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**Addis Ababa University**

**School of Information Science**

**And**

**School of Public Health**

**M.Sc. in Health Informatics Programme**

**Designing an Integrated Licensing and  
Inspection Information System: The Case of  
Oromia Regional Health Bureau**

**By**

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**November, 2014**

# Title Page

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## **Dedication**

I dedicate this work to my beloved aunt Tewabech Wakjira for her humble care and support throughout my school life.

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## **Executive Summary**

Professional licensing and facility inspection and licensing is one of the primary processes that enables and ensures quality health product and service provision mechanism in order to promote public health services. Oromia Regional Health Bureau renders these functions in its inspection and licensing sub-process under the core process called health and health related services and products quality regulation. Though the professional licensing alone is recently automated as part of human resource information system it is neither integrated to the inspection service nor covers all aspects of licensing like facility licensure.

The research project endeavoured to design and integrate those functions to pave the way for the implementation so as to achieve efficient and flexible information system that offers the customers and the staff better satisfaction.

A phased development, Rapid Application Development (RAD) methodology of object-oriented approach applied to the study of the design system. Interview and document analysis were used as a main tool to capture the business system requirement along with observation. Unified Modeling Language (UML) development techniques applied in the process of requirements capture, model organization business system analysis and design. ArgoUML and Visio Software were employed in analysis and design models diagramming.

Data captured and guideline and standard documents referred were illustrated using activity diagram, use case diagrams, use case descriptions, sequence diagrams, state chart diagram, deployment diagram in the analysis and design models as appropriate to model analysis and design of the system under study. Evaluation and feedback were taken for consensus between the users and the designer.

The researcher recommends the implementation of the design by the regional health bureau or any concerned body including health related facility inspection and licensing that was not included under current design to realize the benefit of the Information Communication Technology in the inspection and licensing section.

## Acronyms

|         |                                                                               |
|---------|-------------------------------------------------------------------------------|
| BIR     | Board of Internal Revenue                                                     |
| BPR     | Business Process Reengineering                                                |
| CPD     | Continuing Professional Development                                           |
| CQC     | Care Quality Commission                                                       |
| CRC     | Class Responsibility Collaborator                                             |
| CRUD    | Create, Read, Update, Delete                                                  |
| DB      | Database                                                                      |
| DIA's   | Division of Investigations and Audits                                         |
| DL      | Driving License                                                               |
| DSS     | Decision Support Systems                                                      |
| EFMHACA | Ethiopian Food, Medicine and Health Care Administration and Control Authority |
| EIS     | Executive Information Systems                                                 |
| ES      | Expert System                                                                 |
| FRSC    | Federal Road Safety Commission                                                |
| GTRI    | Georgia Tech Research Institute                                               |
| HF      | Health Facility                                                               |
| HHRSPQR | Health and Health Related Services and Products Quality Regulation            |
| HRIS    | Human Resource Information Sources                                            |
| HRM     | Human Resource Management                                                     |
| HTML    | Hypertext Markup Language                                                     |
| HTTP    | Hypertext Transfer Protocol                                                   |
| ICT     | Information Communication Technology                                          |
| KHWF    | Kenya Health Work Force Project                                               |
| M.D.    | Medical Doctor                                                                |
| MIS     | Management Information System                                                 |
| OAS     | Office Automation System                                                      |
| OOA     | Object-Oriented Analysis                                                      |
| OOD     | Object-Oriented Design                                                        |
| OOP     | Object-Oriented Programming                                                   |
| OOSAD   | Object-Oriented Systems Analysis and Design                                   |
| ORHB    | Oromia Regional Health Bureau                                                 |
| OS      | Operating System                                                              |
| PHP     | Personal Home Page/Hypertext Preprocessor                                     |
| RAD     | Rapid Application Development                                                 |
| RIDS    | Regulation information delivery system                                        |
| SA&D    | Systems Analysis & Design                                                     |
| SDLC    | Systems Development Life Cycle                                                |
| SQL     | Structured Query Language                                                     |
| TPS     | Transaction Processing System                                                 |
| UI      | User Interface                                                                |
| UML     | Unified Modeling Language                                                     |
| VIO     | Vehicle Inspection Officer                                                    |

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Health and health related services and products quality regulation core process is a process which starts from public/customer need, request for regulation of health and health related facilities, health professional, medicines and food, and ending by protecting the public from health risk and quality defective of health and health related facilities, health professionals, medicines and food. It is a regulatory service delivered to promote and protect health of the public in need of being served in standard health facilities by qualified and ethical health professionals and by safe, effective and quality pharmaceutical products. In addition to this, protecting the public health from other sub-standard health related services that have either direct or indirect effect on the public health (1).

Licensing and inspection is one of the sub-process held under health and health related services and products quality regulation core process. The process requires definition and guide lines to analyze and design information system in order to capture data and generate report efficiently.

#### 1.1.1 Licensure of Practitioners

By defining legal requirements for a physician or other health professional, licensure standards restrict entry to practice to qualified personnel meeting minimum qualifications, such as graduation from an approved educational program and passing an examination intended to evaluate expected knowledge for a practitioner. The components of a licensure program for health care practitioners include (2):

- Examination of an individual's credentials to determine whether his/her education and experience meet legal requirements
- Inspection of educational programs to determine whether training programs meet required standards
- Administration of examinations to test professional qualifications that are currently applying for level IV Technical and Vocational Education and Training graduate that ought to pass Centre of Competence exam.

- Issuance of regulations establishing professional standards of practice
- Investigations of charges of violations of standards, which may lead to revocation or suspension of an individual's license to practice, and
- Competence is believed to be assured through successful attendance and completion of stipulated Continued Professional Development (CPD) programs that is planned to be prerequisite for professional license renewal.

### **1.1.2 Licensure of Health Care Organizations**

Licensure standards are intended to define the quality level that is necessary in order for patient care or health services (e.g., drug dispensing by a pharmacy) to be safely delivered. These standards also define the capabilities that are needed in order for a health care organization to advertise to the public that it is a hospital or health center. For example, licensure standards in a particular jurisdiction might require that a health care facility provide certain services (e.g., surgery, radiology testing, round-the-clock nursing care for patients, pharmacy services, and laboratory services) in order to be classified as a hospital. Unlike accreditation or certification, which is usually voluntary forms of external evaluation, licensure is always mandatory. The government's granting of a license to an organization signifies its permission to the organization to be open and provide care or services to patients.

Continued licensure may be either automatically renewed with a payment of a specified fee, assuming no problems have been identified or reported, or the renewal may require periodic inspections or submission of documentation (3).

In order to maintain the updated data on the nations' health professionals and facilities licensure and inspection record they have been using various open source and proprietary software of which iHRIS is one.

Following ICT upgrades, iHRIS Qualify is an Open Source software program, designed for use at a health professional regulation authority, which can be used to track information about health workers from pre-service training through registration and licensure. The software is web-accessible, server-based, regularly backed up, and can be accessed by multiple users at once. Data are stored in a central database (4).

Health workforce planning is important in ensuring that the recruitment, training and deployment of health workers are conducted in the most efficient way possible. However, in many developing countries, human resources for health data are limited, inconsistent, out-dated, or unavailable. Consequently, policy-makers are unable to use reliable data to make informed decisions about the health workforce. Computerized human resources information systems (HRIS) enable countries to collect, maintain, and analyze health workforce data (4).

Researchers from the Georgia Tech Research Institute (GTRI) are helping to automate human resource information systems for health care professionals in two African nations, Kenya and Zimbabwe (5).

In collaboration with Emory University's Lillian Carter Center for International Nursing and the Task Force for Global Health, GTRI is evaluating and advising on computer systems developed to provide information for better human resource management, policy development and health planning.

The aim of the Kenyan effort, called the Kenya Health Work Force Project (KHWFP), is to move information on the nation's health care professionals from a decentralized paper system to a computer database.

The project has made substantial progress. A custom software database – the Kenya Health Care Work Force Informatics System – has been developed by KHWFP using local Kenyan programmers. In early 2009, GTRI joined the effort to carry out an independent software evaluation of the new system (5).

"Before the Kenya Health Work Force Project can be completed, we need to show that its information-systems software will effectively support Kenya's health care effort and perform according to expectations," said Martha F. Rogers, M.D., a professor in Emory's Nell Hodgson Woodruff School of Nursing and principal investigator for the workforce-informatics project. "The GTRI team is helping us reach that goal by testing and evaluating both the software and the overall usability of the system."

Kenya's health-care system follows a centralized model, explained Christopher Skeels, a research scientist who leads the evaluation work for GTRI. Health care personnel records

have traditionally been kept on several paper-based systems at government organizations that track multiple aspects of healthcare professionals' training and professional practice.

Starting with the Nursing Council of Kenya's records, the new informatics software is in the process of transferring the paper systems' functionality to an online database. The aim is to maintain all information on that database and phase out the paper system (5).

Effective health workforce management is crucial for countries to address health worker shortages and meet the health care needs of their people. Human resource managers and other decision-makers require up-to-date and accurate data on the current number of employed health workers, where they are deployed, and what their skill sets and salaries are, as well as information on vacant posts and migration. Unfortunately, many countries lack this information, or they store it in paper files or electronic databases that do not link together, making it difficult to locate employee records or aggregate data for analysis.

A computerized and integrated human resources information system (HRIS) enables countries to more easily collect, maintain, and analyze health workforce data. The global iHRIS community's free and open source HRIS solutions supply health-sector leaders with information they need to track, manage, and plan the health workforce (6).

### **1.1.3 Inspection**

Inspection and enforcement responsibilities rest at three levels according to Swedish Environmental Protection Agency: national, regional, and local. Inspection and enforcement guiding responsibility rests at national and regional level, and the operative part of the work is mainly carried out at regional and local level. The guiding responsibility includes supporting, advising and evaluating inspection and enforcement work carried out at regional and local level (7).

The inspection types, as stated on Inspector's handbook by Care Quality Commission, include:

#### **1. Scheduled inspections**

- Scheduled according to risks and information we have about the service.
- Informed by local intelligence and other available information.

- Require a documented plan.
- Unannounced unless there is a reason to let the service know. They can be short notice, but only where there are very good reasons to do this.
- For most services, have no pre-inspection request for provider information but may request following the inspection if necessary.
- May involve an expert by experience or a specialist advisor.
- Required to have a visit to the location.
- Completed with a report to be produced for publication (for multiple providers who operate from the same location, this means a report for each provider by location).

## **2. Responsive inspections**

- Responsive to concerning information, or gaps in information.
- Occur whenever necessary but within certain days of the need for an inspection being identified.
- Require a documented plan for the inspection.
- Unannounced, unless there is a reason to let the service know. They can occasionally be short notice, but only where there are very good reasons to do this.
- For most services, no pre-inspection request for provider information, but may request following the inspection if necessary.
- Focus heavily on inspection to gain information about non-compliance and on observation and engaging with people and frontline staff.
- May involve an expert by experience.
- Require a visit to the location.
- Require a report to be produced for publication (for multiple providers who operate from the same location, this means a report for each provider by location).
- May be carried out to follow up compliance or enforcement action from a previous inspection.

### **3. Themed inspections**

- The themes are set centrally. They look at care and treatment of specific groups of people, or types of service.
- Inspection of prescribed topics across a defined population of providers or groups of people using services, for example people with dementia.
- Require a documented plan for the inspection or other method of gathering information such as pathway tracking.
- Focus heavily on gathering information about people's experience of receiving care. This includes what works well and what needs to improve. This is usually achieved by visiting services, using observation and engaging with people who use services and frontline staff.
- May be used to pilot new methods.
- Usually involve an expert by experience and/or specialist advice.
- The methodology will be pre-defined for each themed inspection.
- Involve the inspector completing a number of focused questions at the end of the inspection to gather data for the national report.
- Location reports will usually be produced for publication in line with the methodology for the themed inspection.
- Information gathered as part of the themed inspection will contribute to a national report of findings, which will be published (8).

The inspections consist of site visits to the organisation and, where appropriate, selected investigator sites. The inspection will start with an opening meeting where the lead inspector will outline the scope and purpose of the inspection, confirm the inspection plan and introduce the inspector(s). During the inspection, the inspectors will request additional documentation and the organisation should be prepared to provide this promptly during the inspection.

Interviews with relevant personnel, generally as per the inspection plan, are conducted. Time is built into the inspection for the review of documentation. The inspector may visit any

facilities involved in clinical trials, for example data management units, archives, pharmacy and these visits may be pre-arranged by the inspector for logistical reasons or decided upon during the inspection.

During the inspection, the inspectors reserve the right to change the inspection plan, for example additional interviews or time may be required depending on the inspection findings.

At the end of the inspection there will be a closing meeting where the findings are verbal feedback on any non-compliances are provided to the organisation and the plans for any further sites to be inspected are discussed, as well as the timescales for issuing the inspection report (9).

## **1.2. Statement of the Problem**

Licensing- related activities include the issuing, renewal, suspension and revocation of licenses. These can be considered as output of licensing system.

Within many health care systems worldwide, increased attention is being focused on human resources management (HRM). Specifically, human resources are one of three principle health system inputs, with the other two major inputs being physical capital and consumables (1).

The variation of size, distribution and composition within Oromia zones' health care workforce is of great concern. For example, the number of health workers available in a zone in Oromia is a key indicator of that zone's capacity to provide service delivery and interventions. Factors to consider when determining the demand for health services in a particular locality include cultural characteristics, socio-demographic characteristics and economic factors (1).

According to the interview made with experts of licensing and inspection head, the Oromia Regional Health Bureau (ORHB) lacks integrated, organized inspection information that enables to easily monitor and evaluate health and health related facilities currently in the region.

The process of licensing and inspection has a paramount importance either directly or indirectly to a regulatory body in ensuring quality service rendering to the community. Public

health planners and executive decision makers need timely, complete information system on licensed health practitioners at different levels and localities and health facilities and the inspection information of the health care facilities.

Manual implementation of record keeping is prone to error, time consuming in retrieval and cumbersome to generate timely report. The existing process is found to be highly tedious and inefficient with long waiting time. The regulatory measures taken based on the inspection reports were also non uniform and reflected partiality (1).

Even though there are some overlaps between human resource information system and licensing and inspection (regulatory) system the regulatory system needs to be separate from the human resources. The inspection system, the crucial aspect of system also remains outside the human resource system that makes more preferable in house developed system software.

“Although open-source software development has virtues, there is reason to believe that the approach would not have a significant effect on the security of today’s systems. The lion’s share of vulnerabilities caused by software bugs is easily dealt with by means other than source code inspections. And the tenets of open-source development are in hospitable to business models whose success depends on promoting secure systems (10).”

Therefore, implementation of in-house computerized licensing and inspection information has indispensable value in ensuring a quality health service for the community, health sector, practitioners and stakeholders in order capitalize the benefit of the system.

The research aimed to address the separation of the regulatory (licensing and inspection) system from the human resource information system and bring together into one database the licensing and inspection because of because of the nature of the activity.

### **1.3. Objective of the Study**

#### **1.3.1. General Objective**

The overall objective of the project is to design an integrated licensing and inspection information system for Oromia Regional Health Bureau so as to separate the licensing from

the human resource information system and integrate with inspection system by automating the inspection system.

### **1.3.2. Specific Objectives**

Specifically, the project achieves the following objectives:

- Identify business requirement of the system.
- Structure and depict the licensing and inspection requirement analysis using models.
- Evaluate the design with the system users.
- Design a new system for licensing and inspection integrated automation.

### **1.4 Significance of the Project**

The new system design will have a significant impact as it systematically laid a foundation for the implementation that enables easy and much flexible data analysis and report aggregation in a timely manner and with less cost as compared to the paper base manual information process.

Since the health practitioners and health facility owners use the system as a customer they enjoy a better customer satisfaction. In addition the staff will not be engaged in labor intensive file allocation. Health manpower planner can readily make use the data to fill the licensed manpower gap in different profession for different part of the region.

The system can serve as a base for future online renewal system that can reduce the health practitioners transportation cost as long as the communication network facility is available. Successful integrated and organized professional licensing and inspection information system leads to a better quality health service that in-turn ensures to achieve the regions strategic goals.

Over all the system design and integration aims to offer the following functions

- Model activities and decisions using UML tools.
- Identify services and their respective actors.
- Show service procedures with alternate course of actions.

- Model sequence of activities interns of time order.
- Identify and model classes and their relationships.
- Evaluate the design with users and maintain changes accordingly

The researchers learned several things on licensing and inspection regulations and guide lines and practices. He also got the class room course work with the real world work environment particular hands on experience using object oriented system analysis and design in which he is not work with before.

## **1.5 Project Scope and Limitations**

### **1.5.1 Scope**

The project has covered the automation of the health professionals, facilities licensing, and registration of traditional health practitioners at the Oromia Regional Health Bureau and health facility inspection (initial and regular) process capture after the site visit that is regulated by the regional level. Services related with licensing and inspection like renew licensing, professional change, workplace change, professional information, inspection report was included in the study. Requirements have been collected from the experts of the area in the bureau and standard and guideline documents.

### **1.5.2 Limitations**

They study lack adequate related works on the professional and facility license and facility inspection system design research project for the limited discussion that follows. The related works discussion is confined to a vehicle licensing and inspection system.

## **1.6 Research Project Document Organization**

The project document organized into five chapters. The first chapter offered brief background on the subject areas, project objectives, significance, scope and limitation. The second chapter brought into attention literature review licensing and inspection in a broader sense and review of related works. Chapter three shed light up on the methodology of the study. Chapter four dealt with modeling and discussion of result whereas the last chapter explained conclusion and recommendation made for future work.

# **Chapter Two**

## **Literature Review and Related Works**

### **2.1 Licensing and Inspection**

The object of licensing/authorization of physicians is to ensure that, in the general interest of the community, only properly qualified health professionals practice medicine, and have access to the associated privileges e.g. the right to prescribe medicines and controlled drugs. The general underlying principle is that licensing/authorization should apply to all physicians, regardless of where they practice. The authorization of physicians to practice their profession (licensing), while it has existed for many centuries, has become more structured and increasingly introduced into national legislation over the last 150 years (11).

The process and structure of the licensing/authorization systems have evolved in different ways in the various countries, although the common fundamental feature has been the requirement of a completion of recognized formal training in medicine. In addition, explicitly or implicitly, the legislation ensures that the professional accepts certain standards of behaviour in line with his/her professional responsibilities, including professional and personal integrity. This reflects the long-standing practice of requiring new graduates in medicine to undertake the swearing of a professional oath (commonly the Hippocratic oath or that of Geneva) relating to the deontological principles to be observed in medical practice (11).

“Licensing is a statutory mechanism by which a governmental authority grants permission to an individual practitioner to engage in an occupation or to a healthcare organization to operate and deliver services. Licensing allows governments to ensure basic public health and safety by controlling the entry of healthcare providers and facilities into the healthcare market and by establishing standards of conduct for maintaining that status” (12).

