DETERMINANTS AND ADOPTION OF TRANSACTION PROCESSING INFORMATION SYSTEMS AT THE DIRECTORATE OF IMMIGRATION AND REGISTRATION OF PERSONS IN KENYA

BY:

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DECLARATION

This research report is my original work and has not been submitted for examination in this or any other university.

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This research report has been submitted for examination with my approval as a university supervisor.

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DEDICATION

The research study is dedicated to my wife Rita, My children Yvette and Effie for their support, care and the immeasurable joy they brought to my life. May the Almighty God bless you all.

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ABSTRACT

Driven by the steady growth of Information systems in government business processes in Kenya ,a study was conducted to evaluate the determinants and adoption of Transaction Processing Systems in the directorate of Immigration and Registration of Persons in Kenya. The Specific objectives of the study were: (i) To establish the extent to which the Transaction Processing Information System is being used. (ii)To establish the determinants/drivers, benefits and challenges in the adoption of Transaction Processing Information Systems'. This study targeted Staff in the directorate who relied on the information system for their daily operations and determinants, benefits and challenges that influence the adoption of TPIS were studied. Using the questionnaires each specific challenge or benefit respondents were asked to rate the benefit or lack thereof that each specific benefit or challenge respectively brought to their departments due to the fact that they had incorporated a TPIS in their business processes. Items selected by majority showed that the departments derived certain benefits from the adoption of their respective Information System in their businesses. Additionally, they encountered challenges that discouraged their adoption of TPIS in their businesses processes. The study unveiled the fact that internet cost of computers and access to computers ranked first in among the challenges that undermine the adoption of the TPIS. It was also observed that some of the directorates' internal factors to support information system through the adoption of TPIS are focused on eliminating this challenges and cost; hence, the department is on the right track in terms of prioritizing of business processes than investing in TPIS. Based on the research findings and conclusions, the study recommends that the directorate staff should undertake some training in emerging IS to effectively utilize all the resources to ensure the directorate offers efficient services. The government/policy makers should make polices that are Information systems friendly by reducing costs of infrastructure and ensuring security is well taken care of because staff's age, level of education, and gender are key factors for TPS adoption, the application developers should take concern of such factors as ease of use when implementing the different information system that is to make it more user friendly and easy to learn.

LIST OF ACRONYMS AND ABBREVIATIONS

APAI-CRVS	Africa Programme on Improvement of Civil registration and Vital statistics.
CoK	Constitution of Kenya
CRD	Civil Registration Department
CRVS	Civil Registration and Vital Statiscics
CRVSS	Civil Registration and Vital Statistics System
DOI	Diffusion of Innovation
e-	Electronic
E-Government	Electronic Government
GOK	Government of Kenya
GSM	Global System for Mobiles
ICT	Information and Communication Technology
IPRS	Integrated Population Registration System
IS	Information Systems
KENRIS	Kenya National Registration and Identification System
KMRPS	Kenya Machines Readable Passport System
KVSR	Kenya Vital Statistics Report
MIRP	Ministry of Immigration and Registration of Persons
TOE	Technology-Organization-Environment
TPIS	Transaction Processing Information System
TPS	Transaction Processing System
UN	United Nations
UNICEF	United Nations Children's Fund
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The current business environment is very dynamic and undergoes rapid changes as a result of technological innovation, increased awareness and demands from customers. Business organizations, especially of the 21st century, operate in complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate. Information and Communication Technology (ICT) is at the center of this global change curve. Laudon and Laudon, (2001) contends that managers cannot ignore Information Systems because they play a critical role in contemporary organization. The application of information and communication technology concepts, techniques, policies and implementation strategies to the directorate of immigration and registration of persons have become a subject of fundamental importance and concerns and indeed a prerequisite for local and global competitiveness. It has continued to change the way the registry and their corporate relationships are organized worldwide and the variety of innovative devices available to enhance the speed and quality of service delivery (MIRP, 2009)

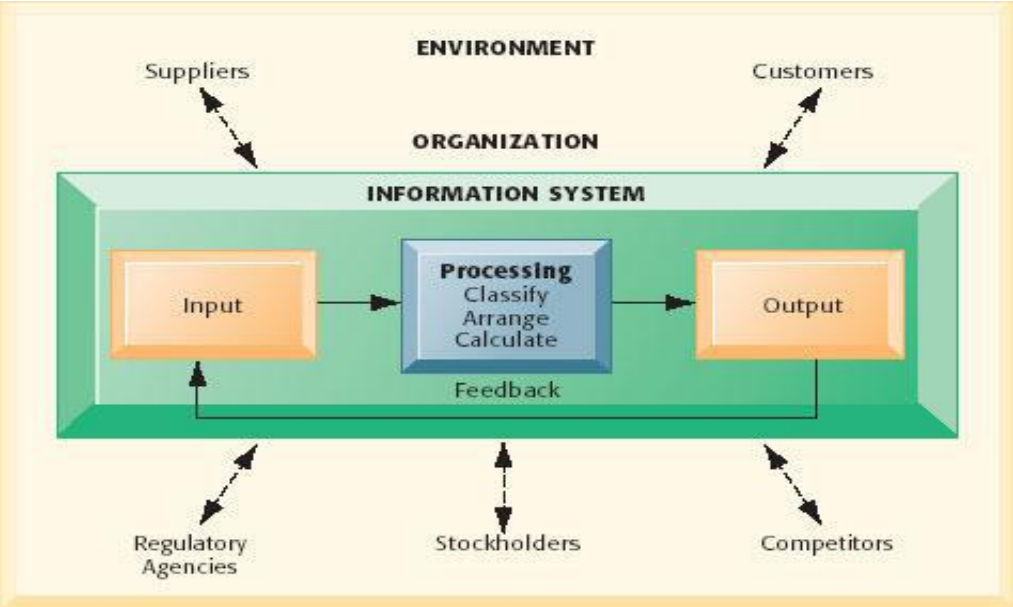
In 2012, the Kenyan government started a program of investing in ICT infrastructure with the help of foreign funding (Muganda, 2008). This program was meant to address two impediments to development faced by many countries: endemic corruption and inefficiency. Despite Kenya being classified as a less-developed country according to the UN's Computer Industry Development index, the country managed to successfully introduce e-Government services that with the aim of improving government services and reducing corruption. Kenya has made substantial progress with ICT reforms. As of 2006, the country scored around 50 percent on an index of institutional reform, which is close to the African average (Cecilia & Shkaratan, 2011).The country has achieved one of the highest rates of GSM coverage in Africa. Over 90 percent of Kenya's population lives within range of a GSM signal. This is one of the highest rates in Africa. It is likely that another seven percent could be profitably served by private operators. Only about one percent of the population would not be commercially viable to serve and would probably require some degree of public subsidy (Mayer et. al., 2008)

1.1.1 Transaction Processing Systems(TPS)

Transaction Processing System (TPS) is an information processing system for business transaction involving the collection, modification and retrieval of all transaction data (Valacich & Schneider, 2010).TPS are designed to process user requests for information from a database, or requests to update a database (Lewis et al.,2003). Nevertheless, the need to introduce new transaction processing systems in government department has been driven by the fact that they still operate with manual transaction processing system.

Laudon (2004) states that as departments grow in size and scope, agency costs or coordinate costs rise, because government must expend more and more effort supervising and managing systems IT, by reducing the costs of acquiring and analyzing information, permits organizations to reduce agency costs because it becomes easier for governments to oversee a greater number of systems (Laudon, 2004). Mwende (2010),on the other hand list some of the drivers for embracing information systems as,(i) increasing dependence on information systems and communication infrastructure that delivers it, (ii) e-business strategies are business driven, thus depend on the entities beyond the direct control of the organization,(iii)the potential for technologies to dramatically hasten business process, reduce costs and bring new opportunities and (iv) the risk of dragging behind in a global economy.

Figure 1.1 Transaction Processing Information System Operation



Source: Loudon, 2007-Essentials of Business information Systems.7th edition

1.1.2 Directorate of Immigration and Registration of Persons in Kenya

This is one of the directorates in the Ministries of Interior and Coordination of National government in Kenya. It's mandate is to promote national security by creating and maintaining a comprehensive population database for personal legal records, generating timely, secure registration, identification and travel documents. The directorate comprises of five departments namely; National Registration Bureau (NRB), Civil Registration Services (CRS), Immigration Services, Refugee Affairs (RA), and Integrated Population Registration Services (IPRS).

National Registration Bureau (NRB) which was established in 1978 and is mandated by the Registration of Persons Act (CAP 107), Laws of Kenya to identify and register all Kenyans who have attained age eighteen and above, production and issuance of secure identifications, management of a comprehensive database of all registered persons, and detection and prevention of illegal registration. Immigration Services, is the security arm of the government as well as a service department. It is responsible for controlling entry and exit of persons seeking to live temporarily or permanently in Kenya. In so doing it derives its mandate from the Kenya Citizenship Act (CAP 170), the Immigration Act CAP 172, and Aliens Restrictions Act (CAP 173), Laws of Kenya.

Refugee Affairs (RA) draws its mandate from the Refugee Act, of 2006. It is charged with registration and refugee status determination, coordination of provision of services such as food, shelter, Medicare safety and security guarantee for the refugees in the country. It is also mandated to maintain appropriate registration and documentation of asylum seekers and refugees in Kenya, issuance of conventional travel documents (refugee travel documents), management of refugee camps, reception and transit centers.

Integrated Population Registration Services (IPRS) was established through the Presidential Circular Number 1 of May, 2008. IPRS consist of National population Register (NPR) which will contain population records of all Kenyans and foreigners resident in Kenya. It operates on the principle of providing a unique identifier in the form of an intelligent pin. IPRS is working towards integrating its central database with all primary registration agents. When fully operational the system will be a comprehensive repository of personal data for all Kenyans and foreigners residing in Kenya. Thereby

being a facilitator to various agencies wishing to use such database to authenticate records and catalyze their service delivery (G.o.K, 2009).

Civil Registration Services (CRS) is the agency charged with the responsibility of implementing the compulsory registration of all births and deaths occurring in Kenya and those of Kenyans occurring abroad. Civil registration is defined by the United Nations Statistical Commission as "the continuous, permanent, compulsory, and universal recording of the occurrence and characteristics of vital events (live births, deaths, fetal deaths, marriages, and divorces) and other civil status events pertaining to the population as provided by decree, law or regulation, in accordance with the legal requirements in each country. It is the total process of (a) collecting information by civil registration or enumeration on the frequency or occurrence of specified and defined vital events, as well as relevant characteristics of the events themselves and the person or persons concerned, and (b) compiling, processing, analyzing, evaluating, presenting and disseminating these data in statistical form. Complete coverage, accuracy and timeliness of civil registration are essential for quality vital statistics"[UNESA, 2001].

