

**DEVELOPMENT AND IMPLEMENTATION OF AN ELECTRONIC WORK
PERMIT SYSTEM FOR THE MINISTRY OF IMMIGRATION AND
REGISTRATION OF PERSONS, KENYA**

BY

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DECLARATION

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ABSTRACT

The Ministry of Immigration and registration of persons collects data related to businesses, labor, and employment as well as other relevant economic areas during the process of issuing work permits. Significant problems are high chances of human error while capturing and analyzing data making the quality of data collected poor. Data is collected in isolation from other government agencies which might be in need of similar information resulting in lack of standardization and consistency across government entities. This study sought to evaluate the current processes and procedures used by the Ministry of Immigration in issuing work permits, with a view to design and develop a computer based system to improve on work permits issuance. Qualitative research strategies were employed; case study research design was used at the evaluation stage and agile methodology for software development at the system development and implementation stage. The study presents results of literature review of case studies from both developed and developing countries. A sample size of 30 was purposively selected, consisting of four members of the management staff and twelve work permits officers, five information communication technology officers, five members from the work permit approval committee and four contact persons from other government agencies which utilizes data from Ministry of Immigration. Data was collected through interviews, observation, group discussion and document reviews and analyzed using cross-case analysis and the narrative strategy. The findings of this study highlighted the weakness of the current work permit setup which included incidences of human manipulation, long processing time, and lack of consistency. This formed the basis for developing a computer-based information system to automate the entire work permit issuance business processes and thereby eliminating the highlighted weaknesses.

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ABBREVIATIONS

ICT	Information Communication Technology
IS	Information System
IT	Information Technology
LAN	Local Area Network
WAN	Wide Area Network
GCCN	Government Common Core Network
E-GOV	Electronic Government
EU	European Union
EEA	European Economic Area
UK	United Kingdom
KM	Knowledge Management
HTML	Hypertext Markup Language
RDBMS	Relational Database Management System
PSC	Public Service Commission
KRA	Kenya Revenue Authority
ISP	Internet Service Provider
SPSS	Statistical software for social scientists
SEI	Software Engineering Institute
PBS	Point Based System
XP	Extreme Programming

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CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Background Information

Work permits are issued to foreign persons wishing to engage in employment or business in a foreign nation. Applicants of work permits provide evidence that they have obtained or are assured of obtaining relevant license(s), registration or other authority that may be necessary in order to engage in the contemplated business, trade or professional assignments. In most cases apart from direct investment and revenue received in form of taxes, work permit beneficiaries also contribute a lot to a country by providing unique set of skills and experience that can be transferred to domestic workers on specific projects. The importance attached to work permit information to a nation emphasizes the need to have elaborate criteria, policies and systems that guide the process of managing them.

ICT has opened up a new realm for business development in the last decades and now governments all over the world have also seen the opportunities and benefits that ICT may bring in. Many governments have initiated and implemented e-government projects that have cost significant amount of money. One of the main reasons why most governments are keen with embracing e-Government initiatives is that e-Government provides many opportunities to improve the quality of service to citizens (Kenya e- strategy, 2007).

Government employees should be able to provide all sorts of services easily, efficiently and effectively to all customers. The government of Kenya has not been left behind in implementing e-government projects regardless of the fact that developing countries like Kenya have budget constraints. Over the last few years the

Kenyan Government has massively invested in e-government projects (Kenya e-strategy, 2007). Some of the E-government projects undertaken by government Ministries and departments are:

- i. Online Selection and Recruitment System by the Ministry of Public Service
- ii. Online Tax Returns by Kenya Revenue Authority
- iii. Online Exams Result and Form One Selection by Kenya National Examination Council
- iv. Land registry system by the Ministry of Lands
- v. An Integrated Financial Information System (IFMIS) that is in use across Government Ministries

The Ministry of Immigration is one of the Kenyan Government Ministry which acts as a security arm of the government as well as a service department charged with responsibility of controlling entry and exit of persons seeking to live temporarily or permanently in Kenya. The Ministry derives its mandate from the Presidential Circular Number 1 of 2008 on the organization of government and the following legal instruments;

- a) Kenya Citizenship Act Cap. 170
- b) Immigration Act Cap. 172
- c) Aliens Restrictions Act Cap 173
- d) Constitution of Kenya Chapter 6; guides the immigration department in processing travel documents and where laws are inadequate and unclear policies do exist, the department applies international instruments e.g. Geneva convention in processing visa
- e) Department is also guided by The Kenya Visa Regulations.

1.1.1 Entry Permits

Entry Permits are issued to any Non-Kenyan wishing to engage in employment or business in Kenya whether in gainful or voluntary service. They are classified from class A to class M inclusive (See appendix 1). They are issued under Section 5 of the Immigration Act Cap 172 Laws of Kenya.

1.1.2 Mode of Application

Immigration Act Cap. 172 specifies that an applicant may make an application directly or choose an agent such as a law firm or consultancy which specializes in permit applications to pursue their application. There are advantages and disadvantages to both methods with the main advantage in direct application being the saving of fees paid to the agent. The primary disadvantage of direct application is that such applications take a long time to receive a notification. Where the applicant uses an agent to make his/her application they usually benefit from the speed and experience of the agent.

1.1.3 Notification of Approval/Rejection

On submission of the application at the Ministry of Immigration, it is presented to a committee for approval or rejection.

The following things are of interest to the committee when deciding whether to approve or reject the application:

- The amount of investment and its impact on Kenya's economy, which is determined by the auditor's report or bank statement.
- The number of jobs that will be created for Kenyans, which is determined by the application letter submitted by the applicant's agent.

- The nationality of the applicant. An applicant has a higher chance of approval of his application if his or her country of origin has a stronger economy than that of Kenya and low criminal statistics and security threats.

In case of approval of the application a notification of approval is issued whose validity is ninety days pending payment of the required fees and if it is rejected, a notification of rejection is issued (Kenya, 2008).

1.2 Problem Statement

One of the greatest obstacles to effective policy-making (and subsequent performance) is the fact that relevant information is difficult to obtain and, even when obtained, it is often inaccurate (European Union, 2008). A variety of different government entities collect data relevant to trade and investment, labor, employment, businesses information and demographic data as well as other relevant economic areas and indicators for purposes of planning, budgeting and production of country's economic status reports.

Lured by guarantees of improved business productivity, information accuracy, streamlined business operations, and increased cost savings, many governments have been implementing business information system as a way of improving efficiency in government corporations in developed countries such as USA, UK, Canada, and Australia (Tilley *et al.*, 2007).

While there is wide adoption of business Information systems in developed countries, developing countries lag far behind in the process of data and information management (Huang *et al.*, 2009). This state of managing information and data has

led to a number of significant problems in developing countries; First, the quality of data collected within some of the entities is often not accurate due to human error. Second, different government entities collect data for their own individual purposes in isolation from one another, resulting in a lack of standardization and consistency across the entities, as well as lost synergies and increased cost for administering the information across and among entities since most databases are not integrated making it difficult to share information across entities Marshall, (2011).

Documenting and managing the process of issuing work permits is an imperative part of maintaining standards and transparency. According to the Kenya e-readiness report (2009) the department of Immigration relies on paper-based systems, where permits are hand-written, signed and filed. The manual nature of this process is not only time consuming but also provides an opportunity for biasness and duplication of duties, efficiency and effectiveness of this process is seriously compromised, it is difficult to search and retrieve data as data has to be searched in lots of registers and this takes a lot of time and manpower (Kenya e-strategy, 2007).

The arguments above suggest that there is often a gap between the system and specific contexts, practices and requirements of particular user organization. This study investigates organizational and societal context within which business information system with standardized in-built business practices can be adopted and used in the Ministry of Immigration and registration of persons for purposes of issuing work permits.

1.3 Aim and Objectives of the Study

1.3.1 Aim

This study assessed the current processes and procedures used by the Ministry of Immigration in issuing work permits, with a view to design and develop a computer based system that will improve on work permits issuance.

1.3.2 Objectives of the Study

The following were the objectives of this study:

1. To evaluate the existing work permit frameworks that guide the Ministry of Immigration;
2. To identify problems with current processes and determine how a new system would help alleviate these problems;
3. To design and develop an appropriate computer-based system for the management of permit issuance processes that will eliminate the problems identified.
4. Perform a pre-implementation testing and evaluation of the system.

1.4 Research Questions

This research sought to answer the following:

- i. What is the state of the existing work permit framework in the Ministry?
- ii. What are the problems with current work permit issuance processes? And how would a new system help alleviate these problems?
- iii. How will the proposed system be developed? Which methodology will be adopted in developing the system?

- iv. How will the end users confirm that the developed system addresses the problems identified above?

1.5 Justification of the Study

A number of arguments justify the importance of this study. First, despite the benefits and the continued popularity of business information systems, evidence is accumulating to demonstrate that obtaining these benefits from a business information system is not as straightforward as those developing and promoting these systems would like us to believe (Boersma and Kingma, 2008).

Secondly, although a number of challenges associated with implementation, adoption and use of these systems have been identified, most of them are mainly experiences sited in the developed countries and cultural and managerial issues in developed countries is completely different from that of developing countries, which makes adaptation of computer systems relatively easy. Despite these still many failures have been reported. Therefore, it will be interesting to find out how the recommendations done by the previous researches are applicable to the Kenyan situation in which one of its main government department is the organization under study in this research which could provide researchers with newer grounds for fresh extensions of existing theoretical paradigms and sometimes development of entirely new and different research frameworks.

Lastly, systems development approaches appear to be applied differently depending on the environment in which the intended system is going to operate and its operational complexity.

Although an organization may choose to develop its own system depending on user requirements or buy off the shelf system which might eventually become incompatible with other software or require new functionality and occasional upgrades to be in line with newer, vendor-supported version. Thus, choices must be made, which make it important to study development and implementation of work permit information systems in a Kenyan environment.

1.6 Assumptions of the Study

This study was conducted based on the following assumptions;

- i. Processing of work permits using the manual system slows the process and therefore creates work backlogs.
- ii. That it is possible for the Migration department to improve on the issuance of work permit and make the process more objective if they adapt electronic system
- iii. The Manual system has limited platform for sharing collected information from work permit applicants with other government organizations.

1.7 Scope and Limitations

1.7.1 Scope

This study focuses on the Ministry of Immigration and registration of persons which is a Kenyan government agency mandated to process, approve and issue work permits which are categorized in different classes from class A to M. The reason for choosing this Ministry is that it is the only entity mandated by the constitution of Kenya to issue

work permits to foreign nationals who wish to work in Kenya (Kenya, Constitution 2010).

The study focuses on people who are directly involved in the process of issuing work permits. These are Immigration officers, IT staff and members of the approval committee together with representatives from other key government agencies which utilize this information for planning purposes. Government agencies that consume information from the Ministry of Immigration are Ministries' of Tourism, trade, foreign affair and labor.

This study analyzed business processes of work permit issuance (feasibility study); looked at the possibilities of automating these business processes (requirements gathering); converted these business requirements into a standard form (specification); carried out a confirmation check to ascertain that the specifications defined the system that the customer wanted (validation); and then designed, developed and finally tested the system.

Agile methods of Information system implementation was applied in this research. This was because agile method is subject to changes which most organizations after going live with systems usually embark on review of the system functionalities in order to suit their changing business processes. The organizational business contexts sometimes are also subject to changes either due to government regulations and policies or customer requirements and therefore there is always a state of continuous change in a bid to adapt to the ever changing environment (Cockburn, 2009).

1.7.2 Limitations

An earlier start in data collection would have increased the time needed to interview more participants and a greater depth of information would have been obtained by having more contact between the researcher and the participants. This study employed the use of focused group interviews where discussion was based on area of specialization of each group during which each topic area formed the focus of discussion. This greatly assisted in saving time during data collection process.

1.8 Definition of Key Terms

Agile methods: This is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing and cross-functional teams (Somerville, 2009)

Alien registration Act: These are regulations passed by the parliament of Kenya requiring that all foreign nationals should be registered before staying in Kenya. (Constitution of Kenya, 2009)

Constitution of Kenya: It is a set of fundamental principles or established precedents according to which a state or other organizations are governed. (Constitution of Kenya, 2009)

Electronic permit system: This is a computerized system that is used to issue permits. (Home office 2009)

Immigration Act: These are regulations passed by the parliament of Kenya to regulate the movement of persons within and outside the country. (Immigration Act cap.172, 2009)

Information and Communication Technology: This refers to the activities used in the provision, operating and maintaining an ICT infrastructure. (Immigration Act cap.172, 2009)

Ministry of Immigration and Registration of Persons: This is a Government agency charged with responsibility of controlling entry and exit of persons seeking to live temporarily or permanently in Kenya. (Constitution of Kenya, 2009)

Work permit: a work permit is a document that authorizes an individual, group or an organization to work or do business in Kenya. (Immigration Act cap.172, 2009)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines existing work permit frameworks and guiding documents available in Kenya, application requirements, procedures and associated challenges and then it attempts to compare and contrast with other frameworks available in other developed countries which have implemented computer based work permit systems .It then looks at system development and implementation approaches and the associated challenges in developed and developing counties and identifies success factors in systems implementation.

Different aspects of agile software development are examined and how to adopt these practices that have values such as customer focus, participative design, time boxed project management, continuous software development among others (Highmith,2008) in designing and developing systems. The review is conceptualized under the objectives of the study.

2.2 Work Permit Application Frameworks

European Commission (2008), defines work permit as a legal authorization which allows a person to take up employment offer .Most often it is used in reference to instances where a person is given permission to work in a country where one does not hold citizenship, but is also used in reference to minors, who in some jurisdictions require a permit in order to legally work due to Child Labor laws. (European Commission, 2008)

In Kenya applications may be considered when submitted by individuals applicants or prospective employers on behalf of their prospective employees by showing evidence that they have been unable to fill a particular post(s) due to lack of suitably qualified personnel in the Kenya labor Market. (Immigration Act Cap. 172, 2009).

Foreigners who wish to engage alone or in business partnership, specific trade or profession would have to furnish evidence that they have obtained or are assured of obtaining relevant license(s), Registration or other authority that may be necessary in order to engage in the contemplated business, trade or profession. In addition, they would be required to prove that they have sufficient capital derived from sources outside Kenya which is certain to be remitted to Kenya for the purpose. (Immigration Act Cap. 172, 2009).

Permits are issued in classes ranging from class A to M and each class has got its unique requirements (see appendix 1). Application procedures generally require not only filling in forms, but also collecting documents for photocopying and attaching to the application (e.g. proof of qualification, work experience, reference letters), taking and attaching recent photographs, visiting banks to buy foreign-currency bank drafts e.t.c. (Kenya, 2009). Where certified documents and medical reports are needed, legal fees are incurred in notarizing the relevant documents and there may be extra costs for medical examinations (Immigration Act Cap. 172, 2009).

All these requirements not only lengthen the application time but they also increase costs to the applicant. If an employer files for a work permit authorization on behalf of a foreign worker, work permit procedures require exhaustive details to be provided about the employer, the nature of the job, what efforts have been made to find local

personnel and evidence of failure to do so, details of the candidate's experience, skills, and training, and verification of personal details. The filing process may take weeks or months. (Kenya, 2009).

2.3 Work Permit Application Process in Developed Countries

Most developed countries have put in place elaborate criteria and policies that guide the process of issuing work permits to foreign nationals. In 2008, the UK Government gradually introduced points-based system which was designed to set the criteria under which nationals of countries outside the European Union (EU) and European Economic Area (EEA) apply to work in the UK. This was a grading system of skills of people with different levels of qualification called 'tiers', (See appendix 2). Each tier requires the immigrant to score a certain number of points to gain entry clearance in the United Kingdom (Home office, 2009).

Like the UK, through "The Border Security, Economic Opportunity, and Immigration Modernization Act," the US government proposed a merit-based point system as a tool to allocate a portion of new work permit applicants each year (US Immigration Council, 2009). In this system applicants qualify for a permit by accumulating points mainly based on their skills, employment history, and education credentials. A number of developed and developing countries adopted the point based framework and variants of point based systems are already used in some countries such as Canada, the United Kingdom, Australia, New Zealand and South Africa (Boswell, 2008). Home office (2009) states that point based system offers clear procedures of identifying applicants who have more to contribute to destination country and the

system has been proved to be more efficient, transparent and objective and provides improved compliance and reduced scope for abuse.

2.3.1 Implementation and Testing of Point Based System

According to Boswell (2008), the main purpose of implementing this system was not only to reduce subjective and bureaucratic processes but also to eliminate political abuse and improvement in compliance management of work permit issuing processes. Home office (2009) set out a number of tests for the point-based system. The tests aimed to measure the following attributes:

i. Objectivity

This was to ensure that attributes of applicants and needs of the UK are defined in a factual way (minimizing subjectivity, inconsistency, and error); and the ability to evaluate similar applicants so that those with the same attributes receive the same entitlements.

ii. Transparency

This guaranteed that ability for the Government, potential migrants, and other stakeholders to understand how each step of the process works.

iii. Operability

The ability for Government employees to use the system as it is specified, with little room for human error.

iv. Usability

This was used to measure the ability for different types of customers, employers and migrants to use the system.

v. Flexibility

The ability to respond to a changing labor market, in terms of both supply of and demand for migrants; and the ability for the process to be modified due to the particular characteristics (e.g. risk factors) of particular applicants.

vi. Robustness

This is the ability to detect and minimize abuse of the system.

vii. Cost effectiveness

The ability to process applicants at a reasonable cost (i.e. which the applicants will be prepared to pay) whilst still maintaining quality of assessment.

viii. Compatibility

With EU and other legislative requirements: the ability to meet legal and any convention requirements, and to be robust enough to withstand challenge.

2.3.2 Application Process

As an initial process, a self-assessment forms the first step of the application process for all applicants. This is done online, if the applicant scores the required numbers of points will an application to a post in the UK be made. The completed self-assessment forms the basis of the application, and the applicant will have to provide independently verifiable documentation to support his application (Home office, 2009).

2.3.3 Awarding of Points

After self-assessment is done successful applicants are awarded points for attributes which predict a migrant's success in the labor market. Points are awarded differently depending on the type of tier. Tiers 1 and 2, points are awarded for attributes which measure the applicant's potential value to the UK labor market. Tiers 2 to 5, points

are awarded for a valid certificate of sponsorship, without which it will not be possible to make an application. For all tiers, there are control factors for which points are awarded such as availability of funds and previous compliance with Immigration conditions. (Home office, 2009).

2.4 Information Systems Development and Implementation Strategies

Successful implementation of any system depends on decisions taken during the initial stages of defining requirements and approach of implementation. These relate to: type of system to be adopted, the scope of implementation, implementation approach, the 'go-live' strategy and the training strategy (Lee and Myers, 2009).

While developing and implementing Information systems, an organization must decide either to acquire all the system modules from one source (enterprise suite) or get different system modules from different sources (best of breed) based on the organizational needs.

Light (2008) states that both of these strategies are undoubtedly complex due to their scale, scope and BPR requirements. While highlighting Light (2008), Grabski and Leech (2010) postulate that multi-vendor solution can provide the best functionality for each module, but implementing it becomes more complex because of the interfaces that need to be established. A single vendor solution on the other hand may not have all the functionality required, but will be easier to implement. Therefore, organizations implementing Information system must decide to either adopt business processes embedded in the system or to customize the system to make it suit the existing business processes.

According to Grabski and Leech (2010) misfits' resulting from differences between system requirements and business requirements normally occurs during system implementation due to contextual differences between the package and the implementing organization, requiring it to either configure or customize their system in order to resolve the 'misfits'.

Light (2008) describes customization as the changing of the software to suit already existing business processes in order to cater for organization-specific and/or country-specific requirements. These modifications can range from customizing the package code, to interfacing with custom developed modules of other vendors.

Therefore, a decision taken to implement any system in an organization is as a result of a process of interaction and negotiation among various parties including management, principal system users, IT personnel, stakeholders and the system developers. This will determine whether the organization would adapt the system as it may be proposed or it will be customized to suit organization structures.

Once installed, a decision on the systems rollout is critical for the organization. The organization needs to decide on big-bang or phased-in (modular) as a 'go-live' strategy. The big-bang implementation approach refers to a scenario where the old system is discarded and all modules of the new system are introduced into each business unit at once (Revere, 2009). According to Revere, (2009) the big-bang approach presents a number of advantages, as it does not require parallel running of manual processes and automated ones, however there are a lot of risks in case of failure.

The modular implementation approach on the other hand refers to a scenario where one module is implemented, and then it is run in parallel with the manual system until the output results are satisfactory. Although this approach presents a minimal risk of failure, it leads to increased costs of system implementation. It is imperative that organizations planning to implement systems need to be aware of inherent trade-offs in different competing strategies so that they can make informed decisions and boost their implementation outcome.

2.5 System Development and Implementation Challenges

In systems implementation, there are many challenges encountered with time to market pressures. These challenges are driven by cost, schedule, implementation approaches and design. The challenges vary depending on the magnitude and complexity of the system. To be effective it is important to align organization business process to system design while designing Information systems

A number of documented challenges to effective development, implementation and use of systems have been drawn from different organizations. Some of these are discussed below.

2.5.1 Interconnections/ Integration Problems

Berente et al. (2009) states integration is often cited as a key goal associated with systems development and implementation. According to them systems create many interconnections among various business processes and data flows to ensure that any other unit of the organization can obtain information in one part of the business. Information that was previously maintained by different departments must be integrated and made available to the organization as a whole. Business processes must

be tightly integrated, jobs redefined and new procedures created throughout the organization. The whole process of change is challenging and employees are often unprepared for new procedures and roles (Rishi and Goyal, 2010).

Berente et al. (2009) argues that integration of stand-alone information systems is a major problem for many organizations which is further complicated by the fact that Information systems also seek to integrate business processes in organizations which were previously function-based. While client/server and open systems solve some of these technical difficulties, there are still problems of integrating different types of data and procedures used by functional areas. Also, there are issues of information sharing, which may contradict existing practices, policies and culture (Revere, 2009)

2.5.2 Technological Complexity

According to Lowe and Locke (2008), Information systems are built on new technologies that require different skills sets than legacy systems. Most large organizations still require use of large scale, main frame legacy systems. Managers find it very challenging to manage the technological complexity of different platforms and to harness the technological power of new technology.