Licensing differs from other approaches to quality regulation in that it is mandatory and is performed uniquely by a government agency. Licensing regulations also specify the time

period for which the license is valid and the required procedure for maintaining or renewing the license. Assuming that problems with the provider or facility have not been identified or reported, licenses may often be renewed with the payment of a specific fee or submission of documentation.

Licensing standards are typically set at a minimum level, defined by the government as that needed to ensure health and safety in the country. For individual providers, licensing standards are usually defined in terms of training (e.g., completion of degree from an acceptable training institution) and demonstrated technical competence (e.g., passing of a licensing examination).

Although licensure exams are the most common example of regulation through licensing, other regulatory programs related to licensing include the reciprocal granting of licenses to professionals of other countries, establishing standards for professional practice, and developing systems to investigate and punish professionals that violate professional license standards(13).

Similar to licensing is *registration*, by which a provider may be admitted into a registry of providers recognized by the government as providers of health care services in the country. If registration requirements are based not only upon completion of educational requirements but also demonstrated technical competence, such as passing of a qualifying examination, the registration process may be a more effective mechanism for quality regulation. Registration has the added advantage of facilitating the creation a database of information about health care professionals that are practicing or intending to practice their profession in a given country (12).

Organizational licensing or registration is used in some countries to enable organizations to legally deliver health care services; granting of the license is often based on on-site inspection to determine if minimum health and safety standards have been met. The licensing of health care facilities differs from accreditation and certification in that it is mandatory, thus providing the government control over the entry and operation of facilities in the health sector. However, in some countries, a new registration or licensing process has been proposed for existing health care facilities that more closely resembles accreditation in the

sense that detailed standards covering various functional areas have been proposed, with initial and subsequent evaluation of compliance, and the possibility of assistance being provided to facilities to help them achieve the standards (12).

A critical requirement for achieving the intended impact of licensing is to build in mechanisms to ensure that the desired performance or competence is sustained over time. Licensing only at the point of entry into the health care market is insufficient to provide assurance to the public and to health sector institutions that providers maintain competency throughout the span of their careers.

Time-limited licenses and clear requirements for renewal are essential to create an incentive for providers to remain current through continuing education and for organizations to maintain physical infrastructure and capacity. A related issue is the need for enforcement of sanctions or consequences for loss or reversal of licensing status. This includes procedures for disciplinary action against licensees who fail to maintain the conditions of licensing as well as procedures for reporting and handling impaired or incompetent providers and facilities (14).

“A system by which physicians with active licenses to practice medicine in the United States will be required over time to periodically demonstrate ongoing clinical competence in their area of practice as a requirement for renewal of licensure is going to become reality in the near term” (15).

So far, we have seen that licensing of health professional and medical facility with some regular interval renewal to maintain consistent standard service which can also be integrated to inspection service because initial inspection is required before licensing a health and health related facility and for renewing it may be needed as well.

The style and approach to facility inspection will depend on the facility itself, the community in which it is located, and its history and relationship with the local licensing program and staff. Diversity in inspection style and approach is acceptable and in many cases may be beneficial, provided that basic principles are followed (16).

## **Inspection Planning**

Planning for an inspection involves careful preparation so that licensing officers know in advance what they intend to do and how they intend to do it. Good planning leads to an appropriate inspection informed by all pertinent and available information.

### **Review the Facility File**

Before an inspection, licensing officers' conduct a file review to familiarize themselves with the background to the license and to identify and document any previous contraventions. This step assists licensing officers in gathering information about previously-identified issues and concerns.

### **Review Risk Assessments**

In order to plan their work and use their time effectively, licensing officers determine the importance of an inspection based on the risk to the health and safety of those in care and rank the inspection accordingly in the context of their other work.

### **Choose an Inspection Method**

There are different inspection methods suitable for different circumstances (16).

- **Unannounced Inspections:** It is important that most aspects of a facility operation are assessed at a time when the facility is in its usual routine. This is best carried out through unannounced inspections. Unannounced inspections are standard practice in most regulatory activities such as restaurant and food inspections, liquor licensing, by law enforcement, and occupational safety.
- **Scheduled Inspections:** It is sometimes appropriate to schedule inspections; for example, an inspection to assess specific aspects of a facility's operation that require the licensee/manager to spend time with licensing staff is usually scheduled to ensure those individuals are available. When completing an initial complaint incident, or follow-up inspection, it may be appropriate to schedule the inspection, unless the licensing staff assesses that doing so would compromise the gathering of information and evidence.
- **Joint Inspections:** There are situations where it is appropriate for more than one licensing staff or a combination of licensing and funding program staff or other

authority such as Fire Protection to conduct an inspection together. Examples of such situations include:

- Inspection when a licensing officer needs to be accompanied by funding program staff (i.e. nutritionist, nurse) with current clinical expertise or funding program expertise to assess specific issues.
- Inspection of a facility where a witness is required as a result of previous history, an especially challenging relationship with a licensee/manager, significant complaint follow-up, or where action on the license is being recommended.
- Inspection where licensing staff safety may be at risk; for example, a joint inspection of an unknown unlicensed premises or an inspection in response to a complaint about violence in a facility. For serious risk, police assistance should be requested.

#### Identify the Depth and Degree of Inspection

Licensing staff must determine the depth and degree of inspection that is required and what approach will best allow them to determine compliance or non-compliance with statutory requirements. Auditing a facility by looking at random samples may be used for large facilities if it allows licensing staff to determine overall compliance based on a balance of probability. Licensing staff need not review every file, record, bedroom, etc.; a general determination of compliance can be made based on a review of a random sample for each legislative requirement. If the findings of all samples are consistently compliant, it is reasonable to assume that the facility generally meets the requirements. If the findings of any of the sample indicate non-compliance, further assessment or additional samples may be necessary.

#### **The Inspection Process**

An organized and transparent inspection process will ensure the least amount of disruption to the operation of a facility. This includes outlining to the licensee/manager/senior staff person the reason for the inspection and the inspection method that will be used. The inspection may need to include a review of facility records, policies and procedures, and may include discussions with other staff of the facility.

During an inspection, licensing staff may also collect valuable information through conversations with a variety of people such as persons in care, family, or guardians, licensees, managers and staff, and, later, with funding programs and other regulatory agencies. Licensing staff should inform the licensee/manager that any information gathered during the inspection will be fully reviewed with them and be maintained to ensure the protection of privacy for the persons in care and family members.

Observation is a key technique of inspection. Licensing staff should inspect the site and also observe staff interactions with persons in care.

When conducting an inspection, licensing officers should also (16):

- Observe a segment of the facility's daily program, and
- Note if care provided is consistent with facility's policies and procedures.

### **Before Writing the Inspection Report**

Whenever possible, licensing staff should allow time for the licensee/manager to ask questions and provide clarification of issues prior to finalizing the written inspection report. Licensing officers should allow the licensee/manager to set reasonable timelines regarding the correction of low-risk issues, keeping in mind that the licensee is responsible for planning, actions and solutions.

### **Documentation: Writing the Inspection Report**

Every aspect of the inspection process must be documented using plain and easily understood language. Licensing staff should use their health authority approved methods and tools which may include inspection checklists. The way in which the inspection report is written should help the licensee to clearly understand contraventions and what needs to be done to correct them. The following guidelines for writing an inspection report may assist licensing staff.

#### **Guidelines For Writing An Inspection Report**

- Use plain language; avoid jargon, technical or legal terms that you and/or the licensee may not fully understand.
- Ensure that hand-writing, if used, is neat and large enough to be legible.

- Document all contraventions clearly; cite and quote relevant sections of the legislation and/or the applicable regulation. (Note: If an issue is not related to legislation, but is merely a helpful suggestion, then it should clearly state in writing that it is a recommendation only).
- Record specific observations or evidence that supports each contravention; state what was observed and what corrections are needed.
- Identify timelines for correction for all contraventions.
- Include all relevant licensee responses and statements.

When an inspection report has been completed, a copy must be provided to the licensee or manager and a copy is kept on file with the licensing office.

## **2.2 Information System**

Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings (17). Information systems are interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization (18).

Health Information System is a system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services (19). Health Management Information System An information system specially designed to assist in the management and planning of health programmes, as opposed to delivery of care (20).

. There are six main types of information systems based up on support they provide.

- **Transaction Processing System (TPS):** A system that processes data resulting from business transactions, updates operational databases, and produces business documents.
- **Management Information System (MIS):** A system or group of systems which collects and presents management information relating to a business in order to facilitate its control. Management Information Systems are those that support all management levels

in the conduct of their functions, such as operations, administration, or planning and programming.

- **Office Automation System (OAS):** A system that automates office procedures and enhances office communications and productivity.
- **Decision Support Systems (DSS):** A system that provides interactive ad-hoc support for the decision making process of managers.
- **Expert System (ES):** A knowledge-based system that provides expert advice and acts as expert consultants to users.
- **Executive Information Systems (EIS):** A system that provides critical information tailored to the information needs of top management. The research project falls into transactional process systems mostly and management information system to certain extent.

When we consider information systems which are found are a fundamental part of, all manner of human organizations. It is hard to be an organization (a business firm, a medical facility, a school, or even a family) without having some information systems to store data and provide information to people who need to use it to guide their actions. Of course, these information systems may not use digital information and communications technology (i.e. computers). A paper notebook or diary, a notice board, a meeting room or a conversation can serve as a part of an information system too. However, here we are mostly concerned with the more formal and deliberately structured information systems found in organizations and that draw in large part on digital technology.

Quite often what we observe is the move from more traditional information system, for example based on paper records, to one based on digital records. Thus we have moved in many organizations from paper letters and memos typed by a secretary to emails and text messages typed by the main sender, or from paper catalogues sent out in the post to electronic catalogues on websites or DVDs. Another good example of change to more ICT-based information systems today is the move in healthcare all around the world from a paper-based patient record in a physical file, to an electronic record stored in a computer network and potentially easily available to multiple persons and at multiple locations.

“It is useful to think through this example (move from paper based to electronic) under the headings of what? Why? How? and ‘so what?’. Taking just the why

question, it is interesting to think of how many reasons there may be to make this change from paper to digital records. Is it to deliver better care, safer care, to help doctors and/or patients make more informed decisions, to reorganise the way care is given by nurses, to allow more information sharing among doctors and nurses, or to make the giving of care cheaper? Is it a way to solve existing and well understood problems, or is it a way to achieve something new, radically different and better? One rather general way to answer this question is to say that it will make healthcare more efficient (or it is hoped it will), but what does this word ‘efficient’ really mean? As in this case where doctors’, nurses’ and patients’ interests are involved(just to start with), we should always see any information system as involving, including and serving people. Sometimes as individuals or as citizens (for example, patients), but often as members of (or workers within) organisations, for example, nurses, managers, clerks, doctors, engineers or accountants.”(21)

Table 2. Key Global Trends analog to digital comparison

| <b>Analog</b>                                                                        | <b>Digital</b>                                                               |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| • Information has weight                                                             | • Information is weightless                                                  |
| • Moves at courier speed                                                             | • Moves at speed of light                                                    |
| • In one location at a time                                                          | • In multiple locations and simultaneously                                   |
| • Storage, sorting and retrieval expensive and slow                                  | • Storage, sorting and retrieval cheap and fast                              |
| • Data collection idiosyncratic                                                      | • Data collection standardized                                               |
| • Retrospective analysis for knowledge creation expensive, unreliable and infrequent | • Retrospective analysis for knowledge creation cheap, reliable and frequent |

Simply put, systems analysis and design is an approach to the development of information system which encompasses the first four phases of the systems development life cycle (SDLC)-Planning, Analysis, Design and Implementation. The SA&D process can encompass many tools and techniques. Broadly speaking; there are two main modeling approaches to SA&D:

- The tradition or “structured” approach, which uses Data Flow Diagrams (DFDs) and Entity Relationship Diagrams (ERDs) as its modeling tools;

- The object-oriented (OO) approach, for which the Uniform Modeling Language (UML) has become the defacto standard.

The traditional approach to SA&D is generally considered process-centric and top-down, in so far as the problem under consideration is decomposed into a hierarchical set of processes. In the traditional approach, the systems analysis phase consists of all activities needed to understand the system and specify in detail what the system is to do. The system design phase consists of all activities needed to specify the solution and how it will be physically implemented.

The object oriented approach is generally considered data centric. It uses a set of entities (or more correctly, “classes”) that encapsulate both the data (attributes) and processes (“methods”) associated with each entity type (22).

The object-oriented approach to software development focuses on real-world objects. Object oriented popularity is increasing in concert with the increasing complexity of software systems. Object Oriented includes object-oriented analysis (OOA), design (OOD), and programming (OOP).

Table-3: Comparison Between the two Approaches of Systems Development (23)

| <b>Structured Approach</b>                                                                                                                                                                                                | <b>Object-Oriented Approach</b>                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Logical steps of SDLC – Analysis, Design, and Implementation                                                                                                                                                              | No logical steps of SDLC – repeating all phases during each iteration                                                                                                                                                          |
| Few models to deal with                                                                                                                                                                                                   | Many models to deal with                                                                                                                                                                                                       |
| There are clear-cut documentation at the end of each phase                                                                                                                                                                | There are no documents per se; all information is contained within the model descriptions                                                                                                                                      |
| Focuses mainly on the business aspects of a system and deals with other components such as user interface, network architecture, processing architecture separately                                                       | Starts with the business aspects of a system but deals with other components such as user interface, network architecture, processing architecture together as the analyst moves from the requirements models to design models |
| Top-down approach of understanding a problem through process models. Data definition is typically evolved from the process models                                                                                         | Bottom-up approach of understanding a problem through process definition and data definition                                                                                                                                   |
| A small and consistent vocabulary to follow through the life cycle                                                                                                                                                        | A large and changing vocabulary during various phases of the life cycle                                                                                                                                                        |
| Process models are the focus of understanding user requirements                                                                                                                                                           | Use cases are the focus of understanding user requirements                                                                                                                                                                     |
| Easy to extract design models from the analysis models                                                                                                                                                                    | Design models depend on many analysis models                                                                                                                                                                                   |
| Easy to extract design information for systems components such as user-interface, application programs, and database or files                                                                                             | Very complex to extract design information for systems components such as user-interface, application programs, and database or files                                                                                          |
| Business logic of a process is described by the process description using structured English, decision tables, and decision trees                                                                                         | Business logic of a process is described by use case scenario, use case description, interaction diagram, and activity diagram                                                                                                 |
| Does not dictate any model for development environment                                                                                                                                                                    | Three-layer approach to systems design is closely analogous to development environment                                                                                                                                         |
| Identification of input and output to the system is simple and they are extracted from the input/output data-flows in the data-flow diagram. Data structures associated with the data-flows are used to describe the data | Input and output information are scattered in many sequence diagrams as input/output messages. Separate classes describe the data                                                                                              |
| All data necessary for designing and developing a system is found in a single repository called data dictionary                                                                                                           | There is no single repository for data; they are scattered with class definitions and use case descriptions                                                                                                                    |
| Development of programs through subroutines and functions are left to the programmers at the implementation phase                                                                                                         | Development of programs is conceived at the requirements phase through defining classes, methods, and messages, and continues through the design phase                                                                         |
| Detailed programming knowledge is not necessary for successful analysis and design                                                                                                                                        | Detailed programming knowledge is necessary for successful analysis and design                                                                                                                                                 |
| Appropriate for developing documents and then start programming; hence programming can be outsource                                                                                                                       | UML iterative approach requires continuous development and testing; hence programming can not be outsourced                                                                                                                    |
| Easy to manage systems development project as tasks are defined in phases, through output documents, and especially the hardest part - programming, which is defined through program modules in a top-down fashion        | Not easy to manage systems development project as models require continuous revisiting, and the hardest part which is programming that depends on packages - are complex; thus task duration is hard to quantify               |

## **Object oriented system analysis and design has the following features (24).**

### **1. Abstraction**

The world is a complicated place. To deal with that complexity we form abstractions of the things in it. For example, consider the abstraction of a person. From the point of view of university, it is enough to know name, address, telephone, social security number, and educational background. From the point of view of police, name, address, phone, weight, height, hair color, eye color, and so on. This is just different abstraction depending the application at hand.

Abstraction is an analysis issue that deals with what a class knows or does. It should include the responsibilities, the attributes, and the method of interest to your application and ignore the rest. OO systems abstract only what they need to solve the problem at hand.

### **2. Encapsulation**

The values of the variables inside an object are private, unless methods are written to pass that information outside of the object. This has both substantive and practical implications. The substantive importance is that the representation of an individual actor now presumes that the actor is a self-contained entity and that other actors do not automatically have access to all information inside that actor. Like humans, objects have to take effort to convey information to each other about their internal states. The practical advantages of encapsulation, however, are just as important. Computer projects can be broken down into separable components and when the code is finished, the details of what goes on inside each object may not be important to the programmer.

This is commonly referred to as the separation of *"interface"* from *"implementation."* While the interface declares what methods the object can execute, the implementation may remain hidden. The user only has to be familiar with the interface of an object, not its implementation

### **3. Inheritance (Code Re-usability)**

Similarities often exist between different classes. Two or more classes often share the same attributes and/or the same methods. Because you don't want to have to write the same code repeatedly, you want a mechanism that takes advantage of these similarities. Inheritance is that mechanism. It enables to reuse existing data and code easily.

For example, look at the similarity between Toyota and Mitsubishi cars. They are both cars. They have many things in common: they can drive, both of them consume energy, they have color, they have capacity measured in horse power, they need driver, etc. They have also few differences: brand name, manufacturer, etc.

Instead of modeling all the above similarity for both types of car and create redundancy, we model the similarity in car and we make them to inherit from the car. This is one of the advantages of reusing code in object oriented system.

Inheritance models “is kind of” and “is like” relationships where we have super classes and sub classes. Each subclass inherits all variables and methods of its super class. Inheritance works because code for each class designates that class as a subclass of a superclass.

#### **4. Information Hiding**

To make applications maintainable, access to data attributes and some methods must be restricted. If one class wants information about another class, it should have to ask for it, instead of taking it. By restricting access to attributes, it is possible to prevent highly coupled code. In highly coupled code, a change in one part of the code forces you to make a change in another, and then another, etc.

#### **5. Polymorphism**

Objects of different classes respond to the same message differently. The objects belonging to different types respond to method, field, or property calls of the same name, each one according to its own behavior. The programmer does not have to know the exact type of the object in advance, and so the exact behavior is determined at run-time. This is called *late binding* or *dynamic binding*.

RAD refers to a development life cycle designed to give much faster development and higher quality systems than the traditional life cycle. It is designed to take advantage of powerful development software like CASE tools, prototyping tools and code generators. The key objectives of RAD are: High Speed, High Quality and Low Cost. RAD is a people-centered and incremental development approach. Active user involvement, as well as collaboration and co-operation between all stakeholders are imperative. Testing is integrated throughout the development life cycle so that the system is tested and reviewed by both developers and users incrementally (25).