The CRS is mandated to carry out these functions and operations through the Registration of births and deaths Act (CAP 149), Laws of Kenya. It also undertakes preservation, security, and custody of births and deaths records, issuance of births and deaths certificates, processing of vital statistics – both nasality (birth statistics) and mortality (death statistics) and re-registration upon legitimation and recognition.

The directorate have developed systems for gathering, transmission, processing, storage and production of passports, identity cards, certificates of births and deaths, alien identification cards as well as refugee registration. These systems include; Civil Registration and Vital Statistics System (CRVSS) which is used for registration of all events of birth and death that occur in the country and those of Kenyans that occur abroad, the Kenya National Registration and Identification System (KENRIS), the Integrated Population Registration System (IPRS) which has created a national population register, the Kenya Machines Readable Passport System (KMRPS). All these systems ride on the backbone of Transaction Processing Systems.

1.2 Research Problem

The right to a name and nationality is well established. However, around 51 million births remain unregistered every year in developing countries, despite government, civil society, UNICEF and other international organizations‟ efforts to universalize birth registration over the last 60 years. These births that go unregistered every year in developing countries, translates to one in three children globally. One out of every three developing countries has a birth registration rate of less than 50 per cent. In South Asia, the region with the largest number of unregistered children, this increases to more than one out of two, or over 24 million children not registered in 2007. Sub-Saharan Africa has the highest percentage of children under age five who are not registered at birth, with 66 per cent (United Nations Children's Fund, 2007).

The Government of Kenya cannot fulfill its development agenda unless it knows who lives, works, and plays within its borders and what is needed to improve living conditions. Today there are still people on the African continent who are born and die without ever leaving a trace of their existence in any legal record, a phenomenon that has been described as the "scandal of invisibility" (Setel, 2007). This means that substantial numbers of people in Africa remain unseen and uncounted, as if they don't exist in the eyes of the state. (GOK Vision2030).

The importance of CRVS(Civil Registration and Vital Statiscics) lies in the fact that civil registration is a routine government operation with far-reaching implications for national security, policymaking, governance, planning, development, and monitoring and evaluation. Thus, African ministers resolved to strengthen the capacity of the Secretariat of the Africa Programme on Improvement of Civil registration and Vital statistics (APAI-CRVS); establishing strong links with the health sector to improve registration of births and deaths including improving death and causes of death information at country level; establishing strong linkages between civil registration and national identity systems; and developing guidelines for mainstraning gender issues in CRVS system and managing in conflict and emergency situations.(Kenya Vital Statistics Report, 2014).

On the other hand,the Constitution of Kenya 2010 (CoK), in Chapter 3, Articles 12, 13, and 14, on citizenship, recognizes the function of civil registration as the primary basis for establishing Kenyan citizenship by recording a birth and associated details, which gives a child its conclusive identity that includes its name, parentage, and nationality[GOK, 2010]. The study therefore aims at identifying the determinants and

adoption of Transaction Processing Systems (TPS) in the directorate of Immigration and Registration of Persons in Kenya.

1.3 General Objective

The main purpose of the study is to investigate the determinants and adoption of Transaction Processing Systems (TPS) in the directorate of Immigration and Registration of Persons in Kenya.

This study aims to achieve the following four specific objectives:

i. To establish the extent to which the Transaction Processing Information System is being used.
ii. To establish the determinants/drivers of the adoption of Transaction Processing Information Systems'
iii. To determine the benefits of Transaction Processing Information Systems'
iv. To find out the challenges experienced when using the Transaction Processing Information Systems'

1.4 Value of Study

The results of the study are expected to address the real situation about application of Transaction Processing Systems in the directorate of Immigration and Registration of Persons in Kenya.. This will also help the directorate strategize on the most effective ways to improve performance of TPS and improve service delivery .To the Kenyan Government, the study would be useful in providing more information on benefits of the TPS and ways to adopt Information Systems to enhance the service delivery .The study is aiming at establishing new data and interpretation as well as new frontiers of knowledge that would be of importance to various stake holders and the documented report of this study will be easily acquired in the library and will equip the learners with more knowledge and skills on Transaction Processing System. Findings of this study are expected to be of great importance to various researchers involved in Transaction Processing Systems. Generally, the study is expected to make general body of knowledge in terms of empirical contribution that will be used globally especially in the technology research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discusses the relevant literature that has been reviewed in the area of Information Systems .The issues discussed include the theoretical review on transaction processing systems and the empirical study on the implementation of the same in the Immigration and Registration of Persons Directorate in Kenya. The chapter also presents the conceptual framework that will be adapted in conducting the study.

2.2 E-government Concept

Information Technology changed the way organization used to work in the first wave of diffusion of technology. It changed the business processes dramatically and cost effectively. The second wave brought common people under the shade of technology where end users not only communicate freely about various aspects of social and personal life but also do business (Iqbal, 2006). Njuru (2011) describes e-government concept as increasingly becoming a fundamental tool for enhancing public administration .Though e-government is not a new concept, it has emerged as the means by which governments, and hence the public sector, can participate in the new knowledge landscape for improved service delivery (Musau, Cheruiyot, and Munishi, 2011). The World Bank (2004) indicates that, the management of the e-government information systems has the ability to transform relations with citizens, businesses, and other arms of government.

Farelo & Morris (2006), looks at e-government as the use of ICT to strengthen government performance in areas such as more effective and more efficient provision of services, opening new channels for people to access government and official information, and making government more accountable to its citizens. This approach, centers on tools and applications that strengthen the government-people relationships, in making internal government processes more efficient and effective. Therefore, e-government has the potential to provide a platform for innovative approaches and solutions to the promotion of human development and information transfer (United Nations Development Programme, 2008). In a study to determine the readiness globally to implement e-government, the United Nations (2004) revealed that the United States and most European countries were already at advanced stages in the implementation and utilisation

of e-governance as a vehicle to provide information and improve service delivery. The United Nations' (2004) study also noted an increase in the number of government services portals or one-stop-shops as well as a marked increase in the amount and types of information provided by governments worldwide.

In view of this, few countries such as Canada, Singapore, Sweden and South Korea have been successful with e-government, but many have not Muganda (2008). He further argues that in many countries , e-government has only been fruitful for a small part of society, therefore, for e-government to be a driver for development, it should therefore be oriented towards the social inclusion of all. Hence, an understanding is needed on how to make e-government acceptable and inclusive of all and so achieve high performance in governance objectives. To realize development and social inclusion of all, another driver for e-government is Infrastructure. This, Infrastructure, has been defined by Choe (2003) as "basic physical and organizational structures needed for the operations of a society or enterprise" "the services and facilities necessary for an economy to function" "a set of interconnected structural elements that provide framework supporting an entire structure of development. '' Increasing amounts of resources are invested in IS infrastructures in organizations to give better services and to produce better value products. Furthermore, the amount of information in organizations is heavily increasing and it has become vitally important to efficiently share information inside the organization. This is where the infrastructure become extremely important if the organization is to deliver quality output to its target customers (Basili and Caldiera, 2010). As such, many organizations are investing great sums in introducing and managing information systems infrastructure in the organization hoping to be able to make business more efficient and information sharing smooth hence, TPS is playing an important role in the effort to increase effectiveness and efficiency in organizations (Boehm and In, 2006).

2.3 Transaction Based Information Systems

Laudon (2007), defines Information Systems as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination, and control in and organization. Information Systems(IS), can also be any organized combination of people, hardware, software, communications networks and data resources that stores and retrieves, transforms, and disseminates information in an

organization(O‟Brien, 2007). In addition, IS are combination of hardware, software and telecommunication networks that people build and use to collect, create, and distribute useful data, typically in organization settings (Valacich & Schneider, 2010).

According to (O'Brien & M.Marakas, 2008), applications of information systems that are implemented in today's business world can be classified in several different ways. They classify these as first, Operations Support Systems; which produce a variety of information products for internal and external use. This is to process data generated by, and used in, business operations. The role of this operation support systems is to efficiently process business transactions, control industrial processes, support enterprise communication and collaborations, and update corporate databases. The next classification is Management Support Systems, where IS applications focus on providing information and support for effective decision making by managers. Conceptually, several major types of information systems support a variety of decision making responsibilities of Management Information System, Decision Support Systems and Executive Information System, thus, all systems that involve interaction with shared database can be considered to be transaction-based information system (Sommerville, 2011). An information system therefore allows controlled access to a large base of information. Increasingly, Information systems are web-based systems that are accesses through a web browser. (Valacich & Schneider, 2010).

In discusing IS ,Sommerville (2011), emphasizes that TPS are usually interactive systems in which users make synchronous request for service. This eventually leads to a database transaction which is the sequence of operations that is treated as a single unit (an atomic unit). All operations in a transaction have to be completed before the database changes are made permanent. This ensures that failure of operations within the transaction does not lead to inconsistencies in the database. Therefore, TPS are designed to process user requests for information from a database, or requests to update a database (Lewis et al., 2003). In view of this, TPS can be classified as an information system designed to process business events and transactions. The goal of TPS is to automate repetitive businesses within an organization to increase speed and accuracy and to lower the cost of processing each transaction which is to make organizations more efficient hence, reduce people from the process, thereby reducing the transaction costs and reducing the likelihood of data entry errors (Valacich & Schneider, 2010).

According to O'Brien & M.Marakas (2008), TPS are operation support systems that record and process the data resulting from business transactions. These are cross functional information systems that process data from the occurrence of business transactions or events that occur as part of doing business. They describe the transaction process in two basic ways. In batch processing, where transactions data are accumulated over a period of time and processed periodically and In real time where data are processed immediately after transaction occurs. They further argue that there are three vital roles that information systems can perform for a business enterprise. That is to support business processes and operations, support of decision making by employees and managers and support of strategies for competitive advantage.

2.4 Determinants of Adoption

When using ICT to conduct more of its activities, a country's government and economy become more transparent and efficient. Over the last ten years, governments have invested heavily in network infrastructure, skills/ the training of human capital, and regulatory frameworks. In its annual overview of the e-readiness of governments and people to deliver and use e-services, the Economist Intelligence Unit (2010) estimated that every month, over 40 million more people become mobile-phone users, while the capacity of the world's international fibre-optic cables doubles every 18 months. Global monthly Internet traffic in 2010 was also two-thirds higher than the year before.

In its overview of e-government activities on the African continent, the 2010 United Nations E-Government Survey (United Nations, 2010) found that huge strides forward have been made by African governments, especially in Northern Africa. Most information systems require teams of people to develop and maintain. The organization of projects into process steps and artifacts implies a social organization among the people performing the work, with significant degrees of task specialization. Some tasks require great familiarity with the application domain, while others require deep knowledge about specific technologies and platforms. Some require meticulous attention to detail, while others require oversight and vision (Basili and Caldiera, 2010). A well-functioning people organization is as important as technical capabilities for project success (DeMarco and Lister, 2009). Every work product requires time and effort to produce. So whether they get produced, and to what quality, depends on motivation, reward structures,

priorities, as well as on personnel capabilities. Yet the social organization is often implicit in how processes and products are organized, rather than explicitly designed, since there are few aids beyond generic project management tools. The human intellectual capital perspective highlights the importance of human knowledge and ingenuity in systems development.

