

ARDHI UNIVERSITY



DEPARTMENT OF COMPUTER SYSTEM AND MATHEMATICS

INDUSTRIAL TRAINING REPORT

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ABSTRACT

This report is a result of the industrial training activities that took place from 17th July to 08th September 2023. The industrial training took place at Tanzania Commercial Bank (TCB), Head Office Dar Es Salaam that deals with providing and promoting Financial Solutions.

I was assigned as IT trainee at Business Solution Department (BS) under the company supervisor, Mr. Eliatosha Kwizera and my faculty supervisor Mr. Yohana Kangwe. During the industrial training, I was involved in different projects concerning development of web and mobile applications.

Some tasks that I was assigned during this progression of these projects includes to develop User Interface for the system using various technologies such as HTML, CSS, JavaScript and Bootstrap to deal with non-complex server-side development of various applications by using different technologies including the PHP and MySQL as the database management system.

I was able to capture different knowledge about software development and the field of IT in general. For example, I was taught the best approach of writing codes for server-side that ensures easily readability and debugging even for other programmers where this can be achieved by employing various techniques such as using comments and performing error handling. I was also taught to utilize public APIs developed by other programmers so as to fetch various information and to create private Rest APIs that are generally used to transfer data between applications of different technologies for example flutter and Laravel applications.

This report has mainly four chapters, The first Chapter illustrates the introduction of the company in which the report shows the mission and vision of the company together with the organization structure. The second chapter gives a detailed description of the task that was executed during the Industrial Training. The third chapter generalizes the industrial training challenges from different areas including the Psychological, physical and technical challenges. The last chapter shows the recommendations and general suggestions toward the industrial training.

ACKNOWLEDGEMENT

I would like to express my gratitude to several people who had help me and guide me throughout the whole industrial training period. This project can be done completely and successfully because of their guidance and support all the times especially when I am facing any difficulties and challenges.

I would like to thanks to my company supervisors, Mr. Eliatosha Kwizera; Mr. Arthur David (Business Solution Officer) and Mrs. Praise Eliya (Business Solution Manager) who have been guiding me since my first day undergoes industrial practical at Tanzania Commercial Bank. They are willing to share their own experience, IT knowledge and programming skills regarding latest information technology knowledge, programming skills and company operations. They also sacrificed their time for me on to guide me in my assigned tasks from the beginning of the industrial training until the end of the program.

LIST OF ABBREVIATIONS AND ACRONYMS

IT – Information Technology

UI – User Interface

UX – User Experience

BS – Business Solutions

TCB – Tanzania Commercial Bank

OTP – One Time Password

API – Application Programming Interface

HTML – Hyper Text Markup Language

CSS – Cascading Style Sheets

JS – JavaScript

VS – Visual Studio

MYSQL– My Structured Query Language.

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CHAPTER 1

INTRODUCTION

1.1 Historical Background of the Organization

Tanzania Commercial Bank PLC (TCB) is one of the oldest bank in Tanzania tracing its history since 1925 when Tanganyika was under British Rule and was then known as Tanganyika Postal Office Savings Bank (TPOSB). It later became a Savings Bank under the then East African Post and Telecommunications Corporation which ceased to operate after the collapse of the East African Community and led to the formation of The Tanzania Posts & Telecommunications Corporation (TP&TC).

The Tanzania Post Office Savings Bank was formed under TP&TC and continued its operations until 1991 when it was transformed into a separate entity from TP&TC as Tanzania Postal Bank (TPB) by The Act of Parliament No. 11 of 1991 which was repealed in 2015. In 2016 the bank was incorporated under the Companies Act (Cap 212) as TPB Bank PLC and in 2018 TPB Bank PLC was merged with Twiga Bancorp Limited and Tanzania Women's Bank Limited. In 2021, TIB Corporate Bank Limited and TPB Bank PLC were merged to form Tanzania Commercial Bank Plc (TCB). Over the years TCB has been transformed into one of the largest and most profitable commercial bank in Tanzania.

1.1.1 Vision and Mission of the Organization

1.1.1.1 Vision

To be the leading bank in the provision of affordable financial services and promoting financial inclusion in Tanzania. TCB offers the full suite of financial solutions and has a track record of being one of the most innovative banks in Tanzania.

1.1.1.2 Mission

To aid in the transformation of the socio-economic landscape of Tanzania by providing and promoting financial solutions in a sustainable way while ensuring stakeholder expectations are met. Customer Focus: All our activities are primarily focused on customers' needs and their fulfilment; we invest to enhance their experience of banking with us. The market we serve determines our choice of products and services and the way we deliver them.

1.2 Organizational Structure

The main purpose of such a structure is to help the organization work towards its goals, mission, and vision. It brings the staff of the organization together and demarcates functions between them. Secondly, the presence of this structure also helps in ensuring smooth and efficient functioning.