Rapid Application Development (RAD)–based methodologies are a newer class of systems development methodologies that emerged in the 1990s. RAD-based methodologies attempt to address both weaknesses of structured design methodologies by adjusting the SDLC phases to get some part of the system developed quickly and into the hands of the users. In

this way, the users can better understand the system and suggest revisions that bring the system closer to what is needed

**Table 1 Criteria for Selecting a Methodology (23)**

| <b>Ability to Develop Systems</b> | <b>Structured Methodologies</b> |                 | <b>RAD Methodologies</b> |                    |                              | <b>Agile Methodologies</b> |
|-----------------------------------|---------------------------------|-----------------|--------------------------|--------------------|------------------------------|----------------------------|
|                                   | <b>Water fall</b>               | <b>Parallel</b> | <b>Phased</b>            | <b>Prototyping</b> | <b>Throwaway Prototyping</b> | <b>XP</b>                  |
| With Unclear User Requirements    | Poor                            | Poor            | Good                     | Excellent          | Excellent                    | Excellent                  |
| With Unfamiliar Technology        | Poor                            | Poor            | Good                     | Poor               | Excellent                    | Poor                       |
| That Are Complex                  | Good                            | Good            | Good                     | Poor               | Excellent                    | Poor                       |
| That Are Reliable                 | Good                            | Good            | Good                     | Poor               | Excellent                    | Good                       |
| With a Short Time Schedule        | Poor                            | Good            | Excellent                | Excellent          | Good                         | Excellent                  |
| With Schedule Visibility          | Poor                            | Poor            | Excellent                | Excellent          | Good                         | Good                       |

Object-oriented approaches to developing information systems, technically speaking, can use any of the traditional methodologies (waterfall development, parallel development, phased development, prototyping, and throwaway prototyping). However, Object-oriented systems analysis and design (OOSAD) is most associated with a phased-development RAD-based methodology, where the time spent in each phase is very short. OOSAD uses a use-case-driven, architecture-centric, iterative, and incremental information systems development approach. It supports three different views of the evolving system: functional, static, and dynamic. OOSAD allows the analyst to decompose complex problems into smaller, more manageable components using a commonly accepted set of notations. Also, many people believe that users do not think in terms of data or processes but instead think in terms of a collection of collaborating objects. As such, object-oriented systems analysis and design allows the analyst to interact with the user with objects from the user's environment instead of a set of separate processes and data (26).

## 2.3 Related Works

Research project paper on health professional licensing and facility licensing and inspection system design and development directly could not be found as far as the researcher's knowledge. Therefore, vehicle licensing work was considered in broader sense.

The research project conducted by Ikechukwu on online motor vehicle licensing system for Nigeria aims in developing software that will link by computerization all the procedures of motor vehicle licensing system in motor license authority centralizing the system that is carried out by Federal Road Safety Commission (FRSC), the state Vehicle Inspection Officer (VIO) and the state Board of Internal Revenue (BIR) three arms of government agencies that are responsible for automobile licensing, registration and control(27).

The researcher explained the problems related with the existing system that includes ineffective, tedious, monotonous of its operation, inaccurate and inconsistent. To address the problems structured systems analysis and design which uses a linear life circle, divided the whole project task into various stages or phases was adapted. Entity relationship diagram was applied for database modelling (27).

The overview model used by the author for Registration Sub-System, Renewal Sub-System and Administrator Sub-System more resembles a context level data flow diagram that lacks detail level data flow diagrams.

On other research project, the first two stages of Development of Driving License MIS of California Motor Vehicle Division described below respectively.

Gebbers (28) stated that in determining test fail rates (that was overwriting the new application after three times fail in the existing system) and the total number of tests of each type that individuals have taken before licensure, and other licensing process measures that would have value to departmental administrators and traffic safety researchers.

“Capturing driver licensing process information directly from the DL Master File and electronic field office application databases before they are purged would be a much more cost effective and efficient way to obtain the desired information. These data would be very useful in a wide variety of applications including longitudinal systems, monitoring of driver license

programs, monitoring driver competency levels, monitoring and auditing driver licensing operations, and estimating workloads.”

Two surveys made with the representative committee member from departments and determined that capturing the desired data was feasible and committee provided recommendations on the desired characteristics of the management information system (28).

Chapman (29) discussed the second stage of the above project involved “Creating a prototype off-line driver license (DL) application management information system (MIS) that captured and stored extensive information on the license application process. From this prototype database, example reports were generated to demonstrate the feasibility of constructing a fully functional off-line DL application MIS.”

A system is needed that would capture data before they are purged, so that a complete picture can be created of what happens to applicants as they progress, possibly over multiple applications, through the licensing process from beginning to end.

The study suggest creation of the proposed driver license application database would result in improvements in driver safety and safety management by providing information that is critical to the identification of problems and initiating system improvements.

Chapman(29) elaborates Division of Investigations and Audits (DIA’s) data warehouse represents a database solution in which several months of data are placed in a single relational database structure that provides several indexed access paths. When loaded and indexed, following established procedures. The database system was constructed so that an auditor or investigator could use the system independently while the department’s Information Services Division staff would be available to answer questions, provide technical advise, and resolve system problems. A 25-month period of application transaction data were requested from DIA’s data warehouse, for a 1% random sample of applicants, to test the feasibility of developing a longitudinal version of the database.

Five problems with the application data from DIA’s database and with the prototype database were identified in constructing the prototype database. Solutions were recommended for each except the one for data entry error that cannot be totally avoided (29).

**Table 2 Summary of Related Works**

| <b>S. No.</b> | <b>Author</b>           | <b>Objective (Purpose)</b>                                                                                                                                                                      | <b>Methodology (Approach)</b>                                                                                                       | <b>Key Findings</b>                                                                                                                                                                                                                                                                               | <b>Remark</b>                                                                     |
|---------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 1             | Ikechukwu, (2012)       | To develop centralized motor vehicle licensing system                                                                                                                                           | Structured System Analysis and Design                                                                                               | The study explains that the introduction of the online motor registration system in motor licensing system in Nigeria will reduce human prone errors in processing and increase the security of registered motor vehicles in the country.                                                         | Data flow diagram shows only the context diagram that lacks detail level modeling |
| 2             | Gebbers (2002) Stage I  | To propose database that would be able to provide descriptive measures and statistical data related to the driver licensing process.                                                            | An advisory committee consisting of representative from a number of divisions within the department through the use of two surveys. | Based on the survey, it was determined that capturing the desired data was feasible. The committee provided recommendations on the desired characteristics of the management information system, the data format and file structure, index methods, and other necessary features of the database. | Feasibility confirmed (conceptual level)                                          |
| 3             | Chapman (2005) Stage II | To develop and evaluate the usefulness of a prototype DL application MIS that would provide data for use in traffic safety research studies and monitoring driver licensing program operations. | Prototype                                                                                                                           | From this prototype database, example reports were generated to demonstrate the feasibility of constructing a fully functional off-line DL application MIS that would be able to provide descriptive measures and statistical data related to the driver licensing process.                       | Feasibility confirmed (technical level)                                           |

# Chapter Three

## Methodology

A phased development, Rapid Application Development (RAD) methodology of object-oriented approach applied to the study of the design system. Interview and document analysis were used as a main tool to capture the business system requirement along with observation. Unified modeling language (UML) development techniques applied in the process of requirements capture, model organization business system and design. ArgoUML and Visio Software were employed in analysis and design models diagramming.

### 3.1. The Study Setting

The ministry of health initiated a Business Process Reengineering (BPR) in order to establish an efficient and effective management system at all levels. It has been believed that this redesign system will assist in meeting the public demands for accountability, responsibility, honesty and help manage the complex regulatory problems the country is facing. Based on this conviction, the previous Drug Administration and Control Authority is provided with a mandate to form redesigning teams and start the Business Process Reengineering(1).

Although, there was a process of professional licensing in the Ministry of Health, it was not supported by pre-licensing regulation to protect the public from malpractice exercised by unqualified and unethical health professionals. Moreover, there was no complaint handling and grievance management system and it is difficult to say that there was practice standard in the country. Moreover, there was no services standard to regulate health professionals and no clear legislative ground to enforce health regulation (1).

Therefore, the existing processes were re-analyzed for their relations and outcomes to satisfy the end users (the public) in need of standard health services, safe, effective and quality medicines, safe and quality foods, and these to be served by qualified and licensed health professionals. From the analysis, they are organized around outputs like standards, license, inspection reports, market authorization certificate and number of information developed and disseminated. Regulatory standard setting process produces standards to objectively establish the expected level of productivity, efficiency and quality of organizational processes or activities as a controller, while the inspection and licensing process produces reports and

license which feed each other with the process or have either direct or indirect effect on the fate quality assessment and registration.

As Business Process Reengineering (BPR) is a fundamental and radical redesigning of business process to bring about dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service level and speed. Based on the process design, it groups related tasks/activities that together create value to customers. Therefore, there were related tasks to come to the process from their fragmented sites of operation, in the Ministry of Health. This being the case, the critical analysis of the situation and the stakeholder analysis led to aggregation of the related tasks and activities. Hence, a process was designed to accommodate regulation of health services, health and health related facilities, health professionals, food and pharmaceuticals. A core process and four sub processes have been developed to carry out the given tasks and achieve the mission, goals and objectives of the regulatory authority (1).

A core process that is feasible, cross functional, customer focused and organized around the outcome has been identified. It is designed around the outcomes, neither functional nor departmental, so that it can provide a single contact point to the customer/stakeholders. It also replaces fragmented processes with simple, integrated ones, which show accountabilities and responsibilities in all ways and establishes a continuous flow of the main sequence. Hence, the core process is named as “Health and Health related services and products quality regulation core process”. The following four sub processes are designed under this core process (1):-

**Regulatory standard setting:** - describes the level of quality expected about health care facilities, health professionals, medicines and food, corresponding to some references considered by a general consent as a basis of comparison, an approved model, used as a basis for regulatory actions and enforcements.

**Inspection and licensing:** - encompasses inspection and licensing of health professionals, traditional medical practitioners, health institutions, food and pharmaceutical manufacturers to ensure that the professionals and facilities meet minimum standards to perform safe and effective public health services.

**Product quality assessment and registration:** - ensures safety, efficacy and quality of medicines through inspection, dossier evaluation and laboratory testing before they are marketed.

**Regulatory information delivery system:** - is to develop and provide regulatory and related information to the customers and stakeholders, including their dissemination through database, printing & electronic materials, mass media, website and other suitable means.

Licensing process under inspection and licensing sub-process involves issuing, renewal, suspension and revocation of licenses. These can be considered as output of licensing system. Measuring outputs is the fundamental and least complicated aspect of evaluating policy and performance of an organization.

However, data for the various licensing activities carried out by different sectors are not always readily available or accessible. Another problem in licensing can be grouped in to those relating to legal structures and those relating to implementation. Moreover, the procedure for issuing a license and the data required to certain degree is retrospective, since the application submitted after the manufacturing plant/ health facility or retail outlet has been built. Ensuring the requirement or any requested modification of the facility or retail outlet has been built. Ensuring the requirement or any requested modification or the facility would be therefore difficult prior to Business Process Reengineering (BPR).

Another problem arises from the way in which mandates were given to different sectors even though the mission is to protect and promote public health, leading to coordination problems. For instance, food safety, hygiene and environmental health partially regulated by hygiene and environmental health department (under ministry of health). At the same time quality and safety issue of food in fragmented manner, though the scope of food and environmental health regulation is broad in scope and consists of varied intervention measures against disease control and the promotion of general public and wellbeing pharmaceutical premises, importers exporters, retail outlets and pharmacy personnel are regulated in limited areas of the country even if all citizens of the country have the right to get quality, safe and effective medicines with reasonable information health professionals practice except pharmacy personal to some extent is to regulated at all although it is a vital component of the overall health service in Ethiopia for ensuring the highest quality health care for the public. The

other major problem is health facility regulation which focus only on private health sectors to some extent as if public health sectors do not require regulation.

In general fragmented regulatory system, poor regulatory capacity, centralized management, bureaucratic hurdle and with none-value adding steps and hand-off contribute to negligible performance of the process (1).

The decentralization of health professionals' regulation down to the state health bureaus was the core of the health professions regulation reform. The federal regulatory organ's role is limited to regulating foreign-trained health professionals and scarce health professionals (doctors, midwives and anesthetists) (30).

Currently the professional licensing alone is computerized as part of Human Resource Information System (HRIS) that does not include facility licensing, traditional health practitioners and inspection. All the officers do the procedure and a single information technology officer captures all the data in to the system.

The facility requirement standard is organized around four 'P's; namely, Premises, Product, Professional and Practice quality inspection (31).

### **3.2 Source and Study Population**

The study population includes the Oromia Regional Health Bureau, licensing and inspection staffs that are 12 of which three are selected purposively including the section head based up on the researcher observation, the section head recommendation and the respondents willingness. Because the staffs carry out the transactional level duties and homogeneity of the functions they are performing, three of them were considered to analyze the business process and system requirement.

### **3.3 Data Collection (tools, variables)**

Data was collected through interview and focused group discussion. Brainstorming was made with three of the staffs. Business Process Reengineering (BPR) of the system under study, sample registration, license, and inspection forms are reviewed inline with the report forms and requirements of the bureau in order to elicit the business requirement. Classes and attributes captured constitute the variables of the study.

### **3.4 Data Management Analysis and Design**

The collected data were presented using tables and narration. Data depiction were made using activity diagrams, sequence diagrams, use case diagram, use case description, class diagrams, state chart and deployment diagram. To help users critically examine the current state of systems and processes (the as-is system), identify exactly what needs to change, and develop a concept for a new system (the to-be system) BPR technique is adopted that creates significant change on the existing system.

As phase based RAD, object oriented approach is adopted by this study less emphasis made on as-is system where as in contrast more emphases given for to-be system to achieve the desired goal (26).

### **3.5 Method of Dissemination of Results**

The study aimed to be compiled and disseminated as a project thesis report and made available to the School of Information Science and School of Public Health Library. Attempt will also be made to publish on local as well as international publication outlets.

### **3.6 Evaluation Technique**

The researcher let two of the 12 staffs other than the respondents to review and comment on the analysis and design models and work procedure descriptions in order to validate the design and have a mutually understand of the new system design performance. Their evaluation and comment report were incorporated both into the conclusion section and the respective area.

### **3.7 Operational Definition**

**Licensure** is a process by which a governmental authority grants permission to an individual practitioner or health care organization to operate or to engage in an occupation or profession. Licensure regulations are generally established to ensure that an organization or individual meets minimum standards to protect public health and safety.

**Inspection** is the act of looking at something closely in order to learn more about it, to find problems, etc.

: the act of inspecting something

: an official visit to a school, hospital, etc., in order to see if rules are being followed and things are in their proper condition

**Initial Inspection:** This is the first inspection following receipt of an application for license. An initial inspection is undertaken after a facility has submitted an application for license and has been entered into the database and assigned a facility number by the computer system. Inspections conducted prior to issuance of a license are considered initial inspections. Inspections conducted after the issuance of the license may be considered as routine or follow-up inspections.

**Routine Inspection:** This is a comprehensive inspection of a licensed facility. A routine inspection may be a complete and comprehensive review of all licensing requirements or may be focused on a particular aspect of the facility or care provided.

**Complaint Inspection:** This is a first inspection of a complaint in a licensed facility. A complaint inspection is conducted when licensing staff investigate a complaint in a facility that is operating with a valid community care facility license. Subsequent inspections may be carried out to follow-up on the initial complaint inspection to ensure that the issues from the complaint have been resolved or to further monitor the situation. These inspections are coded as follow-up inspections.

**Incident Inspection:** This is an initial inspection in response to a reported reportable incident. An incident inspection is conducted when licensing staff investigate an incident in a facility that is operating with a valid community care facility license. Subsequent inspections may be carried out to follow-up on the initial incident inspection to ensure that the issues from the incident have been resolved or to further monitor the situation. These inspections are coded as follow-up inspections.

**Follow-up Inspection:** Any inspection that follows up on an identified issue of non-compliance following a routine, initial, or complaint inspection in a licensed facility. A follow-up inspection may be performed at any time to ensure the licensee/manager has resolved issues of non-compliance identified during a previous inspection.

Typically, follow-up inspections occur after an initial, routine or complaint inspection; licensing staff then undertake a focused inspection to verify whether the licensee has achieved compliance in specific areas of the legislation.

**Unlicensed Inspection:** An unlicensed inspection is carried out when the licensing officer investigates information received that a facility may require a community care facility license (16).

**Regulatory standard setting** describes the level of quality expected from health care facilities, health professionals, medicines and food, corresponding to some references considered by a general consent as a basis of comparison, an approved model, used as a basis of regulatory actions and enforcements.

**Inspection and licensing** encompasses inspection and licensing of health professionals, traditional medical practitioners, health institutions, food and pharmaceutical manufacturers to insure that the professionals and facilities meet minimum standards to perform safe and effective public health services (1).

A **health care provider** is an individual or an institution that provides preventive, curative, promotional or rehabilitative health care services in a systematic way to individuals, families or communities.

**Continuing Professional Development (CPD)** is defined as a range of learning activities through which health professionals maintain and develop throughout their career to ensure that they retain their capacity to practice safely, effectively and legally within their evolving scope of practice.

**Open Source** refers to software applications that are distributed under an Open Source license, meaning that anyone can use, copy, share, or modify the software without paying a licensing fee.

**Essential use cases** A use case describes something of value to an actor (often a person or organization). An essential use case is a use case that is technology independent—it describes the fundamental business task without bringing technological issues into account. Essential use cases are often used to explore usage-based requirements (24).

### **3.8 Ethical Clearance**

The project has been carried out after getting permission from the ethical clearance committee of Addis Ababa University, Medical Faculty through School of Public Health and Oromia Regional Health Bureau. Information sheet and consent forms were delivered along each interview and all interviewees have been asked their willingness to participate in requirement gathering; and informed verbal consent were also be obtained from all study participants and from every interviewee after the objective of the study informed.

The researcher professionally keep the company information security and will not disclose the information to anybody except for the project purpose. The researcher also maintains confidentiality in order to protect the privacy of the respondents.

# **Chapter Four**

## **Modeling and Discussion of Result**

This chapter aims to identify the requirements progressively. First, major business requirements were determined. Second, those requirements elicited using UML functional analysis models activity diagram to support the logical modeling of business processes and workflows and use cases to describe the basic functions of the information system. Both logical models support to understand the function or external behaviors that serve to model the problem domain of the system. Third, design models of system use case descriptions, sequence diagram, class diagram, component diagram and deployment diagram were used in order to show structural design of the new system. Lastly, result of the design model with respect to existing system is discussed.

### **4.1 Presentation of the Data Collected**

The following questions were asked with respective responses during the semi structured interview.

1. What are the major activities carried out in this section?  
Licensing professionals, facilities, registering traditional health practitioners and  
Inspection of health and health related facilities
2. What are your customers and their types?  
Applicants (Graduates), Health and Health Related Facilities Owners.
3. What sort of services they accept and or rendering to the section?  
Licensing health professionals, health and health related facilities, registration of  
traditional health practitioners, professional change, workplace change, license  
renewal, inspection, adding professional training and publication to the respective  
professional profile, report defects during inspection.
4. Which of the services incorporated into database information system?  
Only professional licensing part automated as a human resource information system  
part.
5. What data are captured and how it is going on each activity?  
You can get data that are captured from the forms.

