included the use of
• Tables
The missing values and spoilt responses were coded with special code and this was excluded from the analysis.

3.12 Summary
This is a quantitative study because it presents comparisons of responses in the different departments in numbers but has a qualitative aspect to it since it assesses behaviours and attitudes of officials in both the departments. This allowed the researcher to make recommendations to the entire public sector but not conclusive as to how the entire public sector in SA has integrated ICT in its environment. Chapter 4 presents the data collected from the two departments using tables and charts.
4.1 Introduction

In this chapter the data collected is assessed and categorized as dependant or independent variables. The variables are compared using the statistical tool XLSTAT and STATA, followed by presentation of the results using bar charts and tables. Statistical tests were conducted to ascertain how variables relate to each other and to determine whether their relationship have any impact or influence to the study. At the end of this chapter some limitations of the study are presented which indicate that the conclusions and recommendations are not conclusive of all the South African government departments but only pertain to the cases discussed in this study.

4.2 Descriptive statistics of biographical data

4.2.1 Respondents’ Ages

![Bar Chart showing Age Groups of Respondents at DoHA & SASSA](image)

Figure 4.1: Age groups of respondents at DoHA & SASSA

Figure 4.1 presents the dispersion of the respondents’ ages in both departments. Majority of respondents fall in the age gap 25-49 years.
4.2.2 Formal education levels

![Bar chart showing formal education levels at DoHA & SASSA.]

Figure 4.2: Formal education levels at DoHA & SASSA

Figure 4.2 depicts the dispersion of formal education levels (refers to additional qualifications obtained post secondary schooling) of the respondents in both the departments. In this study, respondents were fairly qualified with just above 50% in both departments having 3-4 years formal education; at SASSA 24% respondents have 6+ years of formal education whereas at DoHA none had 6+ years of formal education level.

4.2.3 Work experience in years

![Bar chart showing work experience in years at DoHA & SASSA.]

Figure 4.3: Work experience in years at DoHA & SASSA
Figure 4.3 presents the work experience dispersion of respondents in both departments. Majority of respondents at DoHA had 1-2 years experience and respondents at SASSA had 3-10 years experience. Work experience may have an influence in the manner respondents view ICT integration; they may be able to compare the years prior to introduction of ICT in the public sector with the current information age where ICT plays a critical role in work environments.

4.2.4 Number of respondents in different departments

![Graph showing departments of respondents at DoHA & SASSA]

This reveals that at SASSA the majority of respondents (47%) were from the ICT workstream followed by administration (18%) and operations (18%). This figure also shows work-streams at DoHA: majority of respondents (22%) were from human resources, administration (17%), accounting (13%), finance (13%) and production (13%).

4.3 Analysis of dependent variables

The responses of the questionnaires were used to address the three key questions of the study as discussed in Chapter 3. The key questions then address the three pivotal objectives of the study. Data in this section are presented according to the objectives of the study. The questions relevant to each objective are grouped accordingly.
4.3.1 To determine if ICT is implemented at a strategic level or at a functional level in the public sector (Objective 1)

Questions (Q) 1 and 2 applied to the first objective. The responses from the two departments are presented in an histogram format for comparison of the levels at which ICT is integrated.

4.3.1.1 Information communication technology is a support function within your organisation (Q1).

![Histogram](image)

Figure 4.5. ICT as a functional support compared

Figure 4.5 reveals that 80% (70% + 10%) of respondents from SASSA view ICT as a support function whereas at DoHA 60% (35% + 25%) agreed that ICT is a support function.
4.3.1.2 Your department has an ICT strategic plan (Q 2)

Figure 4.6. ICT as a strategic function compared

Figure 4.6 above depicts that 85% SASSA respondents are sure that ICT has a strategic plan; at DoHA 60% agreed to ICT having a strategic plan.

4.3.2 To determine the perceptions of managers towards the impact of ICT investment in the public sector (Objective 2)

Questions (Q) 3, 4, 5, 6, 7, 8, 9 and 10 were included to address the second objective.

4.3.2.1 I am satisfied with the effects of the ICT investments (Q 3)

Figure 4.7. ICT investment effects compared
Figure 4.7 reveals that more than 60% of managers at SASSA are satisfied with the investments the department is making with ICT-related projects even though a noticeable 28% are undecided whether enough investments are being made. At DoHA 50% of the respondents are satisfied with the current ICT investments in their environment and almost half are dissatisfied.

4.3.2.2 Productivity increased as a consequence of the ICT investments (Q4)

Figure 4.8 reveals that the majority of managers, namely >70% at DoHA and SASSA respectively, believe productivity increased as a consequence of ICT investments.
4.3.2.3 The ICT investments were more the maintenance of existing ICT (Q5)

![Bar chart showing responses to the question about ICT investments being more for maintenance.]

