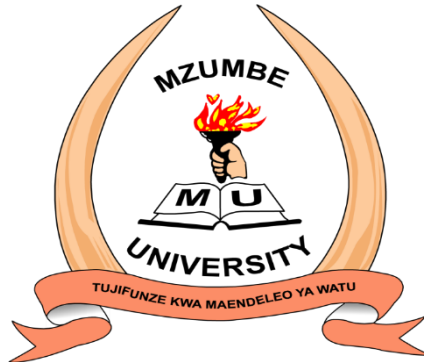


MZUMBE UNIVERSITY



FACULTY OF SCIENCE AND TECHNOLOGY

(FST)

PROJECT TITLE: E-STATIONERY.

PROGRAMM: BSc ICTM - III.

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CHAPTER ONE

1. BACKGROUND AND PROBLEM STATEMENT

1.1. INTRODUCTION

E-STATIONERY is the web-based system software that will be developed to provide different Stationery Service in terms of online services so as to avoid local provision of services as it provided recently. However, the system will be web-based system and it aims to solve and reduce all problems resulting from sharing and the use of stationery in a place where will be applied (Mzumbe). The system focuses on main four things or category that will be easy to address through the use of technology so as to avoid some of the obstacles and challenges which are not necessary, those things are: -

- a. Booking Stationery (printing, scanning, lamination, bindings).
- b. Ordering Materials.
- c. Local payments.

1.2. BACKGROUND TO THE PROBLEM

Across many Universities in Tanzania for a decade there is no a technological controlling and managing of stationeries as the most of them based on local provision of services by physical interaction of client/ customer. Therefore, different factors always lead to the delaying and failure of some stationery activities such as printing, photocopy, editing, bindings, laminations and others which in turn facilitate plagiarism of work due to the laziness of some people who used to copy and paste their material of work without using any knowledge and understanding after reading or discussing and focus on money for those service provider because there is no common price for stationery services so they differ from one another.

However, other stationeries service provider has no experience and skills that required by university on service providing and work format that university prefer, so they always lead to the wastage of time and money when it needed for student to do a work again because of poor format of work which is rejected by the lecturer. Furthermore, location of other stationeries is little bit challenge to get them because they are far away and are not recognized well due to its environment and location, when some factors interfere such as change in climatic condition especially during rain then stationery becomes a little bit challenge to reach them when are

necessary at a time, therefore it slow down other activities when student find alternative for acquire service due to the loss of time and queuing to the nearby stationeries.

1.3. PROBLEM STATEMENT

Stationeries play a big role to the education/ academic arena as they provide access to the materials both academic and non-academic materials and services for studying purposes. The increase in number of Students and other users explode the number of stationeries around the targeted community, but still this proportionate increase of the services and users can cause congestion and queuing to the stationeries. Therefore, the project is structured to reveal the extent to which the student and other users of stationaries can access service and materials in easiest and fastest way than they always do.

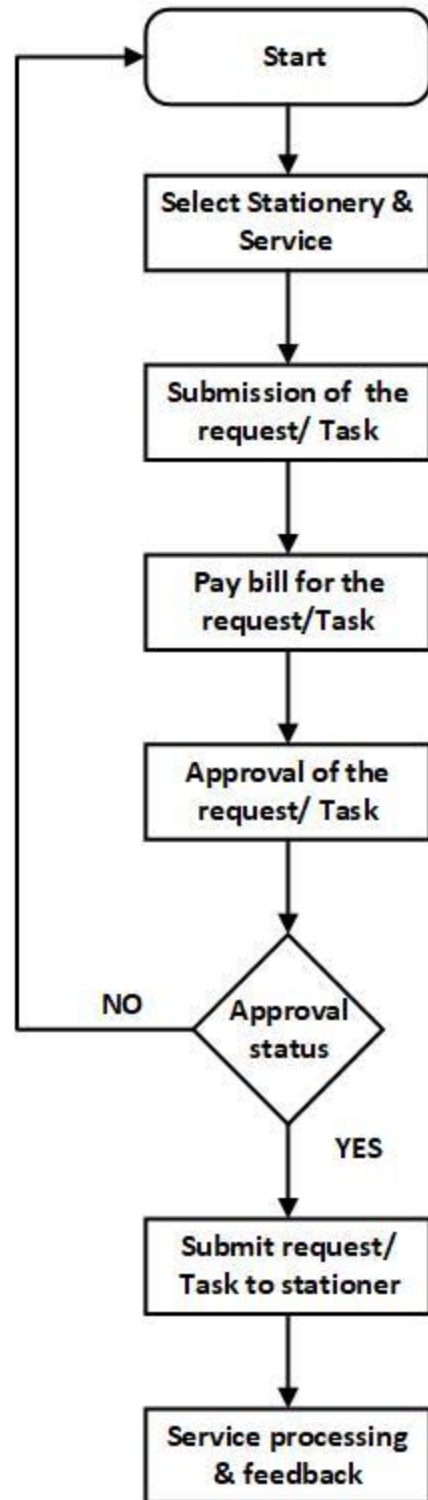


Figure 1: *Stationery request process*

1.4. PROJECT OBJECTIVES

1.4.1. MAIN OBJECTIVE

The main objective of this project is to develop a web-based system that will help out the provision of stationeries services and other studying materials in easiest way that will avoiding queuing and population.

1.4.2. OTHER OBJECTIVES

1. To develop a system that will be able to provide all essentials services (printing, scanning and other services) by connecting stationeries and users (enable interaction of stationery and user).
2. To develop a system that will allow user to make local payment for any service requested such as through the use of M-Pesa, Tigo Pesa.