6. What are the rules, guide lines and standards guiding for licensing and inspection?  
Every facility and professional has guide line and standard to practice health service
7. What parties or entities are involved in the transaction?  
Applicants, Officers, Facility owners, Inspectors, Zonal Health Bureaus
8. What reports are organized?  
Quarterly and annual report on new and renew licensing, inspection report by zone, professional type and level of institute.
9. What are the shortcomings of the existing system if any?  
Review and report generation of facility inspection, professional practice inspection is not easy and sometimes can not be traced at all. Licensing and inspection record tracking is difficult and time consuming.

The above question number 1 helped to get the blueprint of the activities, no. 2 and 7 helped to find actors of the system, no. 3 and 4 to understand the business domain, integration domain respectively. Whereas question no. 5 served a tool for class and attributes articulation, no. 6 and 8, consisted the business rule and report requirements respectively.

## **4.2 Requirement Analysis**

The requirements gathered through interview, discussion and observations are determined and defined below.

### **4.2.1 Functional Requirements**

The system should be able to provide the following functionalities:

- Issue professional license, facility license and register certificate for traditional health practitioner.
- Renew professional license, facility license and traditional health practitioner registration.
- Each professional has to have only one license number at a time with possibly more than one profession.
- Capture facility inspection information and update.
- Capture facility defect report.
- Maintain workplace change information.
- Maintain professional change information.

- Maintain trainings and publications of the professionals.

The system should allow the printing of individual professional, facility, traditional health practitioner on the appropriate paper or card. Only authorized personnel in the office can perform issue registration into the system. The system is required to assign each professional and facility a systematic unique number that will not be used by any other professional or facility. The system needs to have a facility for authorized personnel to review the individual professional's personal information in order to check and approve the issuance of the license and inspection. Moreover, the system should provide an alternative method for verifying issued licensed certificate online from the repository by other regional or Federal Health Bureau authorized offices that want to verify the license certificate bearer is the legal owner of that certificate.

The system has to allow and require the renewal of the license after the respective valid period of time in respective to the profession or facility for the purpose of updating and making active the license. This can be achieved by marking professionals with un-renewed license as illegal until their license is renewed. Licenses that are not renewed can be identified by expiry date indicated on the certificate or by their online status from the repository, which can be seen during online verification.

The system has to maintain professional and workplace change information and track the changes for professional and facilities and automatically update the change.

#### **4.2.2 Non-functional requirements**

Requirements like usability, reliability, performance, supportability, security, recovery, interface, implementation, operation, and legal are considered as nonfunctional requirements.

- The system should be a web-based application.
- Menus should be organized in a hierarchical manner (usability)
- The system must be password-protected.(Security)
- The system must be backed up daily. (Back up)

### **4.3 Analysis Model**

Analysis modeling answers the questions of who will use the system, what the system will do, and where and when it will be used. During this phase, the researcher has learned about the system. The researcher then produces the functional model (activity diagrams, use-case descriptions and diagram), structural model (CRC cards and class and object diagrams), and behavioral models (sequence diagrams, communication diagrams, behavioral state machines, and a CRUD matrix).

#### 4.3.1 Functional Model

The two major activities of existing system: inspection and licensing, in which other activities and actions tied are illustrated in the tables below respectively.

**Table 3 Major and detail activities of inspection and licensing of health facilities, pharmaceutical manufacture and retail outlets.**

| Major activities                       | Detail activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application reception and verification | <ul style="list-style-type: none"><li>• Receive application and verify necessary technical and documentary requirement</li><li>• Differentiate licensing type and also check whether it is new or re- new</li><li>• If any requirement is missed during verification notify and applicant to fulfill the necessary requirement</li></ul>                                                                                                                                                                                                                                                                                                                                                       |
| Document evaluation and inspection     | <ul style="list-style-type: none"><li>• Review inspection profile and check for acceptance for renewal</li><li>• If it is not accepted, notify the client in written form</li><li>• If it accepted re- new and issue it</li><li>• Regulatory decision for inspection</li><li>• Preparation for inspection</li><li>• Introduce to the person in charge</li><li>• Conduct inspection according to the standard</li><li>• Compile inspection result</li><li>• If not comply notify the client and take regulatory action in accordance with the standard</li><li>• Report the result for licensing if comply</li><li>• Prepare and issue license with terms and condition for applicant</li></ul> |

**Table 4 Major and detail activities of professional licensing**

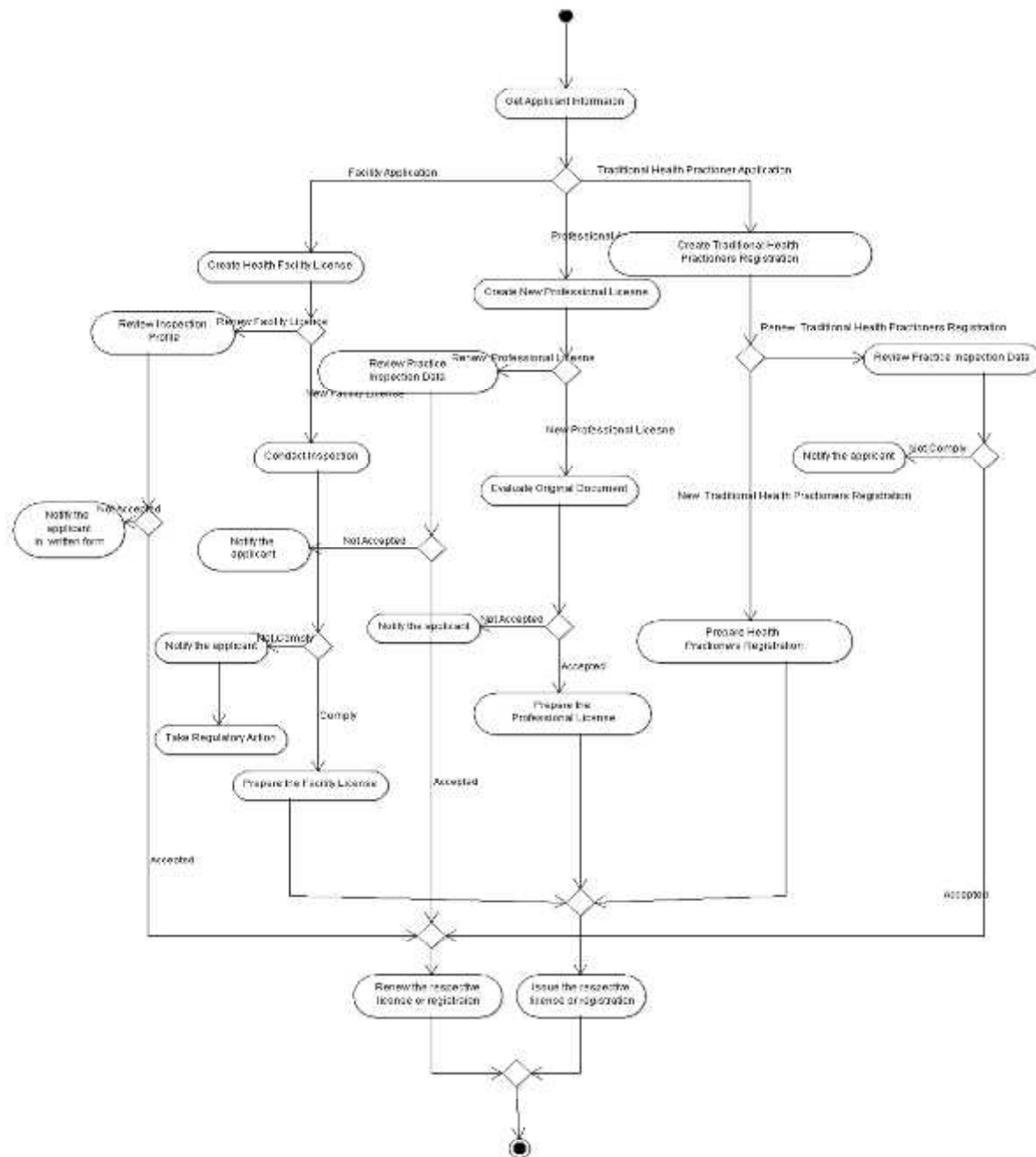
| <b>Major activities</b>                                      | <b>Detail activities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application reception and verification                       | <ul style="list-style-type: none"> <li>• Receive application for license and verify necessary technical and documentary requirements like graduation credential, qualifying examination certificate etc.</li> <li>• Differentiate whether it is new licensing or license renewal application</li> <li>• Notify the applicant for incomplete application to complete</li> </ul>                                                                                                         |
| Review practice inspection profile data or evaluate document | <ul style="list-style-type: none"> <li>• If it is renewal, practice inspection profile data is reviewed</li> <li>• If it is new application original documents are evaluated for the related of data on them</li> <li>• If evaluation results of both above steps are acceptable professional license is prepared or renewed as per the application and</li> <li>• Sent approved license record and archive to make any necessary record and issue license to the applicant</li> </ul> |
| Take regulatory measure                                      | <p>When the evaluation results are unacceptable, regulatory measures like:</p> <ul style="list-style-type: none"> <li>• Denial of licensing under qualified professionals</li> <li>• License suspension, revocation etc. of unethical professionals</li> <li>• Refining to medico legal steps etc. could be taken on the professional</li> </ul>                                                                                                                                       |

#### **4.3.1.1 Activity Diagram**

This section provides activity diagram as a model that can be used to make sense out of the gathered requirements for the proposed system. The licensing activity branched out in to three namely facility license, professional license and registration of traditional health practitioners. All the three branches again decided whether new or renew, finally decisions made and respective service rendered accordingly.

**Figure 1 Licensing and Inspection Activity Diagram**

When one applies he/she categorized under facility owner, professional or traditional health practitioners, and then enquired by the officer whether he/she wants new or renew either to issue or renew the respective license or inform the applicant reasons for denial of the service accordingly.



#### 4.3.1.2 Analysis Use Case Description

Partial list of essential use case description of the system are described below.

**Table 5 Issue Professional License Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | AUC01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Use Case Name          | Issue Professional License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Use Case Description   | This use case is used to register and generate professional license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pre-Condition(s)       | The candidate professional applicant has the required educational credentials and ethical background document to be licensed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Post-Condition(s)      | The candidate professional applicant get license certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Basic Scenario         | <ol style="list-style-type: none"><li>1. The use case starts when request for professional application form placed.</li><li>2. The officer provides blank professional application form after asking new or renew.</li><li>3. The applicant fill the form and submit the form</li><li>4. The officer check whether the form is filled correctly</li><li>5. The officer request for the pertinent document.</li><li>6. The applicant provides the document.</li><li>7. The officer verifies the document against the principles and guidelines and standards.</li><li>8. The officer request for license fee receipt</li><li>9. The applicant present the receipt</li><li>10. The officer attaches the document.</li><li>11. The officer authorizes the license and prepares the license.</li><li>12. The officer prints the license and offers the licensee.</li><li>13. The applicant receives the professional license printed copy.</li><li>14. The use case ends.</li></ol> |
| Alternative Scenario A | <ol style="list-style-type: none"><li>4.1. The officer assist to correct when there is error in filling the form</li><li>4.2. The applicant correct the error</li><li>4.3. The use case continues from 5.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Alternative Scenario B | <ol style="list-style-type: none"><li>7.1. The officer proofs the document is invalid.</li><li>7.2. The officer informs the applicant about the document.</li><li>7.3. The use case ends.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Table 6 Record Professional Training Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | AUC02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Use Case Name          | Record Professional Training                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Use Case Description   | This use case is used to add professional training for the health professional                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pre-Conditions         | User must be logged to the system with privileged account.<br><br>The professional must to be licensed and registered in the system and bring training certificate.                                                                                                                                                                                                                                                                                                                                                                            |
| Post-Conditions        | Professional training information added to professional profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the professional request to add his/her training to the respective profile.</li> <li>2. The officer asks for the training certificate.</li> <li>3. The professional present the certificate</li> <li>4. The officer verifies the certificate.</li> <li>5. The officer opens the professional license</li> <li>6. The officer fills the certificate information</li> <li>7. The officer attaches copy of the training certificate.</li> <li>8. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>3.1. The officer observe defect on the certificate</li> <li>3.2. Informs the case to the applicant.</li> <li>3.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                         |

**Table 7 Record Professional Publication Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | AUC03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Use Case Name          | Record Professional Publication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Use Case Description   | This use case is used to add professional publication for the current health professional information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pre-Conditions         | User must be logged to the system with privileged account.<br><br>The professional must be licensed and registered in the system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Post-Conditions        | Professional publication information added to professional profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the professional request to add his/her publication to the respective profile.</li> <li>2. The officer asks for the professional publication.</li> <li>3. The professional provide the publication and/or publication information if electronic or not physically accessible information.</li> <li>4. The officer proofs relevance of the publication</li> <li>5. The officer opens the professional document</li> <li>6. The officer record the publication information</li> <li>7. The officer adds the publication information to the profile.</li> <li>8. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer found the publication irrelevant or inappropriate</li> <li>4.2. The officer informs the case to the applicant.</li> <li>4.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                             |

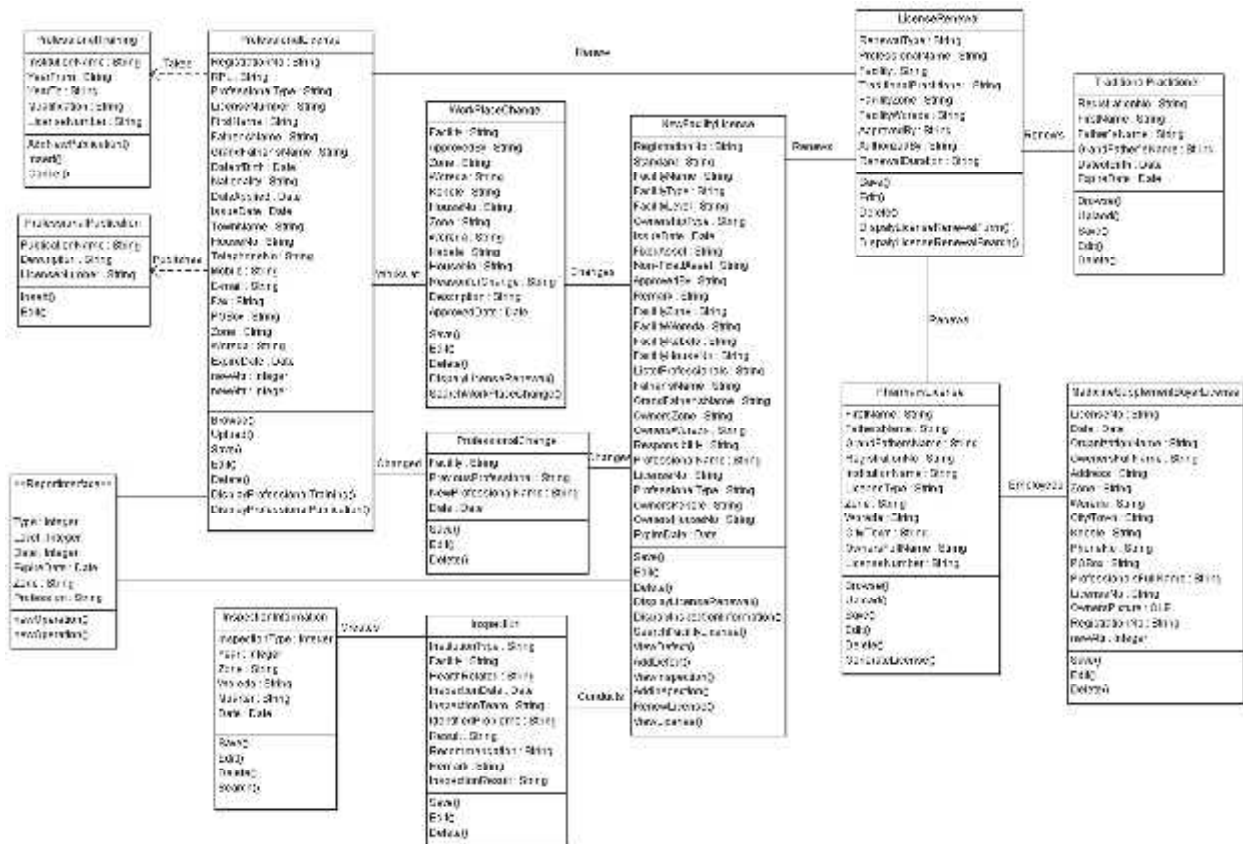
**Table 8 Register Traditional Health practitioner Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | AUC04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Use Case Name          | Register Traditional Health practitioner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Use Case Description   | This use case is used to register traditional health practitioner information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pre-Conditions         | Practitioner submitted consent of 5 to 10 treated and cured cases or EFMHACA approval certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Post-Conditions        | Traditional health practitioner received certificate of registration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the applicant requests for registration application form.</li> <li>2. The officer provides blank traditional health practitioner application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for registration fee receipt</li> <li>6. The applicant present the receipt</li> <li>7. The officer authorizes the license and prepares the license.</li> <li>8. The officer prints the license and offers it to the licensee.</li> <li>9. The applicant receives the health practitioner registration printed copy.</li> <li>10. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1 The officer assist the applicant to correct the form</li> <li>4.2 The use case continues from 5</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>6.1. The officer inform the applicant the receipt is mandatory</li> <li>6.2. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

In this section data underlying the structural model is presented in the use cases are organized and presented using analysis class diagrams.

## Analysis Class Diagram

### Figure 2 Licensing and Inspection Analysis Class Diagram



### 4.3.3. Behavioral Models

The functional models, structural models together with behavioral models describe the internal dynamic aspects of an information system that supports the business processes in the organization helps to get a more complete picture of the system under study. Hence the behavioral models provide the transcript of six use cases and licensing system state chart.

#### 4.3.3.1 Sequence Diagrams

Because of the use case numbers seemingly many and some are similar the researchers modeled the representative or the complex ones into sequential diagrams.

Overview of the sequence diagrams illustrates user clicks on login icon and login controller creates login interface, then user enters user name and password after the system validates it allows the user home page.

Whereas, in the other cases the user officer or inspector interacts with the system sequentially as it is stated in the use case description for the respective sequence diagram as it suited.