Figure 4.9: The ICT investments were more for the maintenance of existing ICT

Majority of SASSA respondents (>60%) agree that more ICT investments were used for maintenance of existing ICT equipment. At DoHA there seems to be a noticeable level of indecision from the respondents with 30% respondents undecided, 34% disagree and 35% agreeing that ICT investments are more for maintenance of existing hardware.

4.3.2.4 The ICT investments were more of new software development (Q6)

![Bar chart showing responses to the question about ICT investments being more for new software development.]

Figure 4.10: The ICT investments were more of new software development

38
Figure 4.10 reveals that 69% of respondents at DoHA agree that ICT investment is more for new software development. At SASSA 61% agree that ICT investments are used more for software development. It should be noted though that 33% respondents at SASSA disagree with this statement.

4.3.2.5 The ICT investments created a greater need to educate our employees (Q7)

![Figure 4.11. ICT investments created need to educate employees](image)

Figure 4.11 shows that 87% of the respondents at DoHA believe ICT investments created a greater need to educate employees. At SASSA 59% respondents agreed to a greater need to educate employees due to ICT investments in their environment.
4.3.2.6 Employee satisfaction increased as a consequence of ICT investments (Q8)

Figure 4.12. Employee satisfaction increased as a consequence of ICT investments

Figure 4.12 reveals that 53% of SASSA managers believe ICT investments have improved employee satisfaction; 48% of managers at DoHA disagree that ICT investments improve employee satisfaction. In both departments it should be noted that about 20% of managers are undecided as to whether ICT investments improved employee satisfaction.

4.3.2.7 Customer satisfaction increased as a consequence of the ICT investments (Q9)

Figure 4.13. ICT investments improved customer satisfaction
Figure 4.13 reveals that above 65% of the respondents at SASSA believe that, as a consequence of ICT investments, customer satisfaction improved. At DoHA > 65% of the respondents believe customer satisfaction improved as a consequence of ICT investments.

4.3.2.8 We changed our internal communication because of the ICT investments (Q10)

![Bar chart showing responses to ICT improved internal communication]

Figure 4.14. ICT improved internal communication

Figure 4.14 reveals that more than 65% of respondents at SASSA agree that ICT integration culminated in improvement of internal communication. At DoHA 50% respondents disagree that there was an improvement of internal communication due to ICT integration.
4.3.3 To determine if there are any barriers to ICT-business alignment in the public sector (Objective 3)

Questions (Q) 11,12, 13, 14,15,16, 17,18,19,20,21 and 22 were included to address the third objective.

4.3.3.1. ICT non-ICT lack close relationship (Q11)

![Figure 4.15. ICT non-ICT lack close relationship](image)

Figure 4.15 reveals that 65% respondents from DoHA disagree with the statement that there is a lack of close relationship between ICT with other non-ICT units. At SASSA 50% respondents believe there is a lack of relationship, 26% are undecided and 24% disagree with the statement.
4.3.3.2 ICT does not prioritize well (Q12)

![Bar chart showing responses to ICT not prioritizing well.]

Figure 4.16: ICT does not prioritize well

Figure 4.16 reveals that 61% respondents at DoHA disagree that ICT does not prioritize. At SASSA there is a noticeable number of respondents that show indecision to whether ICT prioritization is an inhibitor or not. The majority of respondents agree to ICT not prioritizing well.

4.3.3.3. ICT fails to meet its commitments (Q13)

![Bar chart showing responses to ICT failing to meet commitments.]

Figure 4.17. ICT fails to meet commitments
Figure 4.17 shows that 47% respondents at SASSA disagree to ICT failing to meet its commitment whereas 38% agree. At DoHA 65% do not agree that ICT meets its commitments.

**4.3.3.4 ICT does not understand business (Q14)**

![Bar chart showing responses to ICT understanding business](chart)

Figure 4.18. ICT does not understand business

Figure 4.18 reveals that in both departments the majority of respondents disagree that ICT lacks business understanding. It should be noted that at SASSA more than 20% respondents agreed to ICT lacking business understanding.

**4.3.3.5 Senior executives do not support ICT (Q15)**

![Bar chart showing responses to executive support](chart)

Figure 4.19. ICT lacks executive support compared
Figure 4.19 shows that more than 80% of the respondents at DoHA believe that ICT has executives support; 50% of respondents at SASSA believe that ICT has executive support in their environment.

4.3.3.6 ICT management lacks leadership (Q16)

Figure 4.20. ICT lacks management leadership compared

Figure 4.20 reveals that 65% of respondents at DoHA believe ICT management has leadership skills and at SASSA 40% believe ICT management lacks leadership.
4.3.3.7 ICT fails to achieve strategic goals (Q17)

Figure 4.21. ICT fails to meet strategic goals

Figure 4.21 reflects that 57% of respondents at DoHA believe that ICT meets strategic objectives whereas 39% believe otherwise. At SASSA 53% believe ICT meets strategic goals and 27% believe otherwise.