However, Prices for ICT services in Kenya remain relatively high. Submarine cables could substantially reduce costs as long as access is competitive .Based on experience elsewhere in Africa, the imminent completion of three submarine cable projects—EASSy, SEACOM, and TEAMS—has the potential to cut Kenya's Internet and international telecom charges at least by half. But these benefits will materialize for the economy only if there is more than one operator providing a physical point of access to the submarine infrastructure, and hence competition between alternative landing stations. Countries in which international gateways remain under monopolistic control do not experience full price reductions from increases in international connectivity, essentially because the benefits of the technology are retained as monopoly profit (Cecilia and Shkaratan, 2011)

For people working within the physical infrastructure of the organization, the right place to place information may be on the organization network. The considerations of both security and accessibility must always be taken into account in making data placement decisions. Database integration techniques were introduced to make use of data across multiple databases. Data warehousing provided powerful tools for understanding trends by enabling multi-dimensional analysis of data collected from the numerous operational databases in an organization. Data mining and knowledge discovery techniques enhanced these analyses (Bernstein et al., 2009).

By offering a common network computing and information infrastructure that is readily accessible to everyone – regardless of organizational and other boundaries –the integration and interoperability challenges that organizations had been confronting individually at an enterprise level is now being addressed collectively on a worldwide scale (Yang and Papazoglou, 2012). Organizations that had already been opening up their operations to the external world through IS-enabled concepts such as virtual enterprise now have the momentum of the whole world behind them (Basili and Caldiera, 2010)

In describing the essential attributes of a good software system Sommerville (2011) describes product characteristics into four categories; maintainability which is how the software can evolve to meet the changing needs of customers, dependability and security where the software should not cause physical or economic damage in the event of systems failure as well as malicious users should not be able to access or damage the system. This includes reliability, security and safety, efficiency whereby software should not make wasteful use of system resources such as memory and processor cycle. Efficiency therefore includes responsiveness, processing time, memory utilization and acceptability which mean that software must be acceptable to the type of users for which it is designed. It must be understandable, usable, and compatible with other systems that they use which in turn enables service delivery.

2.5 Benefits of Transaction Processing Information Systems

Valacich & Schneider, (2010) highlights three ways to use information system. These are for automation process to help complete a task within an organization faster, more cheaply and perhaps with greater accuracy and /or consistence. Secondly, for organization learning; Information systems can be used to learn and improve processes. Shoshana Zuboff, (1988) describes this as informating. The system helps us not only to automate a business process but also learn to improve the day to day activities within that process. IS can be used for organizational learning which is the ability of an organization to use past behavior and information to improve its business processes. Thirdly, IS role for supporting strategy in a way that enables the firm to gain or sustain competitive advantage over rivals.

Similarly, TPS can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.(Basili and Caldiera, 2010). However, at a high level of abstraction, information systems are seen to positively contribute to the organization in three ways; these are (i) by facilitating activities that could not be done before, (ii) by improving the activities that could already be done, and

(iii) by enabling the organization to cease activities that are no longer needed (Ward and Daniel, 2006).

The United Nations E-Government Survey in 2010 (United Nations, 2010) found that: "Citizens are benefiting from more advanced e-service delivery, better access to information, more efficient government management and improved interactions with governments, primarily as a result of increasing use by the public sector through Information and Communications Technology (ICT)." The survey also found out that a large majority of the countries surveyed made huge amounts of information available not only by using websites, but also by providing national portals as a point of entry for users to connect to the government services delivered by different ministries. Of note was also the report's assertion that some developing countries are in the process of catching up with high-income countries in the developed world (United Nations, 2010).

2.6 Challenges of Transaction Processing Information Systems

O'Brien & M.Marakas (2008) argues that there are three vital roles that information systems can perform for a business enterprise. These include (i) Support of business processes and operations (ii) Support of decision making by employees and managers, (iii)Support of strategies for competitive advantage. However, challenges faced can be broadly classified into governmental, geo-economics, and cultural challenges (Valacich & Schneider, 2010). Governmental challenges are governmental in nature and are associated with the overall political system, regulations (including data sharing) or even internet access. Geo-economics challenges are the combination of economic and political factors that influence the region. This are time zone challenges, infrastructure related and challenges related to economic welfare. Demographic challenges include expertise related challenges as in the nature of the work force while Cultural challenges which include cultural differences. (Valacich & Schneider, 2010).

These challenges can be defragmented as lack of skills, specifically computer literacy skills, among ordinary citizens and departmental staff members and managers (Benton, 2007; Mkhize, 2007); high bandwidth costs; limited public access to the Internet and other ICT technologies; and resistance to change – the desire to cling to old service delivery methods by staff (United Nations Department of Economic and Social Affairs, Inter-Parliamentary Union, Association of Secretaries General of Parliaments, 2007).

According to Schneider (2011), there are problems with compatibility of older and 'newer'technology. There are problems where older business systems cannot communicate with web based and Internet infrastructures, leading to some organizations running almost two independent systems where data cannot be shared.

In addition, Magutu et al. (2010) in describing four major challenges faced in the Adoption of information systems, list (i) Human challenges which relate to the interpersonal skills of the individuals involved with the project, this what Burke et al. (2001) argues that human issues have the biggest impact on the processes as when implementation is successful, it is because a focused attention was paid to the human issues. (ii) Operational challenges - operational factors are those that affect the flow of information transactions within the business. The following operational factors have been identified: Changing Business Processes; and Process Rework. Technical challenges – Technical factors are those that affect the technological side of an organization. The following technical factors have been identified: Technology Trials; Complying with rules and requirements; Integration and Specific module of information system not working as expected; and customizations required. Financial challenges - Financial issues are those that affect the finance side of an organization. Cost overruns have been identified as a major source of information system implementation challenges (Magutu et al., 2010).

2.7 Theoretical Foundation

There are numerous theories of that provide a direction for the study of individuals' characteristics and how they behave. Adoption of the below theories to information systems has enabled theorists and researchers in the field of Information Systems to understand the psychological impact of individuals in information systems adoption.

Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003) considers four constructs hypothesized to have a significant role as direct determinants of user acceptance and usage behavior. The four constructs include; performance expectancy, effort expectancy, social influence and facilitating conditions. The constructs are moderated by age, gender, experience and voluntariness of use to determine user acceptance and usage behavior. The influence of performance

expectancy on behavioral intention is considered to be moderated by gender and age such that the effect is stronger for men and particularly the younger men.

On the other hand, in Diffusion of Innovation (DOI) ,Rogers (2003) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption." and diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system." He further explains that individual innovativeness falls into five categories from earliest to latest adopters i.e. (innovators, early adopters, early majority, late majority, laggards) (Rogers, 1995).These theory has a wider support in Information Technology (IT) adoption research such as the TPS at the department of civil registration. It described the introduction of innovations as being communicated through particular channels over a period and within certain social system (Rogers, 1995)

Another theory is the Technology-Organization-Environment (TOE) framework developed in 1990 (Tornatzky and Fleischer, 1990). It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context .It identifies three features of an enterprise's context that affect series of steps taken to adopts and implements a technological innovation. The TOE framework asses an organization's decision to implement an innovation depending on (a) the technologies appropriate to the organization; (b) organizational attributes (i.e. company size, resources available, quality of human resources); and (c) environmental factors- business environment of the organization (Sekaran, and Bougie, 2011) .The TOE framework provides a useful analytical framework that can be used for studying the adoption and full understanding of different types of IT innovation. The TOE framework has a solid theoretical basis, unchanging empirical support, and the capability of application to IS innovation domains, though specific factors identified within the three contexts may vary across different studies (Oliveira, T. & Martins, M. 2011). These theories can explain the hypothesis used by the directorate of Immigration and Registration of Persons in its adoption of the Information System which is transaction based processing System.

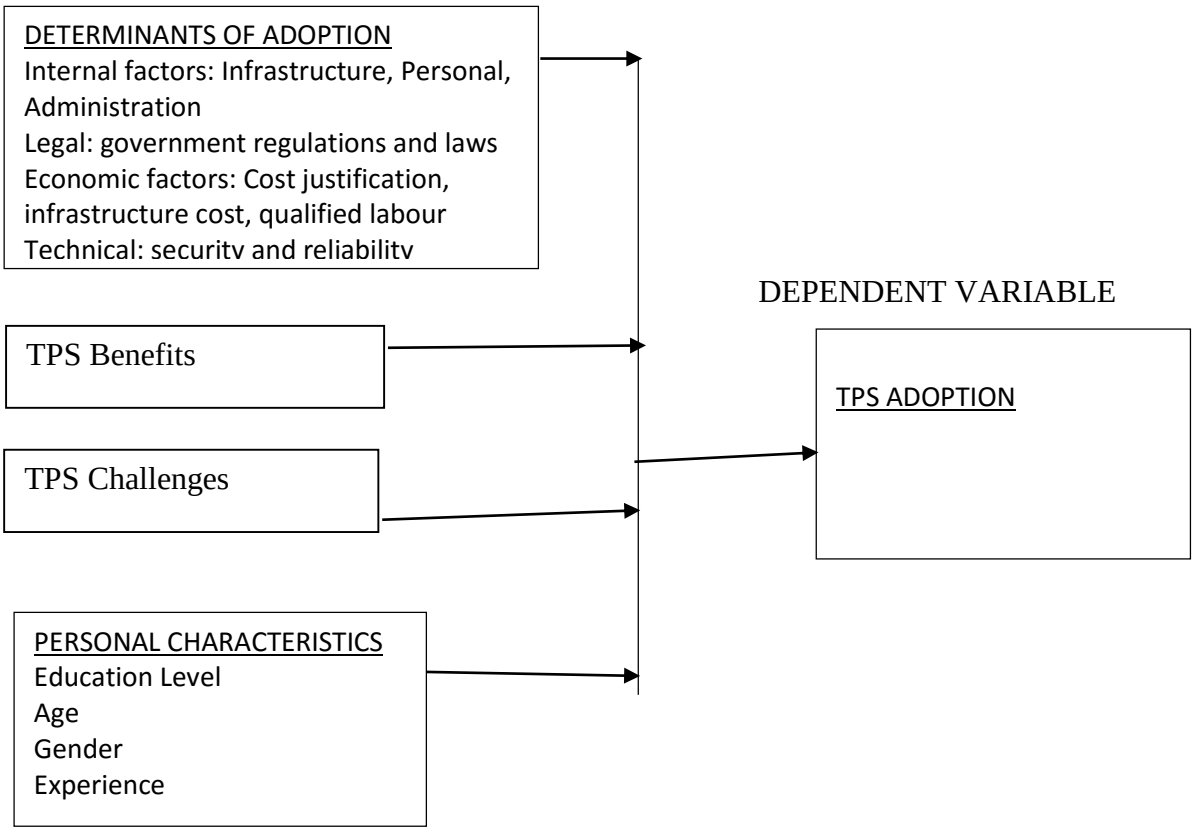
2.8 Summary of the Literature Review

Managing information technology solutions in a complex and ever-changing organizational environment is never easy (Mulira, 2010).TPS constitutes a very important ICT tool that has the potential of improving the government departments across the country. The literature has shown the benefits accrued from adoption of TPS. The literature has expounded in detail the challenges and determinants that limit the adoption of TPS. The literature reviewed has acknowledged the few studies carried out by different researchers on the challenges that affect the adoption of Transaction Processing Information System. The conceptual view then summarizes the relationship among the variables that is, the dependent, independent and moderating variable. Since the studies done were few and basing on the research gaps discussed there is need therefore to conduct a study to establish the factors that affect the adoption of TPS. According to Heeks (2002), effectively managed e-government initiatives within the domain of administration deal particularly with improving the internal workings of the public sector and the relationship between the institutions and their clients by effectively reducing bureaucracy and enhancing the quality of services in terms of time, content and accessibility. This results in high quality services to the citizenly from the government.