**Figure 3 User Log in Sequence Diagram**

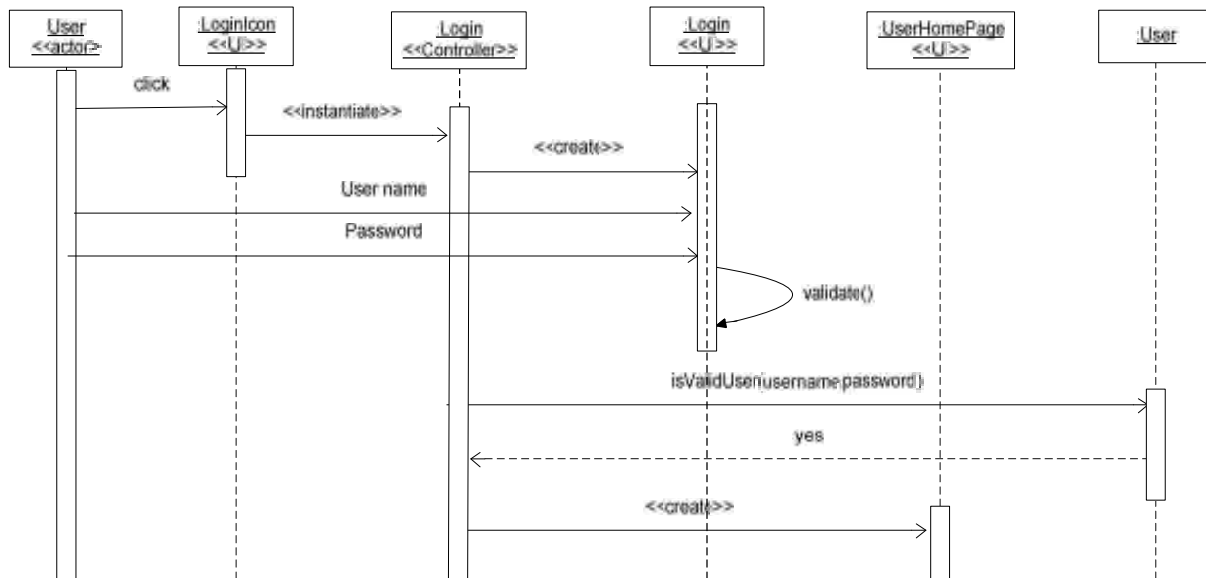


Figure 4 Issue Professional license Sequence Diagram

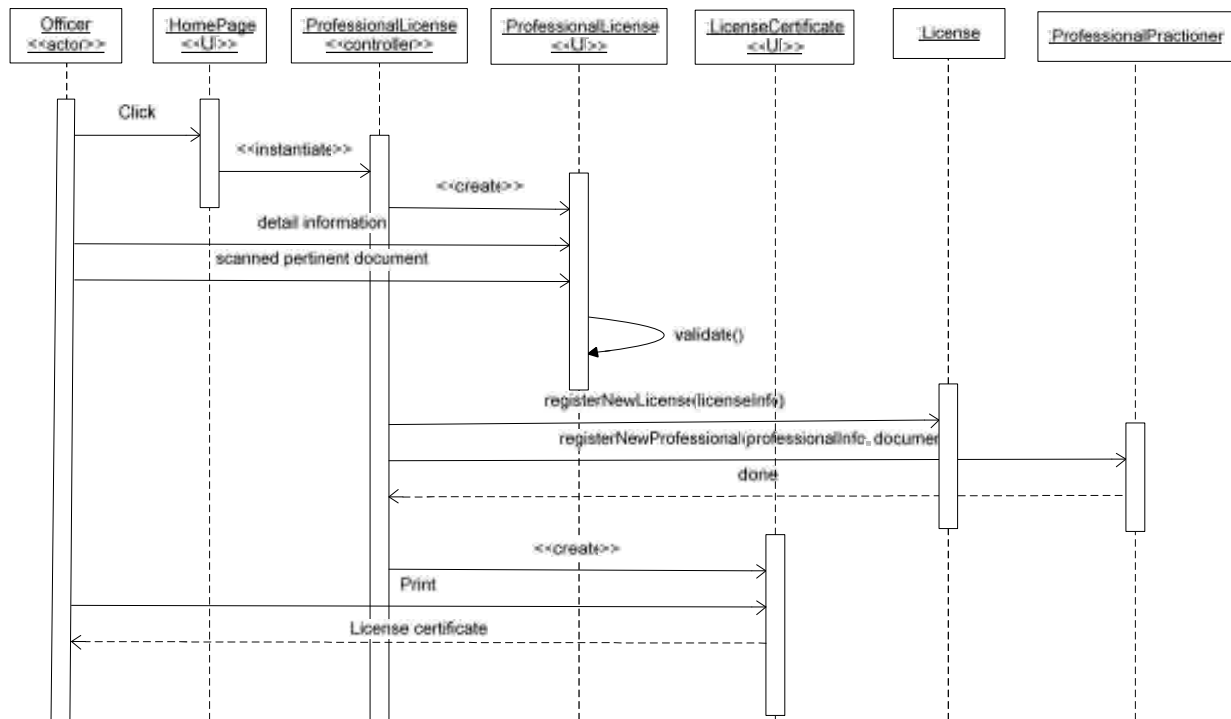
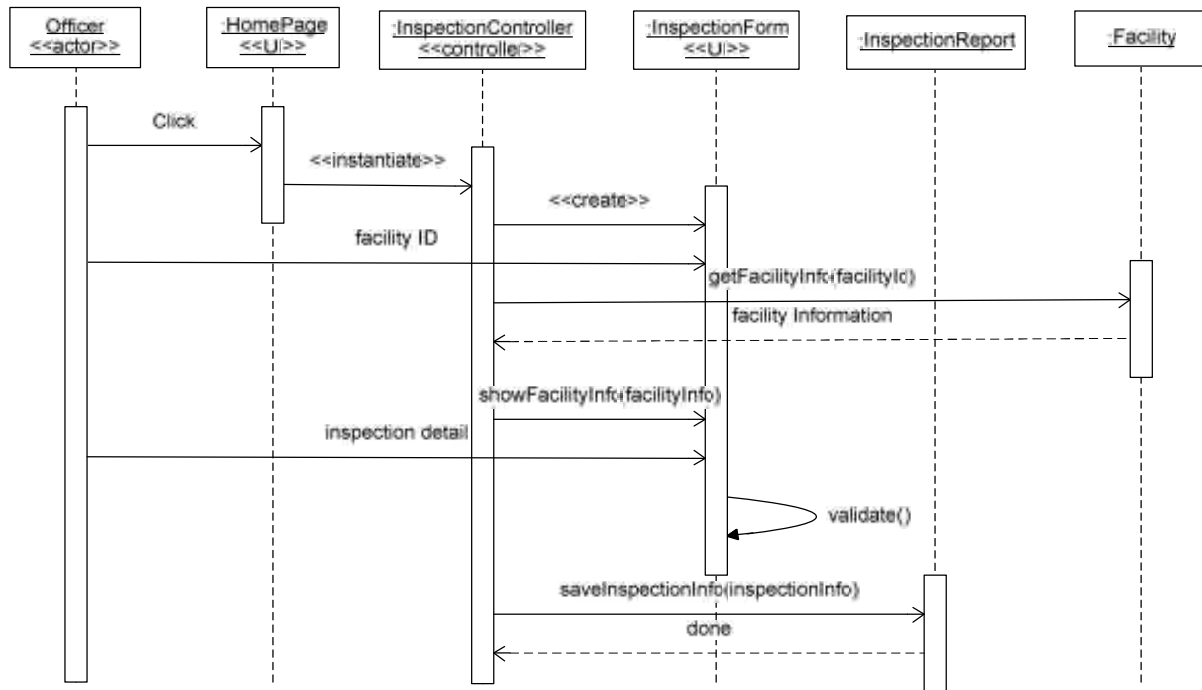
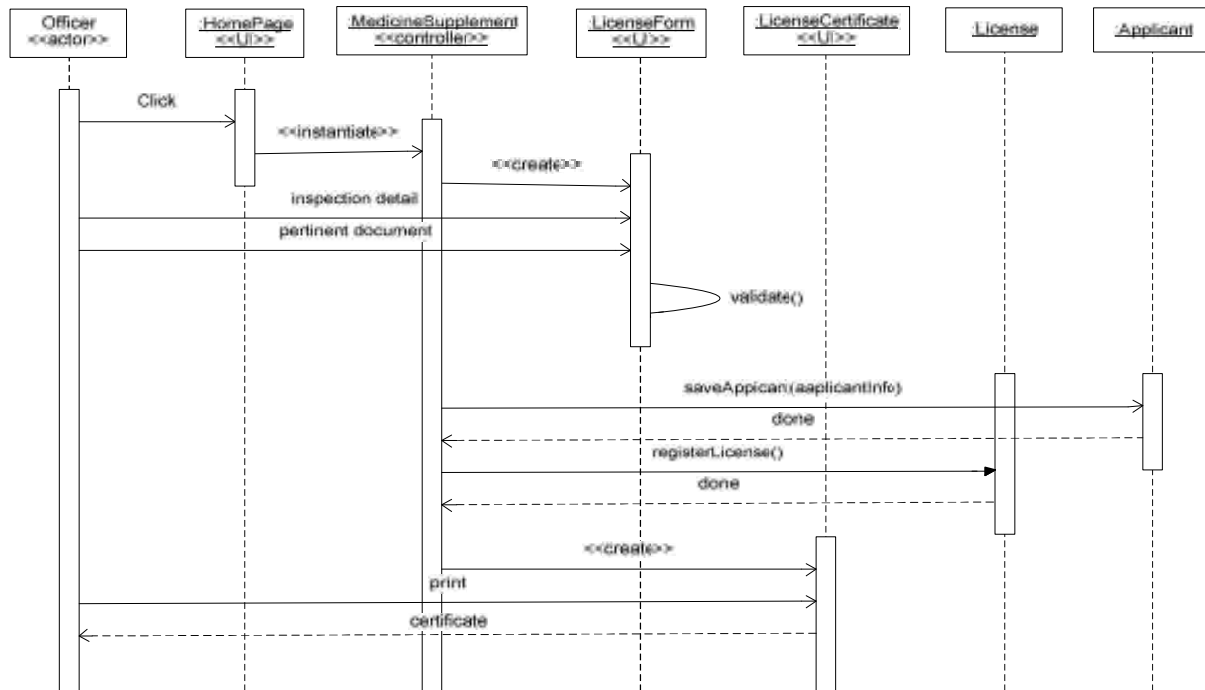


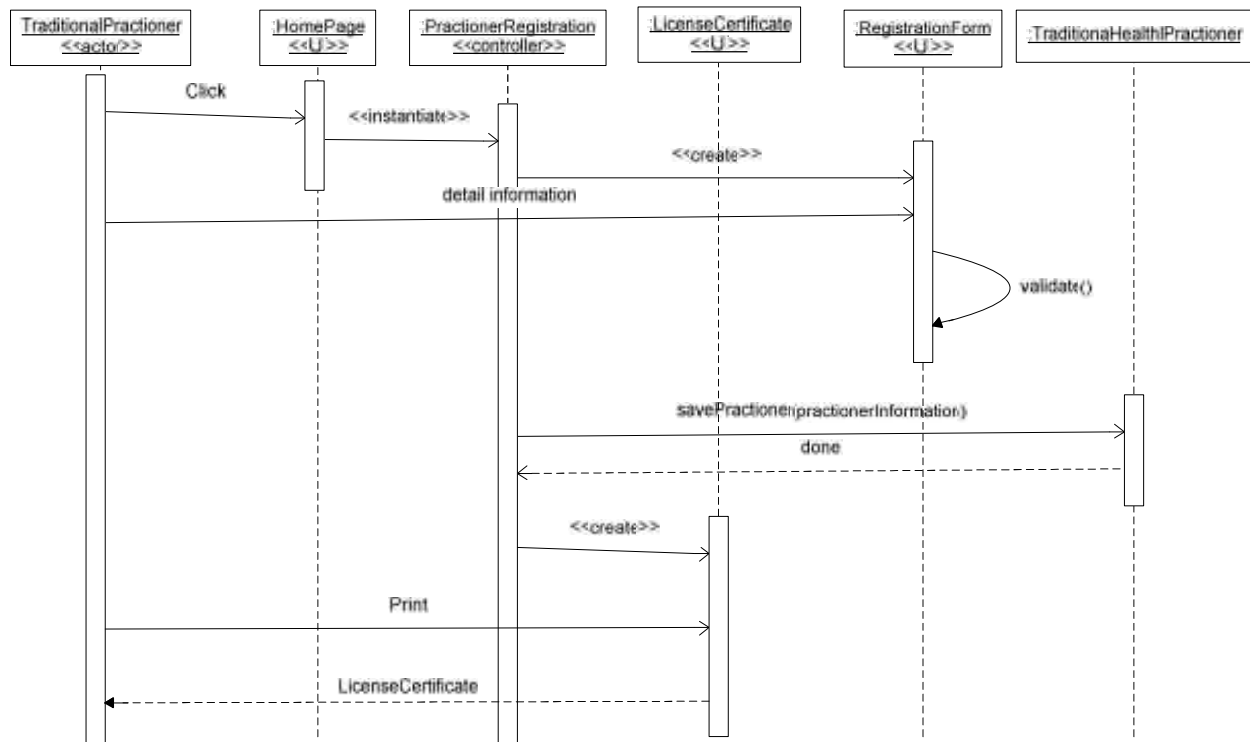
Figure 5 Inspection Sequence Diagram



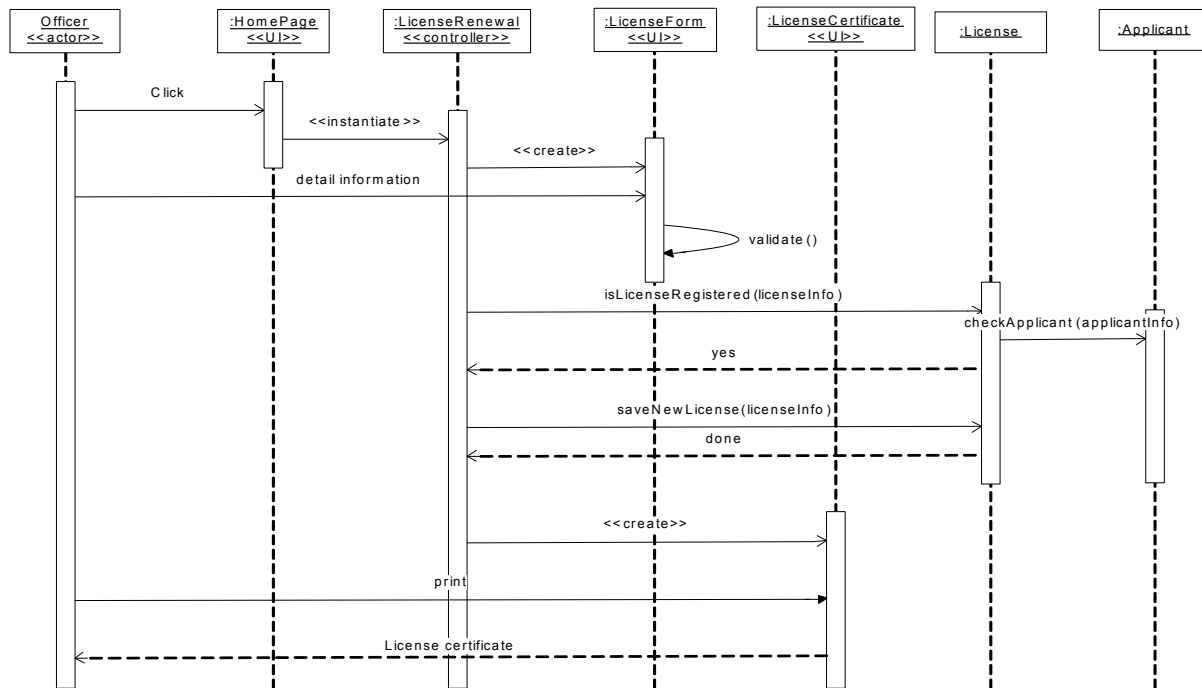
**Figure 6 Medicine Supplement Buyer Sequence Diagram**



**Figure 7 Traditional Health Practitioner Sequence Diagram**



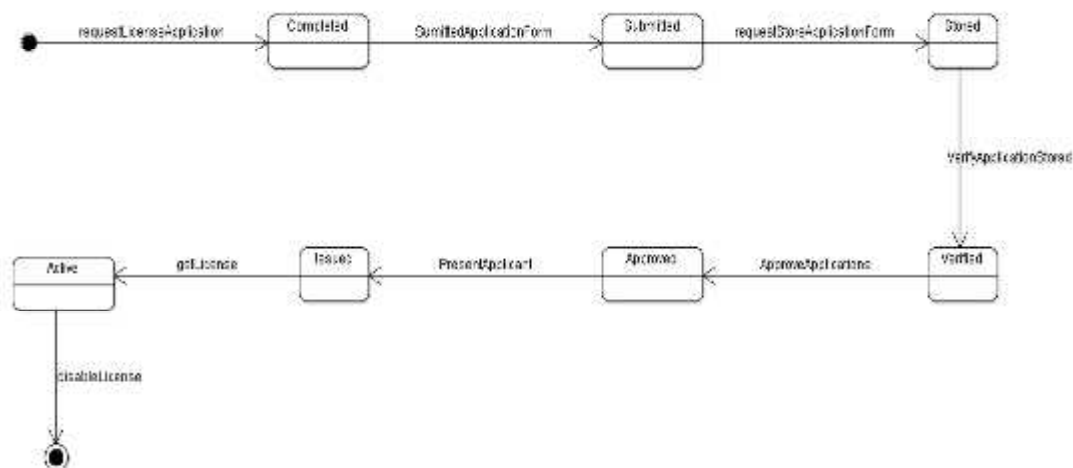
**Figure 8 License Renewal Sequence Diagram**



#### 4.3.3.2 State Chart Diagram

The licensing of the facility or professionals pass through different states as it passes through the process completed when filled, submitted when offered to the officer, stored until verified then approved after it is checked by the officer issued and remain active for the respective period for which it is valid given that it works or practiced according to the standard and guide line then disabled if not renewed.