1.5. SIGNIFICANCE AND SCOPE OF THE PROJECT

1.5.1. SIGNIFICANCE OF THE PROJECT

1. **It saves time**; the project will facilitate time management after the deliverable because it will enable users to observe analysis and progress to each stationery so as they can use the idle one for quick service.
2. **It minimizes queuing**; congestion of people and population will be avoided which in turn will make easy in service provision.
3. **Simplify the accessibility of academic materials**; different stationeries vary in materials and service they provide. Therefore, the system will make it easy to find materials and service in time.
4. **Common price**, price for materials and service will be common to all stationeries and well known unlike the traditional way as it is known before such that every office with its own price.
5. **Avoid plagiarism**; however, the system will help to measure plagiarism before the job is submitted to the stationery.

1.5.2. SCOPE OF THE PROJECT

The accessibility and provision of stationery service based on academic issue such as printing service and material for study is important to the school grounds since those materials facilitate the whole process of learning and services play a big role to the student academic assessments such as printing of works, reports, research and other forms of work. This project is broadly cover and facilitate the whole process of acquiring both academic services and materials that are made available to the stationeries and it is mostly make it easy on access to it because the system is a bridge between the stationaries and the users (students), thus the system is connected to all legally and approved stationeries that are verified by Mzumbe university to offer the service and materials to the students.

The deliverable of this project will be able to allow the user to sign in and to sign out for security purpose, to post out his/ her work to the one of his stationery choices, payment for any requested materials or posted work is prompted by the system before the request is accepted, each work or service is tracked down by the system if is for delivery or self-taking from the stationery.

CHAPTER TWO

2. LITERATURE REVIEW

The main purpose of literature review is to analyze and carry out attentive research towards the the topic ‘E-Stationery’. This literature review involves conclusion that explain the past and current situation information, arranging literature into certain topics and documenting requirements for the project. This section focusses on explain about the reviews for the project and it divided into four major parts namely: Topic Review, Methodology Review, Domain Review and frame concepts and conclusion of the problem.

2.1. TOPIC REVIEW

Over the past few years, the Internet has played a very important role be it at home, work or school. Internet applications such as online shopping and online voting has been widely accepted worldwide. This project focuses on the significance of online systems technology for managing stationeries in Mzumbe University.

2.1.1. Dynamic website

A dynamic database driven website uses a database to gather, manage and display information. They are integral to websites that change constantly in areas such as product inventory, news or listing information. For instance, an e-commerce website using a database to store customer orders and billing information online. Other than that, would be a site that displays current stock market information. It retrieves the information from a database and dynamically displaying it through the website. This type of system is ideal for website content needing regular updates and additions. A database driven system also allows a website to be interactive and store user information (Rashrin A. 2004).

- **Ordering Materials**

Most stationeries management systems like StatMo! That existing are more based on provision of the stationery office inventories much rather than other services offered by

stationeries. Customers may order their goods and material just like in other online shopping centers such as Amazon, Kikuu and other related.

- **Paying bills**

This is something which is similar over the all online shopping center or other system that may offer service online may comprise of online payment through the use of credit card, sim card or Bank. Therefore, is something common that will be applicable in e-Stationery system.

Comparison between similar systems (Umami K. 2018)

System/ Features	Unit Inventory System Information Integrated System	Inventory Management System	Most Stationery Inventory Management System
Login Module	Able to login but for operators used only.	Able to login for management used only.	Able to login for the use of operators and workers.
Supplier Module	Do not have additional form or list of suppliers shown.	Do not have additional form or list of suppliers shown.	Include additional form or list suppliers shown.
Report Module	Do not have report displayed.	Include report displayed.	Include report displayed.
Search Module	Include search space.	Do not include search space.	Include search space.

2.2. REVIEW METHODOLOGY /TECHNOLOGY OF THE PROJECT CALIBER

2.2.1. METHODOLOGY

According Dewan Dictionary Fourth Edition, methodology is defined as system that includes method and principle to be used in activities, discipline situation and son on. Research methodology can be defined as a kind of research and design, collect and analyze data technique to create evidence that can support the research. Methodology explains the ways to study a problem and the reason to use the method and technique.

Waterfall Methodology

The model chosen to develop Most Stationery Inventory Management System is waterfall methodology. Every phase in the development process will be carried out once the previous

phase process has been done completely. **Figure 2** below shows each phase for the development of waterfall model.