Laudon and Laudon (2009), argue that most managers are trained to manage a product line, a division, or an office. Their argument is supported by Rishi and Goyal (2010). They are rarely trained to optimize the performance of the organization as a whole where they are required to take a much larger view of their behavior, to include other products, divisions, departments and even outside businesses. Therefore, Information systems must be developed and implemented over time guided by a shared organization vision and objectives.

2.5.3 Cost of Technology

Even though the price of prewritten software is cheap compared with in-house development. Monk and Wagner (2008) observes that the total cost of implementation could be three to five times the purchase price of the software. This is because a semi-finished product needs to be configured and tailored to suit the organization. The implementation cost is even higher when an organization decides to undertake major customization. The cost of hiring consultants and all that goes with it can consume up to 30 percent of the overall budget for the implementation.

2.5.4 Staff Turnover

Once employees are trained and mastered the business of system development and implementation, it is a challenge to retain them, especially in a market that is hungry for skilled Information System consultants (Skok, 2011). Retention strategies such as bonus programs, company perks, salary increases, continual training and education, and appeals to company loyalty could work. Other intangible strategies such as flexible work hours, telecommunication options, and opportunities can also be used (Skok, 2011).

2.5.5 Organizational Change

Rishi and Goyal (2010), argue that system implementation is not just a software project but an organizational change project. The projects call for co-operation, teamwork, and planning for organizational change. Wagner et al. (2007) further argues that implementing systems successfully is not an easy task because of the major changes to an organizations business process required for the system to be implemented. The projects bring about massive organizational changes as they consist of many functional modules that can span the whole organization and yet share a

database. Because departments are part of a larger organization, they are forced to share systems and act not as independent units but as a larger organization, requiring a whole new understanding of their work (Skok, 2011).

The introduction of any new technology may result in massive staff layoffs and morale problems and integration of departments leads to reduced need for many staff to man operations hence leading to staff layoffs and therefore, managers must anticipate resistance to systems implementations, especially when combined to BPR (Laudon and Laudon, 2009).

2.5.6 Product Quality and Vendor Unreliability

According to Fourney (2007), although Information systems are becoming increasingly similar in functionality, they are still different in their quality, ease of implementation and vendor support. System developers are changing hardware platforms, sometimes operating systems and database platforms, and other times overall system architecture. Given that vendors are continually developing new version of systems products, one vendor may have several versions of the same system. It may also mean that the version you want to buy is brand new but not fully tested hence unstable and prone to crashing (Fourney, 2007)

2.6 System Implementation Challenges in Developing Countries

Information technology has been cited as a key pillar in promoting economic growth in developing countries, but its realization depends largely on the ability to appreciate local conditions and develop applications to address them. Local conditions consist of a variety of dimensions, including specific social and economic settings, cultural values, and technical issues such as the availability of equipment, lack of trained and

experienced personnel, the reliability of power supplies, and telecommunications infrastructures (Heeks, 2010).

An evaluation of the applicability of any information system should therefore consider the cultural characteristics and social values of the environment. Bingi et al. (2007) also identified several issues that developing countries have to face that are not common in developed countries: human resources, technical concerns, and socio-political challenges. Regarding human resources, technology users in developing countries are limited in their opportunities for career development and technical knowledge upgrade. As regards technical issues, there are concerns about quality, security, and availability of data. Socio-politically, there are challenges that arise from illiteracy, language barrier, political instability etc.

As a result, Heeks and Kenny (2009) suggest that there is a strong need to understand the contextual setting of an organization in order to effectively apply information technologies.

2.7 Change Process (Business Process Reengineering).

According to Revere (2009), system implementation often involves some degree of Business Process Re-engineering (BPR) and customization. Arif et al. (2008) assert that if a company is not already conducting business in the manner that can be assumed to be structured, then the organization must re-engineer its business processes and practices in order to have them automated. Therefore, BPR is considered as a key practice in systems implementation.

Abdolvand et al. (2008) describe BPR as a pre-planning phase of system implementation which can be done by either system implementers or organizations' own in-house team. He however cautions that inclusion of BPR in the implementation of systems adds considerably to the risk of implementation failure and also expense of implementation. Problems with BPR occur when the "radical or clean sheet" approach is adopted during systems implementation. Problems with BPR is further supported by Attaran and Wood (2009) argument that organizations may neither be willing to overhaul their present infrastructure and to implement completely new one, nor be willing to interrupt their business while its core processes are re-engineered.

According to Abdolvand et al. (2008), in order to use MIS as proactive tool for BPR, the organization IT strategy and business strategy need to be not only aligned but also interdependent. In the enabling role, the IT strategy supported the business strategy. In the proactive role, the IT strategy is a part of the business strategy. Therefore, it is important for organizations implementing MIS to formulate clear vision of the type of organization that needs to be built, then using MIS as an enabler of change to achieve that vision Revere (2009)

2.8 Success Factors in Software Development Projects

Chow and Cao (2008) define four factors that determine the success of software development projects: Quality is to deliver a good software product to the customer or a project outcome as perceived by all stakeholders. Scope is meeting all requirements and objectives that the customers wants in the software. Time is delivering the final product to the customer on time. Delays in delivering releases, as long as the final

product is delivered on time, will not affect this factor. Finally, the last factor is cost which is delivering the product within the estimated cost and effort.

Qumer and Henderson (2008) also developed a framework which has four areas to crystallize the key attributes of agility. The framework has the following dimensions: flexibility, speed, leanness, learning and responsiveness. Flexibility is the ability to respond to change and leanness accentuates lower cost, reduced timeframe and quality production.

Another framework developed by Conboy and Fitzgerald (2010) comprised of two factors that can improve method tailoring effectiveness. The first area is the characteristics of the method, and the second is developer practices. The framework was developed to overcome some of the problems traditionally associated with software development's tendency to replace older methods with new apparently improved alternatives.

Agile methods as a software development approach actively involve the customer in the development process. However, it is important to consider the involvement and input from all stakeholders such as partners, and suppliers. In addition to external sources, other business units within the organization should be involved (Conboy and Morgan, 2011). Two aspects of the personnel involved in the development of agile software projects are highlighted in this framework: The developer and the customer.

2.8.1 Developer and Developing Practices

Chow and Cao (2008) explain that the interaction between the customer and the development team is a vital feature and an important success factor in agile software development. They further note that Agile methods expand the customer role within

the entire development process by involving them in writing user stories, discussing product features, prioritizing the feature lists, and providing rapid feedback to the development team on a regular basis.

According to Hoda and Marshall (2011), traditional methods usually aim to develop a process that distinguishes human resource roles, such as a project manager, an analyst or a programmer who are interchangeable Agile methods reject such assumption and emphasizes on team work. Fitzgerald (2010) adds that although process descriptions and organization charts are required to get the project started, agile methods emphasizes individual people over roles and encourages interaction between individuals.

2.8.2 Working Software

Agile Alliance proposes that, documents containing requirements, analysis or design can be very useful to guide developers' work and help predict the future. But a working code that has been tested and debugged reveals information about the development team, the development process, and the nature of problems to be solved. They further claim that running program is the only reliable measure of the speed and shortcomings of the team and gives a glimpse into what the team should really be building. (Cockburn, 2009).

Vaucher and Sahraoui (2008) agree that the use and reuse of components to produce high quality software systems facilitates the speedy delivery of a working system since the components have been tested elsewhere.

2.8.3 Collaboration with Customer

Customer collaboration and dedication are critical to all software development projects. Cockburn (2009) describes collaboration as: "Something that deals with community, amicability, joint decision making, rapidity of communication, and connects to the interactions of individuals". Attention to customer collaboration indicates an amicable relationship across organizational boundaries and specialties. Agile Alliance suggests that fruitful and close collaboration can make contracts unnecessary, and if a contract situation is in jeopardy, good collaboration can save the situation.

The involvement of team members in a project depends on the information provided. Communication plays a fundamental factor in the success of a project. Communication according to Moe et al (2011), acts as the glue that links together all work by the team members. Everyone should communicate with everyone else.

This idea suits the process of developing specialized systems where the domain experts are the end users of the system. In this case the wishes of and feedback given by the end-users must be taken into account when developing such systems. This study will borrow a lot from this principle especially during the process of requirements gathering where the staff who issue work permits who are the domain experts in this case will be interviewed.

2.8.4 Responding to Change over Following a Plan

Marshall (2011) acknowledges that requirements for a new software system will not be completely known until after the users have used it. In software development processes, it is not possible to completely specify an interactive system. Requirements

change constantly because of uncertainty and the interactive nature of software, and because of the fluctuating business and technology environments

Lindvall and Sandahl (2008) argue that when implementing change, different method for requirement elicitation can be used. Interviews are widely used when the developers elicit information from domain experts and each other about the structure and the behavior of the system. Projects most responsive to change will offer support for future changing requirements. They point out that other than requirement changes, software face two types of change: technology infrastructure and business processes. Utilizing of technology requires alignment of technology strategies with the business strategies. This alignment reflects the view that the business success depends on the linkage of business strategy with information technology.

Somerville (2008) supports this by stating that such flexibility is needed to accommodate changes for instance in the personnel and infrastructure, product specifications, resource levels, and release schedules. Although external conditions are very hard to predict and control, changes caused by them require timely and rapid responding.

2.9 Traditional Versus Agile Methods of Software Development

Marshall, (2011) says that instead of announcing a winner between the Agilists and the traditionalists we should examine in which situations agile methods would be more feasible than traditional methods and vice versa and how they could be combined. Boehm (2009) further suggests that risk management could assist in deciding in which situations these methods would be most suitable. If the risks are high, more planning is required than when the risks are low, and the possibility to use agile methods exists.

Differences in application domain, system criticality and innovativeness should be examined before choosing a proper method. Tight schedule and problems in hiring motivated and skilled people might also influence the selection. (Marshall, 2011)

Traditional methods pay heavy attention to stable requirements, and if that is not possible in a development project, traditional methods are not feasible. (Boehm, 2009)

Agile method involves planning what one wants and then adapting these plans to the results. Extreme Programming (XP) is one example of agile methodology which this study is going to employ. It involves;

- Communication between customers and other stakeholders;
- Providing simple and clean designs;
- Providing feedback frequently;
- Early delivery and implementation of suggested changes

The informal communication among stakeholders and developers greatly assist in coping up with system complexity and rapidly changing requirements. Work permit system requires clear user requirements, constant feedback and closer collaboration with users and therefore agile methods facilitates dealing with these complexities.

2.10 Software Testing

Bach, (2008) defines software testing as a process of verifying and validating that a software application or program meets the business and technical requirements that guided its design and development; while Boehm (2009) says it is the process of executing a program or system with the intent of finding errors.

Jenkins (2008) adds that software testing can also be used to test software for other quality factors like reliability, usability, integrity, security, capability, efficiency, portability, maintainability, compatibility etc

Software testing technologies have emerged as a dominant software engineering practice which helps in effective cost control, quality improvements, and time and risk reduction among other things (Marshall, 2011). The growth of testing practices has made software testers to find new ways for estimating software projects.

2.10.1 Quality Improvement

Quality means the conformance to the specified design requirement. The minimum requirement of quality, means performing as required under specified circumstances. Testing is a quality control measure used to verify that a product works as desired. Software testing provides status report of the actual product in comparison to product specifications. (Jenkins, 2008).

Debugging, a narrow view of software testing, is performed heavily to find out design defects by the programmer. The imperfection of human nature makes it almost impossible to make a moderately complex program correct the first time. Quality improvement involves, finding the problems and get them fixed. (Bach, 2008)

2.10.2 Verification and Validation (V and V)

Boehm (2009) says testing can serve as metrics. He further explains that testing process verifies and validates whether the software meets the requirements laid down by the user before it is released to the market. Jenkins, (2008) adds that testing should reveal as many errors as possible in the software under test, check whether it meets its requirements and also bring it to an acceptable level of quality. Testers can make

claims based on interpretations of the testing results, which either the product works under certain situations, or it does not work. We can also compare the quality among different products under the same specification, based on results from the same test (Boehm, 2009).

Fowler, 2008 argues that quality cannot be tested directly, but we can test related factors to make quality visible. Quality has three sets of factors namely functionality, engineering, and adaptability. These three sets of factors can be thought of as dimensions in the software quality space. Each dimension may be broken down into its component factors and considerations at successively lower levels of detail as illustrated below.

Table 1: Typical Software Quality Factors

<u>Functionality</u> (exterior quality)	<u>Engineering</u> (interior quality)	<u>Adaptability</u> (future quality)
Correctness	Efficiency	Flexibility
Reliability	Testability	Reusability
Usability	Documentation	
Maintainability		
Integrity	Structure	

For testing, to be fully effective, it must be geared towards measuring each relevant factor and thus forcing quality to become tangible and visible (Scott, 2010)

Scott (2010) further explains that a testable design is a design that can be easily validated, falsified and maintained. According to him, testing is a rigorous effort and requires significant time and cost.

2.10.3 Reliability Estimation

Software reliability has important relations with many aspects of software, including the structure, and the amount of testing it has been subjected to. (Scott, 2010) Testing serves as a statistical sampling method to gain failure data for reliability estimation. (Kalistick (2011).

2.11 Agile Testing

According to Kalistick (2011), the concept of “Time-To-Market” is the key word in today’s IT Business that compels the Software developers to come up with new strategies to save the time, resources, cut down the cost involved and at the same time, deliver a reliable product that meets the user requirements.

Scott (2010) adds that agile testing is built upon the philosophy that testers need to adapt to rapid deployment cycles and changes in testing patterns which is built on the principle that emphasizes on a working software over comprehensive documentation. It involves testing from the customer perspective as early as possible, testing early and as often as the code becomes available.

2.12 Conclusion

Literature reviewed presented the work permit framework available in Kenya and highlighted several initiatives and approaches done by different countries while automating their permit issuance processes. It attempted to compare and contrast the

challenges of system implementation in developed and developing nations which provided a number of issues that warrant further consideration with respect to development, adoption and implementation of Business Information systems in Kenya.

The insights gained from the literature should be interpreted in the light of a number of limitations. Firstly, Information systems implementation are still in early stages of implementation in developing countries especially Kenya and face additional challenges related to economic, cultural and basic infrastructure issues. This points to the urgent need for understanding the importance of Business Information Systems and its development and implementation approaches. Secondly, although research into Information systems has recognized the need to address indigenous local conditions in terms of social aspects, generally it is not exhaustive in the identification of how the social conditions and cultural aspects influence the use of this technology and lastly, it is obvious that Information Systems consciously introduces vendor organization or vendor culture into an organization. This can have a significant effect, cultural conflict, especially when there is no single universal business practice that is standard and applicable across all organizations due to contextual differences among nations, regions, organizations, and industries. In light of these gaps as identified in the literature, this study aims at filling the gap by using agile framework of system development and implementation which emphasizes on close collaboration between the developer and implementing organization in the Ministry of Immigration which is a Kenyan context.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents methods through which the objective of this study was achieved. It introduces the research strategy and the techniques applied in data collection, analysis synthesis and presentation. The chapter defines scope of research design, and situates the research amongst existing traditions of information systems development and implementation. Respondents involved in the process of issuing work permits to foreign nationals by the Ministry of immigration were purposively selected. These were top managers, operation staff, IT staff, permit approval committee members and other external stakeholders who directly utilize processed data from the case organization. Respondents were people who are in a position to know what the Ministry requires to do in order to successfully fulfill its mandate. Data was collected through interviews, general observation, group discussions and documentation review.

3.2 Research Design

Research questions to be answered in chapter 1 above influenced the research design in this study. Case study design was adopted and employed two research methodologies, case study at the evaluation stage and agile methods of information system development at the development stage. The choice of case study was guided by the advice put forward by Yin. Yin (2008) recommends the use of case study when:

- The focus of study is to answers questions like “when”, “who” and “how” ;
- The behavior of the respondent cannot be manipulated by the interviewer; and

- There is no clear boundary between the phenomenon and the context

The unit of analysis of this study was the Ministry of Immigration and Registration of Persons, a Government agency that is mandated to issue work permit in Kenya.

Case study was conducted to examine the current process of issuing work permit in the Ministry of Immigration; it consisted of analysis of the current status which focused mainly on staff, their working relations, as well as their working methods and working environment.

This was done by reviewing ministerial strategic documents and plans, Acts of parliament, departmental manuals and other relevant documentations. This assisted in providing a bird's eye view on what the current status of issuing work permits looked like.

Klein (2007) proposed a multi-methodology framework which combines two research methods in a study. It is referred to as multi-paradigm approach. In his framework, Klein (2007) identifies three levels of understanding;

1. *First Level understanding (subjective understanding)* - This is making of sense of everyday behavior which manifests itself in social settings.
2. *Second level understanding (interpretive understanding)* – This is reading or interpretation of the first level understanding.
3. *Third level understanding (positivistic understanding)* - This involves creating and testing propositions in order to explain the empirical reality under investigation.

He further suggests that methodologies associated with interpretive research (e.g. case study) can be used to develop the researcher's second level of understanding. The second level, interpretive understanding then informs the development of testable propositions addressing institutional/structural aspects of the social phenomenon being investigated. The patterns or themes identified in the second level are represented by testable propositions to constitute a third level of understanding. These testable propositions can then be subjected to more conventional methods of scientific testing.

This study was carried out in six steps which took into account the three levels of understanding proposed by Klein. The steps are organizing of data into functional groups, categorizing of data by function into sub groups based on data analysis, interpretation of the data presented, identifying patterns within the data, designing and development of a solution, and finally testing of the solution.

3.3 Study Population

The target population were people involved in processing and approving work permit requests drawn across different hierarchies of the organization and departments as outlined in Table 2 below.

Table 2: Study Population by Category

Category	Population
Management team	20
Operational staff	210
ICT staff	34
Approval committee member	12
Government stakeholders	4
Total study population	280

These categories were chosen because of the role they play in work permit issuance process. The management team creates policies that govern the entire process of work permit issuance, operational staff are immigration officers who are directly involved in processing work permit request, ICT staff spearhead computerization of the Ministry activities while the approval committee is mandated to vet and approve all work permit requests. Government stakeholders are departments which mainly utilizes information generated from work permit data from the case organization. These are Ministries of Tourism, Foreign affairs, Labor and Trade

3.4 Sampling Procedure

In identifying the sample from the study population, purposive sampling technique was applied. This was based on availability of the respondents, knowledge of the respondent on the subject under study, capacity and willingness to participate in the research. The researcher had to first understand the prevailing situation and identify and differentiate the roles and responsibility of each category of respondents.

Homogeneity and similarities between activities in permit issuance process guided the process of sample selection. In situations where there were many people in performing similar activities only a few were interviewed since they provided similar information.

3.5 Sample Size

A sample of 30 respondents was selected from five categories after applying the sample procedure above, Table 3 below provides details of the sample per category

Table 3: Sample Size

Category	Sample size
Management team	4
Operational staff	12
ICT staff	5
Approval committee member	5
Government stakeholders	4
Total study population	30

The sample constituted 4 respondents from the management, 12 operations staff (immigration officers), 5 IT staff, 5 approval committee members and 4 respondents from the stakeholders group making a total sample size of thirty.

3.6. Data Collection Instruments and Procedures

The field study was conducted at the sites between July 2012 and February 2013, after which a steady correspondence was maintained with different informants from the organization. Field notes were frequently taken while at the site and additional notes made while at home about previously forgotten and recalled events, analytic ideas and inferences, personal impressions and feelings as well as notes for further information, or observational questions. Four modes of data collection were utilized in this study;

3.6.1 Interviews and Discussions

The interviews did not follow a pre-planned strategy, open conversation was promoted and allowed responses to guide the conversations and also assisted in establishing rapport between interviewer and interviewee. Open ended questions were used in this interview (See appendix III). This is because open ended questions allows probing and understanding the working culture, habits and attitudes of the respondents towards the subject under study. Notes were taken by the interviewer during the interviews to ensure comprehensiveness of data collection.

In some incidences the interviewer was forced to conduct follow-up interviews to confirm and substantiate specific opinions with observations or documentation which was time consuming.

3.6.2 Observation and Document Analysis

Observation of general routine work of participants was done alongside the interviews. Data gathered through observation and document analysis made it possible to corroborate what was heard in the interviews with what was observed on the site or read in the documents. The documents that were selected and analyzed

were Kenya citizenship Act, Immigration Act, Aliens restrictions Act, Constitution of Kenya chapter six, The Geneva convention guidelines; and Kenya visa regulations manual.

These documents were helpful in describing the requirements that an applicant has to meet before he/she is granted a work permit, levels of approval and available policies that Govern employment of foreign labor.

3.7 Data Collection Procedures

In order to ensure that the questions in the interview guide were understood by respondents in the same way, a pilot testing was carried. This involved a group of ten respondents two from each category of the targeted population who were selected conveniently to test the appropriateness of the questions and their comprehension. The response from the respondents was then analyzed to look for patterns in the feedback. Questions that needed clarification and further suggestions were amended and reworded in order to fine tune the interview guide before starting actual data collection.

3.7 Validity and Reliability

A field test to validate instruments for data collection was conducted using subjects not included in the sample and appropriate changes were made based on both a field test and expert opinion before using the tools. Information and data was collected from different secondary data sources such as operational manual and Acts of parliament which complemented each other and assisted in doing data triangulation.

3.8 Ethical Considerations

Respondents in this study participated voluntarily and were fully informed about the aims and objectives of the study. Their identity remained anonymous throughout the study and this guaranteed participant's confidentiality. Instruments of data collection was designed to collect information directly related to the research questions, and no personal questions were asked from respondents. Information used in this thesis that belongs to other authors have been fully referenced with APA referencing system.

3.9 Data Presentation, Analysis and Interpretation

This study employed the use of grounded theory as a method of data analysis. This is because it has proved to be extremely useful in developing context-based, process-oriented descriptions and explanations of information systems phenomena (Goulielmos, 2010). It offers relatively well-signposted procedures for data analysis, and potentially allows for the emergence of original and rich findings that are closely tied to the data (Orlikowski, 2009). This features of grounded theory provided confidence of using this method in analysis of data.