**Figure 9 State Chart for Licensing Sub-System**



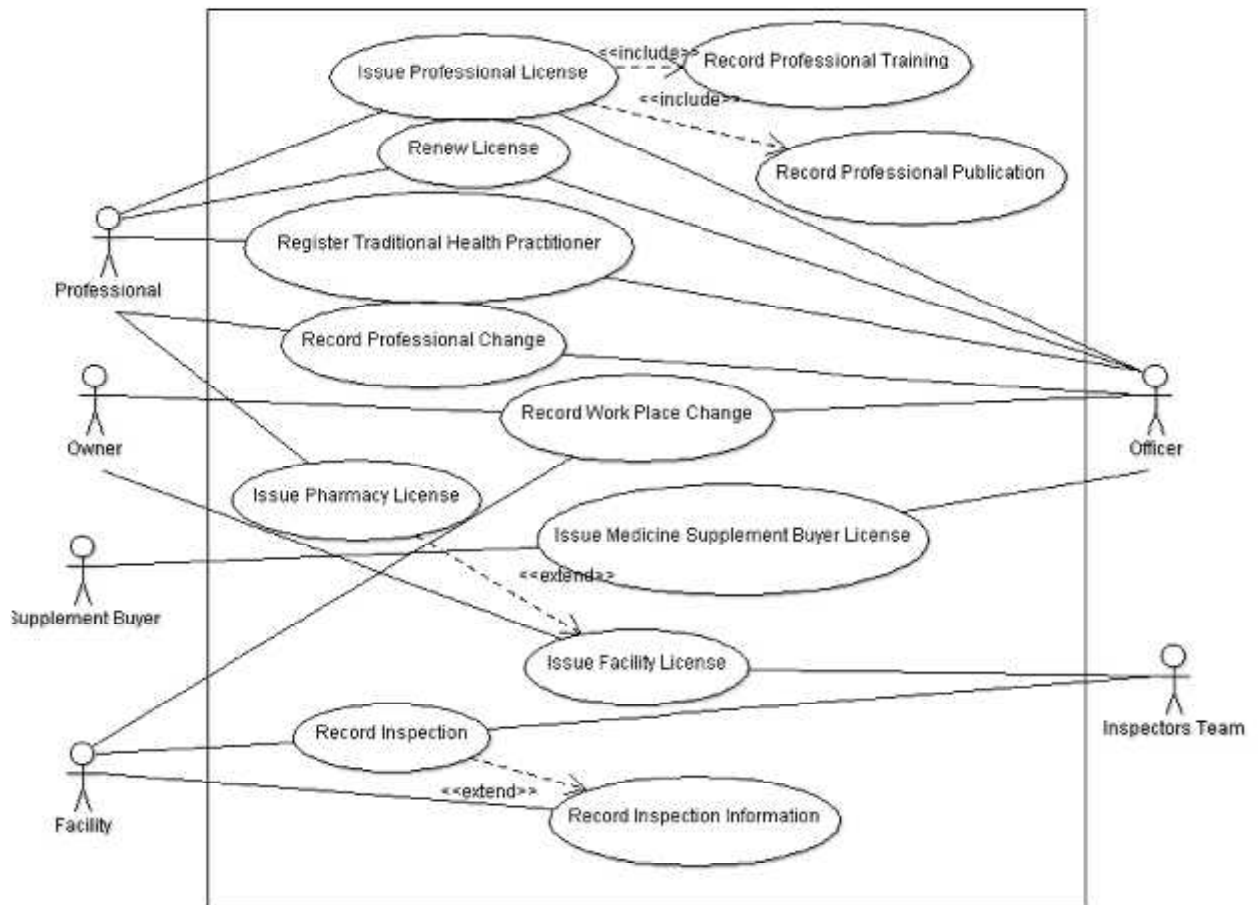
## 4.4 Design Model

The requirements captured in the requirements and analysis model above designed below in more detail depth and wider coverage as it suited to implement the analysis model.

### 4.4.1. System use case descriptions

The only parts drawn on the use-case diagram are the system boundary, the use-cases themselves, the actors, and the various associations between these components. The major strength of the use-case diagram is that it provides the user with an overview of the detailed use cases. Use case diagram below leads us for the system descriptions that follow.

Figure 10 Use Case Diagram



List of system use case description of the system are described below.

**Table 9 Log in to the System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC01                                                                                                                                                                                                                                                                                                                                                                                     |
| Use Case Name          | User Log in                                                                                                                                                                                                                                                                                                                                                                               |
| Use Case Description   | The user login with respective user name and password                                                                                                                                                                                                                                                                                                                                     |
| Primary Actor(s)       | Officer, Inspector, Administrator                                                                                                                                                                                                                                                                                                                                                         |
| Pre-Condition(s)       | The users(Officer, Inspector, Administrator) must have authorized user name and password given by Administrator                                                                                                                                                                                                                                                                           |
| Post-Condition(s)      | The user logged in to the system                                                                                                                                                                                                                                                                                                                                                          |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when user clicks on log in button on start menu.</li> <li>2. The system displays login user interface.</li> <li>3. The user enters user name and password then click on log in</li> <li>4. The system verifies username and password</li> <li>5. The user logged in to the system</li> <li>6. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. If the user enters wrong user name and/or password</li> <li>4.2. The system display error message and prompt to enter appropriate username and password after three trials the system close the computer automatically.</li> <li>4.3. The use case ends</li> </ol>                                                                            |

**Table 10 Issue Professional License System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Use Case Name          | Issue Professional License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Use Case Description   | This use case is used to register and print professional license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Pre-Condition(s)       | The officer has to log into the system<br>The professional has the required educational credentials and ethical background document to be licensed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Post-Condition(s)      | The applicant receives professional license certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when request submitted for professional application form.</li> <li>2. The officer provides blank professional application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for the pertinent document.</li> <li>6. The applicant provides the document.</li> <li>7. The officer verifies the form against the principles and guide lines and standards.</li> <li>8. The officer request for license fee receipt</li> <li>9. The applicant submit the receipt</li> <li>10. The officer record the form in to the system</li> <li>11. The officer attachés the scan copy of the document.</li> <li>12. The officer authorizes the license and prepares the license.</li> <li>13. The officer prints the license and offers to the licensee.</li> <li>14. The applicant receives the professional license printed copy.</li> <li>15. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>7.1. If the officer proofs the document is invalid.</li> <li>7.2. The officer informs the applicant about the document.</li> <li>7.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Table 11 Record Professional Training**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Use Case Name          | Record Professional Training and Professional Publication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Use Case Description   | This use case is used to add professional training for the current health professional information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pre-Conditions         | User must be logged to the system with privileged account.<br><br>The professional have to be licensed and registered in the system and present professional training certificate and/or professional publication                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Post-Conditions        | Professional training information and/or publication information added to professional profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the professional request to add his/her training to the respective profile.</li> <li>2. The officer asks for the training certificate.</li> <li>3. The applicant submit the certificate</li> <li>4. The officer verifies the certificate.</li> <li>5. The officer opens the professional license and click on the professional training and professional publication tabs.</li> <li>6. The officer fills the certificate and/or the publication information</li> <li>7. The officer attaches the training certificate.</li> <li>8. The officer saves the training information.</li> <li>9. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer observe defect on the certificate and/or publication is not relevant</li> <li>4.2. The officer informs the case to the applicant.</li> <li>4.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**Table 12 Register Traditional Health practitioner system Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Use Case Name          | Register Traditional Health Practitioner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Use Case Description   | This use case is used to Register Traditional Health Practitioner information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Primary Actor(s)       | Traditional Health Practitioner, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Pre-Conditions         | Officer must be logged to the system with privileged account.<br><br>Practitioner submitted consent of 5 to 10 treated and cured cases or EFMHACA approval certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Post-Conditions        | Traditional health practitioner information saved in the system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the applicant requests for registration application form.</li> <li>2. The officer provides blank health practitioner application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for registration fee receipt</li> <li>6. The applicant submit the receipt</li> <li>7. The officer authorizes the license and prepares the registration.</li> <li>8. The officer prints the registration and offers it to the licensee.</li> <li>9. The applicant receives the health practitioner registration printed copy.</li> <li>10. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist the applicant to correct the form</li> <li>4.2. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>6.1. The officer inform the applicant the receipt is mandatory</li> <li>6.2. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Table 13 Issue New Facility License System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Use Case Name          | Issue New Facility License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Use Case Description   | This use case is used to register and issue new facility license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Primary Actor(s)       | Owner, Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pre-Condition(s)       | The officer has to log into the system<br>The professional has the required educational credentials and ethical background document to be licensed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Post-Condition(s)      | The owner receives facility license certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the applicants request for new facility application form.</li> <li>2. The officer provides blank new facility application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for the professional license</li> <li>6. The applicant provides the document.</li> <li>7. The officer verifies the form against the principles and guide lines and standards.</li> <li>8. The officer prepares inspection order letter.</li> <li>9. The applicant or the inspector submits the inspection result.</li> <li>10. The officer receives the inspection result.</li> <li>11. The officer evaluates the inspection result.</li> <li>12. The officer attachés the scan copy of the document and inspection result.</li> <li>13. The officer authorizes the license and prepares the license.</li> <li>14. The officer prints the license and offers the licensee.</li> <li>15. The applicant receives the new facility license printed copy.</li> <li>16. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>7.1. If the officer proofs the document is invalid and/or the inspection result is not according to the standard for the facility.</li> <li>7.2. The officer informs the applicants about the document and/or the facility and inform to the applicants in written format.</li> <li>7.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Table 14 Renew License System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Use Case Name          | Renew License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Use Case Description   | This use case is used to renew professional, traditional health practitioner or facility license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Primary Actor(s)       | Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pre-Condition(s)       | The officer has to log into the system<br>The applicant has stay long enough for the respective license validity period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Post-Condition(s)      | The applicant receives renewed license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when request for license renewal application form.</li> <li>2. The officer provides blank renewal application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer search the respective licensed person or facility</li> <li>6. The officer checks the profile and verifies against the principles and guide lines for renewal.</li> <li>7. The officer authorizes the license renewal.</li> <li>8. The officer request for renewal fee receipt</li> <li>9. The licensee pays the renewal fee and brings the receipt.</li> <li>10. The officer stamps the certificate for renewal and saves in the system.</li> <li>11. The applicant receives the renewed license.</li> <li>12. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>6.1. If the officer observe defect or malpractice.</li> <li>6.2. The officer informs the applicant about the renewal.</li> <li>6.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**Table 15 Record Workplace Change System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Use Case Name          | Record Workplace Change                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Use Case Description   | This use case is used to rerecord facility work place change information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Primary Actor(s)       | Facility, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Pre-Condition(s)       | The officer has to log into the system<br>The owner has to present workplace change evidence document                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Post-Condition(s)      | The officer record workplace change information of the professional in to the system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when request for workplace change is placed by the applicant</li> <li>2. The officer provides blank workplace change application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer searches the respective licensed facility in the system.</li> <li>6. The officer orders the new workplace inspection writing a letter.</li> <li>7. The officer receives the inspection result.</li> <li>8. The officer approves the result and authorizes the workplace change</li> <li>9. The officer records the previous address and the new address in the system.</li> <li>10. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>6.1. If the officer proofs the new workplace substandard or not according to guide line.</li> <li>6.2. The officer informs the applicant about the workplace change requirement.</li> <li>6.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 16 Record Professional Change System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Use Case Name          | Record Professional Change                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Use Case Description   | This use case is used to rerecord professional, traditional health practitioner professional change information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Primary Actor(s)       | Owner, Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Pre-Condition(s)       | The officer has to log into the system<br>The professional has to present professional change evidence document                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Post-Condition(s)      | The officer record professional change information of the professional in to the system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when request for professional change is placed by the applicant</li> <li>2. The officer provides blank professional change application form.</li> <li>3. The applicants fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer searches the respective facilityandprofessional in the system.</li> <li>6. The officer request the evidence of change</li> <li>7. The owner submit the evidence document</li> <li>8. The officer authorizes the substitute</li> <li>9. The officer records the previous professional and the new professional and saves to the system.</li> <li>10. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>6.1. The officer proofs the new professional change document is not valid.</li> <li>6.2. The officer informs the applicant about the professional change requirement.</li> <li>6.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Table 17 Issue Pharmacy License System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Use Case Name          | Issue Pharmacy License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Use Case Description   | This use case is used to register and issue pharmacy license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Primary Actor(s)       | Owner, Professional, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pre-Condition(s)       | The officer has to log into the system<br>The professional has the required educational credential and ethical background document to be licensed<br>Evidence of facility ownership or rental agreement document.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Post-Condition(s)      | The applicant receives pharmacy license certificate and the officer records the license information to the system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the owner requests for pharmacy application form.</li> <li>2. The officer provides blank pharmacy application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for the professional license</li> <li>6. The applicant provides the document.</li> <li>7. The officer verifies the form against the principles and guide lines and standards or check in the system.</li> <li>8. The officer prepares inspection order letter.</li> <li>9. The owner takes the inspection order letter.</li> <li>10. The owner submits the inspection result in envelope.</li> <li>11. The officer receives the inspection result.</li> <li>12. The officer evaluates the inspection result.</li> <li>13. The officer attachés the scan copy of the document and inspection result.</li> <li>14. The officer authorizes the license and prepares the license.</li> <li>15. The officer saves the license information to the system prints the license and offers the licensee.</li> <li>16. The applicant receives the pharmacy license printed copy.</li> <li>17. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>12.1 If the officer observe substandard inspection result.</li> <li>12.2. The officer informs the applicant about the facility and/or license requirement.</li> <li>12.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Table 18 Issue Medicine Supplement Buyer License System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Use Case Name          | Issue Medicine Supplement Buyer License                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Use Case Description   | This use case is used to register and print medicine supplement buyer license                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Primary Actor(s)       | Applicant, Officer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pre-Condition(s)       | The officer has to log into the system<br>The applicant has the required educational credential and ethical background document to be licensed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Post-Condition(s)      | The applicant receives professional license certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Basic Scenario         | <ol style="list-style-type: none"> <li>1. The use case starts when the applicant requests for medicine supplement buyer application form.</li> <li>2. The officer provides blank medicine supplement buyer application form.</li> <li>3. The applicant fill the form and submit the form</li> <li>4. The officer check whether the form is filled correctly</li> <li>5. The officer request for the pertinent document.</li> <li>6. The applicant provides the document.</li> <li>7. The officer verifies the document against the principles and guide lines and standards.</li> <li>8. The officer attachés the scan copy of the document.</li> <li>9. The officer authorizes the license and prepares the license.</li> <li>10. The officer saves the information to the system, prints the license and offers the licensee.</li> <li>11. The applicant receives the medicine supplement buyer license printed copy.</li> <li>12. The use case ends.</li> </ol> |
| Alternative Scenario A | <ol style="list-style-type: none"> <li>4.1. The officer assist to correct if there is error</li> <li>4.2. The applicant correct the error accordingly</li> <li>4.3. The use case continues from 5.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Alternative Scenario B | <ol style="list-style-type: none"> <li>7.1. If the officer proofs the document is invalid.</li> <li>7.2. The officer informs the applicant about the document.</li> <li>7.3. The use case ends.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Table 19 Record Inspection System Use Case Description**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID            | DUC12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Use Case Name          | Record Inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Use Case Description   | This use case is used to register and facility inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Primary Actor(s)       | Inspector, Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Pre-Condition(s)       | The Inspector has to log into the system<br>The inspector must have the required educational credential and ethical background document to conduct inspection                                                                                                                                                                                                                                                                                                                                                                    |
| Post-Condition(s)      | The inspector record inspection information to the system                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Basic Scenario         | <ol style="list-style-type: none"><li>1. The use case starts when the inspector team leader introduces the team to the owner and/or professional at facility and start to conduct routine inspection.</li><li>2. The inspector evaluates the facility according to standard, guideline and checklist.</li><li>3. The inspector reviews the result with the owner/professional.</li><li>4. The inspector prepare report</li><li>5. The inspector saves the field result in to the system.</li><li>6. The use case ends.</li></ol> |
| Alternative Scenario A | <ol style="list-style-type: none"><li>4.1 If the officer observe substandard inspection result</li><li>4.2 The officer informs the applicant about the facility and/or license requirement.</li><li>4.3 The use case ends.</li></ol>                                                                                                                                                                                                                                                                                             |

**Table 20 Record Inspection Information System Use Case Description**

|                      |                                                                                                                                                                                                                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID          | DUC12                                                                                                                                                                                                                                                                                                                             |
| Use Case Name        | Record Inspection Information                                                                                                                                                                                                                                                                                                     |
| Use Case Description | This use case is used to register and facility inspection information                                                                                                                                                                                                                                                             |
| Primary Actor(s)     | Inspector                                                                                                                                                                                                                                                                                                                         |
| Pre-Condition(s)     | The inspector team conduct inspection<br>The inspector has to log into the system                                                                                                                                                                                                                                                 |
| Post-Condition(s)    | The inspector register inspection information in the system                                                                                                                                                                                                                                                                       |
| Basic Scenario       | <ol style="list-style-type: none"> <li>1. The inspector click on the inspection information tab.</li> <li>2. The inspector captures basic information of inspection on information form.</li> <li>3. The inspector saves the inspection information in the inspection information table</li> <li>4. The use case ends.</li> </ol> |

**Table 21 Record Defect Report System Use Case Description**

|                      |                                                                                                                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case ID          | DUC13                                                                                                                                                                                                                                                                                    |
| Use Case Name        | Record Defect Report                                                                                                                                                                                                                                                                     |
| Use Case Description | This use case is used to record defect information                                                                                                                                                                                                                                       |
| Primary Actor(s)     | Inspector                                                                                                                                                                                                                                                                                |
| Pre-Condition(s)     | The inspector team conduct inspection<br>The inspector has to log into the system                                                                                                                                                                                                        |
| Post-Condition(s)    | The inspector register inspection information in the system                                                                                                                                                                                                                              |
| Basic Scenario       | <ol style="list-style-type: none"> <li>1. The inspector click on the defect report tab.</li> <li>2. The inspector capture defect information during inspection on defect report form.</li> <li>3. The inspector saves the report in the system</li> <li>4. The use case ends.</li> </ol> |

We use class diagrams to describe the structure of the system. Classes are abstractions that specify the common structure and behavior of a set of objects. Objects are instances of classes that are created, modified, and destroyed during the execution of the system. Objects have state that includes the values of its attributes and its relationships with other objects. Class diagrams describe the system in terms of objects, classes, attributes, operations, and their associations.

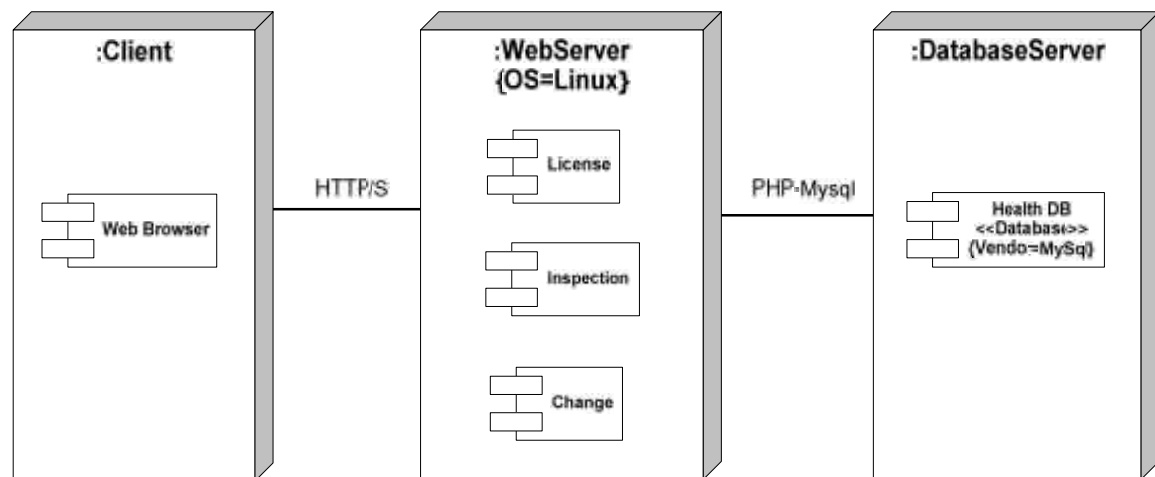
[illegible]

### 4.4.3 Deployment Diagram

Deployment diagrams depict a static view of the run-time configuration of processing nodes and the components that run on those nodes. In other words, deployment diagrams show the hardware for your system, the software installed on that hardware, and the middleware used to connect the disparate machines to one another.