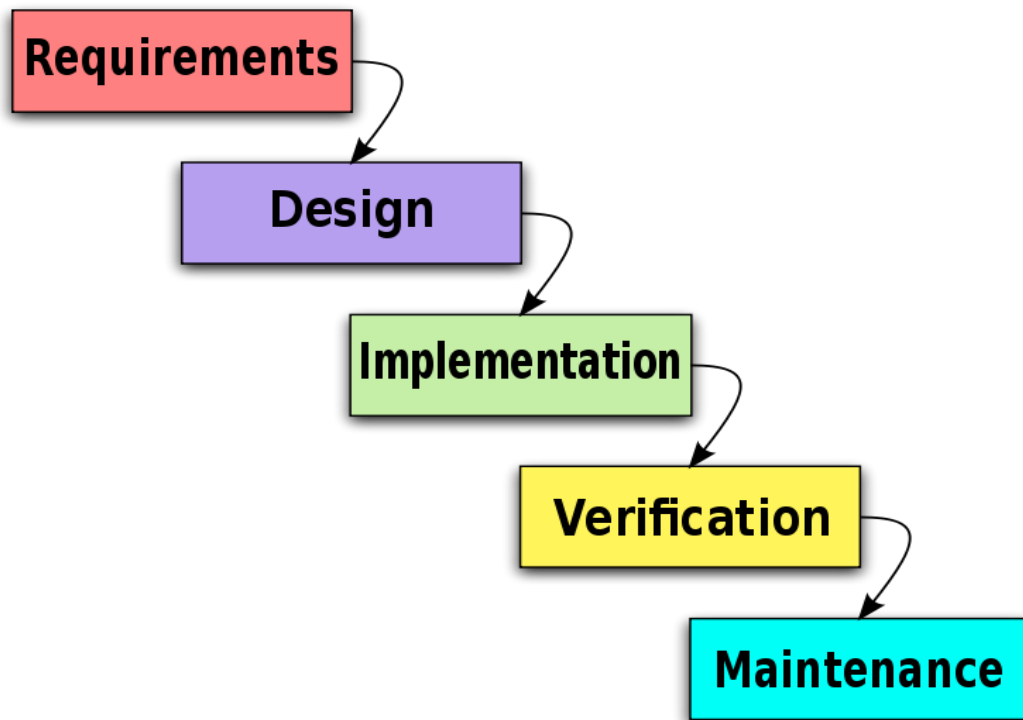


Figure 2: Waterfall Model with Prototyping Phases

Analysis and requirement phase

Analysis and requirement phase is a phase in which it collects the information regarding the system and the requirements for the project development. The acquired data is collected and analyzed to determine the requirement for this system.

Design and software phase

Design phase explains how the developed system operates in terms of hardware, software and network base. Entity Relationship Diagram (ERD) and Data Flow Diagram (DFD) are designed to analyze the system flow. Database used is Postgress Database because it is one of the good database management systems. User interface is designed by using Pinegrow software which increases the quality of system development.

Implementation and unit testing phase

This phase involves the actual system development where the development of program system is carried out by using the appropriate software which is PYTHON while user interface is done by using Pinegrow. The development of database is done attentively as it is the main core for a system to function effectively. Besides, this phase also implements unit testing. Testing is done for the purpose to discover whether each unit had fulfilled the corresponding specification.

Integration and testing phase

For this phase, software testing is carried out to ensure that system and integration testing is done before released to the users. Testing is run on a whole to ensure the system has fulfilled the available requirements. Moreover, testing is aimed to guarantee that no mistake is done and software is function as discussed.

Operation and maintenance phase

Operation and management phase is a phase in which system is developed and released to the users for a first-time use. Users will check whether the appropriate requirement is done as discussed before. If there are any changes required, developer must correct the mistakes to fulfill user's needs. If there are no changes, the system will operate fully.

2.2.2. TECHNOLOGY USED

PYTHON

Is a widely used general-purpose, high level programming language. It was initially designed by Guido Van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including procedural, object-oriented, and functional programming. Python is often described as a “batteries included” language due to its comprehensive standard library.

HTML

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display a web page's words and images for the user. Each individual markup code is referred to as an element (but many people also refer to it as a tag). Some elements come in pairs that indicate when some display effect is to begin and when it is to end.

CASCADING STYLE SHEET (CSS)

Cascading Style Sheets are a collection of rules we use to define and modify web pages. CSS are similar to styles in Word. CSS allow web designers to have much control over their pages look and layout. For instance, you could create a style that defines the body text to be Verdana, 10point. Later on, you may easily change the body text to Times New Roman, 12point by just changing the rule in the CSS. Instead of having to change the font on each page of your website, all you need to do is redefine the style on the style sheet, and it will instantly change on all of the pages that the style sheet has been applied to. With HTML styles, the font change would be applied to each instance of that font and have to be changed in each spot.

CSS can control the placement of text and objects on your pages as well as the look of those objects.

HTML information creates the objects (or gives objects meaning), but styles describe how the objects should appear. The HTML gives your page structure, while the CSS creates the 'presentation', an external CSS is really just a text file with a .css extension. These files can be created with Dreamweaver, a CSS editor or even Notepad.

The best practice is to design your web page on paper first so you know where you will want to use style on your page. Then can create the styles and apply them to your page.

JavaScript

JavaScript is a programming language commonly used in web development. It was originally developed by Netscape as a means to add dynamic and interactive elements to website. While JavaScript is influenced by Java, the syntax is more similar to C and is based on ECMAScript, a scripting language developed by Sun Microsystems.

JavaScript is a client-side scripting language, which means the source code is processed by the client's web browser rather than on the web server. This means JavaScript functions can run after a webpage has loaded without COMMUNICATING with the server. For example, a JavaScript

function may check a web form before it is submitted to make sure all the required fields have been filled out. The JavaScript code can error message before any information is actually transmitted to the server.

Like server-side scripting language, such as PHP and ASP, JavaScript code can be inserted anywhere within the HTML of a webpage. However, only the output of server-side code is displayed in the HTML, while JavaScript code remains fully visible in the source of the webpage. It can also be referenced in a separate .js file, which may also be viewed in a browser.

DJANGO

Django is a web application framework written in Python programming language. It is based on MVT (Model View Template) design pattern. The Django is very demanding due to its rapid development feature. It takes less time to build application after collecting client requirement.

2.3. DOMAIN REVIEW

This section describes the comprehensive review on existing related systems to e-Stationery System. Currently across the world technology employed to manage stationery and lead to the rise of Stationery Inventory Management System for tracking and managing stationer stores.

Not user friendly:

In a stationary the existing system is not user friendly Because the retrieval and storing of data is slow and data is not maintained deficiently.

Difficulty in reports generating:

Report generating in stationary either no reports generating in a current system or they are generated with great difficulty reports take time to generate in the current system.

Auditing:

Auditing is another problem that the stationary industry faces on a regular basis. Stationary businesses are regularly engaged in competition with one another, and this competition can create price wars, forcing a need to keep tight control over inventory and other important data.

MetricStream, Inc. notes that the stationary industry is often faced with inefficient and poor auditing plans that make competing with other companies difficult. The company notes that existing auditing systems may be outdated and provide inadequate audits needed to stay competitive.