A detailed analysis of existing records made it possible to appreciate and conceptualize the business processes which drive work permit issuance. The analysis of the data began with examination of each response. This was done by closely examining, and comparing for similarities and differences of each response.

The iterative process of data collection and analysis gave new insights into the study and assisted in formulating follow up questions in subsequent interviews. It also assisted in identifying most appropriate informants among the interviewees.

There was a continuous feedback with informants, and this made it possible to check whether emerging concepts fitted reality. The use of the constant comparative method enabled the analysis to produce descriptions and use case models, in which more abstract concepts were related and business process was explained.

All researchers supported analysis activities; a regular meeting of the research team was convened to discuss and contextualize emerging interpretations, introducing a wide range of disciplinary perspectives.

3.9 Conclusion

The purpose of this chapter was to describe the research methodology of this study, explain the design and population of the study describe the procedure used in data collection, provide an explanation of the procedures used to analyze the data and define the approaches and tools used in developing a work permit system. The following chapter presents methods used in data collection, analysis and presentation

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 Introduction

This chapter presents the approach used in carrying out user requirements elicitation and analysis for the work permit system. The output of this process provided the framework used to design, develop, test and evaluate the work permit information system described in chapter five

Identifying the appropriate user groups and individuals was a key step in defining system requirements. Users involved in work permit issuance process were identified, and this constituted different categories (from the IT professionals, Immigration officers, administrators, managers and other stake holders). An analysis of their routine activities and individual tasks they perform was done. The purpose of this exercise was to precisely and unambiguously describe the functionalities expected by different users of the system to be built.

4.2 Responses from the Interviews

Interviews were conducted as focused interviews. According to Kidder and Judd (2009), in focused interviews the interviewer has a list of selected topics he or she wants to cover but can flexibly choose how and when to ask the questions. Flick (2009) adds by saying that there are expectations that the views of the interviewee will be more freely expressed when the format of the interview is more flexible and open ended than where the interview style is regulated and confined to a standard set of questions. Borrowing from Flick, the interview was unstructured and respondents were free to discuss and share any information they found important to the interview. The

interviewer only moderated the interview by limiting the discussion to issues that were relevant to this study.

Respondents were chosen for their relevance to the conceptual questions rather than their representativeness, the total number of respondents was 21. Access to respondents was not always easy due to their work constraints and therefore the interview schedule had to conform to the prevailing organization culture which demanded that the interviewer reports to the department supervisor first.

A conscious decision to honor the seniority of managers and supervisors was made while conducting interviews and observations. Each supervisor and manager was given an explanation on the purpose of the research and the decision to identify the appropriate respondent was left to them to select an available respondent to interview. This practice enhanced the validity and reliability of this research as it eliminated any preferences the interviewer might have had in selecting the participants.

Time for interviews and observations had to be considered at all times, this is because the workload differed from one officer to the other. Managers were not readily available, their workload and availability had to be considered while carrying out the interviews. In most cases the interviews with managers were conducted after four o'clock in the evening and this made the interview take a longer time than initially planned.

In carrying out this interview the respondents had the choice to deal with the questions they had mastered and refer what they thought they were not sure to the domain experts. The interview focused on the processes of issuing work permits in depth. It

consisted questions about how, why and when different tasks and activities are performed. In addition to the current state description, the interviewees also pointed out weaknesses in their work, and suggested how they should be managed. The aim was to gather as much process specific information as possible. Besides such detailed questions, at the end of the interview the interviewees had the opportunity of reviewing the information that had been collected from the interviews.

4.2.1 Work Permit Framework

The first objective of this study was “To evaluate the existing work permit frameworks that guide the Ministry of Immigration” and related research question was “What is the nature of the existing work permit framework in the Ministry?”

In order to understand the nature of framework that guided the process of managing work permit issuance process five respondents were interviewed from a target of twelve under this category of respondents (See appendix III c for interview guide), this were mainly immigration officers that process work permits from the initial application to the final approval stage and management team. Their responses are given in table 4 below.

Table 4: Work Permit Issuance Frame Work

Respondent (R#)	Response	Theme
R6	“We are guided by Acts of parliament and the constitution of Kenya where the requirements of work permit are outlined”	Act of parliament and constitution
R7	“ Work permits are classified with each class having its own specific requirements that an applicant must meet, however this are being reviewed to be in line with the new constitution”	Permit classification
R8	“We issue permits to any Non-Kenyan wishing to engage in employment or business in Kenya whether in gainful or voluntary service”	Employment Business
R9	“Work permits are classified from class A to class M and they are issued under Section 5 of the Immigration Act Cap 172 Laws of Kenya”	Work permit classes
R11	“There is an Immigration manual which defines several stages which an application goes through before it is approved”	Approval process

Most of the respondents interviewed confirmed the existence of a framework which is anchored in the laws of Kenya and guides the process of issuing work permits. The framework in use defines many stages in which a work permit application must go through before approval. This is consistent with Immigration procedure manual which identifies six stages that an application goes through before approval for work permit

issuance is done. Immigration Act (Cap 172), classifies work permits into thirteen different classes from class A to M each with specific requirements that an applicant must meet before he/she is granted a work permit.

According to the respondents the existence of the work permit framework defined clear procedures and requirements that guided the process of issuing work permit, however there were a number of challenges with the framework some of which had been occasioned by changes brought about by the new constitution.

4.3.2 Problems with the Current Work Permit Set-Up

The second objective of this study sought to identify problems with current framework and determine how a new system would help alleviate these problems. Research question associated with this objective which this study aimed to answer was “What are the problems with current work permit issuance processes? And how would a new system help alleviate these problems?”

It was noted from the interview that the framework which was being used had a number of challenges which are presented in table 5 below.

Table 5: Problems with the current work permit set-up

Respond (R#)	Response	Theme
R3	“We have been using this framework for more than ten years now without review. ”	Lack of periodic review
R7	“ The enactment of the new constitution abolished a number of permit classes and this is now being implemented”	Review of permit classes
R8	“The manual nature of the system makes the application processes lengthy and difficulties to generate up to date reports.	Lengthy process Report generation difficulties
R9	“Inability to link and share information collected by related departments leading to duplication of data and efforts”	Duplication of data
R10	“There is no centralised mechanisms of information sharing”	centralised mechanisms

The respondents interviewed unanimously agreed that there is urgent need to automate the current work permit system which according to them, it has a number of challenges which can be eliminated by automating the entire process of work permit issuance. They identified the manual nature of the process which was not only lengthy but also made it difficult to track applications. Respondent R10 said there was need to have a centralized repository for all cases a requirement which the current system did not have. Issues on technicalities of process integrations which limit the respondents on the type of reports that can be generated by the system was also raised. There were

concerns by respondents on the review of the framework which they said had taken a long time to be done. The interviewer was informed that efforts had been made to have the work permit framework reviewed, this had been occasioned by the abolishment of a number of permit categories that had been overtaken by events after the enactment of the new constitution such as those applicable to member states of East African Cooperation who according to the new constitution do not require to have a work permit in order for one to work in Kenya. The Ministry of Immigration had therefore made some efforts to have this reviewed to be in line with the new constitution.

Respondents recommended that the work permit framework be reviewed and computerization of the entire process done to eliminate all the challenges that were being faced with the current system. Table 6 presents the views of the respondents on what the new system should have in order alleviate problems identified in table 5.

Table 6: Respondents views on expected features of the new system

Respond (R#)	Response	Theme
R11	“The new system should be web based to provide online access by all the stakeholders.”	Online access
R14	“All the processes in work permit processing should be computerized ”	Computerization of Processes
R15	“There should be a mechanism to capture all work permit data centrally .”	Centralized database
R16	“The system should be able to integrate with other existing system”	System integration
R17	“A mechanism for queries and self-help function should form part of the features of the system”	Queries and self-help function

Considering problems of the current system mentioned in section 4.3.2, respondents proposed that all the processes from the application to the final approval should be automated and have it accessible online to reduce the time for processing the work permit. Respondent R15 suggested that the new system should have a central database with the capacity to integrate with other systems and provide mechanisms for queries and self-help functions, views which were also shared by respondent R16.

Respondent R14 emphasized the need to have the entire process of work permit issuance computerized and then have it integrated with others system that share information with the Ministry of Immigration, the respondent said this would eliminate the work of “work permit agents” who normally take the advantage of the

manual nature of the process to influence activities within the process. The study also found out that efforts to have the work permit process computerized had been made, however this was not successful due to both technical and financial limitations; however the Ministry was still keen on having the work permit issuance process automated.

4.3.3 Computerization of Work Permit System

The third objective of this study was to design and develop an appropriate computer-based system for the management of permit issuance processes that will eliminate the problems identified in section 4.3.2. A total of four people were interviewed from a target of five under this category of respondents (See appendix a for interview guide), this were mainly Information Communication Technology officers with different specialties in IT field (Network specialist, System developer and IT security expert).

Research questions associated with this objective was “how will the proposed system be developed? Which methodology will be adopted in developing the system?” To effectively answer this questions there was need to assess the ICT resources that were available in terms of infrastructure and technical capacity which then assisted in determining the appropriate approach of developing and implementing a new work permit system. Table 7 below presents responses about ICT initiatives undertaken by the Ministry of Immigration.

Table 7: ICT initiatives undertaken by the Ministry of Immigration

Respondent(R #)	Response	Theme
R1	“We are mandated to spearhead ICT initiatives in this Ministry. In particular we are concerned with connectivity system development, capacity building and hardware support ”	ICT adoption Infrastructure Human capacity
R2	“A number of ICT systems currently in use have been developed and implemented by other Government agencies and managed by us here these include financial and HR systems developed by the National Treasury.	System development and implementation
R4	“With the help of consultants we have managed to develop a passport tracking system and a citizen registration system that manage the process of issuing personal identity cards”	System development and implementation
R5	“We have three distinct databases that store different information regarding passports, Visas and National Identity cards. We have currently recruited a consultant to see the possibilities of having them integrated in future”	Databases Systems integration
R6	“Most of the available systems run on commercial software as there in no clear government policy on the use of open source software ”	Policy on system acquisition and licensing

The respondents enumerated a number of computer systems available in the Ministry of Immigration; however some of the systems in use had been developed and implemented by other government agencies for use by the entire public service. Some of these systems mentioned are Integrated Financial Management Information System (IFMIS) developed and implemented by the National Treasury and Government Human Resource Integrated System (GHRIS) developed and implemented by Public Service Commission.

It was noted that the Ministry had contracted the services of external consultants to develop citizen registration and passport tracking systems which was attributed to lack of enough technical capacity to carry out this assignments, however most of this system were not linked to each other and therefore making it difficult to share information within the systems. This indicated that it was necessary to ensure integration issues are clearly captured as one of the system requirements since the work permit generation process involved data and reports sharing.

This study also sought to find out the views of the respondents on how they expect to share and generate information from the new system. The target was four Ministries identified as the main consumers of immigration data; these were Ministries' of Tourism, Labor, Foreign affairs and Trade, however due to the reorganization of Kenyan Government, it was not possible to meet the targeted number and therefore only two respondents were interviewed, one officer from the Ministry of Tourism and the other from Ministry of Foreign affairs. Table 8 below presents the respondents views.

Table 8: Information Sharing and Report Generation

Respondent (R#)	Response	Theme
R19	“Our interest is to know the number of visitors who travel to Kenya for purposes of either investment or tourism. Immigration data helps us achieve this by categorizing our visitors by their areas of interest, country of origin, age etc”	Report generation
R19	“We would have wished the reports could provide more information than it currently does. Our proposal has always been to automate this process and have ourselves generate the reports relevant to our use”	Information sharing
R21	“Foreign affairs Ministry handles issues related to international relations, trade and investment and the ministry of immigration captures most of this information”.	Information sharing
R21	“We are required to get this reports quarterly which we don’t. The current system is not able to generate the reports in the formats that we want and therefore immigration officers are forced to prepare the reports manually and this takes some time.”	Report generation

The first responded in this group who was a representative from the Ministry of Tourism stated the importance of reports from the Ministry of immigration in their daily operations however he expressed his dissatisfaction with the time they receive the reports. He was however optimistic that the challenges they are facing can easily be eliminated by computerizing the entire process of work permit issuance. These concerns were also supported by the second respondent who was a representative from the Ministry of immigration.

4.3.4 Pre-implementation Testing and Evaluation of the System

The fourth objective of this study was to perform a pre-implementation testing and evaluation of the developed system. Five people were interviewed under this category of respondents this were Immigration officers who are the main users of the system.

Research question associated with this objective was “how will the end users confirm that the developed system addresses the problems identified in 4.3.2. The purpose of this objective was to ensure that all programming errors are corrected and the system performs the functions required as specified by the users. Table 9 below presents responses from the interviewees.

Table 9: Testing and Evaluation of the System

Respond (R#)	Response	Theme
R10	“It is expected that the new system will reduce time and cost of processing work permit.”	Objective of the system
R13	“ The system should be piloted to confirm that it generates the required information before its rolled out for use”	Functionality testing
R14	“The responsibility of piloting the system should be left to immigration officers who are the domain experts of this process.	System testing responsibility
R19	“Once the system has been tested, test results should be compared with the manually generated reports to confirm system consistency”	System review
R20	“ Both old and new system should be used together for some time before the full rollout of the system”	Parallel implementation

Respondent R13 proposed that the new system should be piloted before full rollout to assess whether the goal of developing a computerized work permit system had been achieved. This views were also shared by respondent R20 who emphasized the importance of having both the computerized system and the manual one run in parallel before a complete phase out of the manual system is done. While emphasizing the idea of piloting the system first before full implementation, respondent R14 proposed that Immigration officers who are subject matter experts be involved fully in the piloting process since they are the principal users of the system. Respondent R19 stressed the need to carry out a thorough system test and necessary reviews to ensure that the system meets its objectives.

4.4 Conclusion

This chapter presented an analysis of data collected during this study. The information gathered through discussions, documentation review and observation reveal that the current work permit system though in use has a number of challenges both the framework which defines the business processes and how the processes are executed. It was noted that the enactment of the new constitution abolished some requirements in the framework and therefore necessitated the review of the entire process to accommodate this changes. According to the views of respondents, it is clear that most of the challenges emanate from manual processes which are prone to human abuse and influence that can only be minimized by automating work permit business process thereby reducing chances of human manipulation which then formed the basis of developing and implementing a computer based work permit management system. Chapter five describes the methodology used in developing and implementing the proposed work permit system.

CHAPTER FIVE

MODELLING THE WORK PERMIT SYSTEM

5.1 Introduction

This study employed Extreme Programming one of agile methods of software development which encourages starting with the simplest solution and refactoring to better ones. Building software systems requires communicating system requirements to the developers of the system. An extreme Programming technique is viewed as a method for rapidly building and disseminating institutional knowledge among members of a development team. The goal is to give all developers a shared view of the system which matches the view held by the users of the system. To this end, Extreme Programming favors simple designs, common metaphors, collaboration of users and programmers, frequent verbal communication, and feedback.

This chapter presents System modelling which describes the functionality of the system in terms of interactions between the work permit system and the customer which then provided a foundation for developing a computerized work permit system.

5.2 UML Diagrams for Work Permit System

To clearly understand and discuss the user requirement with the prospective users of a work permit system use case and activity diagrams were used which represented high level visualizations of each case of interaction. Each use case diagram consists of actors (those that interact with the system) and use cases (actions performed by actors) while activity diagrams were used to show particular operations of the system and enabled the visualization of dynamic and executable part of the system. This provided clear understanding of the functionalities of the system.

5.2.1 Application Process (System front end)

Work permit applicants will access the system via a portal such that applicants are able to:-

- a. Make applications
- b. View the status of their application.
- c. Make inquiries
- d. Get online help

The use case diagram presented below shows the applicants view of the system. The system front end depicts what the applicant will do and see when they access the system. The first step of work permit application is for an applicant to register. Table 10 below shows application use case process.

Table 10: Use case Form Application Process

Use Case	Application process
ID	001
Actors	Permit applicant
Priority	Essential
Pre-conditions (Stakeholders and interest)	<ol style="list-style-type: none"> 1. Applicant accesses the system online and creates his/her profile by registration in the system. 2. Applicant logs on to the system using his/her credentials and makes an application by completing an application Form 3. Applicant submits form 4. Applicant views the status of application
Post-conditions	<ol style="list-style-type: none"> 1. New Application; or 2. Renewal of work permit is recorded in the system 3. Unique number is assigned to application (Tracking number)
Event Flow	<ol style="list-style-type: none"> 1. Applicant submits application 2. System validates saves and assigns unique number to the application.
Functional Requirements	Users must be able to enter in application details. The keyed in details will be validated upon clicking save. If errors exist, the application will not be saved, and the user will be asked to fix the errors.

As the above use case indicates, permit applicants can access the system online and register their preferred username and password, this enables them to access the work permit application window by entering their registered user name and password. Once logged into the system, they can view the application conditions, edit their registration details, make application or view status of application once submitted. Figure 1 and figure 2 below shows use case and activity diagrams for these scenarios respectively.

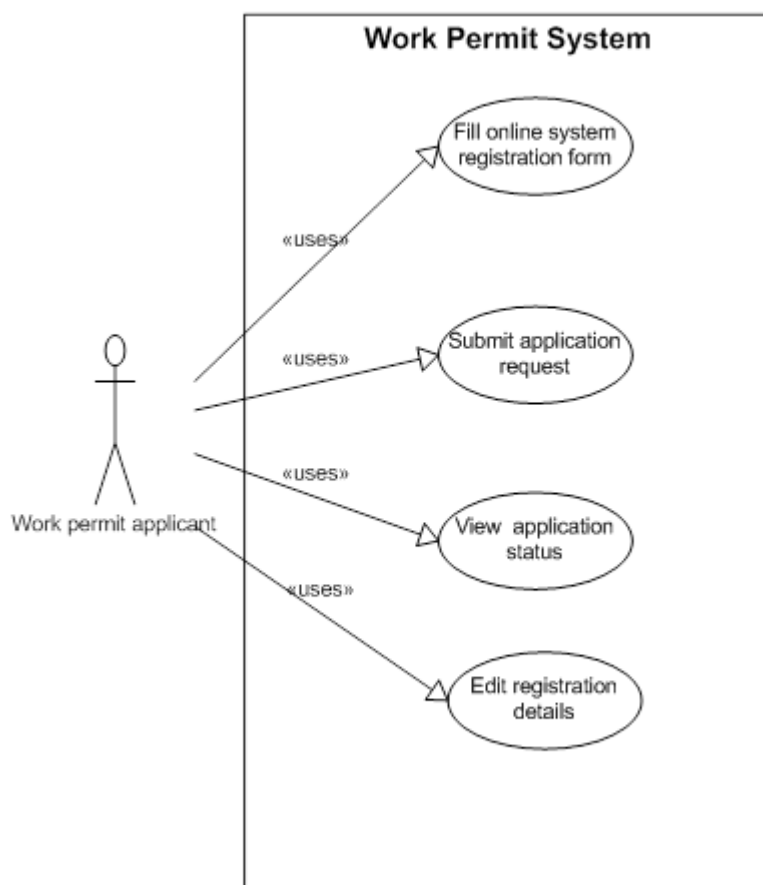


Figure 1: Work Permit Application Process use Case

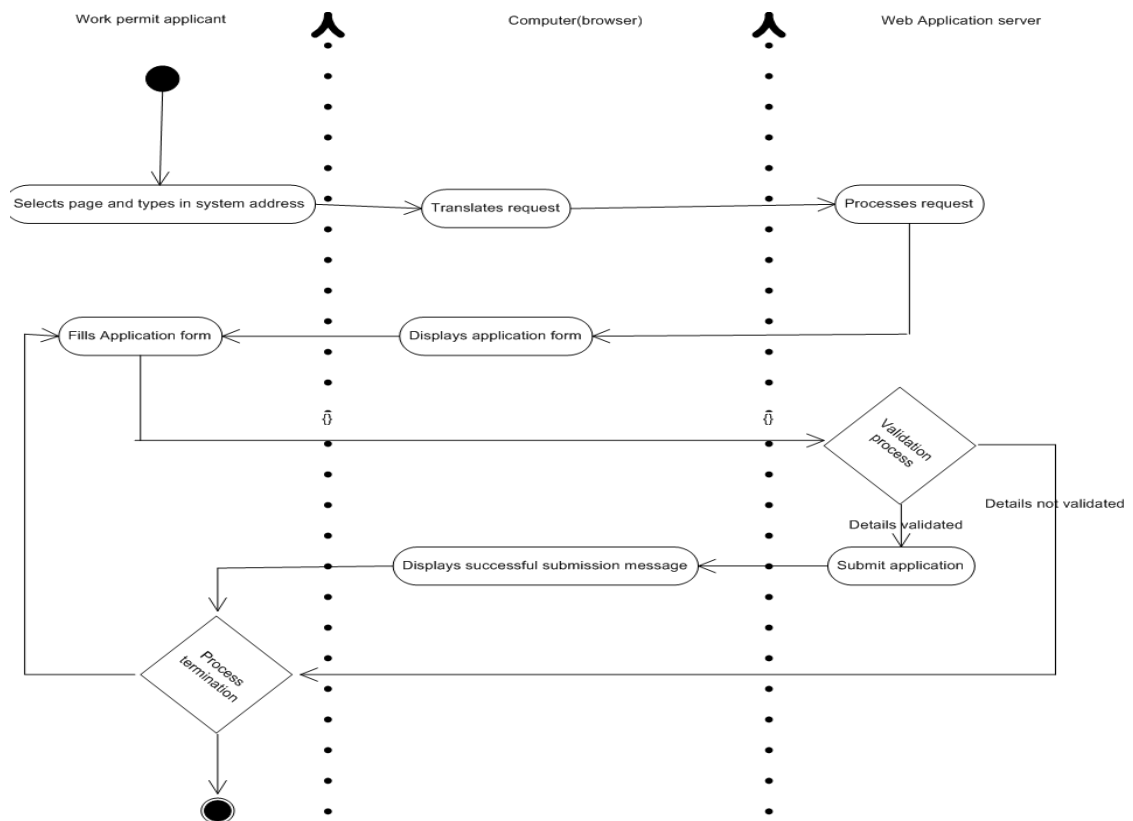


Figure 2: Work Permit Application Activity Diagram

5.2.2 Categorization of Application

All successful applications are then categorized as either new applications or renewals. This depends on whether the applicant is submitting his/her request for the first time or he/she is seeking for a renewal for an expiring work permit. Table 11 below outlines steps involved in categorization.