4.3.3.8 Budgeting problems prevent ICT department from achieving goals (Q18)

Figure 4.22. Budgeting problems prevent ICT department from achieving goals
Figure 4.22 shows that at SASSA budgetting problems are inhibiting ICT integration since 72% of the respondents agree. At DoHA, 56% of respondents disagree that budgetting is an inhibitor of ICT integration in their environment.

4.3.3.9 Antiquated ICT infrastructure (Q19)

![Antiquated ICT infrastructure](chart)

Figure 4.23. Antiquated ICT infrastructure

Figure 4.23 reveals that 48% of the respondents at DoHA believe the ICT equipment in their environment is updated, 26% undecided about the status of the equipment, and 26% believe that the equipment is antiquated. At SASSA 33% of respondents believe ICT equipment is up-to-date, 29% undecided about the status of their equipment, and 38% believe it is antiquated.
4.3.3.10 Goals and visions of ICT department are vague (Q20)

Figure 4.24. Goals and vision of ICT department are vague

Figure 4.24 shows that at DoHA 78% of respondents disagree with the statement that the ICT goals and vision are vague; only 13% agreed. In terms of the SASSA respondents 44% disagreed with the statement and 40% agreed.

4.3.3.11. ICT does not communicate well with other departments (Q21)

Figure 4.25. ICT does not communicate well with other departments
Figure 4.25 reveals that more than 75% of respondents at DoHA believe ICT communicates well with other departments whereas at SASSA more than 54% respondents believe ICT does not communicate well with other departments.

**4.3.3.12 Resistance from senior executives towards ICT (Q22)**

![Graph showing resistance levels](image)

Figure 4.26. Resistance from senior executives towards ICT

Figure 4.26 reveals that 59% of respondents at SASSA believe that executives resist ICT compared to 91% respondents at DoHA who believe senior executives do not resist ICT integration.

**4.4 Cross tabulation of variables**

A cross tabulation is a statistical tool used to display the joint distribution of two or more variables. Tables 4.10 to 4.13 below show cross tabulations of the work-streams that completed the questionnaires and their responses to the variables to determine the level of ICT integration.
Table: 4.10 Departments and ICT has a strategy document at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Cust. Serv.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4</strong></td>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td><strong>7</strong></td>
<td><strong>22</strong></td>
<td><strong>34</strong></td>
</tr>
</tbody>
</table>

Table 4.10 reveals that at SASSA 34 respondents completed the questionnaires. Majority (47%) of the completed questionnaires were from the ICT department; respondents from accountancy, finance, marketing and production departments did not respond to this question. Also from the table the results show that 85% respondents agree that SASSA has a strategy document. Other departments that had a significance contribution to the study are Administration (17%) and Operations (17%).

Table: 4.11 Departments and ICT is a support function at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Cust. Serv.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>ICT</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>4</strong></td>
<td><strong>26</strong></td>
<td><strong>34</strong></td>
</tr>
</tbody>
</table>

Table 4.11 above reveals that in SASSA the majority (47%) of the respondents were from ICT departments and no responses were received from accountancy, finance, marketing and production departments. The table also reveals that 88% of the respondents at SASSA believe ICT is a support function in their environment. The departments that responded to this question are Administration at 17% and Operations at 17% as well.
Table 4.12 Department and ICT have a strategy document at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cus. Serv.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ICT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.12 shows that at DoHA eight departments responded to the questions; only the ICT work-stream did not respond. The responses were evenly distributed with human resources (HR) being in the majority at 22%. Also shown on the table is that 60% of the respondents at DoHA agree to having the strategy document, 22% undecided and 17% disagree.

Table 4.13 Departments and ICT is a support function at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Finance</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Production</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cus. Serv.</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>ICT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.13 reveals the responses from DoHA departments. Majority of the responses were from HR and there are no ICT responses reflected. Sixty five percent agree to ICT being the support function and 26% disagree.
Table 4.14 Departments and Satisfaction with Effects of ICT investments at SASSA

<table>
<thead>
<tr>
<th>Department</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Cust. Serv.</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>15</td>
<td>6</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.14 above reveals that 47% of the respondents at SASSA were from the ICT department. Also shows that 61% of the respondents at SASSA are satisfied with the effects of ICT investments. It should be noted though that 29% of SASSA respondents are undecided about the ICT investments effects.