The architecture of the new system is 3-tier in which one tier acts as a client and the other two are servers. This design decision is made to make the system respond to user requests faster while still distributing processing jobs among devices.

Figure 12 Deployment Diagram



## 4.5 Design and Implementation Recommendations

The researcher recommends the implementation to be client server based where the officers at client computer uses browsers to access and insert etc as privileged by the administrator. The deletion of the professional, facility or any major change to the record should only be allowed to be done by the administrator because of the significance of the document. Again it is recommended to have the server at the section mirrored with other facility server in case of major failure or hazard incident happens.

The server side could be implemented using My SQL database application, Macromedia Dreamweaver, PHP scripting Language and HTML.

## 4.6 Discussion of Result

As compared to the previously manual system and partially automated the new system design can be said that integrated all the licensing, registration and inspection activities of the licensing and inspection sub process of the regional health bureau. Since we need list of professional licensed in order to license new facility that again triggers inspection of the facility.

The manual system file takes longer time to serve the customer. The design of the new system is in such a way that the services readily available as long as the customers fulfilled the requirement for the service.

The design system is prepared in such a way that report organization is easy and flexible based up on the current and future report requirement need of the organization.

The officers evaluated the design document along with the researcher and showed their agreement with descriptiveness of the document of the system generally. In the process they informed that at initial case the facility inspection process focus mainly in the three of four processes namely, premise, professional and product. On the other hand the routine inspection or renewal focuses much on the practice aspect of the inspection. It is during this process the facility and/or professional warning, suspension, revocation and prosecution in case of medico-legal issue arises can be decided.

The officers also clarify that issuance of medicine supplement buyer license is made in special case only where some NGO hospitals as they arrange medicine buying with the wholesalers a head of time the licensed supplement buyer can conduct the acquisition of the medicine that need was not justified earlier by the researcher.

The future plan of traditional health practitioner licensing will be made with consent 5-10 sign of case healed and/or Ethiopian Food, Medicine and Health Care Administration and Control Authority EFMHACA approval in the area of the disease claimed to treat.

The information technology officer also confirms the three-tier architecture for implementing a better, efficient system that enhances licensing and inspection related activities.

# **Chapter Five**

## **Conclusion and Recommendation**

### **5.1 Conclusion**

The development and advancement of computer technology makes computers to be part of everyday human life activities. Licensing and inspection are inseparable activities that is currently professional licensing is automated as a part of human resource and manual integration of licensing and inspection data took the regional health bureau a long duration of time and it is error prone. Policy makers and other concerned bodies do not get accurate and timely information particularly in facility licensing and inspection area

The project study shows a wide range of licensing of health practitioners and facilities and inspection of health facilities activities information system in maintaining a quality health service to the public. It also briefs guide lines and international accepted practices. More over national standards and guide lines documents were consulted along with interview and discussion with licensing and inspection officers in order to determine the requirement for the new system.

Following requirement definition analysis models used were activity diagram, to show business process and work flow and Use cases to describe the basic functions of the information system. Simple use case diagram employed showing a high level modeling and some analysis use case description to illustrate detail description of the activities and functions running in the licensing and inspection sub process of health and health related services and products quality regulation (HHRSPQR) core process. The analysis model is finalized by identifying the relevant analysis classes, attributes and their respective operation for modeling the structure and behavioral models sequence diagram and state chart were applied to elicit the parts of the system.

The design model transcribes the analysis model in such a way that it is going to be implemented and system use case diagram, system use case description and system class diagram.

The researcher acquainted with the licensing and inspection rules, regulations, guidelines and practices and various object oriented analysis and design tools particularly UML tools for the

first hand on experience to realize course work in the health industry for quality improvement.

## **5.2 Recommendation and Future works**

The current workload, customer expectation and availability of technology demand the implementation of computer based licensing and inspection information system that makes a way for online license renewal that can reduce cost of license renewal for professional, traditional health practitioners and facility owners. Easy and timely report generation on licensing and inspection information can be realized if the designed system is implemented with necessary improvement.

It is also recommended that hands on training with manual and help facility should be given the officers so that they can capture data by themselves post implantation of the system in order to maintain more accountability.

Even though effort has been made to cover major activities of the licensing and inspection there are also areas that is not incorporated in the current design such as complaint management, food and water source analysis, health related facilities such as food stores, supermarket, barbershop etc licensing that is jointly done with trade licensing should be incorporated in the future design and implementation.

For easy accessibility by the customers the systems has to be decentralized deployed and offered service at some selected local levels rather than it is centralized as per the guide line and experience of other regions. The system should be available at various locations across the state, at least three databases for Oromia Regional State to achieve better accessibility and it should also work in co-ordination among these databases.

It is recommended that once the standard number of professionals by type for facility is sated the system should signal when that number is below the standard for the facility as professionals leave the profession or change workplace, dead or retired.

In addition, future system has to be sensitive and signal the attachment of one professional with multiple facilities cognizant the spatial data and conceivable means of transport and whether he/she is a part or full time worker at the facility to maintain reasonable and feasible number of attachment of professionals with government, private and NGO facilities.

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## **Annex A**

### **I. Interview Guide**

#### Structured Interview Guide

1. What are the major activities carried out in this section?
2. What are your customers and their types?
3. What sort of services they accept and or rendering to the section?
4. Which of the services incorporated into database information system?
5. What data are captured and how it is going on each activity?
6. What are the rules, guide lines and standards guiding for licensing and inspection?
7. What parties or entities are involved in the transaction?
8. What reports are organized?
9. What are the shortcomings of the existing system if any?

Probing questions where applied when responses need more clarification as appropriate.

1. What do you mean by this?
2. Can you explain that in a bit more detail?
3. Would you give me an/ a few example(s)?
4. What if ....?

## II. Data Capturing Forms

Kutaa Maallaaqaa tiif

Addeemsa Hujjii xigaa Heyyaama Lachuu fi Sakala'umsa Irraa.

BEFO

1. Maqaa isa kaffaanu :-

2. Sababba kaffaaltii :-

• Haayyurmi Oggummaa

☐

Heyyaama Kilimilaa, Hospitaala, Yaa Mannen Qoracama

☐

• "Authentication"

☐

Kan Biraa (Ha'bumma)

3. Qarsaa Kaffaalamu:-

*Maqaa fi Maallaaqaa Nama Ergaa*

Guyyaa

## APPLICATION FORM FOR REGISTRATION AND LICENSE

- ፡፡ ቅጹን በአግባቡ ብቻ ጠይቃል በሁለቱም ቋንቋዎች መመላት ይቻላል፡፡

First Name \_\_\_\_\_ Middle Name \_\_\_\_\_ Last Name \_\_\_\_\_

Sex ☐ F ☐ M

402, 81 ..... 11, 1007 .....

COUNTY.....+ + + + +

Nationality

Address: Region zone wroda

| Kecamatan | House No. | Telephone |
|-----------|-----------|-----------|
|-----------|-----------|-----------|

|         |        |        |
|---------|--------|--------|
| P.O.Box | Fax No | E-Mail |
|---------|--------|--------|

### Professional Trainings:

የጋራው የጥያቄ ስልጠና በጥቅም ላይ የዋለው የጥያቄ ስልጠና

Qualification (Profession):

Publication (if any)

(11 more attach list)

Applicants Signature \_\_\_\_\_

Date \_\_\_\_\_

W

Registrar Ng:- \_\_\_\_\_  
RPL= \_\_\_\_\_

### I. REGISTRATION REQUIREMENT FOR HEALTH PROFESSIONALS

1. Curriculum Viet (one copy) and tow passport size photos.
2. Duly legalized Photocopy of all professional documents (Certificate Diploma transcript, Etc) if the originals are not in English they should be properly translated, signed and sealed by notary public or legal translator.
3. Current license from country of origin /not applicable for new graduates with in the country.
4. A letter of testimonial of ethics, and character and length of experience with the official appointment held.
5. English language proficiency certificate/applicable for foreign applicants.
6. Health certificate.

### II. REGISTRATION (TO BE FILED BY OFFICIALS ONLY)

1. Name of applicant.

1st \_\_\_\_\_ 2nd \_\_\_\_\_ 3rd \_\_\_\_\_

2. The applicant is approved for registration

as

3. Comments and other observations if any.

4. Restriction waived.

5. Temporary Registration

To work under supervision in order to get familiarized and be fully exposed to local health problem and medical practices.

6. Approval Meeting No \_\_\_\_\_ Date \_\_\_\_\_

### III. MEMBERS OF THE REGISTRATION AND LICENSING COMMITTEE

| s.no | Name | Responsibility | Signature | Remark |
|------|------|----------------|-----------|--------|
| 1.   |      | Member.        |           |        |
| 2.   |      | Member.        |           |        |
| 3.   |      | Member.        |           |        |
| 4.   |      | Member.        |           |        |
| 5.   |      | Member.        |           |        |
| 6.   |      | Member.        |           |        |
| 7.   |      | Member.        |           |        |
| 8.   |      | Member.        |           |        |

**Gaaffii Hevyaama Wolaansa dhabbiilee Fayyaa Haaraa**

**[አዲስ የሕክምና አገልግሎት መስጫ ፋቃድ መጠየቂያ]**

Tanka gaaffii Hevyaama Haaraa Kiliinika B/Fayyaa Hospitaala Laboratoorii fi K&F. haaruuf ulaa dhalsamu  
ናክሊኒካዊና ጣቢያ ሆስፒታል እና ሌሎች የጤና ድርጅት ለማቋቋም የሚመልከቻ ትዕ

1. Maqaa-Abbaan Qabeenyaa የባለንብረት ሙሉ ስም.....

2. Teessoo የመኖሪያ አድራሻ:-

Naanoo ክልል.....Zoonii ሆን.....

Aanaa ወረዳ.....Magesalaa ከተማ.....

Ganda ቀበሌ.....Lakk/Manaa የቤት ቁጥር.....

3. Akaakuu dhabaata dhabaatuu ሊቋቋም የታሰበው የጤና ድርጅት

☐ kiinika addaa (ልዩ ክሊኒክ) ☐ Bu'aata addaa (ልዩ ማዕከል) ☐ Bu'aata Fayyaa (የጤና ጣቢያ)

☐ Hospitaala (ሆስፒታል) ☐ Laboratoorii (ላቦራቶሪ) ☐ Radiographii (ራዲዮግራፊ)

☐ Kan biroo ha'ibsaamu (ሌላ ይገለጻል)

4. sadarkaa/maqaa fi ykn gosa dhabatichaa ha'ibsaamu የጤና ድርጅቱ ስም፣ ደረጃ እና ንድፍ ትይዘት

5. Abba Qabeenyuma dhabaatichaa የድርጅቱ ባለቤት ንድፍ

☐ Dhuunfaa የግሉ ☐ Ittigalatamuumaan isaa kan murta'e. ሃሳዱንቱ የተወሰነ ☐ Aksiyoonii እነሱዎች

6. Teessoo Dhabaatii itti dhabachuuf Yaadaama. ድርጅቱ ሊቋቋምበት የታሰበበት አድራሻ

Naanoo ክልል.....Zoonii ሆን.....

Aanaa ወረዳ.....Magesalaa ከተማ.....

Ganda ቀበሌ.....Lakk/Manaa የቤት ቁጥር.....

7. Gahaa abbaan iyyaannoo dhabaaticha kaessa qabu አመልካች በድርጅቱ ወሰን ያለው ድርጅት

6.1.abba qabeenyaa ባለንብረት

6.2.abba qabeenyaa fi Ogeessa. ባለንብረት እና ባለሙያ

8. Ogeessa Dhabaata gageessu. ድርጅቱን የሚመራው ባለሙያ

7.1.Maqaa hanga akakayyuutti:- ስም እስከ አያት.....

7.2.Badarkaa ogummaa:- የሙያ ደረጃ.....

7.3.Lakkoofta Galmee ogeessi Ministeera ogummaa fayyaatii/BEF ittiin galmachaa የሙያ ምዝገባ ቁጥር.....  
RPL=.....

9.Ragaa ogeessaiichi qabu ባለሙያዉ የተረጋገጠ ይከመንቱች

8.1.Ragaa ogummaa fi heyyamaa የሙያና የሥራ ፋቃድ

8.2. Ragaa Bamootaa የትምህርት ማስረጃ ይከመንት

8.3.womaas qullqullinaa fi Muxaannoo hojii,ክሊኒካልና የሥራ ልምድ

8.4.Ragaa Kafaaltii gibiraa isaan irraa barbaadaamu. ተፈላጊ የግብር መክፈያ ማስረጃ

8.5.Woligaltee sooraa hojjoetaa fi hojjoechiisaa ሀገራዊ የሥራ ወሌ ስምምነት

10.Ani raga armaan ol ta'esse hundi chugaa tahuu isaanii mallatto kootiin mirkaneessa.ከላይ የተጠቀሱት መረጃዎች በሙሉ ትክክለኛ መሆናቸውን በፈርማዬ አረጋግጣለሁ

10.1.AbbaaQabeenyaa(ባለንብረት).

Maqaa:ስም.....

Mallaatto:ፈርማ.....

Guyyaa: ቀን.....

10.2. Ogeessaa (ባለሙያ)

Maqaa:ስም.....

Mallaatto:ፈርማ.....

Guyyaa:ቀን.....

|                                                           |        |          |
|-----------------------------------------------------------|--------|----------|
| Tajaajjila Biroo Qofaaf (ለቢሮ አገልግሎት ብቻ)                   |        |          |
| Obbo/addeaa                                               |        |          |
| Ragaan barbaachibisaa dhabaachuu qabu Baalamtee Haaraamaa |        |          |
|                                                           |        |          |
| Mallaatto                                                 | Guyyaa | Sa'atiii |
|                                                           |        |          |



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**Gaaffii Heyyaama Haaraa [አዲስ ፍታድ መጠየቂያ]**  
 Ekaasfii Dhabbaa danda'a Qorichaa/Nyaata Dabalataa **Haaraa** haaraa ittiin dhibbaa  
**አዲስ የመድኃኒት የተወጣጠ ምግብ ችርቻር ንግድ ድርጅት ለግዳጁ የማመልከቻ ቅፅ**

1. Maqna-Abbaa Qabeenyaa የባለንብረት ሙሉ ስም.....
2. Tesso የመኖሪያ አድራሻ:-  
 Naanoo ክልል.....Zoonii ቦን.....  
 Aana ወረዳ.....Magaalaa ከተማ.....  
 Ganda ቀበሌ.....Lakk/Maanaa የቤት ቁጥር.....
3. Akaakuu dhabasta qorichaa ሊቋቋም የታሰበዉ የመድኃኒት ችርቻር ድርጅት ዓይነት  
 3.1.Faamaasii ፋርማሲ ☐  
 3.2.Dukaana Qorichaa መድኃኒት መደብር ☐  
 3.3.Nyaata Dabalataa(Supplementary food) የተወጣጠ ምግብ ንግድ ☐
4. Abba Qabeenyumaas dhabasta qorichaa የድርጅቱ ባለቤት ዓይነት  
 4.1.Dhuunfaa የግለ ☐  
 4.2.kigalatamuumaan isaa kaan murta'e የላፈነቱ የተወሰነ ☐  
 4.3.Aksiyoonii ኦክሲዮን ☐
5. Tesso Dhabaatii qorichiichaa itti dhabachuuf Ysadaame ድርጅቱ ሊቋቋምበት የታሰበበት አድራሻ  
 Naanoo ክልል.....Zoonii ቦን.....  
 Aana ወረዳ.....Magaalaa ከተማ.....  
 Ganda ቀበሌ.....Lakk/Maanaa የቤት ቁጥር.....
6. Gahaa shibaan iyyaanco dhabbaatiicha keessa qabu haama hifi በድርጅቱ ውስጥ የለዉ ድርሻ  
 6.1.abba qabeenyaa ባለንብረት ☐  
 6.2.abba qabeenyaa fi Ogeessa ባለንብረት እና ባለሙያ ☐
7. Ogeessa Dhabaata qorichiichaa gageessu ድርጅቱን የሚመራዉ ባለሙያ  
 7.1.Maqaa hanga akakaayuuitti- ስም እስከ አያት.....  
 7.2.Sada'kaa oguuma:- የሙያ ደረጃ.....  
 7.3.Lakkoo'isa Galmoo ogeessi Ministeera eguumsa fayyaatii/BEF ittiin galmalee የሙያ ምዝገባ ቁጥር.....  
 RPL=.....
- 8.Ragaa ogeessichi qabu ባለሙያዉ የቀረጸባቸዉ ይከመንባች  
 8.1.Ragaa ogummaa fi heyyamaa የሙያና የመራ ፍታድ ☐  
 8.2.woraqaa quillullinaa fi Muxaannoo hojii ክልራንስና የመራ ልምድ ☐  
 8.3.Ragaa Kallafsi gilaara isaan irraa barbaadaamu ተፈላጊ የግብር መከፈያ ማሰሪያ ☐
9. Magaala Dhabbaatiichi banaamu keessa Hospitaala ykn B/Fayyaa Moctumaa jiraa? Jira= hinjiru=  
 ድርጅቱ በግዳጁበት ከተማ ወረዳ ውስጥ የመንግስት ሆስፒታል ወይም ጤና ጣቢያ አለ? አለ= የለም=  
 Jira yoo ta'e maqaa Hospitaala ykn B/Fayyaa ha'ibsaamu  
 የመንግስት ሆስፒታል ወይም ጤና ጣቢያ ካል ስሙ ይጠቀስ  
 10.Ani raga amaan ol isroesso hundi dhugaa tahuu isaaanli mallatto kootin mirkaneessa.ከላይ የተጠቀሱት  
 መረጃዎች በሙሉ ትክክለኛ መሆናቸዉን በፈርማቱ አረጋግጣለሁ  
 9.1.AbbaaQabeenyaa(ባለንብረት)  
 Maqaa:ስም.....  
 Mallatto:ፊርማ.....  
 Guyyaa: ቀን.....  
 9.2. Ogeessaa (ባለሙያ)  
 Maqaa:ስም.....  
 Mallatto:ፊርማ.....  
 Guyyaa:ቀን.....

|                                                            |        |         |
|------------------------------------------------------------|--------|---------|
| Tajaajila Biroo Qofaaf (ለቢሮ አገልግሎት ብቻ)                     |        |         |
| Gobonbadde                                                 |        |         |
| Ragaan barbaachiseeaa shibaachuu qabu shalemaa Haaraa:awto |        |         |
|                                                            |        |         |
| Mallatto                                                   | Guyyaa | Sa'utii |

Pro. Dhaabbata.