Table 11: Use case Form Categorization of Application

Use Case	Categorization of application
ID	002
Actors	Permit applicant, Ministry of Immigration staff
Priority	Essential
Pre-conditions (Stakeholders and interest)	<ol style="list-style-type: none"> 1. An applicant categorizes application as new or renewal. 2. Applicant references on the expired permit number incase it's a renewal
Post-conditions	<ol style="list-style-type: none"> 1. Application categorized as either new or renewal in the system. 2. System updates details and saves
Event Flow	<ol style="list-style-type: none"> 1. An applicant categorizes application 2. MoI staff log onto System 3. MoI staff validates Application → Category → New or renewal 4. System sends acknowledgement message and saves data.
Functional Requirements	Users must be able to categorize application details which will be validated upon clicking save. In case of renewal the older permit must be referenced.

When a user accesses the system using his/her registration credentials, he/she can either make a new application or make a renewal of an expired work permit. If it is a renewal an applicant will be prompted to provide permit number of the expired work permit and allowed to update his/her details already existing in the system. Once that has been successfully done, an immigration officer logs in to the system and confirms

the details are correct and ready for further processing. Figure 3 and 4 below shows the categorization use case and activity diagram respectively.

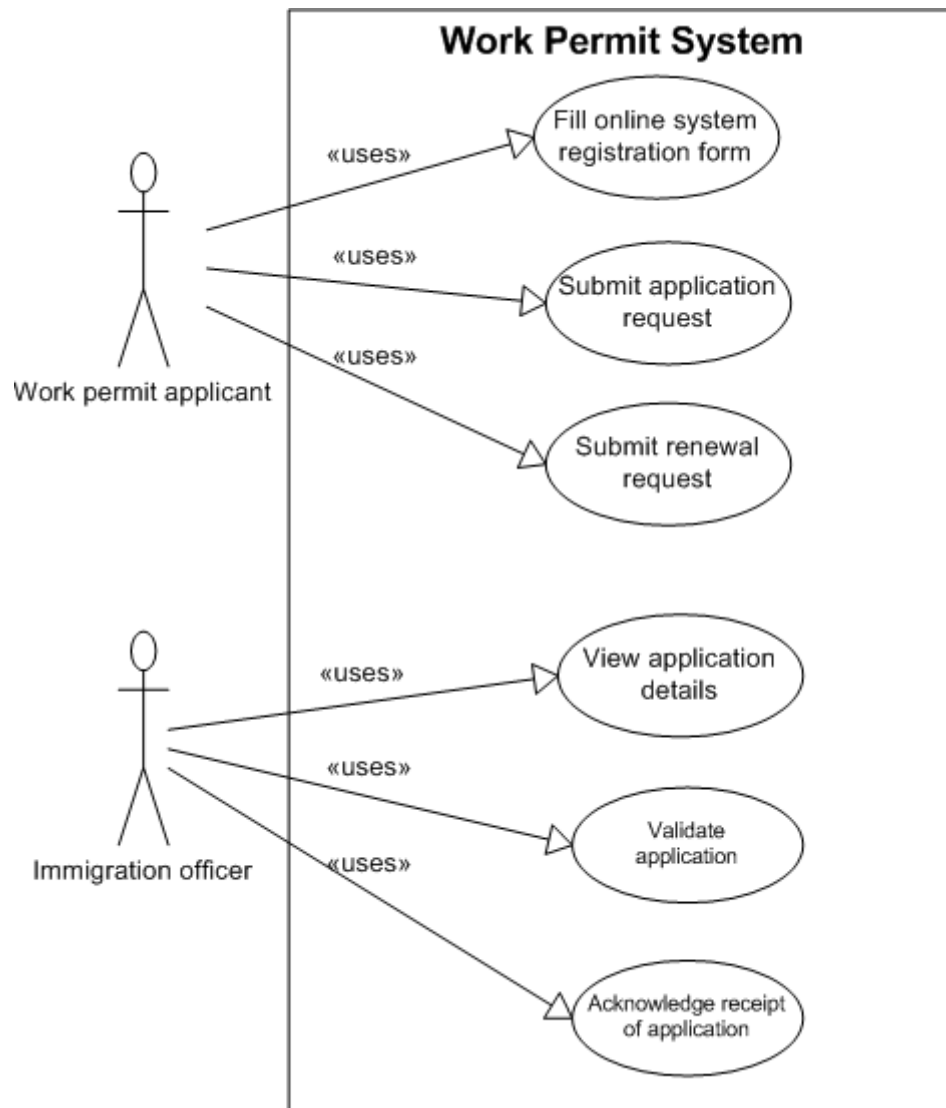


Figure 3: Categorization of Work Permit Use Case

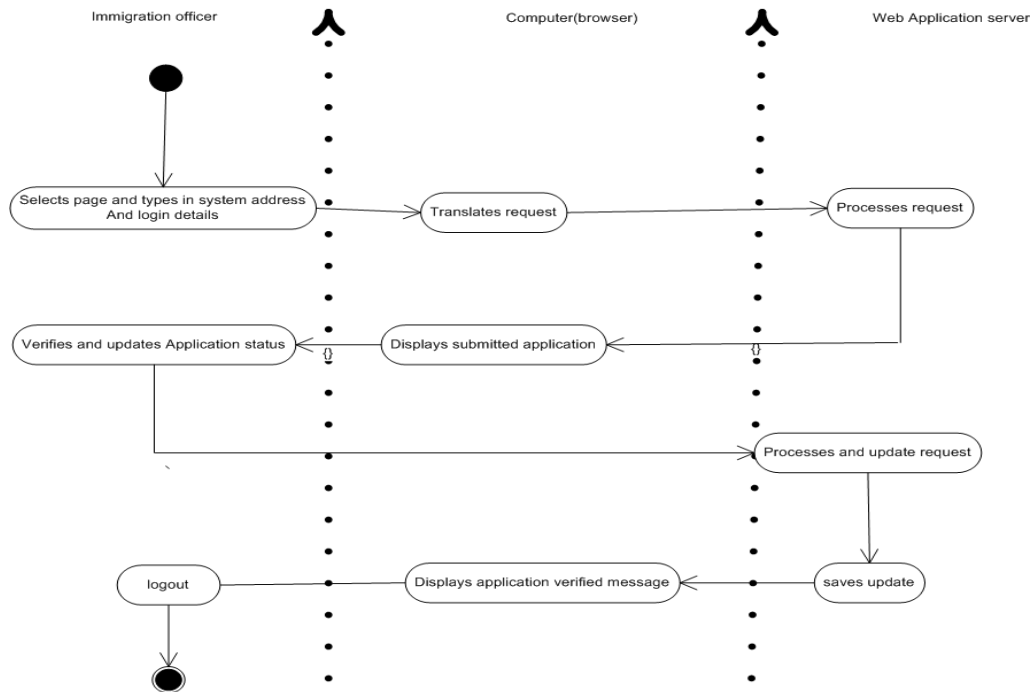


Figure 4: Work Permit Categorization Activity Diagram

5.2.3 Case Management

The system treats each application as a case. There are different case types with each case having a unique reference number which enables listing of different case types for access by various authorities to act on them. This is achieved by a predefined business process which guides the entire process. During this process an applicant is able to log in to the system and monitor the status of his/ her application. Similarly an immigration officer can log in to the system and act on tasks that require their actions and act on them. Table 12 below outlines case management process.

Table 12: Use Case Form Case and Work Flow Management

Use Case	Case Management
ID	003
Actors	Ministry of Immigration staff
Priority	Essential
Pre-conditions (Stakeholders and interest)	<ol style="list-style-type: none"> 1. A request for work permit has been received and captured in the system. 2. Applicant has attached all the requirements 3. The application has been categorized as either new or renewal
Post-conditions	<ol style="list-style-type: none"> 1. A unique number (tracking number) allocated to application. 2. System updates details and saves
Event Flow	<ol style="list-style-type: none"> a) MoI staff log onto System b) MoI staff review application for validity and completeness c) MoI staff recommends to the approval committee to either approve or reject, indicating reasons. d) System saves application data.
Functional Requirements	Users must be able to categorize application details which will be validated upon clicking save. In case of renewal the older permit must be referenced.

Once the application has been received, Immigration staff reviews the application to confirm that the request meets the conditions spelt out in the immigration manuals .If the request meets all the conditions, a fee payment notification is sent to the applicants email address asking him/her to make payments and of the application doesn't meet the requirements a report is sent to the applicants email address

indicating reasons for rejection. Figure 5 and 6 below shows the case management use case and activity diagram respectively.

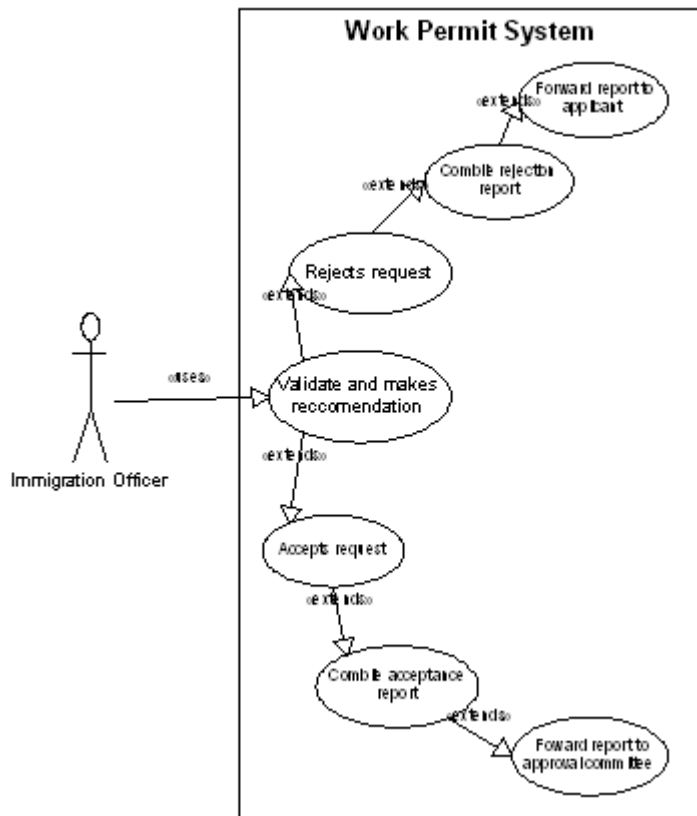


Figure 5: Case Management Use Case

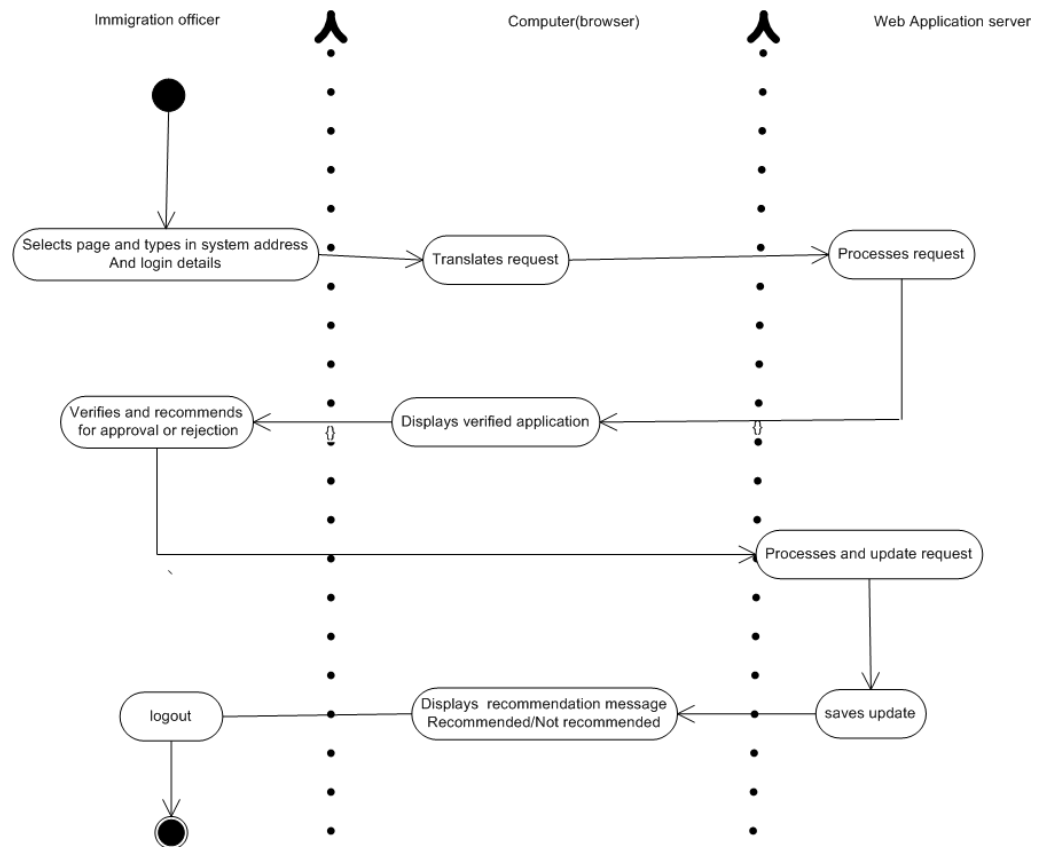


Figure 6: Case Management Activity Diagram

5.2.4 Payment Management

The system provides for predefined fee charges for different categories of applications and capture payments details. Once an applicant receives a payment notification which will indicate the amount he/she is expected to pay and the Ministry of Immigration account details where the payment is supposed to be made. The applicant will then be expected to scan the deposit in slip and send it to the Ministry of Immigration to allow further processing of his/her application. Payment management use case is shown in Figure 7 below.

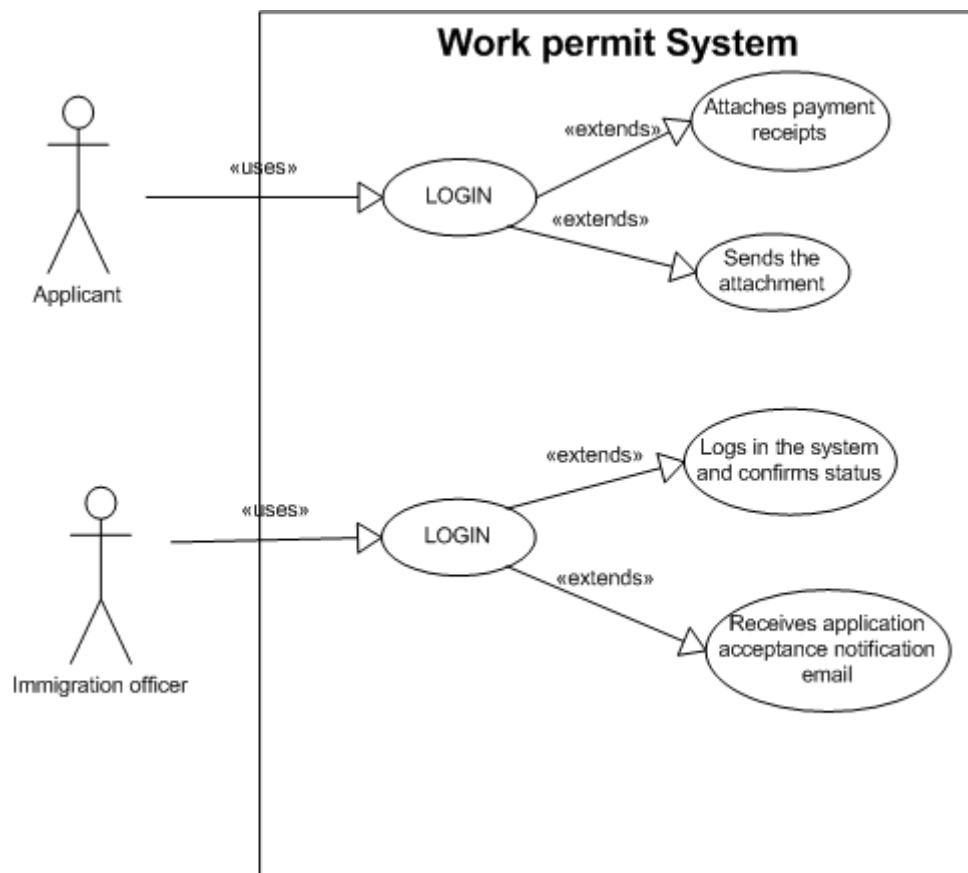


Figure 7: Payment Management use Case

5.2.5 Approval and Rejection Management

Once immigration officials have confirmed that the applicant has paid the required amount of fees, the application is then forwarded to the approval committee. The committee will then deliberate on the recommendations and either approve or reject. Their final decision is then forwarded back to immigration officials who are then required to communicate the decision of the committee to the applicant. If it is an approval the applicant will receive details of his/her work permit. A rejection notice will be send to the applicant incase a decline in approval detailing reasons for decline. Table 13, figure 8 and figure 9 below outlines activities under this process.

Table 13: Use Case Form Approval and Rejection Process

Use Case	Approval and Rejection process
ID	004
Actors	Ministry of Immigration staff and approval committee
Priority	Essential
P re-conditions (Stakeholders and interest)	<ul style="list-style-type: none"> - A request for work permit has been received and captured in the system. - MoI staff have validated, recommended and forwarded to approval committee
Post-conditions	<ul style="list-style-type: none"> - System updates details and saves - Approval committee deliberate and sent results to MoI staff
Event Flow	<ul style="list-style-type: none"> - MoI staff log onto System - MoI staff confirms that payments have been made. - MoI staff forwards the recommendation to the approval committee. - Approval committee deliberates and makes appropriate decision. - MoI staff communicates the decision of the committee to applicant - System saves application data.
Functional Requirements	MoI officers must recommend cases to the approval committee

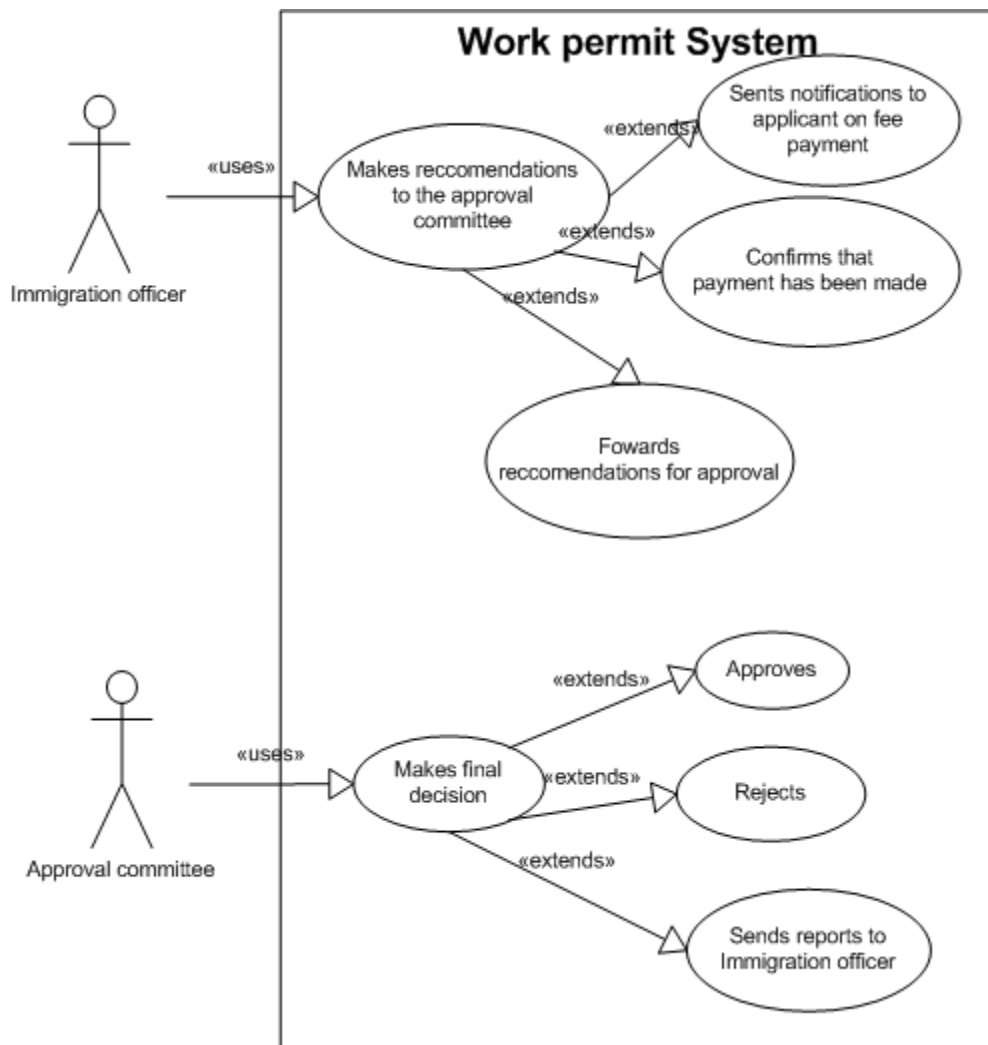


Figure 8: Approval and Rejection Process Use Case

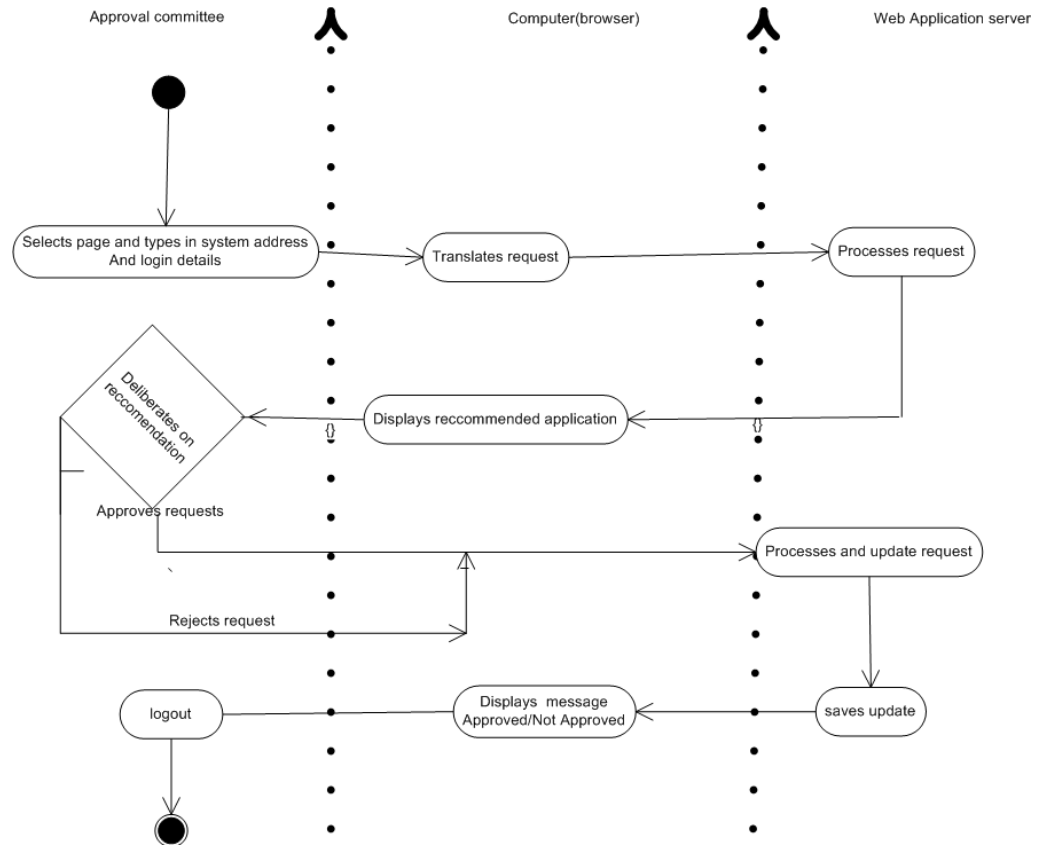


Figure 9: Approval and Rejection Activity Diagram

5.2.6 Reports Generation

The system will be able to generate reports in various formats e.g. pdf, doc, xls and provide for interactive executive dashboards for ease of access to information by management for monitoring and evaluation purposes and also provide key performance indicators. Table 14 below shows the use case form for report generation.