Table 4.15 Departments and Satisfaction with Effects of ICT investments at DoHA

<table>
<thead>
<tr>
<th>Department</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Productions</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cust.Serv</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.15 reflects that 52% of the respondents at DoHA are satisfied with the investments made for ICT in their environment and 43% are not satisfied. It was also noted that majority of the respondents were from the Human Resource department.
Table 4.16 Departments and Productivity Increase as a consequence of ICT Investments SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>14</td>
<td>10</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.16 reveals the results of SASSA respondents per department when asked about the productivity changes as a consequence of ICT investments. Seventy percent agree that productivity increased as a consequence of ICT investments and the majority of the respondents were from ICT department.

Table 4.17 Departments and Productivity Increase as a consequence of ICT Investments DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Production</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td>7</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.17 shows the results of respondents from DoHA when asked about productivity changes as a consequence of ICT investments. Seventy three percent agree that productivity increased and the majority of the respondents were from Human Resource Management department.
Table 4.18 Departments and ICT Investments more for new Software Development at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>HR</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>ICT</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.18 reveals the number of responses from SASSA when asked about ICT investments in their environment. Fifty percent agree that ICT investment is more for new software development and 32% disagree. The table also shows that the majority of the respondents were from ICT department.

Table 4.19 Departments and ICT Investments more for new Software Development at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Production</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>7</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.19 above show that at DoHA majority of the respondents were from Human Resource Management department and 69% of the respondents agree that ICT investments are more for new software development.
Table 4.20 Departments and ICT investments Created a Greater Need to Educate Employees SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>12</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.20 shows that at SASSA majority of the respondents were from the ICT department and 58% of all the respondents from SASSA agree that ICT investments created a greater need for employees to be educated.

Table 4.21 Departments and ICT investments Created a Greater Need to Educate Employees DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Productions</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>15</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.21 shows that majority of the respondents at DoHA were from Human Resource Management department and of all the respondents from DoHA 58% agree that ICT investments created a greater need for employees to be educated.
Table 4.22 Departments and Customer Satisfaction Increased as a Consequence of ICT Investment at SASSA

<table>
<thead>
<tr>
<th>Department</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>5</td>
<td>6</td>
<td>17</td>
<td>6</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.22 reveals that 67% of the respondents from SASSA agree that customer satisfaction increased as a consequence of ICT investments and majority of the respondents were from ICT department.

Table 4.23 Departments and Customer Satisfaction Increased as a Consequence of ICT Investment at DoHA

<table>
<thead>
<tr>
<th>Department</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Productions</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.23 reveals that 69% of the respondents from DoHA agree that customer satisfaction increased as a consequence of ICT investments and the majority of the respondents were from Humana Resource Management and Administration departments.
Table 4.24 Departments and ICT Fails to meet its Commitments at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operations</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Ser</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>11</td>
<td>6</td>
<td>11</td>
<td>1</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.24 above shows that 35% of the respondents from SASSA agree that ICT fails to meet its commitments, 47% disagree, meaning they believe ICT meets its commitments and a noticeable 17% is undecided. Majority of the respondents were from the ICT department.

Table 4.25 Departments and ICT Fails to meet its Commitments at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Productions</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>9</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.25 above shows that at DoHA 65% of the respondents believe ICT meets its commitments, 26% agree to ICT failing to meet its commitments and 9% were of undecided. Majority of respondents were from Human Resource Management and Administration departments.
Table 4.26 Departments and Senior Executives do not Support ICT at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operation</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.26 reveals that 38% of SASSA respondents believe that senior executives do not support ICT and 50% of the respondents believe senior executives do support ICT. Majority of the respondents were from ICT, Operations and Administration departments, respectively.

Table 4.27 Departments and Senior Executives do not Support ICT at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Production</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Cus.Serv</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.27 reveals that 86% of the respondents at DoHA believe senior executives support ICT and 13% believe senior executives do not support ICT. Majority of the respondents are from Human Resource Management and Administration departments.
Table 4.28 Departments and ICT Fails to Achieve Strategic Objectives at SASSA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Operation</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Cus. Serv</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>ICT</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>11</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 4.28 shows that 59% of the respondents from SASSA believe ICT achieves its strategic objectives and 26% believe it does not. It should be noted though that 21% of the respondents were undecided. Majority of the respondents were from ICT department.

Table 4.29 Departments and ICT Fails to Achieve Strategic Objectives at DoHA

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Admin</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Fin</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>HR</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Marketing</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Production</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cus. Serv</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>11</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.29 above reveals that 56% of the respondents from DoHA believe ICT achieves its objectives and 39% believe it does not. Majority of respondents were from Human Resource Management and Administration departments.
4.5 Summary
Chapter 4 has laid a foundation for the researcher to base his recommendations and conclusions of the study in Chapter 5. The data presented in Chapter 4 provide facts to respond to the key questions of the study which in return provide a basis to address the objectives of the study. Data have been presented in the form of tables and charts to paint a vivid picture of the comparisons in the two departments about the topic.