Economic Challenges:

Another area of challenge for the stationary industry is the economic uncertainty it faces moving forward. The stationary industry as a whole is largely dependent upon the economic wellbeing of the nation. As the nation prospers and people have more money to spend, the stationary industry generally flourishes. However, in more difficult economic times, the stationary industry is often faced with potential shrinkage. Columbus IT also indicates that the future uncertainty of global economic markets makes economic planning difficult in the retail world.

Limitation of existing system:

The earlier experiences have shown that manual monitoring of customers enquire about their status, often fails to achieve the desired enquiry, mainly because of the following reasons: -

- Information anytime & anywhere is not possible
- Manual procedure of providing information is not reliable.
- Maintaining database
- Record entry
- Searching & updating record

Among the existing system based on stationery are focused on managing stationery inventories, stores and offering orders based on the customer needs. However, those systems are more related to the online malls with little difference of specification to the stationery office inventories.

Therefore, based on the existing system from different places over the world here I come up with the new system that will offer service based on Mzumbe where by the new and interesting thing

over the other system is that it will offer booking of stationery (printing service from remote) which is new things over the other related systems like StatMo!

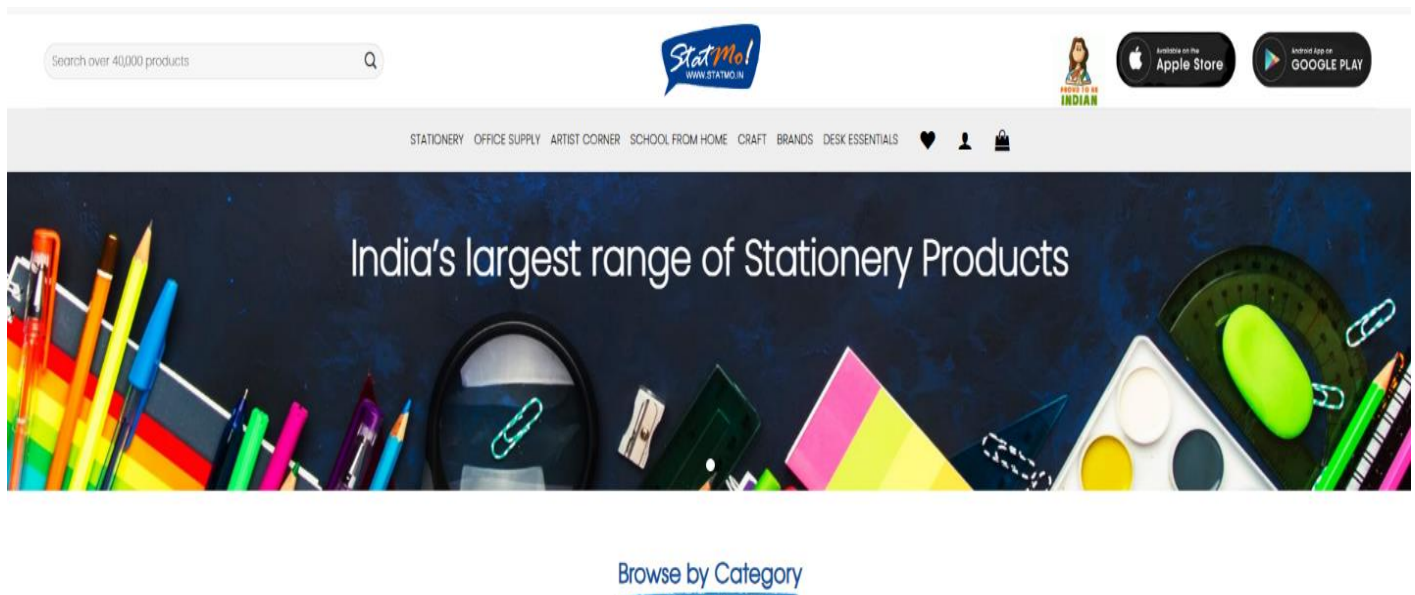


Figure 2: StartMo! (ww.statmo.in) Indian`s stationery landing page

A dynamic database driven website uses a database to gather, manage and display information.

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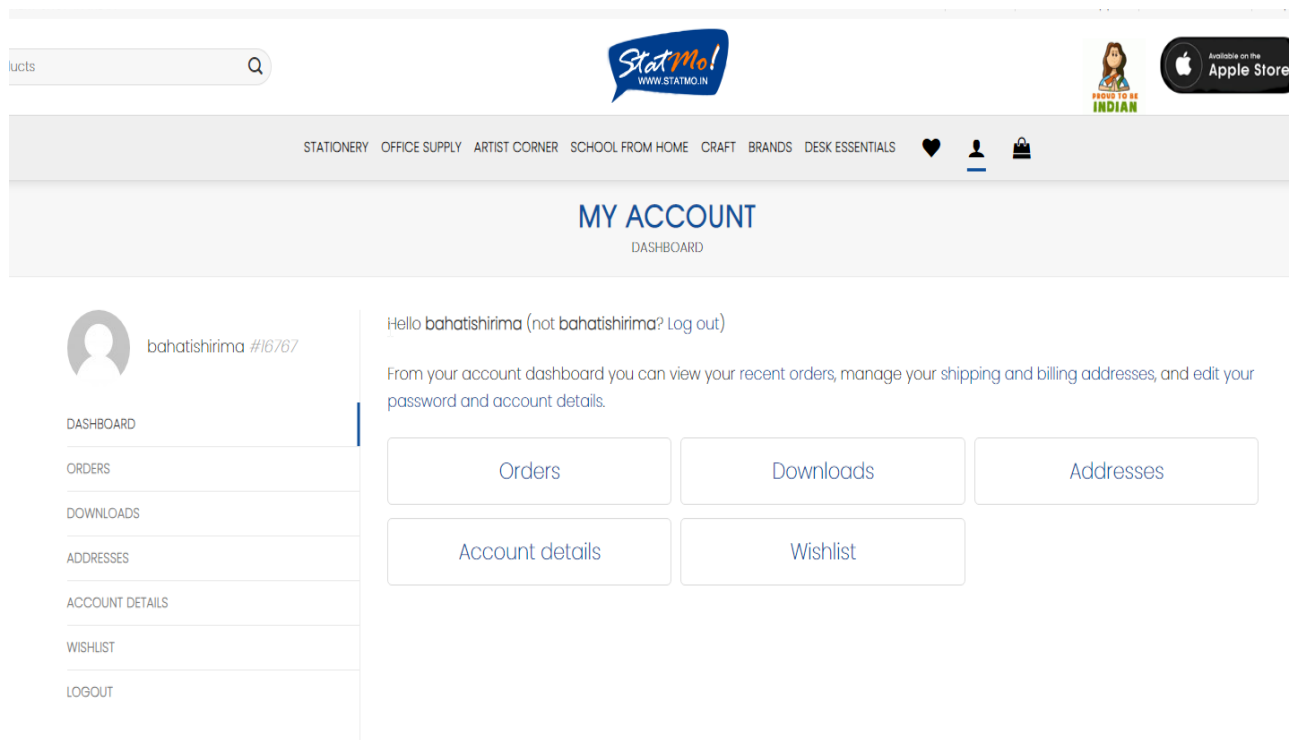