Table 14: Use Case Form Report Generation

Use Case	Report Generation
ID	005
Actors	Ministry of Immigration staff
Priority	Essential
Pre-conditions	1. MoI staff logged into the system
Post-conditions	- Generated report displayed on screen, printed or emailed to stakeholders.
Event Flow	<ol style="list-style-type: none"> 1. User submits report request 2. MoI staff selects reports 3. MoI staff selects report type 4. MoI staff enters report criteria 5. MoI staff selects report format
Functional Requirements	Reports must be generated in PDF or CSV format

Immigration officers can generate different reports for their internal use or share it with other stakeholders. The system is able to generate reports in predefined formats of csv and pdf. Figure 10 below represents a use case diagram for report generation.

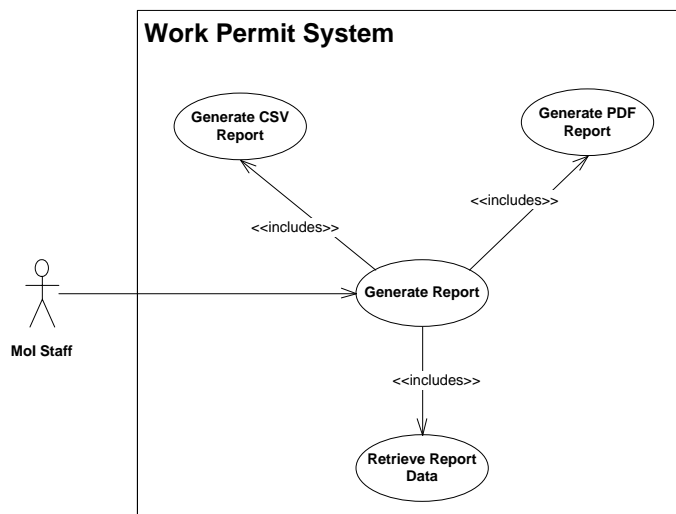


Figure 8: Report Generation Use Case

5.3 UML Diagram for the Overall Work Permit System

The following are the objectives of the work permit system

- To facilitate ease registration of users
- To provide mechanisms for work permit application through online forms.
- To provide an avenue for online enquiries
- To allow registered users to view status of their application
- To allow registered users to edit their profiles.
- To allow immigration officers to process and recommend applications
- To allow approval committee to view, deliberate and approve requests

- To facilitate easy communication between applicant and Immigration officials

e) Use Case and Activity for Overall Work Permit System

Figure 11 and figure 12 below are use case and activity diagram for the entire work permit system. Each activity is aimed to achieve a specific system objective

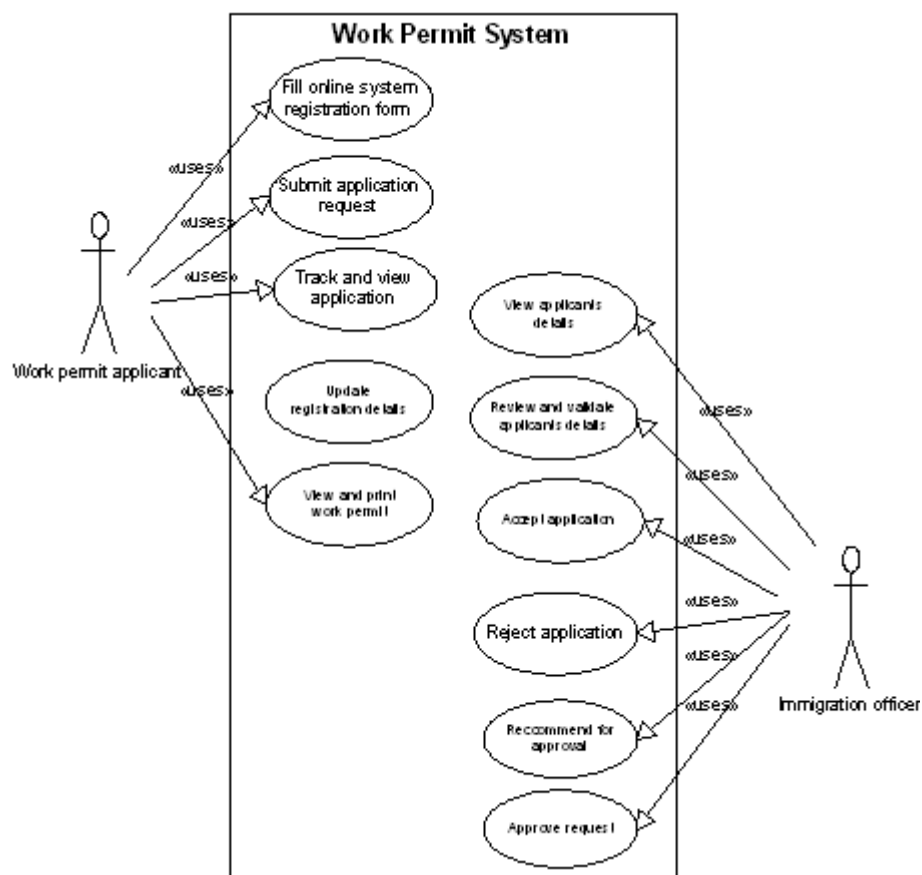


Figure 11: Use Case Diagram for Overall Work Permit System

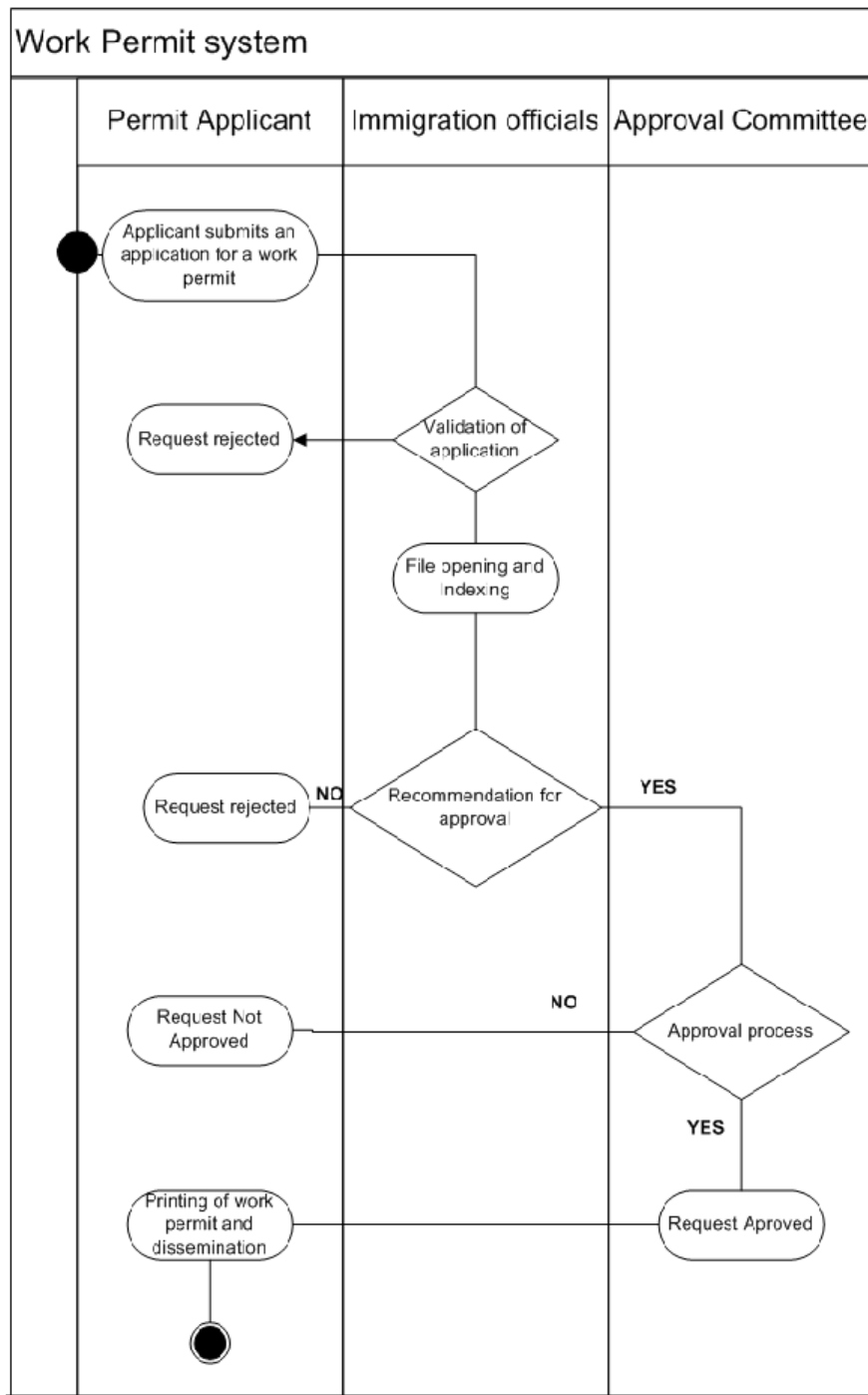


Figure 9: Activity Diagram for Work Permit System

f) Login State Chart and Sequence Diagram for Overall Work Permit System

Work permit system will be used by users who are work permit applicants, immigration officials, and approval committee members. For any user to access the system he/she must be registered in the system. Different access right will be given to each user depending on what he/she is supposed to do with the system. Figure 13 and Figure 14 below shows the state chart of a login process and the sequence diagram for work permit system

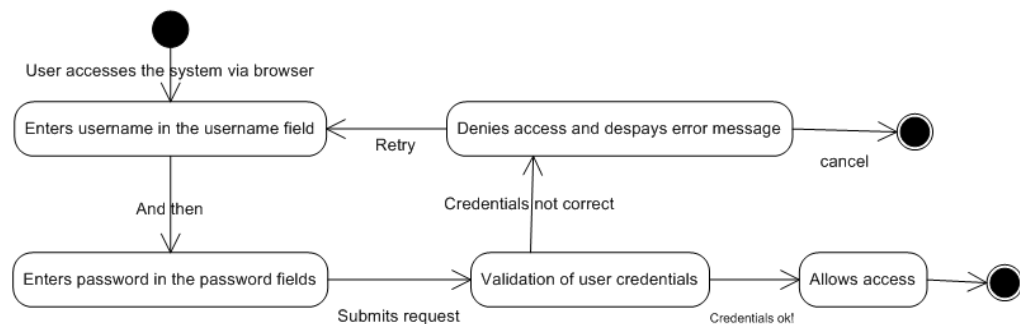


Figure 10: Login State Chart Diagram

In the login process, a user has to enter his/her registered user name and password in the login window. Once this is done, the login details will be validated by the system, if valid the user will be allowed to access the system else access will be denied and the user given an option to retry or cancel the process.

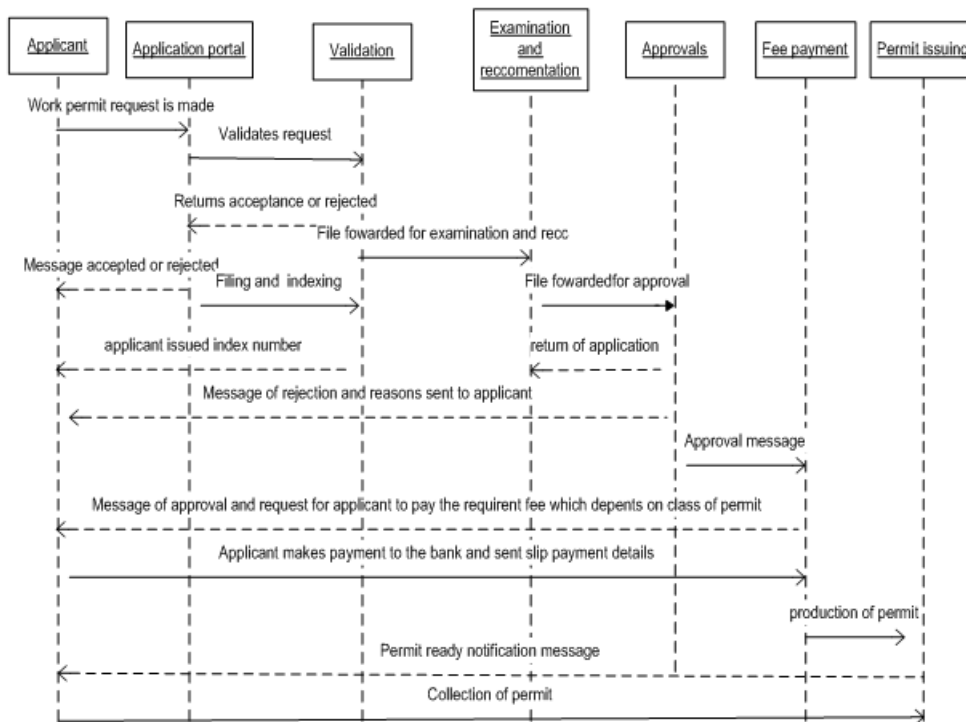


Figure 11: Sequence Diagram for Work Permit System

g) Class Diagram for Work Permit System

Work permit system implements MySQL database, a relational database management system (RDBMS). Figure 15 below shows a class diagram which represents a static view of a work permit system.

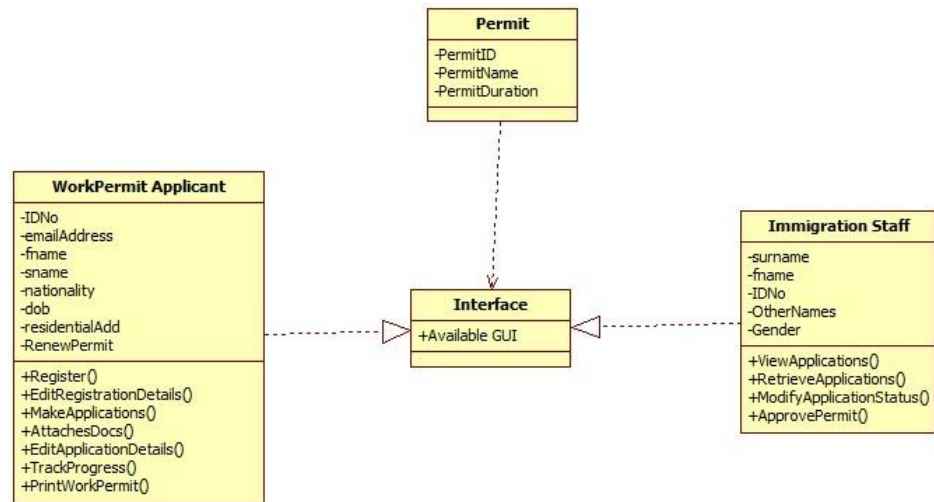


Figure 12: Class Diagram for Work Permit System

5.4 User Interface Design

The system employed a graphical user interface that is composed of data entry fields, drop down menus and check boxes. With a secure user logon screen that permits only pre-authorized users to access the program. Figure 16 below shows the layout of the system menu and accessibility structure.

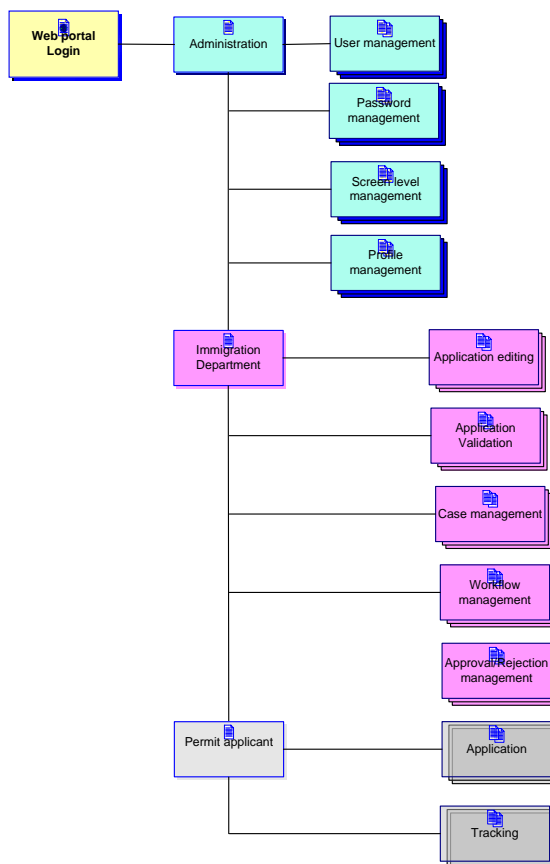


Figure 13: Work Permit Menu Structure

The system allows permit applicants to register with the system, make and track applications. While immigration officers are able to manage all applications by editing, making recommendations and approvals within the system. The system has an internal capacity to manage user profiles and passwords. Table 15 below shows the controls structure of the login page.

Table 15: Work Permit Login Control Structure

Function code	Control	Purpose	Validation rule
Login page	Login page		
	Login Page	The user will start on the Login Page for the application with the option to LOG IN	
	User code and Password	The user code and password will form the front line security measure and will facilitate the capture of user name and encrypted Password.	User name and encrypted password are validated.
	New application/renewal buttons	Once authentication succeeds the user will select their region and the system home page will load	Validated to User login.

5.5 Work Permit Architecture

The physical architecture for the work permit system describes the software tools and server platforms that were used in system development. This included operating systems, server products and user applications for designing, developing and implementing the system.

Figure 17 below shows the architecture of a work permit system with the following components:

1. Client application
2. Server application
3. Database back-end and web-based administration tool
4. Graphical front-end

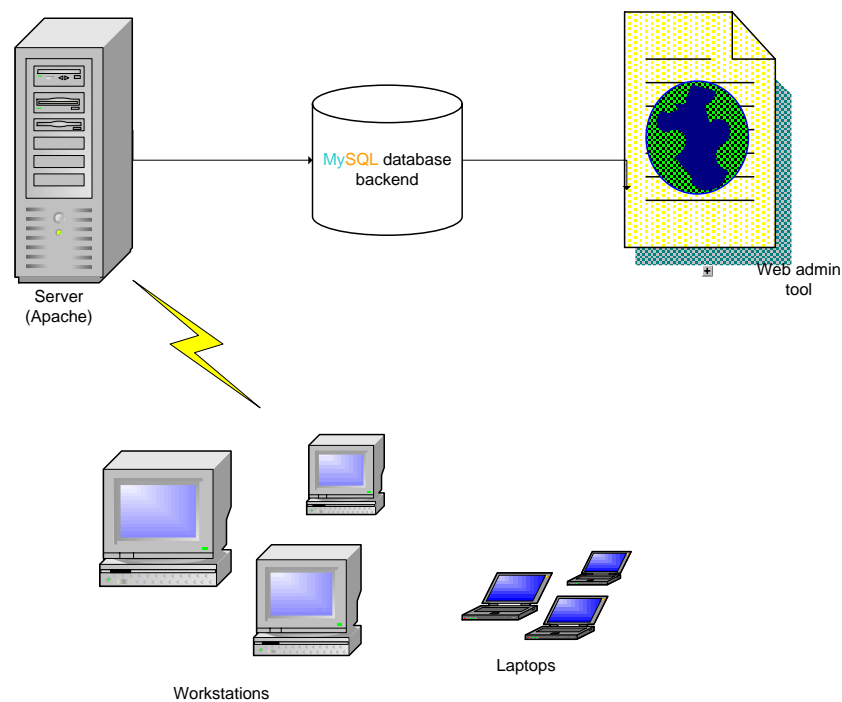


Figure 14: Work Permit System Architecture

5.6 Coding of Work Permit System

These are the software tools and server platforms used to implement the work permit system, these includes operating systems, server products and user applications software that were used to develop and implement the work permit system.