2.9 Conceptual framework

The conceptual framework below has illustrated the relationship between independent variables on one hand and the dependent variables on the other hand. The adoption of TPS by the department is the dependent variable which has birth and death registration, legitimization ,re-registration and vital statistic while the values of the independent variable are technical, internal, economical and legal factors and moderating variables as personal characteristics; gender, education level, age and experience .

INDEPENDENT VARIABLE



MODERATING VARIABLE

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CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

Research design is the way a study is planned and conducted, the procedure and techniques employed to answer the research problem or question (Mc Millan & Schumacher, 2001). According to Nachmias & Nachmias (1996) the concern is turning the research question into a testing project. Every design has its positive and negative sides. The research design for this study will be a survey. According to Owens (2002) in cross-sectional surveys data is collected at one point in time from a sample selected to represent a larger population.

3.2 Target Population

The population for this study will be the staff at the directorate of Immigration and Registration of Persons in Kenya who handle the Transaction Processing System, which is 167 in number. According to Mugenda and Mugenda (2003), a target population is defined as, the entire group of individuals or items under consideration in any field of inquiry and has a common attribute

3.3 Sample Design

This study will therefore have a sample size of respondents drawn from among the staff at the directorate of Immigration and Registration of Persons in Kenya.The sample shall therefore be 50 employees at the directorate. According to Warner & Costenoble (2011), a sample size that surpasses the threshold of 30 respondents for a normal distribution is adequate for a study. According to Mugenda & Mugenda (2008), a sample size of between 10 and 30 % is a good representation of the target population.

3.4 Data Collection

Questionnaires will be used to collect the primary data for this research. The questionnaire will consist of both open and closed ended questions providing both quantitative and qualitative data. The questionnaire will have three sections: Section A will cover the general details about the respondent and the field station. Section B will cover the various sections of the Transaction Processing System in use and section C will cover the determinant and drivers of adoption including benefits and challenges

experienced during the adoption of the TPS. Drop and pick method will be used to disperse the questionnaires.

3.5 Data Analysis

Each data collected will be checked for consistency with data obtained from questionnaires in order to eliminate misleading data which could arise from misrepresentation of questions in the questionnaires. The data will be analyzed using descriptive statistics. The results will be presented using tables, frequency charts and graphs, and the findings were presented using tables, graphs, bar charts and pie charts.

According to Baulcom (2012), content analysis uses a set of categorization for making valid and replicable inferences from data to their context. This offers a systematic and qualitative description of the objective of the study. The study will use inferential statistics which will involve coefficient of correlation and multiple regression analysis to investigate the determinants and adoption of Transaction Processing Systems (TPS) in the directorate of Immigration and Registration of Persons in Kenya specifically to the TPS which is used for registration processes that occur in the country and those of Kenyans that occur abroad, These are the Kenya National Registration and Identification System (KENRIS), the Integrated Population Registration System (IPRS) which has created a national population register, the Kenya Machines Readable Passport System (KMRPS). In this case, TPS adoption (y) is the dependent variable. Independent variables are determinants (x_1), Personal Characteristics (x_2), benefits (x_3), challenge (x_4). A multiple regression equation for predicting performance in the Directorate of Immigration and Registration of Persons is expressed as follows:

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4\ e}$$

Where:

Y = TPS Adoption

β_0 = Constant

X_1 = Determinants

X_2 = Personal Characteristics

X_3 = Benefits

X_4 = Challenges

$\beta_1 ... \beta_4$ = Regression Coefficients of four variables

e = Error term

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter describes the actual findings according to the feedback from the respondents and links them to the objectives of the study. Questionnaires were used to seek the respondents' perceptions of the various attributes defining determinants or drivers of TPIS, demographic factors, benefits of using TPIS and challenges of adoption of TPIS. In total 50 questionnaires were distributed and out of these 35 questionnaires were filled up and returned indicating a response rate of approximately 70% and according to Cooper and Schindler,(2008) a response rate of above 60% is deemed to be good. The various tables that were formed in processing the information and the results obtained from the calculations undertaken are included in this chapter.

4.2 Descriptive Statistics

This section presents the descriptive statistics of the variables of the study, the study had five variables with determinants, demographics, benefits and challenges as the independent variables, and TPIS adoption as the dependent variable, in this study, means, frequencies and standard deviation were used. Descriptive statistics is a set of brief descriptive coefficients that summarizes a given data set, which can either be a representation of the entire population or a sample. The measures used to describe the data set are measures of central tendency and measures of variability or dispersion. (Cooper and Schindler, 2008).

4.2.1. The Age of the respondents

The respondents were asked to indicate the range within which their age fell. The results were as indicated in table 4.1 below.

Table 4.1: Distribution of Respondents by Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-29	8	22.9	23.5	23.5
	30-39	22	62.9	64.7	88.2
	40-49	2	5.7	5.9	94.1
	50+	2	5.7	5.9	100.0
	Total	34	97.1	100.0	
Missing	System	1	2.9		
Total		35	100.0		

The study was conducted in in the directorate of Immigration and Registration of Persons in Kenya, majority of the respondents (22) indicated that they fell in the 30-39 age category representing 62.9%,8 of the respondents representing 22.9% were between the age bracket 20 to 29 years while 2 of the respondents representing 5.7 % were in the age bracket of 40-49 years, another 2 of the respondents representing 5.7% fell in the 50+ category, this showed that young people were in the directorate of immigration and registration thus the Adoption of TPIS can be embraced due to the liberal mind set and the high learning rate and exposure to technology.

4.2.2. The Gender of respondents

The respondents were asked to indicate the range within which their age fell. The results were as indicated in table 4.2 below.

Table 4.2 Gender of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	30	85.7	85.7	85.7
	FEMALE	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

The respondents were basically categorized in two; male and female. Majority were male with a frequency of 30 which represented 85.7%, while female had a frequency of 5 which represented 14.3 %.

4.2.3: Duration in the current position

The respondents were asked to indicate the range of time they had held their current positions. The results are indicated in table 4.3

Table 4.3: Duration in the current position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LESS THAN 1 YEAR	8	22.9	23.5	23.5
	1-2 YEARS	3	8.6	8.8	32.4
	3-8 YEARS	19	54.3	55.9	88.2
	9-10 YEARS	2	5.7	5.9	94.1
	MORE THAN 10 YEARS	2	5.7	5.9	100.0
	Total	34	97.1	100.0	
Missing	System	1	2.9		
Total		35	100.0		

The respondents were asked to indicate the duration they had held their current position. Majority (19) had held their position for a period between 3-8 years, representing 54.3% ,8 had been in their position for less than a year representing 22.9%, 2 had been in their current position for a period between 9-10 years representing 5.7%, similarly 2 of the respondents had been in their current position for a period exceeding 10 years representing 5.7%,this shows that most of the respondents were conversant with the working environment and the introduction of TPIS will be a good idea.

4.2.4 Level of Education

The respondents were asked to indicate the range within which their education level fell. The results are indicated in table 4.4

Table 4.4: Level of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CERTIFICATE	1	2.9	2.9	2.9
	DIPLOMA	7	20.0	20.6	23.5
	BACHELORS DEGREE	19	54.3	55.9	79.4
	MASTERS DEGREE	7	20.0	20.6	100.0
	Total	34	97.1	100.0	
Missing	System	1	2.9		
Total		35	100.0		

The education level was divided into certificate, diploma, bachelor degree, master's degree and PhD, most of the respondents (19), indicated that they held a bachelor's degree representing 54.3%,7 had a master's degree representing 20%,1 had a certificate representing 2.9% while one respondents did not respond. From the results it's therefore clear that the department of immigration and registration of persons have the right competent skills to embrace TPIS adoption as they have the knowledge of the importance of the systems and the accruing benefits.

4.2.5 TPIS Adoption

In this section, the researcher sought the respondents' perception regarding the various aspects defining TPIS adoption. The respondents were first introduced to the various TPIS available and other general TPIS aspects. The respondents were expected to indicate to what extent they used TPIS to handle the various tasks at their job context. For this particular aspect responses were captured in a five point likert's scale (5= Never, 4= Rarely, 3=Often, 2= Very ,1= Always) and the general level of acceptance was

determined by calculating the means and standard deviation for the various statements as per the responses and tabulated in ascending order of means.

4.2.5.1: The TPIS available in the department

The respondents were required to indicate what type of TPIS was being widely used in their departments. The result's, were as displayed in table 4.5 below.

Table 4.5 TPIS available in the Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CIVIL REGRISTRATION AND VITAL STATISTICS	8	22.9	26.7	26.7
	KENYA NATIONAL REGISTRATION AND IDENTIFICATION	7	20.0	23.3	50.0
	INTEGRATED POPULATION REGISTRATION SYSTEM	10	28.6	33.3	83.3
	KENYA MACHINES READABLE PASSPORT SYSTEM	5	14.3	16.7	100.0
	Total	30	85.7	100.0	
Missing	System	5	14.3		
Total		35	100.0		

From Table 4.5 above, majority of the respondents (10) indicated that they were using Integrated Population Registration System representing 28.6% ,8 of the respondents were using Civil Registration and Vital Statistics representing 22.9%,7 were using Kenya National Registration and Identification System representing 20%, while 5 were using Kenya Machines Readable Passport System representing 14.3%.