Figure 3: Indian's stationery user account

2.4. FRAME CONCEPT AND CONCLUDE THE PROBLEM

2.4.1. Lesson learnt

The issue now is often less the availability of information than its overabundance, and access to quality information for diverse users. The challenge is to filter what is most useful out of the vast quantity of information available: to select, evaluate, describe, store, retrieve, manipulate, and present information in all its forms, including text and numeric data. The goal is to provide, not simply data, but information that enhances understanding and helpful in decision making. I propose a system that will advance in monitoring and controlling Students Field practices and Research works progresses.

2.4.2. Problem Conclusion

According to different scholar's literature related to Field practices and Research work Management System. Through those scholars and researcher's projects, I have been influenced to design Field practices and Research work Management System, this project will replace the current manual Field and Research works Management System used at Mzumbe University.

From the other recent systems as prescribed in literary reviewing, I discovered the issues that haven't been solved in previous developed systems to be recommended accomplished in my project such as evaluation of Students Field practice and Research works scores through the proposed Field practices and Research work Management System for Mzumbe University, and providing the ways on how there will be also feedback notification to the University or help for those students who will miss the field practice and research works placement centers with proof submission.

3. SYSTEM ANALYSIS AND REQUIREMENT ELICITATION

3.1. UNDERSTAND REQUIREMENT OF THE PROJECT

Requirements Analysis and Definition is the first stage in the systems engineering and software development process. This stage breaks down functional and non-functional requirements to a basic design view to provide a clear system development process framework. A thorough requirement analysis process involves various entities, including business, stakeholders and technology requirements.

Effective requirements analysis includes four types of activity:

- **Requirements Elicitation:** The elicitation activity consists of gathering information, understanding the sub stationeries, customers need, and articulating high level requirements.
- **Requirements Analysis:** The analysis activity examines the high-level requirements and determines if they are clear, complete, and free of contradictions, and then defines the strategy to address these issues.
- **Requirements Specification:** The specification activity defines the behavior of a system in development and determines the method for requirements documentation (i.e., natural-language documents, process models, business definitions, use cases, user stories, or process specifications).

- **Requirements Validation:** The validation activity involves sessions with users, stakeholders, and functional experts to determine mitigation and issue resolution.

3.2. METHOD FOR DATA COLLECTION

Major activities involved in system analysis are fact findings & fact analysis. There are many fact-finding techniques. An analyst can collect data from two principle sources: written documents & personnel who are knowledgeable about or involved in the operations of system under study. The most appropriate 5 fact finding tasks are:

- i. Data Collection
- ii. Correspondence & Questionnaires
- iii. Personal Interviews.
- iv. Observations.

DATA COLLECTION:

I have collected & organized the documents related to data such as record, reports, manuals etc. of the present system. The recent information is collected through correspondence including questionnaire, personal interviews and direct observations.

3.2.1. CORRESPONDANCE AND QUESTIONNAIRES

Correspondence defines the subject area and specific topics to be reviewed. it also explains the purpose of investigation activities and inform the staffs what is expected from them in the interviews

Questionnaires are important and effective types of correspondence. It should be brief in order to increase the promptness and probability of response.

3.2.2. PERSONAL INTERVIEWS

It is one of the fruitful methods of obtaining information. I have conducted personal interviews with the resource person and is able to collect many useful data.

3.2.3. OBSERVATION

I had observed the operations of the current systems and formulated questions and drawn conclusions on the basis of what I observed.

3.3. ELICIT AND CLASSIFY REQUIREMENTS

For the proper working of a system some requirements have to be met. These requirements include the needs specified for the software. Apart from this some requirements have to be met for the working of the system. Thus, the requirement elicitation and analysis come under three types.

3.3.1. FUNCTIONAL REQUIREMENTS

It specifies the primary requirements of the system such as the major tasks to be performed by the system. It includes

- The administrator should be able to update stationery details, add stationery and its service, delete stationery and/or service, add stationeries details etc.
- The user should be able to access the site and view the stationery and its service/materials.
- The staff should have a login id and password for registering.

3.3.2. NON-FUNCTIONAL REQUIREMENTS

It mentions the requirements that are indirectly needed for the working of the system. The distance quote fare predicting system requires the following non-functional requirements.

User Requirements

User requirements define system properties and constraints. Examples of system properties are *reliability* and *response time*. Examples of constraints are the capabilities of the i/o devices attached to the system and the data representations used by other systems connected to the required system.