MySQL was used as database software since it is a relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases and a popular choice of database for use in web applications. Apache provided web-service (HTTP) while PHP (Hypertext Preprocessor) which is a general-purpose server side scripting language was used. PHP was preferred because of its ability to be embedded into HTML web page which makes it possible to be interpreted by a web server with a PHP processor module.

5.7 Testing of Work Permit System

Agile software testing strategy which is integrated in the development process was applied in this study. Testing of the system was "in-house" test; this was to ensure that all modules worked as intended. Usability checks and system tests were carried out in different stages in parallel with system development. Each module that was completed during development was tested independently as bugs were being fixed.

In particular, this process was meant to verify that the system;

- Meets the requirements that guided its design and development,
- Works as expected,
- Can be implemented with the same characteristics, and
- Satisfies the needs of stakeholders

5.7.1 Requirement Testing

This was the first phase of testing process which was done after completion of the requirement gathering process. The test was meant to ensure that the information collected meets business needs of the case organization. This process was

accomplished by holding discussion forums with prospective system users who had a detailed understanding of all phases of their business processes, and the data that supports their business processes. This was achieved by discussing different system use cases with the users and aligning the actual practice with the recommended practices that eventually guided the coding process. The testing phase gave all stakeholders an opportunity to clearly understand the business requirements, and to ask detailed questions about all phases of the study which was very critical because the design phase was expected to address all the issues raised during requirement.

5.7.2 Modular Testing

Throughout the coding process each piece of code was tested to ensure that the code does what it was expected to do. In this study the first module to be developed was the mechanism of making application requests which was done by first designing the application form that captured all the field that an applicant has to fill. The form was then tested to ensure that it allows the applicants to fill only the required details in each field. Modular testing was applied to each individual module to ensure that each part of the system was functioning correctly. Sample test are given in the system manual in (see appendix IX).

5.7.3 Integration Testing

After confirming that all the modules were working appropriately using module testing, interaction testing was then done to verify that all components of the application work together correctly. This was done by running a test case from the application stage to the final execution of the work permit.

5.7.4 Verification and Validation

Verification and validation started with requirements reviews and continued through design and code reviews to system testing. Verification involved checking that the program conformed to specification identified by the system users and confirmed the completeness and correctness of the system. Validation on the other hand was done to ensure that the system met the business requirement of the case organization. In doing this business requirement and specification documents were used together with system test results.

5.8 Project Management

Having a clear project implementation plan (See appendix VIII) assisted in identifying who to interact and collaborate with and steps to be followed during the entire process. It also outlined a framework which ensured that all aspects of the project were properly and consistently defined, planned, and communicated, as well as the expected output of the end product. This ensured that there was a common understanding between all the stakeholders and served as a reminder on what is yet to be accomplished how to accomplish it and the time to do so.

5.9 Communication

The scale of this exercise was relatively small and therefore there was no complexity, confusion, and significant difficulties in managing the process. Both formal and informal communication was used to gather information from relevant stake holders. This was accomplished through informal discussions, weekly meeting, e-mail communication and organized group discussions. This mode of communication made it possible to analyze different business scenarios and develop use cases together with

the user. Besides having face-to-face meetings, phone calls and email were frequently used in communication during the period of this project.

5.10 Conclusion

This chapter presented system modelling which describes the functionality of the system in terms of interactions between the work permit system and the users using Unified Modeling Language (UML). It pinpoints the appropriate tools that were used to code the system and provides a description of strategies applied during the testing process as well as the project management and communication channels employed during the entire process of work permit development. The next chapter summarizes the findings and provides recommendations of this study.

CHAPTER SIX

SUMMARY FINDINGS, CONCLUSION AND RECCOMENDATIONS

6.1 Introduction

This chapter provides a summary of the key issues that have been addressed. It forms a narrative of the whole thesis, incorporating ideas which have been constructed over the course of this study.

6.2 Summary of the Research Findings

6.2.1 Work Permit Frameworks

The first research question aimed at appraising the existing of work permit framework that guide the Ministry of Immigration in executing its mandate. Based on the case study organizations, there was a framework in place which had been used for a long period without review, however due to changes made to some of the Immigration laws as a result of enactment of the new constitution, it was imperative that the framework be reviewed to accommodate some of this changes. The review process would ensure that permit categories which had been abolished by the constitution such as those applicable to East African member states are removed to allow for free movement of labor between these states.

The review was also meant to reduce the period of application and renewal of work permit which according to the old framework could take a period as long as three months for one to have his or her work permit approved.

The study deduced that while the case organization had been actively using the available framework, it was known that it had a number of limitations which in most cases was being used to abuse the process of work permit issuance. This findings

addressed the concerns of research question two of this study which sought to establish if there existed weaknesses with the current work permit setup and the possible ways of addressing the these weaknesses

The findings above confirmed the Bingi *et al.* (2009) assertion that it is inevitable that business processes need to be modified to suit the market requirements and business system during implementation. The findings also concur with the Holland *et al.* (2010) argument that organizations should be willing to change the business process to fit the governance with minimal customization. Orientation to change as a business re-engineering process favors systems implementation which confirms the willingness by an organization to adopt new work practices which is an essential requirement for system implementation and adoption. The case study organizations which was oriented towards change was more willing to change their business practices to conform to the processes embedded in the constitution and other guiding documents.

6.2.2 Work Permit System Development and Implementation

The manner in which decisions are made within an organization affects the way in which systems are adopted and implemented. These include such decisions as to whether to develop or procure an already develop software, the kind of technology to be used and the infrastructure required for implementation and its related costs. Also important decision to make is whether to use a Big-Bang approach or the phased-in approach, and the amount of software customization and business process re-engineering required. This implies that in an organization where one individual has executive authorities over other managers like for the case of study organization, where principle secretaries are, he/she has a distinct role of determining the need,

budget, implementation approaches and the risk of budget overruns which can be mitigated with the application of a consensus and team work principle.

From the information gathered in this study most of the ICT initiatives undertaken by the organization are mostly spear headed by management most of whom are not subject matter experts and therefore making it difficult to have the project implemented due to technical complications which could otherwise have been solved with the involvement of other team players. A case in point is where I was informed by the director of Immigration services about the efforts he had made to have the work permit process automated without fully involving the IT department who could advice on technical issues.

The possible interpretation of this is that most IT staff are junior in job groups and therefore the Management feels that by virtue of their position they are not in a position to provide any advice or oversee automaton processes within the organization with total disregard to their qualification as IT experts. From these scenario it is evident that the approach and decision making structures warrant special attention. Rishi and Goyal (2010), argue that system implementation is not just a software project but an organizational change project. The projects call for co-operation, teamwork, and planning for organizational change. Wagner et al. (2009) further argues that implementing systems successfully is not an easy task because of the major changes to an organizations business process required for the system to be implemented.

6.2.3 System Development and Implementation Success Factors

The success of system development and implementation in an organization is not only a function of contextual factors but it is also mediated and controlled by the manner in which the process of development and implementation is nurtured, supported and managed throughout its implementation. Goyal (2010), identifies the characteristics of effective delivery of systems as organizational factors (e.g. top management support, technology champion, training, links to consulting services) and process and tools used in development and implementation.

What is being referred to us as organizational factors lacked in the Ministry of Immigration which made it difficult for the organization to facilitated assimilation of computer systems within its functions. Top management support ensures success in projects implementation, in terms of designing and controlling the whole implementing process which sometimes could also strengthen other team players confidence in the whole implementation exercise.

6.3 Conclusion

This study focused on evaluating and identifying the current framework of issuing work permits in the Ministry of Immigration. The study also aimed to design and develop a computer based system that will address these problems. Primary and secondary resources of data were used in the study. A survey was conducted to collect primary data using non-randomly selected personnel of the Ministry of Immigration as participants. Interviews and group discussions were used for data collection. Observation and documentation review which supported the findings provided secondary sources of data. Information from respondents was then analysed using

cross-case analysis and the narrative strategy and the results used as basis to develop a computer based work permit system.

Based from the results of the survey, successful implementation of any system depends on decisions taken during the initial stages of defining and understanding user requirements which in most cases define the approach to be employed during system development and implementation. The respondents of this study agree that system implementation often involves some degree of Business Process Re-engineering (BPR) and customization, which promote efficiency and effectiveness in the computerisation of business process. In addition, BPR have some other advantages. One of which is aligning an organisations business operations to Information systems standardised operation procedures. This also supports the establishment of a uniform working culture within the organization, which in turn helps in enhancing the performance and output level of an organisation.

Despite these benefits, it is important to ensure that software that are delivered to customers meet all the requirements and objectives that the customers identified during requirement gathering. Time and cost of delivering the final product to the customer are also factors important to consider while implementing Information systems in an organization.

6.4 Recommendations

6.4.1 Change Management

As a way of change management, it is necessary to ensure that all stakeholders of the system are inducted accordingly with the new functionalities of the new system during transition.

Organizations need to realize the importance of the training in order to increase the chances of successfully implementing systems. Training should go beyond teaching the users how to operate with the new system. This study emphasizes the need for continuous customer involvement in the entire process which not only ensures complete ownership but also necessitate early transfer of knowledge. This approach ensures project success and sustainability.

6.4.2 Training and Knowledge Transfer

Most of the staff who participated in this exercise had some basic understanding of the functionalities of the system. This was because they were involved in all the activities that contributed to the designing and development of work permit system. In addition, Immigration officers are technical officers mandated to process work permits and therefore they understood clearly what was needed in terms of business requirements. However it is important that all the staff who interact with the system are trained on the usage of the system. This can be done depending on roles and responsibilities. Work permit system has three main distinct level of responsibilities carried out by the following groups;

- i. Senior Management
- ii. Operational Users
- iii. Technical staff and System Administrators

Table 16 below indicates proposed trainings for each category of user of this system. The trainings are guided by the roles each user plays in work permit issuance process.

Table 16: Proposed Training per Category of Users

Group	Constituents	Type of training
Senior Management	Heads of Department and Units	<ul style="list-style-type: none"> - Business processes, - Systems operations, - Change Management
Operational staff	Immigration officers	<ul style="list-style-type: none"> - Introduction to system and constituent parts - Application of system in work permit issuance - Report design and generation
Technical staff	ICT officers	<ul style="list-style-type: none"> - System installation. - System configuration - Systems administration - Security, disaster recovery and back-up of the system

Senior management who are basically heads of sections are expected to understand all the business process integrated in the work permit system and the basic usage of the system. This is important because this group is mainly responsible for development of policies and providing strategic direction for the organization and this will only be possible if this group of user understood the processes embedded in the work permit system. All immigration officers are knowledgeable about the process however it is necessary that they are taken through the basic operations of the system and how to generate relevant reports required by different stakeholders as ICT staff are orientated on back end administrative support to the system.

6.4.3 Management of ICT

The absence or presence of personnel to advocate for adoption and use of computer systems in an organization greatly influence and determine the extent in which an organization can go in as far as computerization is concerned. IT champions direct Information Systems adoption and implementation efforts, and encourage employees to use them. In addition they collaborate with management to identify requirements for resources and end user training.

In the Ministry of Immigration , even though there was a manager in charge of IT, he was not directly involved in planning and budgeting of IT projects as most of this were being done by managers in charge of Finance. It is also important to note that most of the applications were being done by third party organizations which made the IT team in the case organization to have limited control over such systems.

To successfully implement its IT projects the Ministry of Immigration should empower its IT department by allowing the department to develop and implement its programs, ensuring that they are involved in planning, budgeting and executing all IT related issues.

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APPENDIX I: Classification Criteria for Issuing Permits in Kenya

Class	Description
Class A:	A person who is offered specific employment by a specific employer who is qualified to undertake that employment, and whose engagement in that employment will be of benefit to Kenya
Class B:	A person who is offered specific employment by the Government of Kenya, the East African Community or any other person or authority under the control of the Government or the Community, and whose engagement in that employment will be of benefit to Kenya.
Class C:	A person who is offered specific employment under an approved technical aid scheme under the United Nations Organization or some other approved agency (not being an exempted person under section 4(3) of this Act), and whose engagement in that employment will be of benefit to Kenya.
Class D:	A person, being the holder of a dependant's pass, who is offered specific employment by specific employer, whose engagement in that employment will be of benefit to Kenya.
Class E:	A person who is a member of a missionary society approved by the Government of Kenya, and whose presence in Kenya will be of benefit to Kenya.
Class F:	A person who intends to engage, whether alone or in partnership, in the business of agriculture or animal husbandry in Kenya, and who: <ul style="list-style-type: none"> • Has acquired, or has received all permission that may be necessary in order to acquire, an interest in land of sufficient size and suitability for the purpose; and • Has in his own right and at his full and free disposition sufficient capital and other resources for the purpose, and whose engagement in that business will be of benefit to Kenya.
Class G:	A person who intends to engage, whether alone or in partnership, in prospecting for minerals or mining in Kenya, and who: <ul style="list-style-type: none"> • Has obtained, or is assured of obtaining any prospecting or mining right or licence that may be necessary for the purpose; and • Has in his own right and at his full and free disposition sufficient capital and other resources for the purpose, and whose engagement in that business will be of benefit to Kenya.
Class H:	A person who intends to engage, whether alone or in partnership, in a specific trade, business or profession (other than a prescribed profession) in Kenya, and who: <ul style="list-style-type: none"> • Has obtained, or is assured of obtaining, any licence,

	<p>registration or other authority or permission that may be necessary for the purpose; and</p> <ul style="list-style-type: none"> • Has in his own right and at his full and free disposition sufficient capital and other resources for the purpose, and whose engagement in that trade, business or profession will be to the benefit of Kenya.
Class I:	<p>A person who intends to engage, whether alone or in partnership, in a specific manufacture in Kenya, and who:</p> <ul style="list-style-type: none"> • Has obtained, or is assured of obtaining, any licence, registration or other authority or permission that may be necessary for the purpose; • Has in his own right and at his full and free disposition sufficient capital and other resources for the purpose, and whose engagement in that manufacture will be to the benefit of Kenya.
Class J:	<p>A member of a prescribed profession who intends to practise that profession, whether alone or in partnership, in Kenya, and who:</p> <p>(a) possesses the prescribed qualifications; and</p> <p>(b) has in his own right and at his full and free disposition sufficient capital and other resources for the purpose, and whose practice of that profession will be to the benefit of Kenya.</p>
Class K:	<p>A person who:</p> <p>(a) is not less than 21 years of age; and</p> <p>(b) has in his own right and at his full and free disposition assured annual income of not less than the prescribed amount being an income that is assured, and that is derived from sources other than any such employment, occupation, trade, business or profession as is referred to in the description of any of the classes specified in this Schedule, and being an income that either</p> <p>(i) is derived from sources outside, and will be remitted to Kenya; or</p> <p>(ii) is derived from property situated, or a pension or annuity payable from, sources in Kenya; or</p> <p>(iii) will be derived from a sufficient investment capital to produce such assured income that will be brought into and invested in Kenya; and</p> <p>(c) Undertakes not to accept paid employment of any kind should he be granted an Entry Permit of this class, and whose presence in Kenya will be of benefit to Kenya.</p>
Class L:	<p>A person who is not in employment, whether paid or unpaid, and who under the repealed Acts was issued with resident's certificate, or who</p>

	<p>would have on application been entitled to the issue of such certificate, or who has held an Entry Permit or Entry Permits (whether issued under this Act or the repealed Acts or both) of any of the foregoing classes of Entry Permits A-K for a continuous period of not less than ten years immediately before the date of application, and whose presence in Kenya will be of benefit to Kenya</p>
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APPENDIX II: Classification Criteria for Issuing Permits in United Kingdom

Category	Description
Tier 1	Highly skilled migrants, admitted on the basis of skills, qualifications, earnings, age and language ability, to contribute to growth and productivity (launched at the beginning of 2008). This tier effectively replaced the Highly Skilled Migrants Program.
Tier 2:	Medium and high-skilled workers with a job offer, who gain points, based on gaps in particular sectors. The work should have to be either an occupation which has been identified as a shortage by the Skills Advisory Board, or will need to have passed a labour market test demonstrating that no EU worker was available for the job. In the latter case, the person will need to meet additional skills and salary requirements. Migrants entering under this tier are allowed to bring dependents.
Tier 3	Low-skilled workers filling specific temporary labour shortages replaced the Seasonal Agricultural Workers Scheme and the Sectors Based Scheme (covering food processing). This tier has not been implemented since the demand is currently met by EU nationals.
Tier 4	Students studying at a specified and registered institution in the UK. This tier does not allow for a switch to permanent residence or citizenship: it is intended to be a temporary arrangement. However, graduates are allowed to switch to tier 1 (the “post-study work” category) for a maximum two-year period.
Tier 5	Youth mobility and temporary workers, permitted to work for a limited period of time.

APPENDIX III a: Interview Guide for Officer In-Charge of ICT

Date of Interview:**Interview Time:**

- What is the mandate of this department?
 - What are the objectives of your section (ICT) in as far as the overall Mandate of this department is concerned? state
6. Among the objectives stated above, what are the statuses?
7. List the current Computerization and E-Government Initiatives of the Department and the function it performs? What is the service delivery channel (Kiosk/ Intermediary/ Internet/ Telephone) of this E-Government initiative?

Initiative	Channel
<i>(Example – Online Registration)</i>	(Internet)

- How many computer systems do you have? And what is your role in each.
- Do you interact directly with users? How (meetings, emails online chat etc)
- What are the various business processes and ICT services that your department provides to Ministry's staff and other stakeholders?
- Does the Department maintain database of citizens in any form? Provide details
- Do you have any computerized system that was developed in-house?
 - If yes in (8) above what were the challenges during development and operating it?
 - If no in (8) above are there any plans to automate some of your processes and which ones?

- Among the processes mentioned above, how do you intend to do it? In-house or out source.

- What is the list of major Software applications being used by the Department with modules? Also provide details of the Operating system and application and db platforms on which these applications are running.

- In your role as the ICT manager and a decision maker, do you receive adequate support from the management in terms of resource allocation and other support?

- One of the objectives of this study is to develop a system that will be used to issue work permits. What is your opinion on this and do you think there will be any improvement in the way business is transacted here? And if so how?

- In your opinion, what are the goals of developing a computer based system

- What are the related process performance targets for each goal? Please, identify the targets in concrete terms (reducing costs, improving quality, etc.)

- Do you have any mechanism to assess level of achievements in the implementation of IT projects? Elaborate
- What do you see as major resource constraints related to the work environment of the process?

- In your view do you think the legislations available in this country are sufficient enough to support online transactions?

APPENDIX III b: Interview Guide for Administration Department**Date of Interview:Interview Time:**

1. What is the mandate of your department?
2. Are there standard guidelines and frameworks that govern the way you transact business? If yes are they documented?
3. With the enactment of the new constitution, how has it affected the frameworks stated above?
4. It is claimed that the process of approving work permits sometimes stretch beyond six months? What is the main reason for this?
5. A number of Government operations are currently transacted online, your department being one that provides services to external customers, have you ever thought of this? If yes what are the initiatives so far?
6. Do you have any computerized system in this organization?
 - a. If yes in (6) above how did you procure it? And what were the challenges?
 - b. If no in (6) above are there any plans to automate some of your processes and which ones?
 - c. Among the processes mentioned above, how do you intent to do it? In-house or out source.
7. Other than this organization, are there other organizations that you collaborate with in terms of issuing permits?
8. What are existing roadblocks in implementing IT/ E-Governance projects in your department?
9. One of the objectives of this study is to develop a system that will be used to issue work permits. What is your opinion on this?

(Example –

-Internal Roadblocks - Lack of adequate manpower, Government policies/ Acts, Inter-departmental dependencies, Corruption, Budgetary constraints, etc;

-External Roadblocks - Funds/ grants, policies/ Acts, Infrastructure, Delivery channels, Demand/ Supply mismatch etc

- Internal to the department –

- External to the department –

10. What are some of the problems and challenges that you experience in your efforts to manage this section?
11. What recommendations would you propose to solve the issues raised above?
12. What do you see as major resource constraints related to the work environment of the process?
13. In your view do you think the legislations available in this country are sufficient enough to support online transactions?

APPENDIX III c: Interview Guide for Operational Staff**Date of Interview:Interview Time:**

1. Are there standard guidelines and frameworks that govern the way you transact business? If yes are they documented?
2. With the enactment of the new constitution, how has it affected the frameworks stated above?
3. Who are your customers? And are there different categories or types of customers?
4. How do you capture/receive requests from your customers (eg online forms, direct manual application emails etc)
5. What are the outputs of this process?
6. What process does an application goes through before it is finalized?
7. In each process above how many people are involved in processing and what roles do they play?
8. In your own opinion can the roles you have mentioned above be played by one person? Explain
9. How is the information collected above used?
10. Do you classify applications in any order? If so what are the classes and what do you consider in doing so?
11. Do you have any problems with the current setup? If so what are the problems?
12. What do you propose as the solutions to the problems stated above
13. It is claimed that the process of approving work permits sometimes stretch beyond six months? What is the main reason for this?
14. What other business processes in the organization does the process interface/interact with?

15. What external entities (suppliers, service providers) does the process interface with?
16. What are the few big chunks that the process can be divided into (sub processes) that make intuitive sense?
17. Are there systems that are available online that your customers interact directly with? Briefly describe what they do and how they were procured
18. Other than this organization, are there other organizations that you collaborate with in terms of issuing permits?
19. In your opinion, what are the goals of developing a computer based system?
20. What are the related process performance targets for each goal? Please, identify the targets in concrete terms (reducing costs, improving quality, etc.)
21. Do you have any mechanism to assess level of achievements in the implementation of projects?