4.2.5.2: Usage of TPIS

Here the respondents were asked to respond with a Yes or No as to whether they were using TPIS; results were as indicated in table 4.6 below;

Table 4.6: Usage of the TPIS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	26	74.3	78.8	78.8
	NO	7	20.0	21.2	100.0
	Total	33	94.3	100.0	
Missing	System	2	5.7		
Total		35	100.0		

From Table 4.6 above, most of the respondent's (26) indicated that they were using TPIS representing 74.3% while 7 were not representing 20%, two of the respondents representing 5.7% did not respond. This shows that adoption of the TPIS was taking shape in the Immigration and registration of persons department which was a very good thing.

4.2.5.3 Training in TPIS

Here the respondents were required to indicate if they had received any form of training in regard to TPIS in the past two years; the results were as indicated in table 4.7 below.

Table 4.7 Training in TPIS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	18	51.4	54.5	54.5
	NO	15	42.9	45.5	100.0
	Total	33	94.3	100.0	
Missing	System	2	5.7		
Total		35	100.0		

From the Table above 18 of the respondents representing 51.4% indicated that they had been to some form of training in regard to TPIS while 15 representing 42.9 % had not, two of the respondents representing 5.7% did not respond. This shows that efforts towards capacity building to empower officers in regard to TPIS was in place and its

huge step forward towards computerizing the immigration and registration of person department to boost service deliver.

4.2.5.4: Office Computerisation

Here the respondents were asked to indicate the extent to which they felt their offices were computerized; the results were as indicated in Table 4.8 below.

Table 4.8: Office in Terms of Computerisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PLANNING TO COMPUTERISE	3	8.6	8.8	8.8
	COMPUTERISED	25	71.4	73.5	82.4
	FULLY COMPUTERISED	6	17.1	17.6	100.0
	Total	34	97.1	100.0	
Missing	System	1	2.9		
Total		35	100.0		

From Table 4.8 above, 25 of the respondents indicated that their offices were computerized representing 71.4%, 6 indicated that their offices were fully computerized representing 17.1%, 3 indicated that they were planning to computerize the offices representing 8.6% while one respondent did not respond. This is good as it shows that with the computerization in many offices TPIS adoption will be far much easier as the necessary infrastructure was in place.

4.2.5.5: The Rate of TPIS Usage

The respondents were expected to indicate to what extent they used to TPIS to handle the various tasks at their job context. For this particular aspect responses were captured in a five point likerts scale (5= Never, 4= Rarely, 3=Often, 2= Very ,1= Always) and the general level of acceptance was determined by calculating the means and standard deviation for the various statements as per the responses and tabulated in ascending order of means. The results were displayed in table 4.9 below.

Table 4.9:Means and Standard Deviations of the Rate of TPIS Usage

	N	Mean	Std. Deviation
INTEGRATED POPULATION SERVICES	23	2.22	1.594
PASSPORT ISSUING PROCESS	22	2.32	1.555
NATIONAL IDENTIFICATION	25	2.56	1.530
VITAL STATISTICS	20	3.55	1.276
BIRTH REGISTRATION	22	4.05	1.214
DEATH REGISTRATION	21	4.24	.944
Grand Mean	18	3.16	1.352

From Table 4.9 above, the overall rate of TPIS usage had a grand mean of 3.16 and a grand standard deviation of 1.352, parameters with mean and standard deviation below the overall mean and standard deviation indicate a deficiency in usage, in this regard therefore Integrated population services which had a mean of 2.22 and a standard deviation of 1.594 was not being used a lot similarly Passport issuing process and National identification which had a mean of 2.32 and 2.56 respectively were not in operation a lot.

4.2.6 Challenges of TPIS

In this section, the researcher sought the respondents' perception regarding the various aspects defining TPIS adoption challenge. The respondents were expected to indicate to what extent they agreed to the various statements that defined TPIS adoption challenges variable. Responses were captured in a five point likerts scale (5= Strongly Dis agree, 4= Dis agree, 3= Moderate , 2= Agree,1= Strongly Agree) and the general level of acceptance was determined by calculating the means and standard deviation for the various statements as per the responses and tabulated in ascending order of means. The results were as presented in table 4.10.

Table 4.10:Means and Standard Deviations of the Challenges of TPIS Adoption

Descriptive Statistics			
	N	Mean	Std. Deviation
INTERNET CONNECTIVITY IS A LIMITING FACTOR TO ADOPTION	34	2.79	1.388
POWER OUTAGES IS A LIMITING FACTOR TO ADOPTION	34	3.32	1.249
LACK OF ICT SKILLED STAFF IS A LIMITING FACTOR TO ADOPTION	34	3.62	1.303
EASE OF TPIS IS A LIMITING FACTOR TO ADOPTION	34	3.68	1.173
COST OF COMPUTERS IS A LIMITING FATOR TO ADOPTION	34	3.91	1.138
ACCESS TO COMPUTER IS A LIMITING FACTOR TO ADOPTION	34	4.21	.880
Grand mean	34	3.58	1.1885

From Table 4.9 above, the overall rate of TPIS adoption Challenges had a grand mean of 3.58 and a grand standard deviation of 1.1885, parameters with a mean and standard deviation above the overall mean and standard deviation indicate the greatest challenge, in this regard therefore cost of computers, access to computers, lack of ICT skills, ease of TPIS were the main limiting factors to adoption of TPIS as their means were 3.91,4.21,3.68,3.68 respectively which was above the overall mean, similarly their standard deviations had a huge deviation as compared to grand standard deviation of 1.1885.

4.2.7 Benefits of TPIS Adoption

In this section, the researcher sought the respondents' perception regarding the various aspects defining TPIS adoption benefits. The respondents were expected to indicate to what extent they agreed to the various statements that defined benefits of TPIS adoption

variable. Responses were captured in a five point likerts scale (5= Strongly Dis agree, 4= Disagree, 3= Moderate , 2= Agree,1= Strongly Agree) and the general level of acceptance was determined by calculating the means and standard deviation for the various statements as per the responses and tabulated in ascending order of means. The results were as presented in table 4.11.

Table 4.11: Means and Standard Deviations of TPIS Adoption Benefits

Descriptive Statistics			
	N	Mean	Std. Deviation
TPIS MAKES IT EASIER TO ACQUIRE,MANAGE,STORE AND DISTRIBUTE DATA	34	1.47	.706
TPIS WILL IMPROVE OVERALL CUSTOMER SATISFACTION	33	1.48	.755
TPIS MAKES IT EASIER TO LINK WITH OTHER STATIONS	34	1.50	.707
EFFICIENCY IN THE SERVICES WILL IMPROVE IF I USE TPIS	34	1.50	.826
TPIS EASE ACESSIBILITY OF DATA FROM OTHER STATIONS	34	1.65	.950
THE COST WILL REDUCE IF I USE TPIS	34	1.74	.931
GRAND MEAN	33	1.56	.813

From Table 4.11 above, the overall rate of TPIS adoption benefits had a grand mean of 1.56 and a grand standard deviation of 0.813, parameters with a mean and standard deviation below the overall mean and standard deviation indicate the least benefits enjoyed, while those above the grand mean indicate the greatest benefit enjoyed in this regard therefore only ease of accessibility of data from other stations and reduction of costs befits will be enjoyed a lot as their means were 1.65 and 1.74 respectively with standard deviation at 0.905 and 0.931 respectively, but this does not mean that other benefits won't be enjoyed as their means are very close to the grand mean, thus benefits will be there, but not on a very large scale.

4.2.8 Determinants of TPIS adoption

In this section, the researcher sought the respondents' perception regarding the various aspects defining determinants of TPIS adoption. The respondents were expected to indicate to what extent they agreed to the various statements that defined determinants of TPIS adoption variable. Responses were captured in a five point likerts scale (5= Strongly Dis agree, 4= Dis agree, 3= Moderate , 2= Agree,1= Strongly Agree) and the general level of acceptance was determined by calculating the means and standard deviation for the various statements as per the responses and tabulated in ascending order of means. The results were as presented in table 4.12 below.

Table 4.12: Means and Standard Deviations of Legal Factors

Descriptive Statistics			
	N	Mean	Std. Deviation
THE GOVERNMENT SUPPORTS INFORMATION SYSTEMS	34	1.74	.864
THERE ARE GOVERNMENT POLICIES ON INFORMATION SYSTEMS	34	1.97	.834
GOVERNMENT POLICIES INTERFERE WITH INFORMATION SYSTEMS	34	3.18	1.193
Grand Mean	34	2.29	0.964

From Table 4.12 above, the overall legal factors for TPIS adoption had a grand mean of 2.29 and a grand standard deviation of 0.964, parameters with a mean and standard deviation below the overall mean and standard deviation indicate that those legal factors are not very critical but are necessary, while those above the grand mean indicate that the factors are very critical in this regard therefore many respondents indicated that there are government policies that interfere with information systems as the greatest legal challenge towards TPIS adoption as the mean was 3.18 and standard deviation at 1.193.

Table 4.13: Means and Standard Deviations of Internal Factors

Descriptive Statistics-INTERNAL FACTORS			
	N	Mean	Std. Deviation
THERE ARE QUALIFIED ICT PERSONNEL IN OUR INSTITUION	34	1.91	.900
ORGANISATION'S POLICIES FAVOUR INFORMATION SYSTEMS	34	1.94	.952
CONSIDERATIONS OF BOTH SECURITY AND ACCESSIBILITY ARE TAKEN INTO ACCOUNT IN MAKING DATA PLACEMENT DECISIONS THUS IMPROVING SERVICE QUALITY	34	2.24	.855
THE ADMNISTRATION IS FULLY SUPPORTING THE ADOPTION OF IS	34	2.24	1.017
ALL EMPLOYEES SEE THE IMPORTANCE OF IS	34	2.26	.751
THERE IS SUFFICIENT ICT INFRASTRUCTURE IN THE INSTITUION	33	2.30	.883
THERE IS A COMMON NETWORK COMPUTING AND INFORMATION INFRASTRACTURE THAT IS READILY ACCESSIBLE TO EVERYONE IN THE DIRECTORATE THUS IMPROVING SERVICE QUALITY TO THE PUBLIC	34	2.59	1.209
THERE ARE OTHER PROJECTS TO INVEST IN IS	34	3.44	1.078
Grand mean	33	2.085	0.956

From Table 4.13 above, the overall internal factors for TPIS adoption had a grand mean of 2.085 and a grand standard deviation of 0.956, parameters with a mean and standard deviation below the overall mean and standard deviation indicate that those internal factors are not very critical but are necessary, while those above the grand mean indicate

that the factors are very critical in this regard therefore many respondents indicated that organization policies that favor systems and there being qualified ICT personnel in the institution as not being very critical factors though necessary as the means for the two were 1.94 and 1.91 respectively, while respondents indicated that the factor on there being other projects to invest in than invest in IS as being a very critical factor as the mean was 3.44.