Safety Requirements

The software may be safety-critical. If so, there are issues associated with its integrity level. The software may not be safety-critical although it forms part of a safety-critical system. For example, software may simply log transactions. If a system must be of a high

integrity level and if the software is shown to be of that integrity level, then the hardware must be at least of the same integrity level. There is little point in producing perfect code in some language if hardware and system software (in widest sense) are not reliable. If a computer system is to run software of a high integrity level then that system should not at the same time accommodate software of a lower Integrity level. Systems with different requirements for safety levels must be separated. Otherwise, the highest level of integrity required must be applied to all systems in the same environment.

- **Accessibility** The system should be accessible by the users at any time without any interruption and at any time.

- **Security** Since online payment of registration fee is made available, the system should be secure.
- **Maintainability** The system should be maintained properly for the proper working of the system.

3.3.3. DOMAIN REQUIREMENTS

These are the requirements of the system that are derived from application domain. They refer to characteristics and constraints of the domain and sometimes may be from function and nonfunctional requirements (Sommerville, I., 2017). They include: -

- **Language** in which the system should be applicable in English or Swahili to the user
- **Interoperability** the system should be able to work together with other system available concerning Student results

3.3.4. HARDWARE REQUIREMENTS

Processor	: Intel Dual core/ Core 2 Duo/ i3/i5/i7
Processor speed	: Minimum 1GHz
RAM	: Minimum 512 MB
Hard Disk	: Minimum 4GB
Keyboard	: 104 keys
Monitor	: 15'
Printer	: Any Suitable Model

3.4. SPECIFY FUNCTIONALITIES AND SERVICES OF THE SYSTEMS

System Analysis

Analysis on the system requirement is basically to analyze what is going to be built for the purpose to acquire a full understanding to the system environment. This involves process of collecting and interpreting facts, identifying the problems, and decomposition of a system in to its components. System analysis is conducted for the purpose of studying a system or its parts in order to identify objectives.

Data Flow Diagram (DFD)

Context diagram is a diagram that shows a whole image on data flow that involves in the development of inventory diagram contains two entities which are operator and workers, tasks for workers are registering new inventory, add an information, handle defected stuff information and a Furthermore, operator can generate sales report. Figure the context diagram for Most Stationery Inventory Management