APPENDIX IV: Agile Principals

Principal	Description
Principal 1	Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
Principal 2	Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
Principal 3	Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
Principal 4	Business people and developers must work together daily throughout the project.
Principal 5	Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
Principal 6	The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
Principal 7	Working software is the primary measure of progress.
Principal 8	Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
Principal 9	Continuous attention to technical excellence and good design enhances agility.
Principal 10	Simplicity – the art of maximizing the amount of work not done – is essential.
Principal 11	The best architectures, requirements, and designs emerge from self-organizing teams.
Principal 12	At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

APPENDIX V: Document Review Checklist

Type of evaluation	Question to be Answered	Data collection Method	Information Sources	Question Answered	
				Yes	No
Process	<ul style="list-style-type: none"> • Is the process clearly defined? • Are the defined process documented? • Is the process being implemented as intended? • Who does it? And how? • Is it reaching the target population? • What works and what doesn't work and for whom? • How much does it cost? 	<ul style="list-style-type: none"> • Document review • Observation • Interviews 	<ul style="list-style-type: none"> • Program staff • Kenya Citizenship Act Cap. 170 • Immigration Act Cap. 172 • Aliens Restrictions Act Cap 173 • Constitution of Kenya • Kenya Visa Regulations. 		
Outcome/ Impact	<ul style="list-style-type: none"> • Is the program achieving its objectives? • Is the program achieving its goals? • Is the program achieving its intended outcomes? • Is it effective? • Is it achieving its long-term impacts? • Can we attribute change to the program? 	<ul style="list-style-type: none"> • Document review • Observation • Interviews 	<ul style="list-style-type: none"> • Program staff • Kenya Citizenship Act Cap. 170 • Immigration Act Cap. 172 • Aliens Restrictions Act Cap 173 • Constitution of Kenya • Kenya Visa Regulations. • Strategic plans • Performance contracting documents 		

APPENDIX VI: System Development Review Guidelines

Review Type	Purpose	Conducted on	Examples	Date conducted
Technical Review	<p>Determine suitability for intended use</p> <p>-Evaluate conformance to applicable laws, regulations, policies, standards, guidelines, plans, procedures, and specifications</p> <p>-Identify anomalies and issues</p> <p>-Identify recommendations</p> <p>-Examine alternatives</p>	<p>-Online Selection and Recruitment System in the Ministry of Public Service</p> <p>-Online Tax Returns system of Kenya Revenue Authority</p> <p>-Passport tracking system of the Ministry of Immigration</p> <p>Company registration system</p>	<p>-Specification review</p> <p>-Design Description review</p> <p>-Test readiness review</p> <p>- Deployment readiness review</p>	
Inspection	<p>Evaluate conformance to applicable laws, regulations, policies, standards, guidelines, plans, procedures, and specifications</p> <p>Identify anomalies</p>		<p>-Code Inspection</p> <p>- Test Results Inspection</p> <p>-User Manual Inspection</p>	

	<p>and issues</p> <p>Identify recommendations for improvement</p> <p>Resolve anomalies and issues</p> <p>Determine remedial or investigative action for an anomaly</p>			
Walk-through	<ul style="list-style-type: none"> -Knowledge transfer -Identify anomalies -Identify recommendations for improvement -Discuss alternatives -Evaluate conformance to guidelines and specifications -Expose deficiencies -Expose unquantifiable specifications 		<p>Requirements Specification Walkthrough</p> <ul style="list-style-type: none"> -Design Description Walk-through -Code Walk-through -Application or prototype Walkthrough 	
Policy and procedure review	<p>Independently evaluate conformance to applicable laws, regulations,</p>		<ul style="list-style-type: none"> -Project Management Audit -Test Results 	

	policies, standards, guidelines, plans, and procedures		Audit -Development Processes Audit -Security Audit	
--	---	--	---	--

APPENDIX VII: Scope of the Scenarios

Scenario 1 : Retrieval capabilities		
Reference 1 (SC1)	Description	
User needs	<p>The user expressed the following concerns:</p> <ul style="list-style-type: none"> • The system should have retrieval capabilities. • Retrieval should either be by Name, Serial number or application, date • The retrieved report should be editable and printable by the creator. • The system should support various formats for preview on the retrieving media. • Retrieve material by subject • Order results according to relevance 	
Content Technical Environment	Content	<p>The system should support the following content types</p> <ul style="list-style-type: none"> • Text • Pictures • Videos • Sound
Technical Environment	<p>Accessibility of the system must be through the following media</p> <ul style="list-style-type: none"> • Desktop • Laptops • Palmtops • PDAs • Mobile phones 	

Scenario 2 : Querying capabilities	
Reference 2 (SC2)	Description
User needs	<ul style="list-style-type: none"> • System should have querying capabilities. • Querying should be based and support natural language (English) • Querying should either be by Name, Serial number or application, date • The system should support indexing • Specialized querying (i.e. in this scenario author search). • Relevance feedback • Specific categories for each specific type of querying. • Ability to save queries and results
Content	<p>The Query outputs should be any of system should support the following content types</p> <ul style="list-style-type: none"> • Text • Pictures • Videos • Sound
Technical Environment	<p>Accessibility of the system must be through the following media</p> <ul style="list-style-type: none"> • Desktop • Laptops

	<ul style="list-style-type: none"> • Palmtops • PDAs • Mobile phones
Scenario 3 : Profiles	
Reference 3 (SC3)	Description
User needs	<ul style="list-style-type: none"> • Registration and sign in features(user name and password authentication) • User profile customization. • Show history of logs
Content	Images and text
Technical Environment	<p>Accessibility of the system must be through the following media</p> <ul style="list-style-type: none"> • Desktop • Laptops • Palmtops • PDAs • Mobile phones
Scenario 4 : Performance	
Reference 4 (SC4)	Description
User needs	<ul style="list-style-type: none"> • The system should be scalable to accommodate large amounts of data • The system should be protected through the use of hardware, software, policies, and practices against data corruption, destruction, interception, loss, or unauthorized access. Robust

	<ul style="list-style-type: none"> • The system should provide the right service. • The system is expected to be repaired or serviced with ease and within the shortest time and available resources
Content	<ul style="list-style-type: none"> • Text • Pictures • Videos • Sound
Technical Environment	<ul style="list-style-type: none"> • High end Servers • Application point (Laptops, desktops etc) • Firewalls • Cameras • Network infrastructure (LAN, WAN and VPN) • Service level agreements (SLAs) • Knowledge transfer
Scenario 5 : Data Management	
Reference 5 (SC5)	Description
User needs	<ul style="list-style-type: none"> • Web-based online applications and submissions to the central database • Verification and scanning of support documents • Storage of data in the databases • Control of data consistency and integrity • Generation of dependencies for dependants • Management of document collection by

	<p>applicant</p> <ul style="list-style-type: none"> • Management of all rejection cases • Management of citizenship • Management of Prohibited Immigrants • Management of the databases
Content	<ul style="list-style-type: none"> • Text • Pictures • Videos • Sound
Technical Environment	<ul style="list-style-type: none"> • High end Servers • Application point (Laptops, desktops etc) • Scanners • Cameras • Network infrastructure (LAN and WAN)
Scenario 6 :Service management	
User needs	<p>There should be</p> <ul style="list-style-type: none"> • A possibility of ease of migration of data from current databases to the new database. • Clear project plan and implementation mechanism • Intellectual Property • Testing and Inspection and Quality Assurance • Training and knowledge transfer • Documentation • Post-implementation Maintenance • Commissioning and Handover

APPENDIX VIII: Project Implementation Plan

Deliverable	Goal	Delivered by	Approved by	Time scale
<p>Complete Work Permit System. This includes all code – modules, components, and libraries – kept in the production version of the data repository.</p>	<ul style="list-style-type: none"> • Deliver system that meets the business need and all requirements • Run tests the system with the prospective users in the environment similar to where it is going to be hosted. 	Developer	-Principal users (Immigration officers)	6 months
<p>System Documentation – includes all technical documentation which includes requirement analysis report, system design and User Guide).</p>	<ul style="list-style-type: none"> • Provide all documentation necessary to effectively operate and maintain the system 	Developer	-Principal users (Immigration officers). -ICT officers	1 months
<p>Readiness Document – consolidates summary information regarding the current status of the system and provides decision makers with the information necessary to make decisions. This includes a checklist listing all work products, User Acceptance Test (UAT) results, other indicators of success measures and deliverable</p>	<ul style="list-style-type: none"> • Provide information necessary to make the go/no-go decision • Consolidate status information regarding the effective completion of the project and achievement of project objectives and SDLC requirements • Affirm achievement of all deliverable acceptance criteria 	Developer	-Principal users (Immigration officers). -ICT officers -Management	1 months

acceptance.				
<p>Post-Implementation Review Report – summarizes the assessment of Implementation activities at the end of the Implementation Phase.</p>	<ul style="list-style-type: none"> • Summarize assessment of implementation activities • Evaluate the effectiveness of the system development after the system has been in production • Determine if the system does what it was designed to do 	Developer	<ul style="list-style-type: none"> -Principal users (Immigration officers). -ICT officers -Management 	1 months
<p>Standard Operating Procedures (SOP) (Optional) – defines in detail how the Systems Team will perform the business processes related to the operations and maintenance of the system. Whereas the User Guide is focused on the use of the system specifically, the SOP addresses all related business processes.</p>	<ul style="list-style-type: none"> • Provide detailed instructions for future business processes • Ensure consistent execution of business processes • Drive performance improvement and improve organizational results 	Developer	<ul style="list-style-type: none"> -Principal users (Immigration officers). -ICT officers - Management 	1 months

APPENDIX IX: System Manual

Ministry of Immigration

Work permit system

User Manual

1.0 System Overview

Work permit system is an application which processes work permit application requests. The application provides electronic version of a work permit application form used to submit application requests. Work permit applicant fills the form online and submits. The application saves data to a database. Processing of the requests involves Immigration officers who do this in a number of processes as it is detailed in this manual.

1.1 Organization of the Manual

This manual consists of two main sections: application which is a function carried out by work permit applicants (front end) and work permit processing done by Immigration (back end).

1.2 System Access Levels

Everyone can use application, but only registered users are able to save data to database.

1.3 System Setup

Work permit system was developed using HTML and PHP programming and scripting languages. The database was implemented in MySQL and the webserver used to run the code was apache web server. During development, WAMP Server software was used for testing and executing the code. The system has been tested on windows XP/7/8 operating system and it works well.

1.3.1 System Files

The system files (in cd to be provided)

1.3.2 System Setup

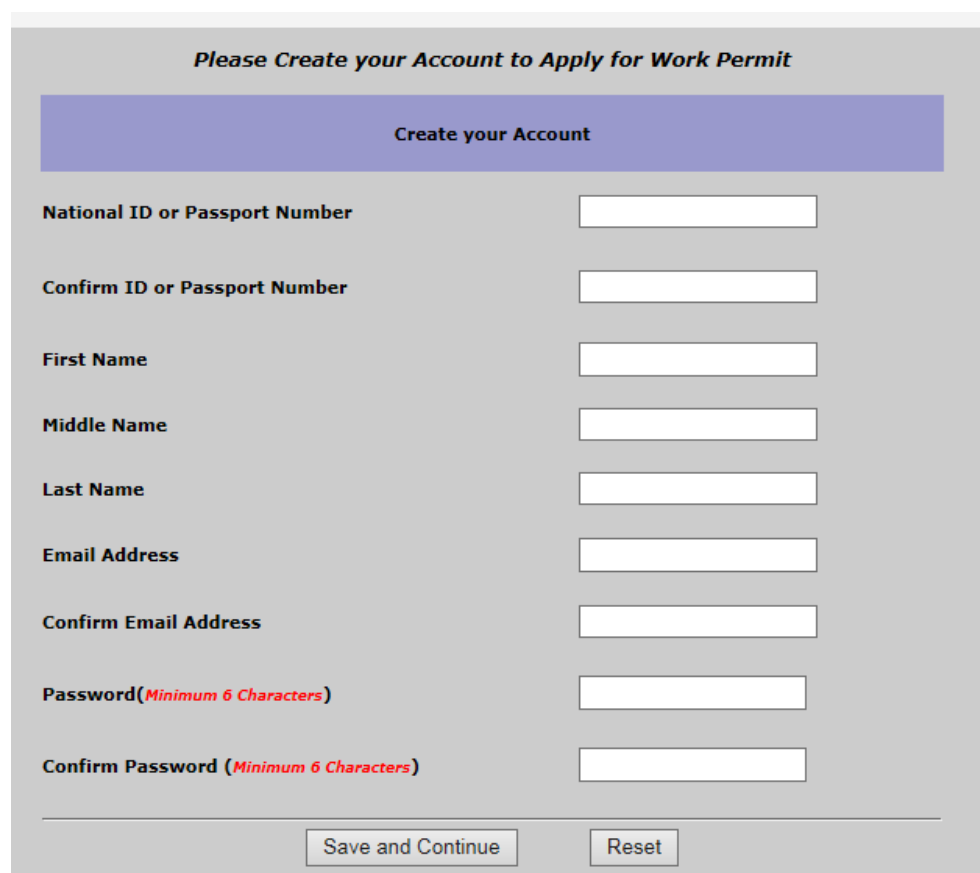
To install the system;

- First, install WAMP Server by running the *WampServer2.1e-x32* executable file from the CD. The installation wizard will guide you through the installation process. It will install the application in the path *c:\wamp* in your machine. The root folder “*www*” will be automatically created, the path being usually *c:\wamp\www*.
- Copy the *work permit* folder from the CD and paste it inside the *www* folder. The final path should be *c:\wamp\www\work permit*
- Start WAMP Server service by Clicking Start > All Programs > Wampserver > Wampserver.
- Open Mozilla firefox and open the address <http://localhost>.
- Open the link PhpMyadmin
- Click the link Privileges and create a super user named *work_permit* admin with a default password *passw0rd*.
- Click on the link localhost and under the section create database type the name *wrkpmtdb* and click create
- Select *wrkpmtdb* and select import. Browse the CD and select *wrkpmtdb.sql* and import.
- Open the browser and type the address <http://localhost/workpermit> to launch the system.
- Proceed with the registration process as outlined below.

2.0 System Front End

2.1 Registration Process

To use work permit system, one has to register with the system first before accessing the application form. Figure 1 below show the registration interface where a user is required to provide his/her valid details as shown below. The system front end depicts what the applicant first see when they access the system.



The registration interface is a web form titled "Please Create your Account to Apply for Work Permit". It features a purple header bar with the text "Create your Account". Below the header, there are several input fields for user registration:

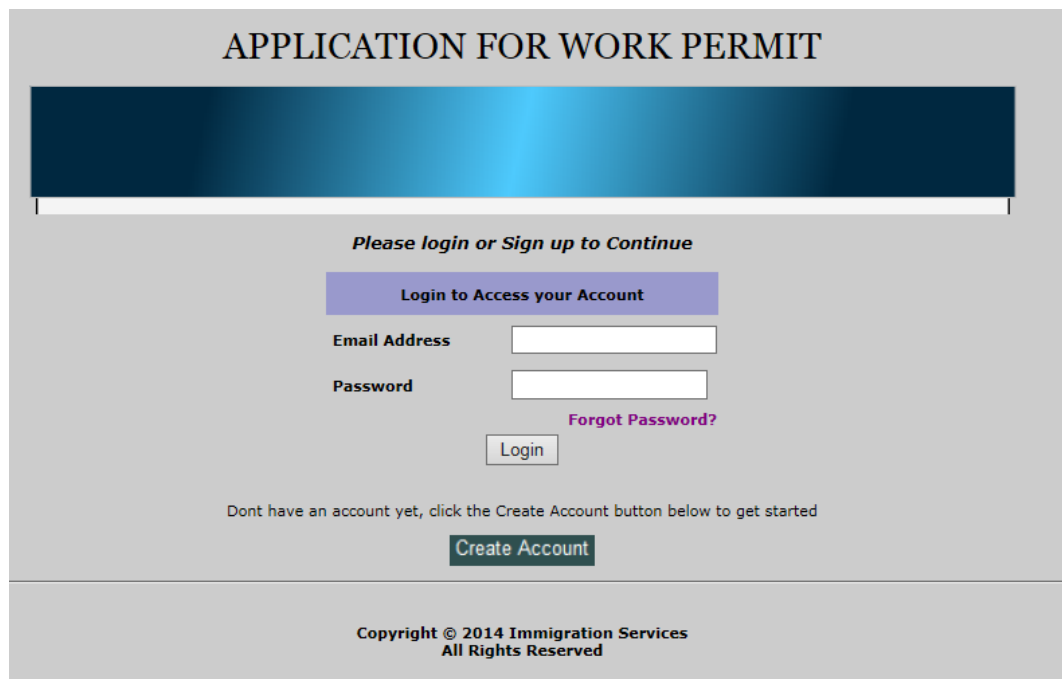
- National ID or Passport Number
- Confirm ID or Passport Number
- First Name
- Middle Name
- Last Name
- Email Address
- Confirm Email Address
- Password (Minimum 6 Characters)
- Confirm Password (Minimum 6 Characters)

At the bottom of the form, there are two buttons: "Save and Continue" and "Reset".

Figure 15: Registration Interface

2.1.1 Logging in

Once the registration details have been saved successfully, the applicant will be required to enter the resisted email and password in the system login interface shown in figure 2 below to access the system.



The screenshot displays a login interface for the 'APPLICATION FOR WORK PERMIT' system. At the top, the title 'APPLICATION FOR WORK PERMIT' is centered. Below it is a blue gradient header bar. The main content area is light gray and contains the following elements: a prompt 'Please login or Sign up to Continue', a purple button labeled 'Login to Access your Account', two input fields for 'Email Address' and 'Password', a 'Forgot Password?' link in purple, and a 'Login' button. Below the input fields, there is a text prompt 'Dont have an account yet, click the Create Account button below to get started' and a 'Create Account' button. At the bottom, a footer contains the text 'Copyright © 2014 Immigration Services All Rights Reserved'.

Figure 16: Login Screen

In the system, users can view the application conditions, edit their registration details, make application, make enquiries, view status of application or get online help once submitted. Figure 3 and figure 4 below shows interfaces for this activities



Figure 17: Work Permit System Tabs

2.1.2 My Profile Tab

Figure 4 shows what an applicant is able to do under my account tab. Once the user has successfully logged in the system the system allows him/her to edit the application details or change his/her logging in details.

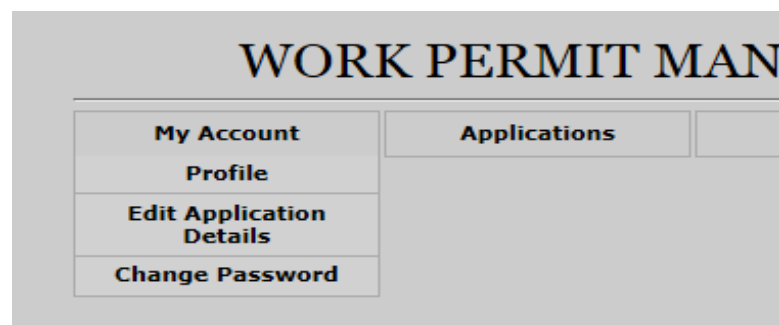


Figure 18: My Account Profile Tab

National ID or Passport Number	<input type="text" value="20234035"/>
First Name	<input type="text" value="george"/>
Middle Name	<input type="text" value="w"/>
Last Name	<input type="text" value="kimunguyi"/>
Email Address	<input type="text" value="gkimunguyi@yahoo.com"/>
Nationality	<input type="text" value="kenyan"/>
Place of Birth	<input type="text" value="nairobi"/>
Date of Birth	<input type="text" value="02/03/2014"/>
Residential Address	<input type="text" value="nau"/>
Postal Address	<input type="text" value="3333"/>
Full Names of Husband/Wife/Father	<input type="text"/>
Particulars of Children, Full Names, Sex, Date and Place of Birth	<input type="text"/>

Figure 19: Edit Application Details Tab

Change Your Password

New Password

Confirm Password

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Figure 20: Change Password Tab

2.1.3 Application Tab

Under this tab the applicants are able to view the fee charged for each class of permit, make application if it's a new application or apply for renewal. It is also possible for the applicant to track the application in case he/she has applied under this tab. See figure 5, 6 and 7 below.

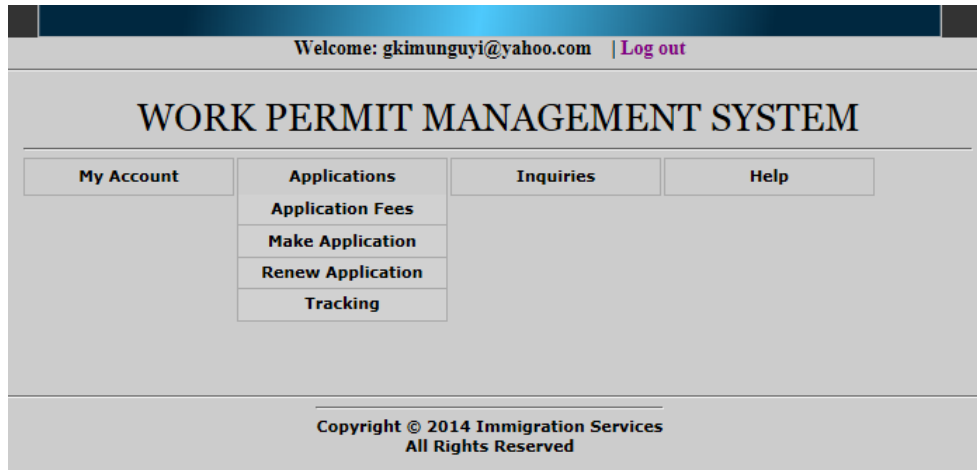


Figure 21: Permit Management Process Tab

Fees for Entry/Work Permits to be paid for each year or part thereof:

Class	Amount
class B & C	gratis
class D	50,000
class A	100,000
class E	25,000
class F	50,000
class G	50,000
class H	50,000
class I	50,000
class J	50,000
class K	25,000
class L	25,000
class M	gratis

Payments for these fees is to be done to the following account
Kenya Commercial Bank
A/C 00102001234
Industrial Area, Nairobi

Figure 22: Application Fee Screen

Welcome gkimunguyi@yahoo.com | [Log out](#)

My Account **Applications** **Inquiries** **Help**

Please Create your Account to Apply for Work Permit

Application for a Work Permit

Before beginning to fill this form, ensure you have all the required information and documents

Entry Class

Employee Qualification*(full details)

Postal Address

Engaging in*(Business or profession)

Place of Employment (full details)

Figure 23: Permit Application Form

Required Documents Upload for Classes A to E

Scanned/Document File Upload

Max file size 1MB, Valid document formats are jpg, png, bmp, pdf, doc, docx

Please ensure the documents to be uploaded have their proper names plus the Applicants

General Qualification Certificate

Technical Qualification Certificate

Professional Qualification Certificate

Work Permit Fee Certificate/Bank Deposit Slip

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Figure 24: Attaching Relevant Application Requirements

Welcome: gkimunguyi@yahoo.com | [Log out](#)

WORK PERMIT MANAGEMENT SYSTEM

My Account
Applications
Inquiries
Help

These are your application and are being worked on

a) Individual Work Permit

Reference No.	Date Applied	Class	Email Address	Status
11	02/10/2014	ryy	gkimunguyi@yahoo.com	Incomplete/Missing

b) Investment Work Permit

Reference No.	Date Applied	Class	Email Address	Status
2	02/10/2014	M	gkimunguyi@yahoo.com	pending

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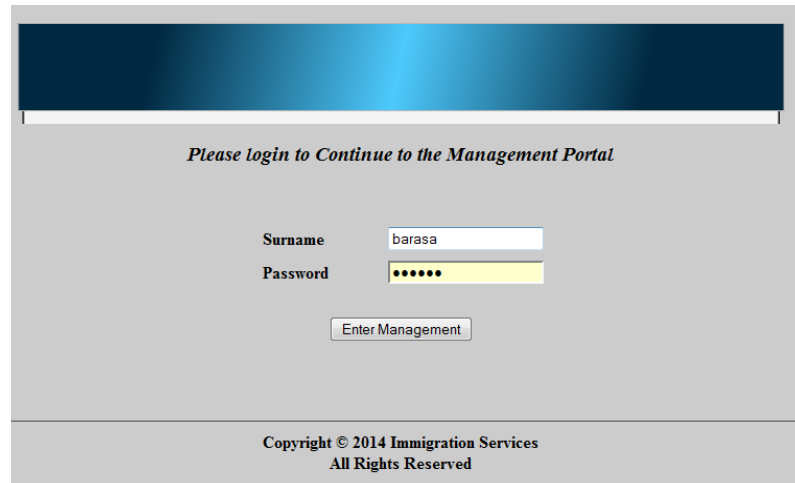
Figure 25: Tracking Application

3.0 System Back End

3.1 Immigration Officers Profile- Management Portal

To process any application, Immigration officers need to log in the system using their login credentials provided by the system administrator. Different users have different access levels depending on the privileges assigned to them by the system administrator. Figure 12 below shows the login module which is one of the security features of the system that allows only authorized access to the system.