Table 4.14: Means and Standard Deviations of Internal Factors

Descriptive Statistics			
	N	Mean	Std. Deviation
IS WILL EASE OUR WORK	33	1.33	.645
I RECOMMEND OTHER STATIONS TO ADOPT TPIS APPLICATION	34	1.53	.706
I INTEND TO CONTINUE USING TPIS APPLICATION IN THE NEAR FUTURE	34	1.65	.734
USING THE TPIS APPLICATION MAKES ME FEEL BETTER THAN THOSE WHO DO NOT USE IT	34	1.97	.717
I KNOW HOW TO USE TPIS APPLICATION WELL	34	1.97	.904
THE TPIS APPLICATION IS EASY TO LEARN	34	2.06	.886
IS WILL INTERFERE WITH MY JOB SECURITY	33	4.12	1.219
Grand Mean	32	2.09	0.83

From Table 4.14 above, the overall personal factors for TPIS adoption had a grand mean of 2.09 and a grand standard deviation of 0.83, parameters with a mean and standard deviation below the overall mean and standard deviation indicate that those internal factors are not very critical but are necessary, while those above the grand mean indicate that the factors are very critical in this regard therefore, many respondents strongly agreed that Information systems will ease their work as the mean was the least at 1.33,however that was not the greatest concern of adoption of TPIS in the work place as the respondents felt that, TPIS might render them jobless, the mean

for this parameter was 4.12 and standard deviation at 1.219,meaning that they would rather not see the Immigration and registration of persons departments adopt TPIS for the sake of their jobs.

4.3 Relationship between Determinants of TPIS adoption and Adoption

To establish the relationship between adoption of TPIS, and determinants of TPIS adoption, a regression model was used where TPIS adoption was the dependent variable with determinants of TPIS adoption being the Independent variable in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.15 Relationship between Determinants of TPIS adoption and Adoption

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.323[a]	.104	.076	.56892

a. Predictors: (Constant), DETERMINANTS

From Table 4.15 above R was 0.323 meaning that there was a positive relationship between TPIS adoption, and determinants of TPIS adoption, while R squared was 0.104 meaning that 10.4% of TPIS adoption variations can be attributed to determinants of TPIS adoption changes while 89.6% is due to other Factors. This implies that the regression model for determinants of TPIS adoption did not have some good explanatory powers as only 10.4% of the variations could be explained.

Table 4.16 Analysis of Variance (ANOVA) in Regression Model for Determinants of TPIS adoption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.205	1	1.205	3.723	.063[b]
	Residual	10.357	32	.324		
	Total	11.562	33			

a. Dependent Variable: TPIS_ADOPTION

b. Predictors: (Constant), DETERMINANTS

From Table 4.16 the results show that the model had an F ratio of 3.723 and the p value was 0.063< 0.05, therefore the overall regression model for Determinants of TPIS adoption was statistically significant and can be used for prediction purposes at 5% significance level, this further indicated that the independent variable (determinants) as used in this study is statistically significant in predicting the TPIS adoptions in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.17 Coefficients for the model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.451	.546		2.656	.012
	DETERMINANTS	.462	.239	.323	1.930	.063

a. Dependent Variable: TPIS_ADOPTION

From Table 4.17 the results show that the model had a t- ratio of 1.930, β=0.462 and the p value was 0.012< 0.05, therefore the using the t-ratio and beta the model was statistically significant and can be used for prediction purposes at 5 % significance level.

4.3.1 Relationship between TPIS Adoption and Demographics

To establish the relationship between adoption of TPIS, and demographics for TPIS adoption, a regression model was used where TPIS adoption was the dependent variable with demographics of TPIS adoption being the Independent variable in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.18: Relationship between TPIS Adoption And Demographics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.431[a]	.186	.160	.54248

a. Predictors: (Constant), DEMOGRAPHICS

From Table 4.18 above R was 0.431 meaning that there was a positive relationship between TPIS adoption, and demographics for TPIS adoption, while R squared was

0.186 meaning that 18.6% of TPIS adoption variations can be attributed to demographics for TPIS adoption, while 81.4% was due to other Factors. This implies that the regression model for TPIS adoption and demographics for TPIS adoption did not have some good explanatory powers as only 18.6% of the variations could be explained.

Table 4.19: Analysis of Variance (ANOVA) in Regression Model for Demographics of TPIS adoption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.145	1	2.145	7.290	.011[b]
	Residual	9.417	32	.294		
	Total	11.562	33			

a. Dependent Variable: TPIS_ADOPTION

b. Predictors: (Constant), DEMOGRAPHICS

From Table 4.19 the results show that the model had an F ratio of 7.290 and the p value was 0.011< 0.05, therefore the overall regression model for demographics for TPIS adoption was statistically significant and can be used for prediction purposes at 5 % significance level, this further indicate that the independent variable (demographics) as used in this study is statistically significant in predicting the TPIS adoptions in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.20: Coefficients for the model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.788	.490		7.726	.000
	DEMOGRAPHICS	-.538	.199	-.431	-2.700	.011

a. Dependent Variable: TPIS_ADOPTION

From Table 4.20 the results show that the model had a t- ratio of -2.7, β= -0.538 and the p value was 0.011< 0.05, therefore the using the t-ratio and beta the model was statistically significant and can be used for prediction purposes at 5 % significance level,

however the co efficient is negative implying an inverse relationship between demographics and TPIS adoption.

4.3.2 The Relationship between TPF adoption and Benefits of Adoption

To establish the relationship between adoption of TPIS, and benefits for TPIS adoption, a regression model was used where TPIS adoption was the dependent variable with benefits of TPIS adoption being the Independent variable in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.21 The Relationship between TPF adoption and Benefits of Adoption

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423[a]	.179	.153	.54474

a. Predictors: (Constant), BENEFITS

From Table 4.21 above R was 0.423 meaning that there was a positive relationship between TPIS adoption, and demographics for TPIS adoption, while R squared was 0.179 meaning that 17.9 % of TPIS adoption variations can be attributed to benefits of TPIS adoption, while 82.1% of the variations was due to other Factors. This implies that the regression model for TPIS adoption and benefits of TPIS adoption did not have some good explanatory powers as only 17.9 % of the variations could be explained.

Table 4.22: Analysis of Variance (ANOVA) in Regression Model for Benefits of TPIS adoption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.067	1	2.067	6.964	.013[b]
	Residual	9.496	32	.297		
	Total	11.562	33			

a. Dependent Variable: TPIS_ADOPTION

b. Predictors: (Constant), BENEFITS

From Table 4.22 the results show that the model had an F ratio of 6.964 and the p value was 0.013< 0.05, therefore the overall regression model for benefits of TPIS adoption was statistically significant and can be used for prediction purposes at 5 % significance

level, this further indicate that the independent variable (benefits) as used in this study is statistically significant in predicting the TPIS adoptions in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.23:Coefficients for the model [a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.862	.255		7.295	.000
	BENEFITS	.403	.153	.423	2.639	.013

a. Dependent Variable: TPIS_ADOPTION

From Table 4.23 the results show that the model had a t- ratio of 2.639, β=0.403 and the p value was 0.013< 0.05, therefore the using the t-ratio and beta for the model was statistically significant and can be used for prediction purposes at 5 % significance level.

4.3.3 The Relationship between TPIS adoption and Challenges for Adoption

To establish the relationship between adoption of TPIS, and the challenges for TPIS adoption, a regression model was used where TPIS adoption was the dependent variable with the challenges of TPIS adoption being the Independent variable in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.24 :The Relationship between TPIS adoption and Challenges for Adoption Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.130[a]	.017	-.014	.59602

a. Predictors: (Constant), CHALLENGES

From Table 4.24 above R was 0.13 meaning that there was a positive relationship between TPIS adoption, and challenges for TPIS adoption, while R squared was 0.17 meaning that 17 % of TPIS adoption variations can be attributed to benefits of TPIS adoption, while 83% of the variations was due to other Factors. This implies that the regression model for TPIS adoption and benefits of TPIS adoption did not have some good explanatory powers as only 17 % of the variations could be explained.

Table 4.25: Analysis of Variance (ANOVA) in Regression Model for Challenges of TPIS adoption [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.195	1	.195	.548	.464[b]
	Residual	11.368	32	.355		
	Total	11.562	33			

a. Dependent Variable: TPIS_ADOPTION

b. Predictors: (Constant), CHALLENGES

From Table 4.25 the results show that the model had an F ratio of 0.548 and the p value was 0.464> 0.05, therefore the overall regression model for challenges of TPIS adoption was not statistically significant and cannot be used for prediction purposes at 5 % significance level, this further indicate that the independent variable (challenges) as used in this study is not statistically significant in predicting the TPIS adoptions in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.26:Coefficients for the model [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.142	.478		4.480	.000
	CHALLENGES	.096	.130	.130	.740	.464

a. Dependent Variable: TPIS_ADOPTION

From Table 4.26 the results show that the model had a t- ratio of 0.740, β=0.096 and the p value was 0.464>0.05, therefore the using the t-ratio and beta, the model was not statistically significant and cannot be used for prediction purposes at 5 % significance level.

4.3.4 The Relationship between TPIS Adoption and Determinants, Demographics, Benefits and Challenges

To establish the relationship between adoption of TPIS, and determinants, demographics, benefits and challenges for TPIS adoption, a regression model was used where TPIS

adoption was the dependent variable with determinants, demographics, benefits and challenges for TPIS adoption being the Independent variables in the directorate of Immigration and Registration of Persons in Kenya

Table 4.27: The Relationship between TPIS Adoption and Determinants, Demographics, Benefits and Challenges Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	.318	.224	.52139

a. Predictors: (Constant), CHALLENGES, BENEFITS, DEMOGRAPHICS, DETERMINANTS

From Table 4.27 above R was 0.564 meaning that there was a positive relationship between TPIS adoption, and determinants, demographics and challenges for TPIS adoption, while R squared was 0.318 meaning that 31.8% of TPIS adoption variations can be attributed to determinants, demographics, benefits and challenges for TPIS adoption, while 68.2% of the variations was due to other Factors. This implies that the regression model for TPIS adoption and benefits of TPIS adoption did not have some good explanatory powers as only 31.8 % of the variations could be explained.

Table 4.28: Analysis of Variance (ANOVA) in Regression Model for Determinants, Demographics, Benefits and Challenges of TPIS adoption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.679	4	.920	3.383	.022[b]
	Residual	7.884	29	.272		
	Total	11.562	33			

a. Dependent Variable: TPIS_ADOPTION

b. Predictors: (Constant), CHALLENGES, BENEFITS, DEMOGRAPHICS, DETERMINANTS

From Table 4.28 the results show that the model had an F ratio of 3.383 and the p value was 0.022< 0.05, therefore the overall regression model for Determinants, Demographics, Benefits and Challenges of TPIS adoption was statistically significant

and can be used for prediction purposes at 5 % significance level, this further indicate that the independent variable (Determinants, Demographics, Benefits and Challenges) as used in this study are statistically significant in predicting the TPIS adoptions in the directorate of Immigration and Registration of Persons in Kenya.