Context Level Diagram

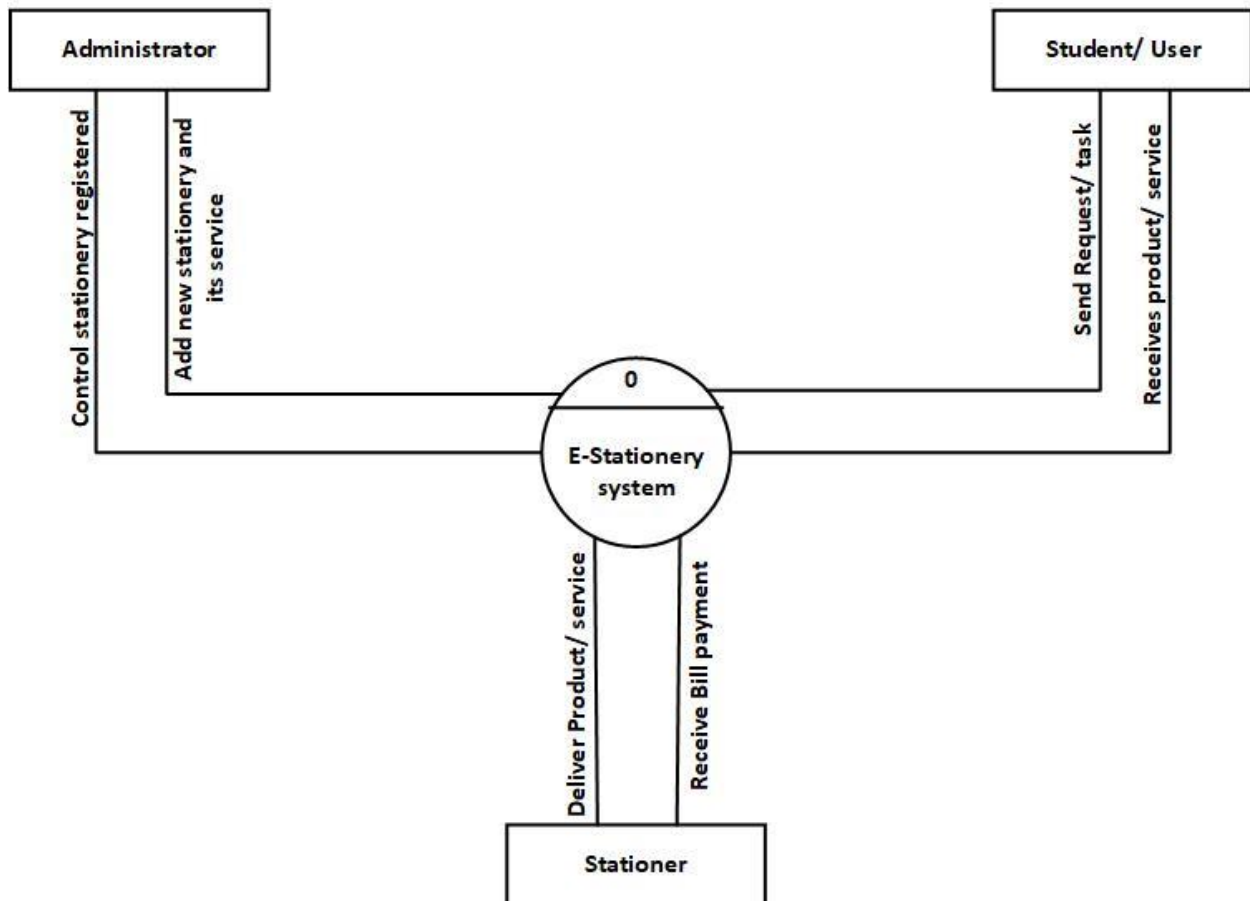


Figure 2: Context Diagram for E-Stationery System

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DFD : Level 1

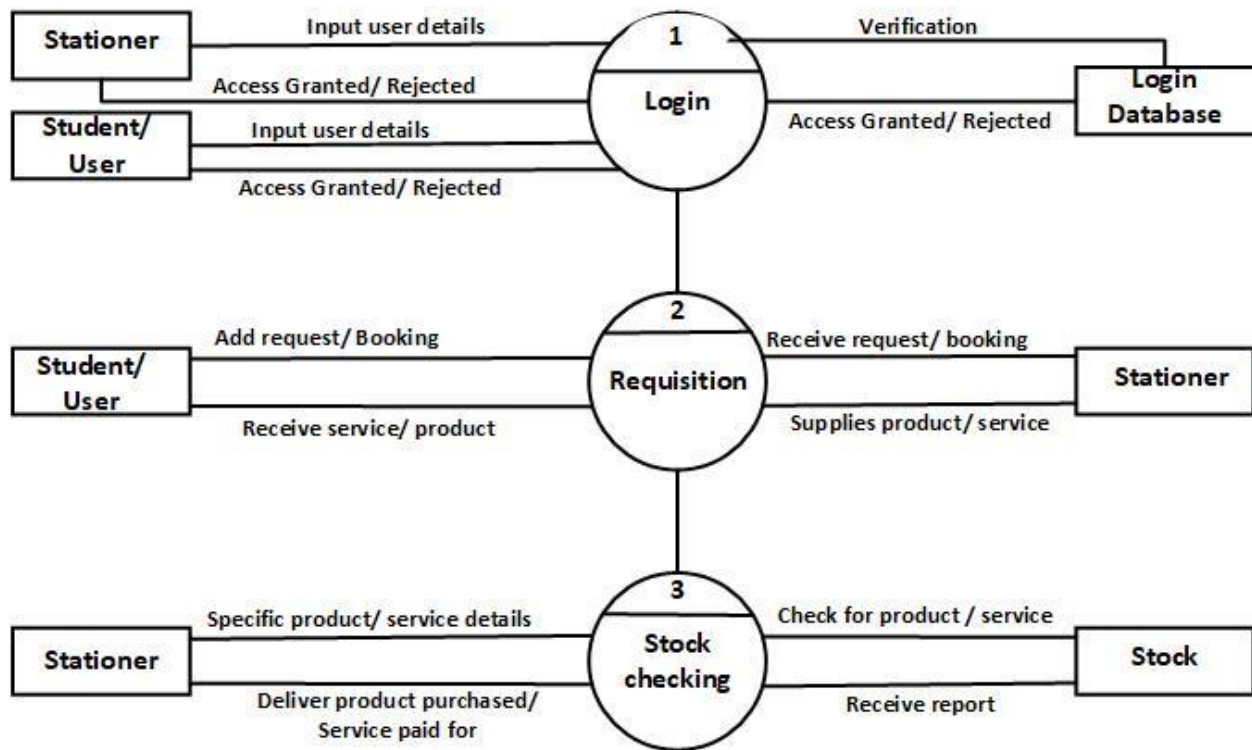


Figure 3: Data Flow Diagram level 1 for E-Stationery System

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DFD : Level 2

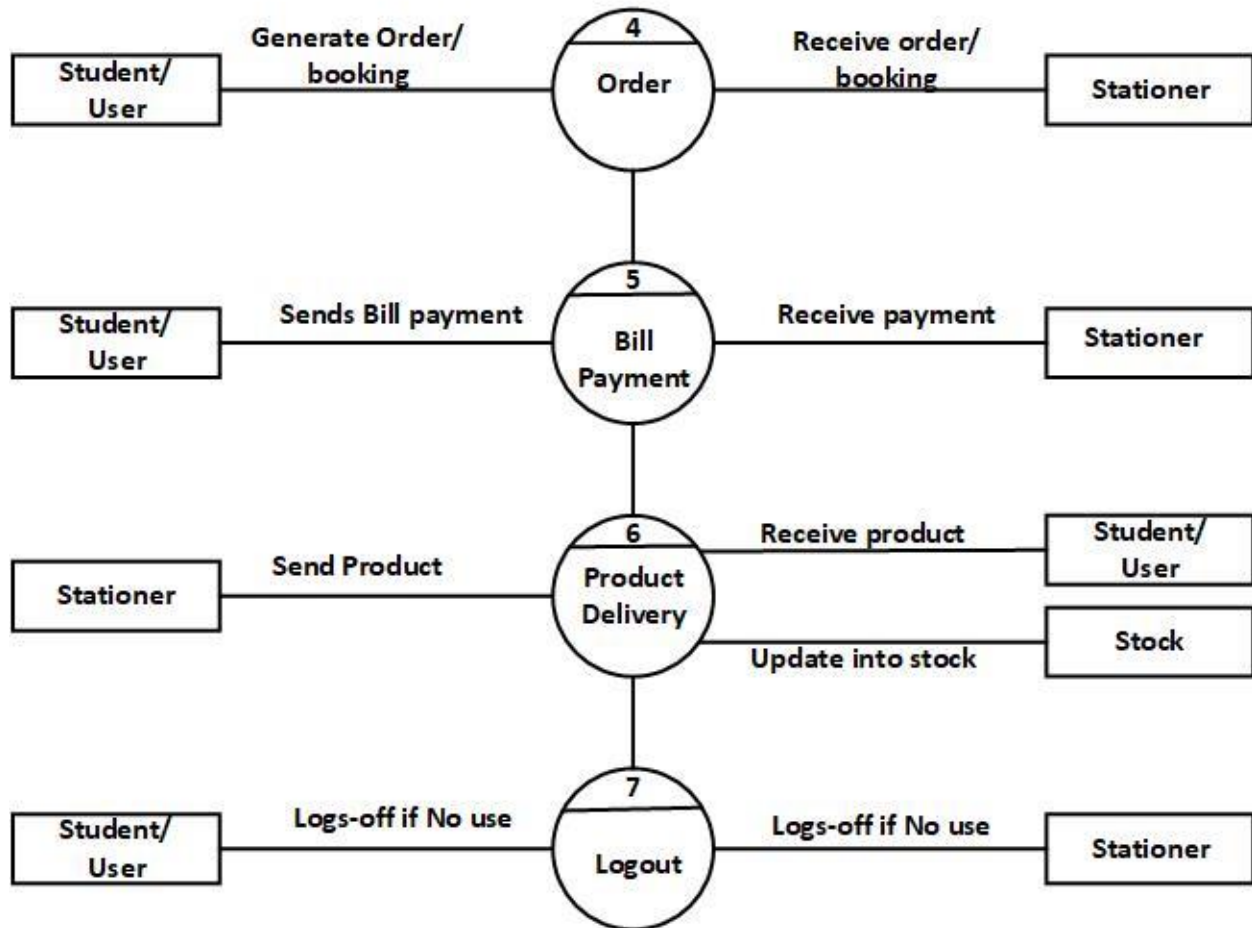


Figure 4: DFD Level 2 for E-Stationery system

Use case diagram