It's also through this that access to administrative functions in the system is given.



The image shows a login interface for the Work Permit Processing Management Portal. At the top, there is a blue gradient header. Below it, the text "Please login to Continue to the Management Portal" is centered. The login form consists of two input fields: "Surname" with the value "barasa" and "Password" with six dots. Below the password field is a button labeled "Enter Management". At the bottom of the page, the copyright notice "Copyright © 2014 Immigration Services All Rights Reserved" is displayed.

Figure 26: Work Permit Processing Login Interface

After successful login, immigration officers will be able to access a dashboard with different functionalities which are applications management tab, user management tab, reports tab and help tab. Figure 13 below show dashboard interface.

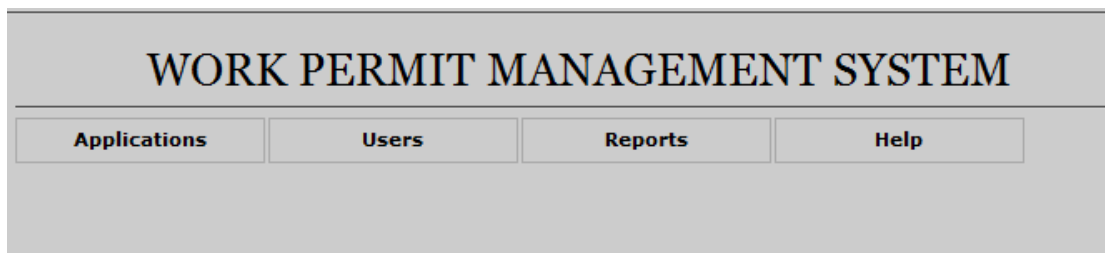


Figure 27: Work Permit Management Dashboard

3.2 Case Management

The system treats each application as a case. There are different case types with each case having a unique reference number which enables listing of different case types for access by various authorities to act on them. This is achieved by a predefined business process which guides the entire process as shown in figure 14



Figure 28: Validation Process Interface

In the application tab, immigration officers are able to view all applications, sent fee payment notifications and validate applications as shown in figure 15

WORK PERMIT MANAGEMENT SYSTEM					
Applications	Users	Reports	Help		
Submitted Applications for Verification					
a) Individual Work Permit					
Tracking Number	Entry Class	Applicant Last Name	Applicant First Name	Documents Submitted	Status
1	a	simon	nelison		pending
2	b	son	asarab		pending
3	d	son	asarab		pending
4	b	son	asarab		pending
5	a	kim	alex		Approved
6	e	Wafula	George		pending
7	mmmh	CSA	acfds		pending
8	vdg	CSA	acfds		Approved
9	vfdngfhf	CSA	acfds		pending
10	miin	CSA	acfds		pending
11	ryy	kimunguyi	george		Incomplete/Missing D
b) Investment Work Permit					
Tracking Number	Entry Class	Applicant Last Name	Applicant First Name	Documents Submitted	Status
1	bffgfdg	Wafula	George		pending
2	M	kimunguyi	george		pending

Figure 29: Validation Process Interface

3.3 Recommendations and Approvals

After immigration officials have confirmed that the application meets the required threshold, the necessary recommendations are made and then forwarded to the approval committee. The committee will then deliberate on the recommendations and either approve or reject. Figure 16 shows the interface for this.

Kenyan Citizen Qualification	N
None Kenyan Citizen	rewfrew
None Citizen Qualification	vhbhjh
If Application Approved, Trainings to be Provided	iuuuuuuu
Recommendation	<div style="border: 1px solid black; padding: 2px;"> Pending <ul style="list-style-type: none"> <li style="background-color: #e0e0e0;">Pending In Progres Incomplete/Missing Documents Approved Denied </div>
Copyright © 2014 Immigration Services All Rights Reserved	

Figure 30: Recommendation and Approval

3.4 Reports Generation

Immigration officers can generate different reports for their internal use or share it with other stakeholders. The system is able to generate reports in predefined formats of csv and pdf. Figure 9 below shows the interface for report generation

Welcome barasa | [Log out](#)

WORK PERMIT MANAGEMENT SYSTEM

Applications

Users

Reports

- System User Reports
- Successful Applications
- Unsuccessful Applications

Help

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 All Rights Reserved

Figure 31: Reports Generation

APPENDIX X: Sample Codes

Registration process.

The system requires that a user must register with the system before accessing the application. The source code for this process is given below;

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Entry Permit Application</title>
<link href="../../scripts/permit.css" rel="stylesheet" type="text/css" />
<script src="../../SpryAssets/SpryValidationTextField.js"
type="text/javascript"></script>
<script src="../../jquery.ui-1.5.2/jquery-1.2.6.js" type="text/javascript"></script>
<script src="../../jquery.ui-1.5.2/ui/ui.datepicker.js" type="text/javascript"></script>
<link href="../../SpryAssets/SpryValidationTextField.css" rel="stylesheet"
type="text/css"/>
<link href="../../jquery.ui-1.5.2/themes/ui.datepicker.css" rel="stylesheet"
type="text/css" />
</head>
<body bgcolor="#CCCCCC">
<center>
<div id="wb_uid0">
<div id="wb_uid1"><span id="wb_uid2">APPLICATION FOR WORK
PERMIT</span></div>
</div>
<div class="container" align="center">
<div class="content" align="center">
<div id="banner"><br>
</div>
<h3><em>Please Create your Account to Apply for Work Permit</em></h3>
<!--action="../../ni.php"-->
<form action="register2.php" method="POST" enctype="multipart/form-data"
name="form1" id="form1">
<table width="583" height="501" border="0" bgcolor="#CCCCCC">
<tr bgcolor="#9999CC">
<td height="45" colspan="2" align="center"><strong>Create your
Account</strong></td>
</tr>
<tr>
<td width="325" height="42"><strong>National ID or Passport
Number</strong></td>
<td width="223"><span id="sprytextfield2">
```

```

>A value is required.</span><span
class="textfieldInvalidFormatMsg">Invalid format.</span></td>
</tr>
<tr>
<td height="42" scope="row"><strong>Confirm ID or Passport
Number</strong></td>
<td><span id="sprytextfield1">
<input name="confirm_id" type="text" id="textfield3" maxlength="8" />
<span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldInvalidFormatMsg">Invalid format.</span></td>
</tr>
<tr>
<td height="39" scope="row"><strong>First Name</strong></td>
<td><span id="sprytextfield3">
<input type="text" name="fname" id="textfield4" />
<span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldInvalidFormatMsg">Invalid format.</span></td>
</tr>
<tr>
<td height="32" scope="row"><strong>Middle Name</strong></td>
<td><input type="text" name="mname" id="textfield2" /></td>
</tr>
<tr>
<td height="39" scope="row"><strong>Last Name</strong></td>
<td><span id="sprytextfield4">
<input type="text" name="lname" id="textfield5" />
<span class="textfieldRequiredMsg">A value is
required.</span></td>
</tr>
<tr>
<td height="34" scope="row"><strong>Email Address</strong></td>
<td><span id="sprytextfield5">
<input type="text" name="email" id="textfield6" />
<span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldInvalidFormatMsg">Invalid format.</span></td>
</tr>
<tr>
<td height="39" scope="row"><strong>Confirm Email Address</strong></td>
<td><span id="sprytextfield6">
<input type="text" name="confirm_email" id="textfield7" />
<span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldInvalidFormatMsg">Invalid format.</span></td>
</tr><tr>
<td height="41" scope="row"><strong>Password(<span
class="emphasis">Minimum 6 Characters</span>)</strong></td>
<td><span id="sprytextfield7">
<input name="password" type="password" id="textfield8" maxlength="8" />

```

```

    <span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldMinCharsMsg">Minimum number of characters not
met.</span></span></td>
  </tr>
  <tr>
    <td height="39" scope="row"><strong>Confirm Password (<span
class="emphasis">Minimum 6 Characters</span></strong></td>
    <td><span id="sprytextfield8">
      <input name="confirm_pass" type="password" id="textfield9" maxlength="8"
/>
      <span class="textfieldRequiredMsg">A value is required.</span><span
class="textfieldMinCharsMsg">Minimum number of characters not
met.</span></span></td>
  </tr>
<!-- <tr>
  <td width="325" height="42"><strong>Passport Photograph</strong></td>
  <td width="223"><input type="file" name="photo" id="fileField" /></td>
  <?php
/*$allowedExts = array("gif", "jpeg", "jpg", "png");
$temp = explode(".", $_FILES["photo"]["name"]);
$extension = end($temp);
if ((($_FILES["photo"]["type"] == "image/gif")
|| ($_FILES["photo"]["type"] == "image/jpeg")
|| ($_FILES["photo"]["type"] == "image/jpg")
|| ($_FILES["photo"]["type"] == "image/pjpeg")
|| ($_FILES["photo"]["type"] == "image/x-png")
|| ($_FILES["photo"]["type"] == "image/png"))
&& ($_FILES["photo"]["size"] < 20000)
&& in_array($extension, $allowedExts))
{
  if ($_FILES["photo"]["error"] > 0)
  {
    echo "Return Code: " . $_FILES["photo"]["error"] . "<br>";
  }
  else
  {
    echo "Upload: " . $_FILES["photo"]["name"] . "<br>";
    echo "Type: " . $_FILES["photo"]["type"] . "<br>";
    echo "Size: " . ($_FILES["photo"]["size"] / 1024) . " kB<br>";
    echo "Temp file: " . $_FILES["photo"]["tmp_name"] . "<br>";

    if (file_exists("upload/" . $_FILES["photo"]["name"]))
    {
      echo $_FILES["photo"]["name"] . " already exists. ";
    }
    else
    {
      move_uploaded_file($_FILES["photo"]["tmp_name"],

```


Work Permit Validation Process

In the application tab, immigration officers are able to view and validate all applications requests. The source code for this process is shown below.

```
<?php require_once('./Connections/conn.php'); ?>
<?php
//initialize the session
if (!isset($_SESSION)) {
    session_start();
}
// ** Logout the current user. **
$logggoutAction = $_SERVER['PHP_SELF']."?doLogout=true";
if ((isset($_SERVER['QUERY_STRING'])) && ($_SERVER['QUERY_STRING'] !=
"")){
    $logggoutAction .="&". htmlentities($_SERVER['QUERY_STRING']);
}
if ((isset($_GET['doLogout'])) &&($_GET['doLogout']=="true")){
    //to fully loggg out a visitor we need to clear the session variables
    $_SESSION['MM_Username'] = NULL;
    $_SESSION['MM_UserGroup'] = NULL;
    $_SESSION['PrevUrl'] = NULL;
    unset($_SESSION['MM_Username']);
    unset($_SESSION['MM_UserGroup']);
    unset($_SESSION['PrevUrl']);
    $logggoutGoTo = "signout.php";
    if ($logggoutGoTo) {
        header("Location: $logggoutGoTo");
        exit;
    }
}
?>
<?php
if (!function_exists("GetSQLValueString")) {
function GetSQLValueString($theValue, $theType, $theDefinedValue = "",
    $theNotDefinedValue = "")
{
    if (PHP_VERSION < 6) {
        $theValue = get_magic_quotes_gpc() ? stripslashes($theValue) : $theValue;
    }

    $theValue = function_exists("mysql_real_escape_string") ?
mysql_real_escape_string($theValue) : mysql_escape_string($theValue);
    switch ($theType) {
        case "text":
            $theValue = ($theValue != "") ? "'" . $theValue . "'" : "NULL";
            break;
```

```

    case "long":
    case "int":
        $theValue = ($theValue != "") ? intval($theValue) : "NULL";
        break;
    case "double":
        $theValue = ($theValue != "") ? doubleval($theValue) : "NULL";
        break;
    case "date":
        $theValue = ($theValue != "") ? "" . $theValue . "" : "NULL";
        break;
    case "defined":
        $theValue = ($theValue != "") ? $theDefinedValue : $theNotDefinedValue;
        break;
    }
    return $theValue;
}
}
if (!function_exists("GetSQLValueString")) {
function GetSQLValueString($theValue, $theType, $theDefinedValue = "",
$theNotDefinedValue = "")
{
    if (PHP_VERSION < 6) {
        $theValue = get_magic_quotes_gpc() ? stripslashes($theValue) : $theValue;
    }

    $theValue = function_exists("mysql_real_escape_string") ?
mysql_real_escape_string($theValue) : mysql_escape_string($theValue);

    switch ($theType) {
        case "text":
            $theValue = ($theValue != "") ? "" . $theValue . "" : "NULL";
            break;
        case "long":
        case "int":
            $theValue = ($theValue != "") ? intval($theValue) : "NULL";
            break;
        case "double":
            $theValue = ($theValue != "") ? doubleval($theValue) : "NULL";
            break;
        case "date":
            $theValue = ($theValue != "") ? "" . $theValue . "" : "NULL";
            break;
        case "defined":
            $theValue = ($theValue != "") ? $theDefinedValue : $theNotDefinedValue;
            break;
    }
    return $theValue;
}
}

```

```

}
$colname_logggg = "-1";
if (isset($_SESSION['hiddenField'])) {
    $colname_logggg = $_SESSION['hiddenField'];
}
mysql_select_db($database_conn, $conn);
$query_logggg = sprintf("SELECT * FROM registeredusers WHERE email = %s",
    GetSQLValueString($colname_logggg, "text"));
$logggg = mysql_query($query_logggg, $conn) or die(mysql_error());
$row_logggg = mysql_fetch_assoc($logggg);
$totalRows_logggg = mysql_num_rows($logggg);

$colname_track = "-1";
if (isset($_SESSION['MM_Username'])) {
    $colname_track = $_SESSION['MM_Username'];
}
mysql_select_db($database_conn, $conn);
$query_track = sprintf("SELECT * FROM parta_entry_app WHERE emailAdd =
    %s", GetSQLValueString($colname_track, "text"));
$track = mysql_query($query_track, $conn) or die(mysql_error());
$row_track = mysql_fetch_assoc($track);
$totalRows_track = mysql_num_rows($track);

$colname_tracker = "-1";
if (isset($_SESSION['MM_Username'])) {
    $colname_tracker = $_SESSION['MM_Username'];
}
mysql_select_db($database_conn, $conn);
$query_tracker = sprintf("SELECT * FROM partb_entry_app WHERE emailAdd =
    %s", GetSQLValueString($colname_tracker, "text"));
$tracker = mysql_query($query_tracker, $conn) or die(mysql_error());
$row_tracker = mysql_fetch_assoc($tracker);
$totalRows_tracker = mysql_num_rows($tracker);
?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Entry Permit Application</title>
<link rel="stylesheet" href="../scripts/permit.css" type="text/css" />
<script type="text/javascript" src="../scripts/script.js"></script>
<style type="text/css">
<!--
.style1 {
    font-family: "Times New Roman", Times, serif;
    font-size: 12px;
    color: #000000;

```

```

        font-weight: bold;
    }
    .style4 {font-size: 14px}
    .style5 {color: #FFFFFF}
    #wb_Text2 { background-color: transparent;
        border: 0px #C0C0C0 solid;
        padding: 0;
    }
    #wb_Text2 { position: absolute;
        left: 36px;
        top: 21px;
        width: 499px;
        height: 41px;
        text-align: left;
        z-index: 4;
        border: 0px #C0C0C0 solid;
        overflow-y: hidden;
        background-color: transparent;
    }
    #wb_uid6 { font-family: Arial;
        font-size: 13px;
        color: #000000;
    }
    #wb_uid7 { text-align: center;
    }
    #wb_uid8 { font-family: Georgia;
        font-size: 27px;
    }
-->
</style>
</head>
<body bgcolor="#CCCCCC">
<center>
    <div id="conn">
        <br />
    </div>
    <div class="style1" id="menus">
        <span class="style4">Welcome: <?php echo $_SESSION['MM_Username']; ?>|
    <a href="<?php echo $logoutAction ?>">Log out</a></span></div>
    <hr width="100%" />
    <div id="leftnav2">
        <p>&nbsp;</p>
        <p><span class="style1"><span class="style4"><span
class="style5"></span></span></span></p>
        <p>&nbsp;</p>
        <p>&nbsp;</p>
        <p>&nbsp;</p>
        <p>&nbsp;</p>

```



```

<p>&nbspnbsp;</p>

</div>
<div id="centernav2" align="center">
<div id="wb_Text">
  <div id="wb_uid">
    <div id="wb_uid2"><span id="wb_uid8">WORK PERMIT MANAGEMENT
SYSTEM</span></div>
  </div>
</div>
<hr />

<ul class="menu" id="menu">
  <li><a href="#" class="menulink">My Account</a>
    <ul>
      <li><a href="profile.php">Profile</a></li>
      <li><a href="edit_Registration.php">Edit Application Details</a></li>
      <li><a href="changePassword.php">Change
Password</a></li>
      <!--<li><a href="#">Signout</a></li>-->
    </ul>
  </li>

      <li><a href="#" class="menulink">Applications</a>
      <ul>
        <li><a href="fees.php">Application Fees </a></li>
        <li><a href="schedule.php">Make Application </a></li>
        <li><a href="tracking.php">Tracking </a></li>
        <!-- <li><a href="#">Old Application</a></li>-->
      </ul></li>

      <li><a href="inquire.php" class="menulink">Inquiries</a></li>
      <li><a href="help.php" class="menulink">Help</a></li>

    </li>
  </ul>
<p>&nbspnbsp;</p><p>&nbspnbsp;</p>
<p>
  <input name="userinfo" type="hidden" value="<?php echo
$_SESSION['MM_Username']; ?>" />
  These are your application and are being worked on</p><br />
a)Individual Work Permit
<br />
<table width="200" border="1" cellpadding="0" cellspacing="0"
bgcolor="#FFFF99">
  <tr>
    <th scope="col">Reference No.</th>
    <th scope="col">Date Applied</th>
    <th scope="col">Class</th>

```

```

<th scope="col">Email Address</th>
<th scope="col">Status</th>
</tr>
<?php do { ?>
<tr>
<td scope="row"><?php echo $row_track['applicationNo']; ?></td>
<td><?php echo $row_track['dateApplied']; ?></td>
<td><?php echo $row_track['entryClass']; ?></td>
<td><?php echo $row_track['emailAdd']; ?></td>
<td><?php echo $row_track['status']; ?></td>
</tr>
<?php } while ($row_track = mysql_fetch_assoc($strack)); ?>
<!--<tr>
<td scope="row">&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
</tr-->
</table><br /><br />
b)Investment Work Permit
<table width="200" border="1" cellpadding="0" cellspacing="0"
bgcolor="#CCFFCC">
<tr>
<?php do { ?>
<th scope="col">Reference No.</th>
<th scope="col">Date Applied</th>
<th scope="col">Class</th>
<th scope="col">Email Address</th>
<th scope="col">Status</th>
</tr>
<tr>
<td scope="row"><?php echo $row_tracker['applicationNo']; ?></td>
<td><?php echo $row_tracker['dateApplied']; ?></td>
<td><?php echo $row_tracker['entryClass']; ?></td>
<td><?php echo $row_tracker['emailAdd']; ?></td>
<td><?php echo $row_tracker['status']; ?></td>
<?php } while ($row_tracker = mysql_fetch_assoc($stracker)); ?>
</tr>
<!-- <tr>
<td scope="row">&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
<td>&nbsp;</td>
</tr-->
</table><br /><br />
</div>

```

```

<div id="rightnav2">
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
  <p>&nbsp;</p>
</div>
<div id="footer">
<hr width="100%">
<hr width="20%">
<strong>Copyright &copy; 2014 Immigration Services</strong><br />
<strong>All Rights Reserved</strong></span></div>
</center>
<script type="text/javascript">
  var menu=new menu.dd("menu");
  menu.init("menu","menuhover");
</script>
</body>
</html>
<?php
mysql_free_result($logggg);
mysql_free_result($track);
mysql_free_result($tracker);
?>

```