Table 4.29 Coefficients for the model[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.957	1.025		1.910	.066
	DETERMINANTS	.189	.270	.132	.699	.490
	DEMOGRAPHICS	-.390	.217	-.312	-1.793	.083
	BENEFITS	.245	.178	.257	1.378	.179
	CHALLENGES	.186	.118	.251	1.572	.127

a. Dependent Variable: TPIS_ADOPTION

a. Dependent Variable: ORGANISATION_PERFOMANCE

From Table 4.29 above, the model will therefore be;

TPIS adoption =1.957 (Constant) -0.390(Demographics)

From the results above, when all the independent variables were regressed against the dependent variable, beta for determinants, benefits and challenges was found not to be statistically significant; for determinants (β=.0.189, t=0.699 and p=0.490> 5%) for benefits (β=0.245, t=1.378, and p=0.179>5%) for challenges, β=0.186, t=1.572 and p=0.127>5% which was also not statistically significant.

The Standardized Beta Coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable. The t and Sig (p) values give a rough indication of the impact of each predictor variable – a big absolute t value and small p value suggests that a predictor variable is having a large impact on the criterion variable. At 5% level of significance and 95% level of confidence system (Determinants), had a co efficient value

of 0.189 level; Demographics had a co efficient of 0.390.Benefits had 0.240 and challenges had 0.186,while the combination of the two was at -0.328, thus we conclude an increase of determinants will subsequently increase the TPIS adoption by 0.189,similarily perceived benefits by users will increase by 0.240 when TPIS are adopted, challenges also go hand in hand with adoption and the more adoption is embraced the more complex challenges might arise, however there seems to be an inverse relationship between demographics and TPIS adoption as the co efficient is negative.

4.4 Discussion of Findings

This study was guided by four independent variables; determinants or drivers of the adoption of TPIS, demographics for adoption of TPIS, benefits of adoption of TPIS and the challenges of adoption of TPIS. From the analysis of the study, all the four independent variables when regressed on their own were found to have a positive relationship with the dependent variable(TPIS adoption),however the relationship was found to be weak, determinants or drivers was seen to have an R of 0.323,this meant that the three categories of drivers such as the legal, internal factors and personal factors had an influence of 32.3% on the adoption of TPIS in the directorate of Immigration and Registration of Persons in Kenya. On the other hand demographics had an R of 0.431 which was also a positive but a weak relationship with the TPIS adoption; this implied that factors such as gender, level of education, the experience at the work place played a role to the tune of 43.1% towards adoption of TPIS.

When the benefits of the adoption of TPIS were regresses with the dependent variable the relationship was also seen to be positive but it was weak at 0.423, this implied that in the directorate of Immigration and Registration of Persons in Kenya, the department was only enjoying benefits to the tune of 42.3% as results of adoption of TPIS. Similarly the challenges of adoption were seen to have a positive relationship with the dependent variable, the R was 0.13 meaning that the relation was positive but very weak; this implies that the challenges faced shall continue to diminish as more adoption is applied.

Positive co efficient were also seen with three of the independent variable, determinants had a co efficient of 0.189 this meant that as more drivers are taken care of, the more adoption of TPIS will take place in the immigration and registration of persons in Kenya, this is consistent with a study that was carried out by Javed(2006) where the researcher

concluded that drivers were very key in adoption of TPIS in E-government settings, benefits had 0.240 and this implied that the more adoption of TPIS takes place in the directorate of Immigration and Registration of Persons in Kenya the more the benefits will be realized. This was consistent with a study that was carried out by Demarco and Lister (2009) where the author found out that benefit of adopting TPIS were far much reaching and included efficiency, costs cutting, customer satisfaction among others.

Challenges had 0.186, this meant that the three variables had a positive relationship with the dependent variable, this implied that as the departments were trying to adopt TPIS to enhance service delivery challenges were present to hinder that adoption, a study carried out by Gatabaki (2010) showed that challenges such as costs and lack of ICT skilled personnel played a huge role in slowing down the process of adoption in government departments. However demographics was found to have an inverse relationship with the dependent variable as the coefficient was -0.39,this implied that personal characteristics do play a huge role in terms of attitude toward adoption of TPIS in public department, and this hinders rapid adoption, this was noted by Boehm(2006).

This study was guided by four objectives; the first objective was to establish the extent to which the Transaction Processing Information System is being used. The results of the analysis found out that TPIS rate of usage was high as 74.3% of the respondent indicated that they were using TPIS in their offices to carry out their duties, 51.4% of the respondents also indicated that in the last 2 years they had gone for training on TPIS, 71.4% of the respondents also indicated that their offices were computerised which was core aspect in terms of infrastructure for TPIS, 17.1% of the offices were fully computerised and 8.6% were planning to. The mean on adoption of TPIS was high at 3.16 with birth registration, death registration and national identification recording means above the grand mean. This is consistent with a study carried out by United Nation (2010) on e-government survey; the study concluded that adoption was high among many government departments worldwide.

The second objective was to establish the determinants/drivers of the adoption of Transaction Processing Information Systems', the results of the study established that three categories of drivers that is legal factors, personal factors and internal factors played a big role towards adoption of TPIS in the government departments, among the legal

factors the government policies that interfere with the information was seen to be the most critical factor in hindering adoption and this was consistent with a study carried out by Olal,(2012) which indicated that government policies usually do hinder IS. Among the internal factors availability of alternative projects other than IS was seen to be very critical which implied that IS adoption was competing with other deemed important projects thus not given priority. Among the personal factors job security was seen to be very critical as employees felt that TPIS will render them jobless.

The third objective was to determine the benefits of Transaction Processing Information Systems', from the results of the study it was found out that the benefits of TPIS were not being realized fully in the mean as it was indicated by the respondents, the overall mean was 1.56 and only two parameters were above this mean i.e. TPIS will ease accessibility of data from other stations which had a mean of 1.65 and the costs will reduce with the usage of TPIS as the mean was 1.74,the other four parameters of benefits had means below the grand mean. This should not be a concern as a study by Heeks (2002) indicated that benefits of Information systems are not usually long term but they are more in the long term, another study by O'Brien (2009) explained that in the context of government the costs are more and may erode away the most common benefits.in that adoption does not always lead to overall net benefits in the public setting.

The fourth objective was to find out the challenges experienced when using the Transaction Processing Information Systems', it was found out that the challenges were far much reaching as the grand mean was 3.58 and only two of the parameters that the respondents did not feel were a challenge i.e. internet connectivity and power outages, the respondents had an issue with the cost of computers, lack of ICT skills, access to computers and they felt using TPIS was not an easy task. This was consistent with a study that was carried out by Musau et al (2011) who concluded that cost of computers was too high, access to computers was a major obstacle and the lack of ICT skills in public setting was hindering adoption of IS.

In general analysis, it can be concluded that when the independent variables are regressed on their own against the dependent variable the relationship is positive but weak but when a multiple regression is done the relationship becomes more stronger R=0.568,this implies that for adoption to take place the project should be evaluated in considerations

of all factors in totality as opposed to evaluation of individual factors, in this regard challenges will be assessed against benefits but still incorporating determinants and demographics factors. This will ensure that adoption of TPIS and other IS in the public setting takes place smoothly for the benefits of the service delivery.

CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions, recommendations and limitations of the study and suggestions for future research.

5.2 Summary of Findings

The study was conducted in the directorate of Immigration and Registration of Persons in Kenya. The main objective of the study was to investigate the determinants and adoption of Transaction Processing Information Systems (TPIS). Data was collected through the use of questionnaires and analyzed through the use of data analysis software SPSS version 22, statistically the data was analyzed through descriptive statistics and the underlying relationships was done through the use of regression model, regression ANOVA and regression co efficient. From the study had four independent variables that is; determinants, demographics, benefits and challenges, these were regressed in a simple linear trend against the dependent variable Adoption of TPIS. Each of the independent variable was regressed against the dependent variable and the results indicated that all of them had a weak but positive relationship as it was depicted by the individual R's, however this changed a little when a multi regression model was used, the R was still positive but much stronger. It was also found out that while using beta's, F-ratio's and T-ration for the individual independent variables the individual regression models were statistically significant at 5% margin of error and at 95% level of confidence, however this changed when multi factors were added to the model, only demographics beta was statistically significant at 5% level of margin error. This can be attributed to the fact that many variables will require a lot of considerations thus the margin of error must be raised as the level of confidence is lowered, more so because the study was considering public departments where there are a lot of beaurocracies in terms of decision making as to whether to adopt TPIS or not .

The study also had specific objectives that were guiding it; the first objective was to establish the extent to which the Transaction Processing Information System is being used. It was found out that the usage was to a low extent and this can be attributed to the fact that in a government setting to transit from one model to another takes time due to

the beaurocracy aspect in that, a lot of people must be involved and the cash must be availed through the budgetary process, considering that the government has a lot to cater for in the economy funds for adoption might not be availed at once. However there is a lot of ground work that has taken place in the immigration and registration of persons department as some of the TPIS are already in place such as integrated population registration system which has 28.6% usage ,a lot of offices are computerized to the tune of 71.4% while 17.1% are fully computerized, capacity building on Information systems was also taking place to enhance skills level, this shows that the infrastructure part is on the ground and soon TPIS adoption will be fully in place.

The second objective was to establish the determinants/drivers of the adoption of Transaction Processing Information Systems', this were categorized into three, legal factors, personal factors and internal factors, among the legal factors most of the respondents felt that government policies were hindering the diffusion of Information systems in the public setting, this is attributed to the fact that the government is beurocratic, conservative and secretive and always tries to protect that which they are not sure of, in this regard therefore it's clear that the government is not so sure of the accruing benefits that come along with adoption of information systems in its operations. Among the personal factors, most of the respondents felt that TPIS will interfere with their job security, this is a fact as it was put by O'Brien (2006) that some of the effects of information systems is to flatten the organization structure, this is so because once the system is in place a lot of work shall be executed by it and it will only need one /two people to run the system hence a lot of workers will be displaced, this now explains why the adoption is low in government, it can be attributed to that attitude of workers who are hindering the process, however, the respondents agreed that TPIS will ease their work and this can be attributed to one of the major benefits of information systems, they are programmed to do tasks thus they lower the work load of workers. Among the internal factors the respondents noted that competing projects had made it hard to adopt systems in the government departments, government works on a budget and it must balance priorities in the economy where they are more pressing issues in the country adoption will take a back sit.