Uunka(Foormii)Inspeekshiinii      Manneen      daldala      qorichaa      haarayaa  
inspeektarootaan guutamu

- 1.Maqa Dhaabbata daldala qanxaba qorichaa\_\_\_\_\_
- 2.Teessoo Dhaabbatichaa\_\_\_\_\_

Naannoo\_\_\_\_\_ Godina\_\_\_\_\_ Aanaa\_\_\_\_\_ Magaalaa\_\_\_\_\_  
Ganda\_\_\_\_\_ Lakk.Manaa\_\_\_\_\_

- 3.Gosa dhaabbata fayyaa Naannoo san jiru\_\_\_\_\_
- 4.Maqa Abbaa Qabeenyaa akaakayyuu wajjin\_\_\_\_\_
- 5.Maqa Ogeessaa Akaakayyuu wajjin\_\_\_\_\_
- 6.Sadarkkaa Ogummaa Ogeessichaa\_\_\_\_\_
- 7.Sadarkkaa Dhaabbata Qanxabaa\_\_\_\_\_
- 7.1 Mana Qorichaa(Faarmaasii)\_\_\_\_\_
- 7.2 Dukkaanaa Qorichaa \_\_\_\_\_
- 7.3 Mana Qoricha Baadiyyaa \_\_\_\_\_

8.Dhaabbani kun

- 8.1 Tajaajila Bishaanii ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_
- 8.2 tajaajila Ibsa(Eleektrikaa) ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_
- 8.3 Tajaajila Bilbilaa ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_
- 8.4 Tajaajila Poostaa ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_

9.Akkaataa hojjatama dhaabbatichaa

- 9.1 lafti kutaalee\_\_\_\_\_
- 9.2 Ededni kutaalee\_\_\_\_\_
- 9.3 qilleensaa fi ifa gahaa ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_
- 9.4 Gonbisaan kutaalee koomisii ni qaba\_\_\_\_\_ hin qabu\_\_\_\_\_

Dhaabbatichee akkaataa hojjatumsaa lafa irraa ol-ka'adhaa fi lolaa kan hin galchinee dha. Eeyyee \_\_\_\_\_ miti \_\_\_\_\_

10. Qaabbatni qanxaba qorichaa kun \_\_\_\_\_

10.1 iddoon itti argamu baddaa \_\_\_\_\_ badda-daree \_\_\_\_\_ gammoojjii \_\_\_\_\_

10.2 olka'iinsa kutaa kutaa dhaabbatichaa meetiraan \_\_\_\_\_

10.3 baldhina kutaa raabsaa qorichaa karee meetiraan \_\_\_\_\_

10.4 baldhina kutaa kuusaa qorichaa karee meetiraan \_\_\_\_\_

10.5 baldhina kutaa qophii qorichaa(compounding) \_\_\_\_\_

10.6 Finjii teemoomeetira wajjiin ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.7 teemoomeetira Ededaa ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.8 ittisa balaa ibiddaa ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.9 teessoo harabaafannoo dhukkubsataa ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.10 teessoo fi minjaala hojii barreessaatiif gargaaru ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.11 bakkee/iddoo hoccuu itti fannisan ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.12 kaabineetii qorichoota naarkotikii fi saayikotirooppikii furtuu wajjiin qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

10.13 mana fincaanii tajaajila bishaanii wajjiin ni qaba \_\_\_\_\_ hin qabu \_\_\_\_\_

Akkaataa keessa dhaabbatichaa \_\_\_\_\_

11.1 lafti isaa jabduu fi sirriidha \_\_\_\_\_

11.2 manni isaa waan lubbuu qabeeyyii adda addaa irraa eegamaadha? \_\_\_\_\_

11.3 balballi hundinuu akka gaanitti ni cufama \_\_\_\_\_

12. wonti hin dubbatamin yoo jiraate \_\_\_\_\_

13.yaadainspeektarootaa \_\_\_\_\_

Maqaa inspoektarootaa

Ogummaa

mallattoo

guyyaa

A. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

C. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Yaada Eksipartii Too'annoo Qulqullina fayyaa waajjira eegumsa fayyaa  
godinaa/Bulchiinsa Magaalaa

Maqaa guutuu

Mallattoo

Oguma

Guyyaa

## INSPECTION FORMAT FOR PRIVATE /NGO CLINIC

### A. General Information

1. Name of the Clinic \_\_\_\_\_
2. Owner     a) Private     b) Organization/Association
3. Name Owner \_\_\_\_\_ profession \_\_\_\_\_ Telephone \_\_\_\_\_
3. Type & standard
  - a) General -     Higher \_\_\_\_\_ Medium \_\_\_\_\_ Small \_\_\_\_\_
  - b) Special -     Higher \_\_\_\_\_ Small \_\_\_\_\_
4. Address - Zone \_\_\_\_\_ District \_\_\_\_\_
 

Town \_\_\_\_\_
Higher \_\_\_\_\_ Kebele \_\_\_\_\_ H.No \_\_\_\_\_

Tel \_\_\_\_\_
P.O.Box \_\_\_\_\_ Fax \_\_\_\_\_
5. Distance from Bureau (Km) \_\_\_\_\_
6. Year of establishment \_\_\_\_\_
7. Number of beds \_\_\_\_\_
8. Catchment's population \_\_\_\_\_
9. The clinic was run by Nurse \_\_\_\_\_ H/O \_\_\_\_\_ G/P \_\_\_\_\_ Specialist \_\_\_\_\_ Other \_\_\_\_\_
10. Professional running the clinic (Telephone \_\_\_\_\_)
 

Name \_\_\_\_\_
Prof.Reg.no. \_\_\_\_\_ Release \_\_\_\_\_
11. Did the clinic licensed to run it's activities legally by responsible bodies?  
(Please observe the documents)
  - a. Oromia Investment commission     yes \_\_\_\_\_ no \_\_\_\_\_
  - b. Oromia Trade and Tourism Bureau     yes \_\_\_\_\_ no \_\_\_\_\_
  - c. Oromia Regional Health Bureau     yes \_\_\_\_\_ no \_\_\_\_\_
  - d. Did the license renewed for this year?     yes \_\_\_\_\_ no \_\_\_\_\_
  - e. If the clinic gives x-ray service, did it licensed by the National Radiation Protection Authority?     Yes \_\_\_\_\_ no \_\_\_\_\_
  - f. Did the x-ray license renewed for this year?     Yes \_\_\_\_\_ no \_\_\_\_\_
12. Adequate electric power supply     a) yes     b) no
13. Availability of safe and adequate water supply.     a) Yes     b) no

### B) Human Resource (Please observe H/Professionals documents)

| S.No. | Type of Health Personnel | Standard        |        |       |         |       | Currently available   |    |         |    | Professional s on duty |
|-------|--------------------------|-----------------|--------|-------|---------|-------|-----------------------|----|---------|----|------------------------|
|       |                          | Level of clinic |        |       | Special |       | Profession al License |    | Release |    |                        |
|       |                          | Higher          | Medium | Small | Higher  | Small | Yes                   | No | Yes     | No |                        |
| 1     | Specialist               |                 |        |       |         |       |                       |    |         |    |                        |
| 1     | Surgeon                  |                 |        |       |         |       |                       |    |         |    |                        |
| 2     | Internist                |                 |        |       |         |       |                       |    |         |    |                        |
| 3     | Obs- Gyn                 |                 |        |       |         |       |                       |    |         |    |                        |
| 4     | Pediatrician             |                 |        |       |         |       |                       |    |         |    |                        |
| II    | G/Practitioner           |                 |        |       |         |       |                       |    |         |    |                        |
| III   | Nurse                    |                 |        |       |         |       |                       |    |         |    |                        |
| IV    | JCN/TLA                  |                 |        |       |         |       |                       |    |         |    |                        |
| V     | Lab. technician          |                 |        |       |         |       |                       |    |         |    |                        |

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|      |                            |  |  |  |  |  |  |  |  |  |  |
|------|----------------------------|--|--|--|--|--|--|--|--|--|--|
| VI   | X-ray technician           |  |  |  |  |  |  |  |  |  |  |
| VII  | Radiologist                |  |  |  |  |  |  |  |  |  |  |
| VIII | Dentist                    |  |  |  |  |  |  |  |  |  |  |
| VIII | Dental therapist           |  |  |  |  |  |  |  |  |  |  |
| X    | Ophthalmologist            |  |  |  |  |  |  |  |  |  |  |
| XI   | Ophthalmic assistant/Nurse |  |  |  |  |  |  |  |  |  |  |
|      | Total                      |  |  |  |  |  |  |  |  |  |  |

**C) Site plan, number and size of room**

| Type of clinic        | List of rooms              | No. of rooms | Area of one room (sq.) | Total area (sq.) | Wall thickness & circulation area | Compound area | Remark |
|-----------------------|----------------------------|--------------|------------------------|------------------|-----------------------------------|---------------|--------|
| Small clinic          | Waiting room               |              |                        |                  |                                   |               |        |
|                       | Examination room           |              |                        |                  |                                   |               |        |
|                       | Treatment room             |              |                        |                  |                                   |               |        |
|                       | Toilet                     |              |                        |                  |                                   |               |        |
| Medium clinic         | Waiting room               |              |                        |                  |                                   |               |        |
|                       | Examination room           |              |                        |                  |                                   |               |        |
|                       | Treatment room             |              |                        |                  |                                   |               |        |
|                       | Laboratory                 |              |                        |                  |                                   |               |        |
|                       | Toilet                     |              |                        |                  |                                   |               |        |
| Higher clinic         | Waiting room               |              |                        |                  |                                   |               |        |
|                       | Examination room           |              |                        |                  |                                   |               |        |
|                       | Treatment room             |              |                        |                  |                                   |               |        |
|                       | Emergency beds             |              |                        |                  |                                   |               |        |
|                       | Laboratory                 |              |                        |                  |                                   |               |        |
|                       | X-ray room                 |              |                        |                  |                                   |               |        |
|                       | Treatment preparation room |              |                        |                  |                                   |               |        |
| Special Higher clinic | Toilet                     |              |                        |                  |                                   |               |        |
|                       | Waiting room               |              |                        |                  |                                   |               |        |
|                       | Examination room           |              |                        |                  |                                   |               |        |
|                       | Treatment room             |              |                        |                  |                                   |               |        |
|                       | Emergency beds             |              |                        |                  |                                   |               |        |
|                       | Laboratory                 |              |                        |                  |                                   |               |        |
|                       | X-ray room                 |              |                        |                  |                                   |               |        |
|                       | Store                      |              |                        |                  |                                   |               |        |
|                       | Toilet                     |              |                        |                  |                                   |               |        |

1. Are x-ray, laboratory and administrative rooms built on the ground?

(Please observe it) a) yes b) no

2. Service that is not delivered in the clinic.

a. MCH- ANC, Delivery, PNC, Vaccination, FP, Child care...

b. Laboratory services

c. Radiological services – X-Ray, U/Sound

d. Minor Surgery

e. Outpatient services and emergency care

3. Why not delivered?

**D) List of Emergency Drugs & Medical Supplies to be made available in private clinics**

| Ser.no | Description                               | Level of handling |               |               |                |
|--------|-------------------------------------------|-------------------|---------------|---------------|----------------|
|        |                                           | Small clinic      | Medium clinic | Higher clinic | Special clinic |
| 1      | Adrenaline injection                      |                   |               |               |                |
| 2      | Aminophylline injection                   |                   |               |               |                |
| 3      | Savlon ( chlorhexidine – Cetrimide )      |                   |               |               |                |
| 4      | Alcohol solution 79%                      |                   |               |               |                |
| 5      | Dextrose 40% injection                    |                   |               |               |                |
| 6      | Ergometrine Maleate injection /tabs: *    |                   |               |               |                |
| 7      | Hydrocortisone sodium succinate           | X                 | X             |               |                |
| 8      | Lidocaine Hydrochloride injection         |                   |               |               |                |
| 9      | Procaine Hydrochloride injection *        | X                 | X             |               |                |
| 10     | Vitamine K injection                      |                   |               |               |                |
| 11     | Hyosine Hydropromide / Dyprone injection  |                   |               |               |                |
| 12     | Bandage different sizes                   |                   |               |               |                |
| 13     | Cotton                                    |                   |               |               |                |
| 14     | Disposable syringe and needle ( assorted) |                   |               |               |                |
| 15     | I.V. Fluid bags ( 5bags)                  |                   |               |               |                |
| 16     | T.A.T. 1500 IU (5 amps) **                |                   |               |               |                |
| 17     | Digoxin injection *                       | X                 | X             |               |                |
| 18     | Promethazine injection *                  |                   |               |               |                |

NB: - Item with \* mark should be available when there are services which require Such items.

f. These drugs and medical supplies are to be bought from pharmacy retail outlets using requisition paper written & signed by licensed professionals.

g. Retail activity is prohibited.

h. Item with X is prohibited.

i. \*\* Only if refrigerator is available.

**E) List of medical Equipments for clinics**

| Ser.no. | List of Equipments                | Type of clinics |        |        |         | Remark |
|---------|-----------------------------------|-----------------|--------|--------|---------|--------|
|         |                                   | Small           | Medium | Higher | Special |        |
| 1       | Syringes and needle (assorted)    |                 |        |        |         |        |
| 2       | Sphygmomanometer                  |                 |        |        |         |        |
| 3       | Clinical Thermometers ( assorted) |                 |        |        |         |        |
| 4       | Diagnostic set                    |                 |        |        |         |        |
| 5       | Tongue depressor                  |                 |        |        |         |        |
| 6       | Adult scale                       |                 |        |        |         |        |
| 7       | Infant scale                      |                 |        |        |         |        |
| 8       | Examination bed                   |                 |        |        |         |        |
| 9       | Infusion stand                    |                 |        |        |         |        |
| 10      | Dressing trolleys                 |                 |        |        |         |        |
| 11      | Refrigerator                      |                 |        |        |         |        |
| 12      | Catheter                          |                 |        |        |         |        |

|    |                                   |  |  |  |  |  |
|----|-----------------------------------|--|--|--|--|--|
| 13 | Stethoscope                       |  |  |  |  |  |
| 14 | Binocular Microscope              |  |  |  |  |  |
| 15 | Centrifuge                        |  |  |  |  |  |
| 16 | Lab. Bench                        |  |  |  |  |  |
| 17 | Glass ware (assorted)             |  |  |  |  |  |
| 18 | Timer                             |  |  |  |  |  |
| 19 | Photometer                        |  |  |  |  |  |
| 20 | Water bath                        |  |  |  |  |  |
| 21 | ESR rocks                         |  |  |  |  |  |
| 22 | Test tube racks                   |  |  |  |  |  |
| 23 | Hemoglobin Pipette                |  |  |  |  |  |
| 24 | WBC pipette                       |  |  |  |  |  |
| 25 | Slides                            |  |  |  |  |  |
| 26 | Cover slides                      |  |  |  |  |  |
| 27 | Heamacytometer with its cover sli |  |  |  |  |  |
| 28 | Test tubes ( assorted)            |  |  |  |  |  |
| 29 | Measuring pipettes ( assorted)    |  |  |  |  |  |
| 30 | Lancets                           |  |  |  |  |  |
| 31 | Electrical boiler                 |  |  |  |  |  |
| 32 | Delivery table                    |  |  |  |  |  |
| 33 | Foetal monitor                    |  |  |  |  |  |
| 34 | Vacuum extractor/ low forceps     |  |  |  |  |  |
| 35 | Aspirator / manual                |  |  |  |  |  |
| 36 | Breast pump                       |  |  |  |  |  |
| 37 | Resuscitator /Ambu bag            |  |  |  |  |  |
| 38 | Suction machine                   |  |  |  |  |  |
| 39 | Portable light / mobile           |  |  |  |  |  |
| 40 | Auxiliary operating light         |  |  |  |  |  |
| 41 | Vaginal speculum                  |  |  |  |  |  |
| 42 | Minor operating set               |  |  |  |  |  |
| 43 | Autoclave                         |  |  |  |  |  |
| 44 | Delivery kit                      |  |  |  |  |  |
| 45 | Ultra sound +                     |  |  |  |  |  |
| 46 | ECCG -                            |  |  |  |  |  |
| 47 | X-Ray Machine +                   |  |  |  |  |  |
| 48 | Oxygen cylinder +                 |  |  |  |  |  |

+ Optional - Necessary only if services is available

F/Recording, Record keeping, Documentation and Reporting/ADR,

Resistance/Tolerance of Drugs and Disease pattern/.

• Please Note what you had observed \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### G) Sanitary Condition

1- Is the toilet functional? Yes \_\_\_\_ no \_\_\_\_

- #### H/.Summary of Problems observed during inspection

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

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**J/.Recommendations from supervisory/Inspectors team: -**

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| <u>Name of Supervisors</u> | <u>Responsibility</u> | <u>Signature</u> |
|----------------------------|-----------------------|------------------|
| 1. _____                   | _____                 | _____            |
| 2. _____                   | _____                 | _____            |
| 3. _____                   | _____                 | _____            |

**Date** \_\_\_\_\_

**Decision from Health & health related Service and products quality control core process owner**

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**OROMIA NATIONAL REGIONAL GOVERNMENT**  
**ጤና ጥበቃ ቢሮ**

**HEALTH BUREAU**

BEFO/AMH/QHFWO/1-9/

ቀን 13/2/2007

የምዝገባ፡ EHA= 04087/2007

Reg.No RPL-407

**የወጪ ምዝገባ የሥራ ፈቃድ ምስክር ወረቀት**  
የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ መንግስት የአባሪዳማ አካል ሥልጣን ተግባር ለመጠየቅ ዘመዝገቡ አዋጅ 47/1998 አንቀጽ 22(10) ስለፍ ጥበቃ ሚኒስቴር በተሰጠው ሥልጣን ተግባር እንዲሰጥ በዚህ አንቀጽ ንዑስ አንቀጽ 12 ስለሌለ ጤና ቢሮ ጠባብ ውክልና መሠረት

ተዛቢውን የብቃት ደረጃ አማልተው ስለተገኘ በአስተርጓሚ ህልዝ አስታገኝት መያ መዝግቦ ይህን የሰው ምዝገባ የሥራ ፈቃድ ምስክር ወረቀት ተሰጥቷል፡፡

የወጪ ምዝገባ ሥልጣን  
የሥራ ፈቃድ ፈቃድ

ቀን 13/2/2007

የኃላፊው ፊርማ  
የሰው ምዝገባ የሥራ ፈቃድ ምስክር ወረቀት  
በጥያቄው ላይ ምስራቅ አስተዳደር  
በጥያቄው ላይ ምስራቅ አስተዳደር  
በጥያቄው ላይ ምስራቅ አስተዳደር  
በጥያቄው ላይ ምስራቅ አስተዳደር

**PROFESSIONAL REGISTRATION AND LICENSING CERTIFICATE**  
The Ministry of Health by Virtue of the power vested in it by the definitions of powers and Duties of the Executive Organs of Federal Democratic Republic of Ethiopia proclamation Number 471TE/2005 Article 22(10) and as the authority delegated to regional health Bureau by this article(12)

**Expert HEALTH ASSISTANT**

**Inspection & Licensing Expert**

Signature/Name authorized

23/10/2014  
Date (Gregorian)

Personal

- ☐ This certificate shall be renewed every five years.
- ☐ Is unlawful if it is found being used by another person.
- ☐ The holder is required to notify as soon as the certificate is lost or misused.

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