Chapter 5 focuses on the discussion of the data presented in Chapter 4. Conclusions are drawn from the data; recommendations are made based on the data and literature reviewed in this study.
CHAPTER FIVE
ANALYSIS AND DISCUSSIONS

5.1 Introduction
In this chapter the data presented in Chapter 4 are discussed and analyzed. The chapter begins by interpreting the results from the frequency statistical analysis that was completed in Chapter 4. Thereafter, the findings of the study are discussed according to the research questions and the objectives as defined in Chapters 3 and 4.

5.2 Discussion
5.2.1 Results from frequencies of biographical data
Figure 4.1 shows that in both departments the most prevalent age gap is 25-39 being $n = 56\%$ at SASSA, and $n = 26\%$ at DoHA. For the age gap 35-49 $n = 38\%$ at SASSA, and $n = 26\%$ at DoHA. According to Figure 4.1 SASSA did not have any respondents between the ages 18-24 and 60+ years and only had 6% at the age gap 50-59. At DoHA the age gap appeared to be evenly dispersed from age 18 – 59 with 4% respondents at age gap 60+. According to Wessel et al. (2005) age is critical in the manner in which respondents view ICT integration since ICT started playing a meaningful role in the public sector around 1962. They pointed out that prior to 1962 management was dominated by behavioral perspective where managers maintained a diverse and complex web of contacts and interactions that acted as an informal information system. Post 1962 heralded the commencement of the cognitive perspective school of management. This meant that the introduction of knowledge, core competencies and perceptual filters became pivotal in management (Cronje et al. 2004). The age factor may therefore mean older managers still use the behavioral school of management and integrating ICT in their environment may be a challenge.

Figure 4.2 reveals that the level of formal education for the respondents at SASSA is predominantly between 3-4 years at 53%, 21% at 5yrs and 24% at 6+ yrs. Most respondents from SASSA have either a diploma or a degree, with some officials with an equivalent of masters degree. Formal education level at DoHA is also 52% at 3-4 years, 26% at 1 year and 13% at 0 years. Formal education level is critical in the analysis as it
may depict the level of critical thinking and exposure to the ICT programmes which may have an influence in the manner officials perceive ICT integration.

Figure 4.3 shows work experience of the respondents in the two departments. At SASSA respondents have work experience predominantly between 3-15 years; the majority being at 6-10 years work experience. At DoHA the majority of respondents have work experience between 1-2 years and 6-10 years. Work experience is critical in this assessment because it shows the level of exposure to business systems and the use of ICT in work environments which could have an influence in the manner in which officials view ICT integration in their work environment. ICT integration will be effective in different ways in different departments. Understanding the impact of ICT in each department assisted the researcher to make recommendations in terms of using ICT to improve service delivery in the public sector. At SASSA majority of respondents were from ICT and at DoHA they were evenly dispersed with administration and human resources being higher than the other work-streams.

5.2.2 Results from analysis of dependent variables

Previous researchers of related studies have identified ICT as a strategy enabler and a tool that can be utilised to differentiate an organisation from its counterparts (Nwokeafor 1996 as quoted by Grossberg et al. 1999). In the public sector implementing a differentiation strategy would refer to improved service delivery as a consequence of ICT integration thus achieving the objectives set by top management of the department.

Assessment of ICT integration in the public sector was done in this study and the findings are discussed below.

5.2.2.1 Objective 1: To determine if ICT is implemented at a strategic level or at a functional level (Support function) in the public sector

This study assesses the level of management at which ICT is integrated in the two departments using the responses to the questionnaires distributed to the officials in the
two departments. The results were presented in chapter 4 above below are the findings and discussion of the results.

Figure 4.5 reveals that >70% SASSA officials view ICT as a support function and figure 4.6 reveals that >60% of SASSA officials also view it as a strategic function. From this figures it is evident that the majority of SASSA officials still see ICT at a support function level rather than at a strategic level. This could be interpreted to mean at SASSA there is a strategy document which clearly defines ICT integration and is communicated to employees as figure 4.14 reveals but may have some challenges in the implementation thereof. Tables 4.10 and 4.11 reveal that even within the ICT department within SASSA officials look at ICT as more of a support function than a strategic function.

At DoHA 60% officials view ICT as a support function and also 60% view it as strategic function. This presents a level of indecision among the officials at DoHA which could be interpreted to mean there is a strategy document but is not implemented or the strategy document is not properly communicated to the other internal departments as fig 4.14 reveals that internal communication at DoHA has not changed. Tables 4.12 and 4.13 show that Human Resource Management and Administrations departments are the departments at DoHA that predominantly feel the impact of ICT integration.