The third objective was to determine the benefits of Transaction Processing Information Systems', it was found out that most of the benefits attributed with information systems are not yet enjoyed in the Immigration and registration of persons in Kenya, this is because of the productivity paradox ,Erick (1993), developed the productivity paradox and argued that at times investment in ICT may not earn the desired benefits, this argument mostly holds at the national level as opposed to the firm's level, this is because most of the benefits of ICT accrue to the firm in the long run as opposed to the short run, the paradox however should not be used to hinder the need of adoption of TPIS in the immigration and registration of persons in Kenya at large, benefits such as efficiency, speed in service delivery, quality of services, public satisfaction will still be enjoyed at national level when TPIS are in place.

The fourth objective was to find out the challenges experienced when using the Transaction Processing Information Systems', the study found out that challenges ranging from the cost of computers, access to computers, lack of ICT personnel was actually a limiting factor to TPIS adoption, this can be explained by the limited funds that the government has which must be shared to all sectors of the economy, this makes it hard to acquire systems for ease of operations.

5.3 Conclusions

This study had four independent variables, determinants or drivers of adoption was the first independent variable, this variable was catered for by three set of factors that is legal, internal and personal, the legal factors had a mean of 2.25 and a standard deviation of 0.964 and the parameters included the government policies on IS, the government policies that interfere with the IS and the government policies that supports IS adoption, among this it was found out that the government policies do actually interfere with the IS. The internal factors had a grand mean of 2.085 and a deviation of 0.956 and the parameters included organization policies, ICT infrastructure, qualified ICT, personnel, other projects that compete with IS, among this ,it was found that in government ,many other projects do compete with the IS projects thus hindering adoption of TPIS. The personal factors had a mean of 2.09 and standard deviation of 0.84, the parameters included IS will interfere with the job security, IS will ease the work, the TPIS application is easy to learn it can be concluded that job security was the

most critical factor as many respondents felt that TPIS will take away their jobs, but it was also found out that adoption of TPIS will ease work in most of the departments.

Demographics also do influence adoption of IS in the government departments, this variable had factors such as gender, level of education, duration that one had held the current position, age and title of the position held, among this, age and level of education were found to be the most influencing in terms of adoption, most of the respondents were between 20-39 years meaning that they were young people and the level of education was bachelor, this shows that the mindset is liberal for adoption of TPIS in the immigration and registration of persons departments.

Benefits refers to the payoffs as a result of adoption, this variable had parameters such as ease of accessibility of data from other station, ease of linking with other stations, easier to acquire, manage, store and distribute, efficiency, costs reduction, improvement of customer satisfaction, the mean for this was at 1.56 and standard deviation was 0.813, this indicated that most of the benefits were not yet being enjoyed by the departments.

Challenges can be described as the main obstacles to adoption of TPIS, this variable was very critical as the grand mean was 3.58 and the standard deviation was 1.1885, the parameters here included cost of computers, access to computers, internet connectivity, power outages, ease of TPIS use and lack of ICT skills, apart from internet connectivity and power outages ,all the other parameters were a limiting factor to adoption of TPIS.

5.4 Recommendations

From the study findings, the following recommendations are proposed; first the immigration and the registration of persons departments and other government departments should strive to adopt TPIS and other IS in their operations as these will help them to better serve their customers, cut costs of operation, increase efficiency, effectiveness and economy as this will result into satisfying the public more.

Similarly the immigration and the registration of persons departments and other government departments should strive to integrate via adoption of various integration applications as this will boost the relationships with other work stations, the public and even properly manage the resources at their disposal thus ensuring smooth running of operations.

The government through the relevant channels should also strive to show commitment in the process of adoption of IS through availing of funds to acquire the necessary systems for ease of operations and quality service delivery.

The government should also abolish the policies that hinder and interfere with the IS in the country, enact proper laws that make it easy to adopt IS, craft proper policies that encourage adoption and integration of IS.The government should also embark on more capacity building among its officers in all departments on IS; this will help solve the deficiency in emerging IS skills.

In general analysis therefore it can be concluded that TPIS and other IS adoption and integration is a core aspect in the operations of immigration and registration of persons, this is so because IS do play a major role in the economy growth and development and the earlier they put their operations in order the better it is for the departments and for the Nation as efforts are geared towards the attainment of vision 2030.

5.5 Limitations of the study

The study had one big limitation. The study did not attain 100% response rate because the immigration and registration of persons which was the context considered involved some parameters which some respondents felt that such information was too sensitive to share, in this perspective only a few were willing to respond to some questions that were very critical in the study.

The study only used quantitative data to come up with findings, results and conclusions, thus to develop deductions, qualitative data was not used, this vital aspect of qualitative data being absent leaves a gap to develop comprehensive conclusions.

Despite the above limitations, the equality of the study was not compromised; the study had immense contribution to the existing body of knowledge, especially in the area of IS adoption and integration which has not been fully exploited.

5.6 Suggestion for further research

This study only considered the determinants and adoption of Transaction Processing Systems (TPIS) in the directorate of Immigration and Registration of Persons in Kenya. Other areas of study could be integration of IS with operations of Immigration and Registration of Persons in Kenya should be studied in depth. Another area of study could be determinants and adoption of Transaction Processing Systems (TPIS) among other government departments in Kenya.Another area of study is integration and adoption of other IS other than TPIS among government departments in Kenya

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Appendices

Appendix I: Research Questionnaire

Dear Respondent,

I am a student at University of Nairobi. I am carrying out a research project on the "Determinants and Adoption of Transaction processing System-TPS in the Directorate of Immigration and Registration of Persons in Kenya". This research project is in partial fulfillment of the award of Master of Business Administration. Your cooperation in completing this questionnaire as objectively and accurately as possible will be highly appreciated. This information will be kept in strict confidence and will only be used for this research.

SECTION A: DEMOGRAPHICS DATA

1. The name of the department is?

   _____

2. Age category [ ] Less than 20 years [ ] 20 – 29 years [ ] 30 – 39 years [ ] 40 – 49 years [ ] 50 +
3. Gender [ ] Male [ ] Female
4. What is the title of your position? _____
5. How long have you held your current position? [ ] Less than 1 year [ ] 1 – 2 years [ ] 3 – 8 years [ ] 9 – 10 years [ ] more than 10 years
6. What is your level of education? [ ] Certificate [ ] Diploma [ ] Bachelors degree [ ] Masters degree [ ] PhD

SECTION B: TPS ADOPTION

7. Which Transaction Processing System(TPS) is available in your department?

a) Civil Registration and Vital Statistics System (CRVSS) [ ]
b) Kenya National Registration and Identification System (KENRIS) [ ]
c) Integrated Population Registration System (IPRS) [ ]
d) Kenya Machines Readable Passport System (KMRPS) [ ]

8. Are you using the TPS in your services? Yes [ ] No [ ]

9. Have you received any TPS training in the last two years? Yes [ ] No [ ]
   a. If yes, indicate the training(s)received_____
   b. If No, why? _____

10. How would you describe your office in terms of computerization?
    [ ] Not computerized [ ] Planning to computerize [ ] Computerized
    [ ] Fully computerized

11. How often do you use the TPS for:-
    Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements on usage towards adopting TPS in your office –Where;
    1 = Always 2 = Very 3 = Often 4 = Rarely 5 = Never

		1	2	3	4	5
A	Birth Registration					
B	Death Registration					
C	National Identification (ID)					
D	Vital Statistics					
E	Passport Issuing process					
F	Integrated Population Services					

SECTION B (i): CHALLENGES

Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements as limiting factors towards adopting TPS in your office –Where;

1 = Strongly Agree 2 = Agree 3 = Moderate 4 = Disagree 5 = Strongly Disagree

		1	2	3	4	5
A	Cost of computers is a limiting factor to adoption					
B	Access to computer is a limiting factor to adoption					
C	Internet connectivity is a limiting factor to adoption					
D	Power outages is a limiting factor to adoption					
E	Ease of TPS use is a limiting factor to adoption					
F	Lack of ICT skilled staff is a limiting factor to adoption					

SECTION B (ii): BENEFITS OF USING TPS IN YOUR OFFICE;

Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements – Where;

1 = Strongly Agree 2 = Agree 3 = Moderate 4 = Disagree 5 = Strongly Disagree

		1	2	3	4	5
A	TPS ease accessibility of data from other stations					
B	TPS makes it easier to link with other Stations					
C	TPS makes it easier to acquire, manage, store and distribute data					
D	Efficiency in the Services will improve if I use TPS					
F	The costs will reduce if I use TPS					
G	TPS will improve overall customer satisfaction.					

SECTION C: DETERMINANTS /DRIVERS

i). Legal Factors

Indicate your level of agreement with the following LEGAL in regard to adoption of TPS. Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements - Where

1 = Strongly Agree 2 = Agree 3 = Moderate 4 = Disagree 5 = Strongly Disagree

(Please tick appropriately)

		1	2	3	4	5
A	There are government policies on Information Systems					
B	Government policies interfere with Information Systems					
C	The government supports Information Systems Adoption					

ii) Internal Factors

Indicate your level of agreement with the following statements with regard to Internal factors on adoption of Information systems in your institution. Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements (Please tick) - Where

1 = Strongly Agree 2 = Agree 3 = Moderate 4 = Disagree 5 = Strongly Disagree

		1	2	3	4	5
A	Organisation`s policies favor information systems					
B	There is sufficient ICT infrastructure in the institution					
C	The administration is fully supporting the adoption of IS.					
D	There are qualified ICT personnel in our institution					
E	There are other projects to invest in than invest in IS					
F	All employees see the importance of information systems					
G	There is a common network computing and information infrastructure that is readily accessible to everyone in the directorate thus improving service quality to the public					
H	Considerations of both security and accessibility are taken into account in making data placement decisions thus improving service quality					

iii) **Personal Factors**

Please indicate by way of ticking in the right column, the extent, to which you agree with the given statements - Where

1 = Strongly Agree 2 = Agree 3 = Moderate 4 = Disagree 5 = Strongly Disagree

		1	2	3	4	5
A	Information systems will interfere with my job security					
B	Information system will ease our work					
C	The TPS application is easy to learn					
D	Using The TPS application makes me feel better than those who do not use it.					
E	I know how to use TPS application well					
F	I intend to continue using TPS application in the near future					
G	I recommend other stations to adopt TPS application					

I wish to appreciate your participation in this exercise and particularly for taking your time to fill in the questionnaire. Thank you! Please feel free to contact me via email makabongo@gmail.com or Tel+254722286882 or my lead supervisor Dr. Kate Litondo via Tel +254733223635

APPENDIX II: Work Plan

This proposal and project will take 6 months to complete. The activities will take place in stages as shown below.

ACTIVITY	**DURATION**
Selecting research Title and objectives	1 Month
Writing the proposal and presentation	3 Months
Preparation of Questionnaire	1 Month
Actual data collection	1 Month
Data analysis and presentation	1 Month

APPENDIX III: Monetary Budget

PARTICULARS	AMOUNT (KSHS)
Materials and Stationery Costs	5,000
Transport Costs	10,000
Accommodation Costs	15,000
Miscellaneous costs	5,000
Total	35,000