Use case describes sequence of events for the users who use system functionality to complete various processes. Use case diagrams, which show the interactions between a system and its environment.

Use case is used in order to demonstrate the system's behavior and how the user will interact with the system.

The followings are actors for the system as shown in the figure:

- Administrator
- Stationer
- Student/ User

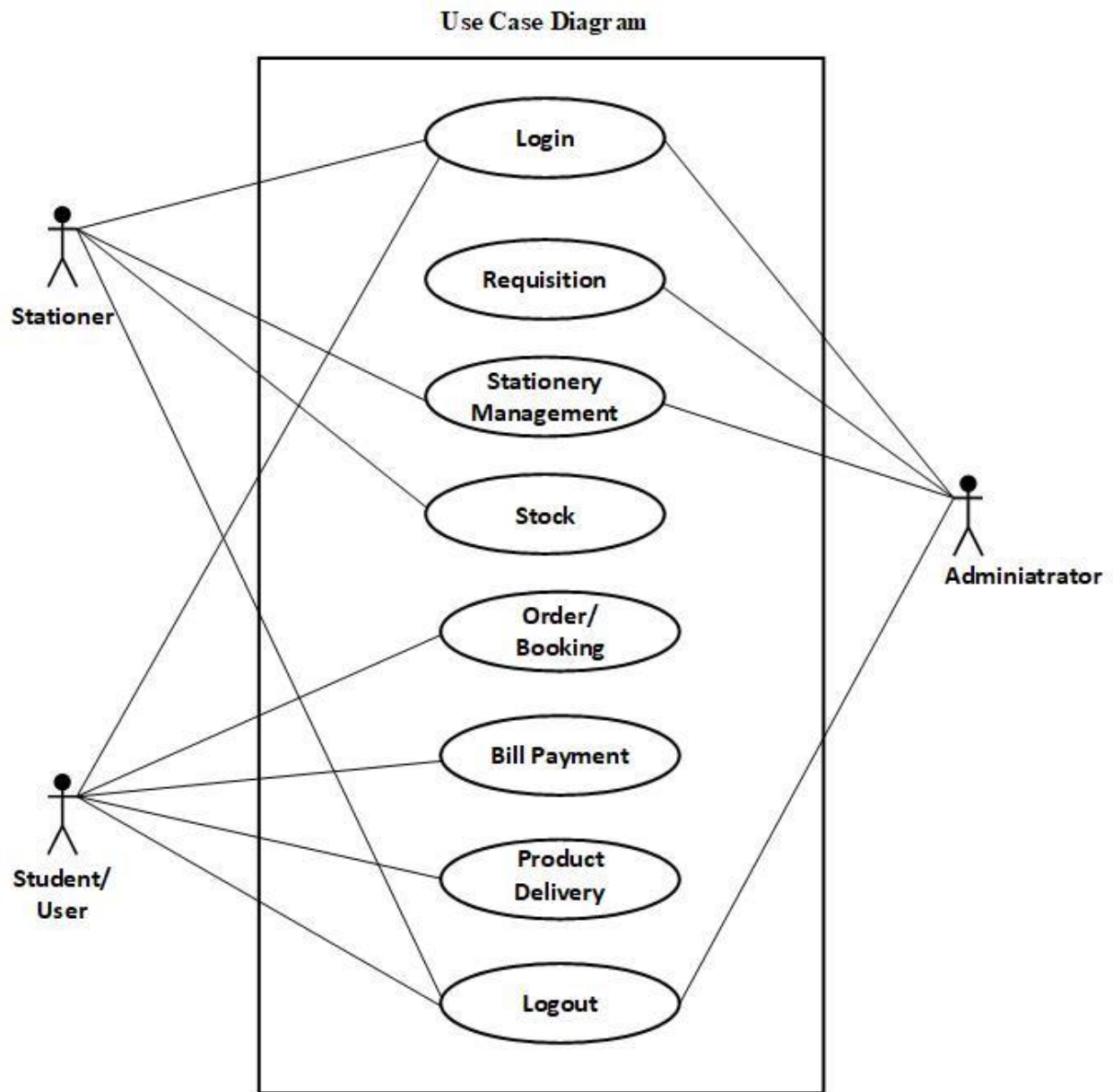


Figure 5: Use case diagram for E-Stationery system

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