5.2.2.2. Objective 2. To determine the perceptions of managers towards the impact of ICT investment in the public sector

Figure 4.7 reveals that in both departments majority of managers still believe investments are made towards ICT integration. At SASSA >60% agree to meaningful impact of ICT investments and at DoHA >52% officials are satisfied with the effects of ICT investments. Table 4.14 reveals that at SASSA 47% of the managers in ICT are satisfied with ICT investment effects and a noticeable 29% of managers were undecided. At DoHA 22% of Human Resource managers and 22% at Administration managers are satisfied with ICT investment effects. The overall finding could mean in both departments managers are generally satisfied with ICT investments effects but within individual departments there is a need for a balanced implementation of ICT since in some departments officials reflected ICT to be more effective.
Figure 4.8 reveals the managers’ perceptions to productivity increase as a consequence of ICT integration. In both departments managers seem to believe productivity has increased as a consequence of ICT investments. This could be interpreted as service delivery in both departments improved since ICT integration. Also revealed by an improvement in customer satisfaction in both departments as reflected in figure 4.13. Tables 4.16 and 4.17 show that both at SASSA (>70%) and DoHA (>70%), respectively managers believe productivity increased as a consequence of ICT investments.

Figure 4.11 reveals that managers at DoHA felt a greater need for employees to be educated as a consequence of ICT integration in their environment. According to Figure 4.11 the age gap at DoHA is dispersed across different ages up to 60+ years. This could mean some officials in the employ of the department are from the behavioral perspective school of management, where most of the management work was paper based and manual, namely pre-1962 (Wessel et al. 2005) and others from cognitive perspective school of management where management work is more information systems based and digitised, that is post-1962 (Cronje et al. 2004). Given the two possible different perspectives it could be argued that there is an increased need to bridge the skills gap. According to the results presented on Table 4.20 at SASSA 58% of the managers felt a greater need for employees to be educated and the majority being from the ICT department. At DoHA (Table 4.21) 58% of managers felt a greater need for employees to be educated and the majority being in Human Resource and Administration departments.

Figure 4.9 shows that SASSA officials believe that ICT investments were more for maintenance of existing hardware. At DoHA 30% disagree and 30% are undecided. This could be interpreted as being that at SASSA ICT hardware is updated and properly functional and at DoHA this may not be the case.

Managers at DoHA believe ICT investments are more on new software development as is evident in Figure 4.10 because 69% support of this statement. This could be interpreted that DoHA spends more resources on new programs but the hardware is not properly maintained.
Figure 4.12 shows that at DoHA 48% of managers believe ICT investments did not increase employee satisfaction whereas at SASSA 53% of the managers believe it did. This could be interpreted that DoHA employees did not see the impact of ICT integration and as such there was no tangible evidence that could be pointed out that increased their satisfaction.

In both departments there seems to be a significant level of customer satisfaction as a consequence of ICT investments as it is evident from the responses of managers in Figure 4.13. It should also be noted that 25% of the officials at DoHA disagree to customer satisfaction having increased as a consequence of ICT investments in their environment.

Figure 4.14 reveals that managers at SASSA (71%) are convinced that ICT investments changed the way internal units of the department communicate whereas at DoHA 50% of the managers disagree to ICT investments changing internal communications. This could be interpreted that at SASSA ICT integration has improved internal communication and may have made a noticeable improvement since 71% of the officials all agreed. At DoHA it may not be the case since only half of the respondents may have noticed ICT impact on communication improvements.

5.2.2.3. Objective 3. To determine if there are any barriers to ICT-Business alignment in the public sector

In determining the barriers of ICT-business alignment in the two departments the following were the findings. Figure 4.15 shows the results of the relationship of ICT with non-ICT units in both departments as a potential inhibitor of effective integration of ICT. At DoHA there seem to be close relationship between ICT and other internal units whereas at SASSA there is still a gap in relationship of ICT with other internal units. This could mean relationship between ICT unit and other non-ICT units at DoHA is not a barrier but might be considered an barrier at SASSA.
Figure 4.16 reveals the results of ICT prioritization as a barrier to ICT integration. At DoHA > 60% officials believe ICT prioritizes well which therefore means ICT prioritization is not a barrier whereas at SASSA the levels of indecision amongst the official were 26% disagree, 29% undecided and 29% agree. At SASSA ICT prioritization can be considered a barrier.

Figure 4.17 shows the results of ICT meeting its commitments as being a barrier to ICT integration. At DoHA 65% of the officials believe ICT meets its commitments which means ICT commitments may not be a barrier of ICT integration. At SASSA 47% officials believe ICT meets its commitments whereas 50% believe otherwise. It can then be interpreted that at SASSA ICT meeting its commitments can be a barrier at SASSA compared to DoHA where this is not the case.

Figure 4.18 shows results of ICT understanding of business in the two departments as a barrier of ICT integration. In both departments > 60% officials believe ICT understands business. It can then be interpreted that ICT understanding of business of both environments is not a barrier of ICT integration.

Figure 4.19 reflects the results of executive support of ICT in both departments as a barrier of ICT integration. At SASSA 50% of officials believe executives support ICT but the remainder (50%) believe otherwise. At DoHA 84% of the officials believe ICT is supported by executives; only 16% believe otherwise. This could be interpreted to mean at SASSA the support of ICT by executives can be a barrier whereas at DoHA it is not.

Figure 4.20 reveals the results of ICT management leadership as a barrier to ICT integration. At DoHA 69% of the officials believe ICT management has the leadership qualities required and at SASSA only 50% believe so. This could be interpreted to mean at SASSA management leadership in ICT could be a barrier whereas at DoHA it is not.
5.3 Summary
This chapter discussed the analysis of the data in terms of the three research objectives. The different perspectives of ICT integration, as viewed by officials in both the departments, were analysed to address the objectives of the study. The next and final section of this manuscript provides closing commentary and recommendations for this study as whole.
CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction
This chapter draws conclusions from the data and presents recommendations based on the findings of the study to the public sector management. The conclusions and recommendations presented in the study are based on the data collected in the two departments and may be customised to other departments as well to improve ICT integration in South African public sector.

6.2 Key findings
In assessing the integration of ICT in the public sector the following were the key findings and are presented in accordance with the key research objectives.

- **Objective 1. To determine if ICT is implemented at a strategic level or at a functional level in the public sector**
  In assessing the level of ICT integration in the two departments this study has found that at SASSA officials still view ICT as a support function even though the majority may have seen and know that there is an ICT strategy document. The level of ICT integration at SASSA may be at strategy level but it may be that the implementation of the strategy is not effective hence officials still view and feel its impact at a functional level. At DoHA ICT has been integrated but the level of management of integration is not clearly defined. It also may be concluded that the ICT strategy document exists but is not properly implemented since officials still view ICT as a support function at functional level.

- **Objective 2. To determine the perceptions of managers towards the impact of ICT investment in the public sector**
  In assessing the managers perceptions in the two departments, this study has found that:
  - Managers in the the two departments understand the value of ICT
  - Managers percieve that Investments are being made towards ICT but can be improved
• Managers believe ICT investments have created a greater need for educating the employees
• In both departments managers believe ICT investments have increased productivity and improved customer satisfaction.

• Objective 3. To determine if there are any barriers to ICT-business alignment in the public sector

In assessing the barrier to ICT integration this study found that:
• At SASSA executives do not fully support ICT whereas at DoHA majority of executive support it. This then may mean at SASSA executive support for ICT may be a barrier at SASSA but not at DoHA
• At DoHA a noticeable number of officials believe ICT fails to meet strategic objectives. This may be a barrier to ICT integration at DoHA as the executives may find it difficult to justify ICT investments if set objectives are not met.

In the overall the study found the barriers to ICT integration in the two departments are minimal and officials generally understand the value it may bring in both environments.

6.3 Recommendations for future research
• The case study approach was a limitation because each department has a different approach to its operations and different management approach to its plans and execution thereof. The case study confined the researcher to only the approaches of the two departments and did not assess other government departments.
• The bureaucratic nature of the South African government departments prevented the researcher from accessing sufficient information which could have been of benefit in this study.
• To conduct the same study in a larger population in the South African public sector in order to understand the broader perspective of public sector officials on ICT integration.
6.4 Specific recommendations for this research

Objective 1. To determine if ICT is implemented at a strategic level or at a functional level in the public sector

- Government departments play a pivotal role in the society and their services are critical for the well being of the citizens and economical growth. ICT is a critical tool which when implemented properly can improve services and save costs for an organisation. Decision makers in organisations can use ICT to make accurate and informed decisions to properly direct organisations and achieve strategic objectives (Wessel et al. 2004). This study recommends that ICT integration is implemented at strategic levels and cascaded down the other levels through policies and strategic documents. According to Luftman et al. (1999) ICT on its own cannot provide value but business policies must translate into priorities and projects for the ICT unit.

Objective 2. To determine the perceptions of managers towards the impact of ICT investment in the public sector

This study recommends that managers in the public sector be provided resources through ICT investments and be provided room to explore their innovative ideas (Koellinger 2006). From the results of the study it is evident that most managers have positive perceptions towards ICT investments in the two departments, it is therefore recommended that decision makers harness this positive spirit and improve service delivery. It is up to managers to exploit the fruits of ICT integration and translate them into more productive use of their ICT assets (McCauley et al. 2004).

Objective 3. To determine if there are any barriers to ICT-business alignment in the public sector

The study revealed that there are not too many barriers towards ICT integration in the South African public sector. It is therefore recommended that Executives
provide the necessary support to ICT and provide room for it to benefit the public sector.

6.5 Limitations and future research of the study

This section of the study presents limitations and the proposed future studies in this topic. Some of these limitations are associated with the lack of existing theories on the topic while others are due to the research design and data collection process. For example, the study was undertaken in two departments and based on self-reported opinions of its’ employees. It neglected other constituencies such as citizens, business partners, and other government organizations. While future studies should expand our understanding of e-government beyond the scope of the present research, this work can provide a foundation for such future works. Some of the suggested directions for future studies include:

- Assessment of the ICT skills level amongst the citizens as recipients of public services.
- In depth study on the benefits of integrating ICT in the public sector.
- Benchmark South African government departments against comparable countries to recognize different characteristics of e-government initiatives and underlying organizational and technological aspects.
- An in depth study into ICT enablers in the public sector

6.6 Conclusions

This manuscript has assessed the integration of information communication technology in the public sector despite the sample size and the challenges of the limitations of the case study. The level of ICT integration, ICT-business barriers and perception of managers to ICT integration has been investigated. Finally recommendations have been made to suggest approaches to integrate ICT in the public sector to reap the benefits or save costs and improve service delivery in the South African government departments.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadband</td>
<td>Refers to the ability of the user to view content across the internet that includes large files, such as video, audio and 3D.”</td>
</tr>
<tr>
<td>e-Services</td>
<td>Electronic Services - refers to any computer base services</td>
</tr>
<tr>
<td>ICT Integration</td>
<td>Refers to the transformation of public sector’s internal and external relationships through net-enabled operations, IT and communications, in order to improve government service delivery, constituency participation, and society in general.</td>
</tr>
<tr>
<td>Functional Level</td>
<td>Level of management constituted by Middle and Junior Management Levels</td>
</tr>
<tr>
<td>ICT-Enabled Projects</td>
<td>Refers to any information communication technology adaptable projects</td>
</tr>
<tr>
<td>Legacy Systems</td>
<td>Computer systems or application programs, which are outdated and incompatible with other systems, but are too costly to replace or redesign</td>
</tr>
<tr>
<td>Non-parametric</td>
<td>Refers to a function on a sample whose interpretation does not depend on the population fitting any parametrized distributions</td>
</tr>
<tr>
<td>Service Delivery</td>
<td>An act of providing the required needs or resources to the citizens in a manner that is coordinated, cost effective and justifiable.</td>
</tr>
<tr>
<td>Strategic Level</td>
<td>Level of management constituted by top or executive management</td>
</tr>
</tbody>
</table>
ACRONYMS

ASGISA - Accelerated and Shared Growth Initiative for South Africa
ASPA - American Society for Public Administration
BAS - Basic Accounting Systems
CIO - Chief Information Officer
DOHA - Department of Home Affairs
DPSA - Department of Public Services Administration
eNATIS - Electronic National Traffic Information System
ERP - Enterprise Resource Planning
ICT - Information Communication Technology
IEDMS - Integrated Electronic Documents Management System
IGAP - Integrated Grants Administration Programme
IS-IT - Information Systems - Information Technology Alignment
LOGIS - Logistical Information Systems
MIS - Management Information System
PERSAL - Payroll and Human Resource Management System
SAITIS - South African Information Technology Industry Strategy
SASSA - South African Social Security Agency
SITA - State Information Technology Agency
STATA - Statistical Analysis Tool
UNCED - United Nations Conference on Environment and Development
UNPA - United Nations Public Administration
VPN - Virtual Private Network
WAN - Wide Area Network
XLSTATA - Statistical Analysis Tool with Microsoft Excel capability
REFERENCES


David Masango 2005 State of the Nation Address: Service delivery to be intensified South Africa, viewed 02 April 2008, Source: BuaNews

Department of Home Affairs 2007, Strategy Document


Gartner:CIO, April 2007, Signature Business Performance Is the Value of ICT,


http://en.wikipedia.org/wiki/Qualitative_methods
http://www.qsrinternational.com/what-is-qualitative-research.aspx
http://www.wisegeek.com/what-is-a-case-study.htm
http://dictionary.bnet.com/definition/MIS.html


Soy, S. 1997, *The case study as a research method*. Unpublished paper, University of Texas at Austin


28 NOVEMBER 2008

MR. SC DLAMINI (9262219)
GRADUATE SCHOOL OF BUSINESS

Dear Mr. Dlamini

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0736/08M

I wish to confirm that ethical clearance has been approved for the following project:

"Assessing the importance of Integrated Information Communication Technology (ICT) in the Public Sector"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

MS. PHUMELELE XIMBA

cc. Supervisor (Ms. A Marimuthu)
cc. Mrs. C Haddon