Tanzania Commercial Bank



figure 1. 1. Organizational structure of Tanzania Commercial Bank

1.3 Roles performed by the IT department

Tanzania Commercial Bank is divided into different kinds of department. Every department has its own responsibility and operation. The department for the industrial training placement is Business Solution Department. It is one of an important department which helps the company to solve any problems from client's regardless software or database. This department is responsible in developing the bank software basically websites, systems and mobile applications also handling software technical problem such as fixing system bugs and add-on new features on systems.

1.4 Description of assigned tasks

At the beginning of industrial training, field trainee placed in Business Solution Department under supervision from Mr. Eliyatosha. The first assignment was to develop application which are the among of the main tools used in this company and the second complete assignment was to develop system. The training started with the task to develop UI and UX as well as to interact with database which is MYSQL.

CHAPTER 2

ASSIGNED TASK

2.1 Problem statements

People are always visiting to TCB Bank and being register manual by writing their credentials to the book available to reception area, hence there is no security of data since any time may be stolen also maintainability of these visitors' data is not highly because there are duplications of data since a single person is always signing when visiting a bank regardless how much is visiting.

By observing, so we came up with the idea on how to develop the system that all visitors may be signed and record their data on the system and ensuring the data is secured and can be stored for the long time and access it when necessary.

2.2 Functional Characteristics of the system

The web was developed in such a way that they were very easy to use as the visitor didn't require a sign up, their data especial names, assets where are they from and where are they going to also time in and out as well as the name of security officer who approved them, are interrering by security officer.

Also, the Security officer is registered by System Administrator before they are required to sign up and add the visitor's information, then after being registered now is able to login and record all the visitors' information. This added advantage as visitors are now being able to just tells their credentials and not wasting time to start taking a pen and book to write down.

2.3 Non-functional Characteristics of the system

The system package delivery applications were set to reach the top-notch quality as being reliable, easily reachable, and above all secured with OTP technology in which prevented unauthorized access to the application as the users especially security officer and security manager were got with a confirmation to make sure they are who they claim to access the system. The system was also developed with PHP language, HTML, CSS, JavaScript and Bootstrap which rendered beautiful UI the system incorporated the feature of users Security Officer to be able to sign the all incoming and outgoing visitors to the system.

2.4 Proposed Solutions

- i. As we decided to develop Visitors Management System For the package delivery system based, I was assigned to develop UI for all system pages, including the homepage. I was required to develop UI for all login pages.
- ii. We used CSS, HTML, BOOSTRAP in implementation of UI for package delivery system based, where the main task that I was assigned was to create UI of some screens including sign in screens and for the backend we used PHP language.
- iii. Also, for the tasks that I was assigned was to develop both the frontend and backend parts of the system, where by using different skills and knowledge as I was taught at university and those that I gained during the industrial training period, I was able to develop the fully working system as per given requirements proposed by clients.

2.5 Functional and Technical Requirements

- i. The technology used to develop the system is called PHP, which is a language for the back end of the system interaction between the UI and Data from database. On the other hand, we needed to have a backend infrastructure to provide API services that enables data transfer from UI to the backend with MYSQL as the database.
- ii. For the frontend parts of both web applications, I used different technologies including HTML, CSS, JS and Bootstrap which is the framework of CSS in implementation, as the UI for this system was aimed to target user especial Security Officer and Security Manager and System Administrator.
- iii. Also, server machine was required to be able to host the systems, where for this case we used the platform known as 360 web technologies, that's is involved with provision of hosting services.

2.6 Results of implementation

Generally, results of implementation for all tasks that I was assigned during development of these projects were successfully.

Security officer is able to interact with the system and can perform the legislation activities from the visitors and Luckily there were no any negative reviews from users towards working and features of the system and hence this indicated that, both users of the system were satisfied with the web application developed. Also, based on the general output of the task that I was assigned, all office members were satisfied as there was no negative comments instead positive ones that encouraged me to develop the system more efficiently than before.

Generally, the results of implementation were nice as the output was compatible to the requirements that I was assigned hence this led my supervisors to be satisfied with the work i did. This project is not yet released rather it is still in progress of development, specifically the Audit trail part.

2.7 Benefits from assigned tasks

- i. Both the tasks equipped me with a lot of skills particularly on application development using PHP in which the system demanded a lot of my skills be furnished again by learning new concepts from the internet or elsewhere before implementation.
- ii. I was also taught how to use UI designing software including Figma and Adobe XD, where I was made aware about some fundamentals and principles concerning UI designing process. And lastly, I was able to understand how to utilize designs made by other designers, that is to convert from designs to code for both web and mobile designs.
- iii. Usually after the system development, for the output product to be released to the end users, there is the need to put the source codes of such applications on server so as to be accessible online by users using their browsers. Hence, during IT period I was taught about different hosting platforms and on how the actual process of hosting is done
- iv. In addition, based on the tasks that I was assigned during my industrial trainings I was able to learn and experience on how software development projects are conducted in teams. That is there are some kinds of works that can be sliced into portions and those portions can be done by different programmers where this can be done either when at the same physical location or even remotely by using different platforms for example GitHub and different techniques such as live share extension of VS Code, zoom, Team viewer and Skype.

CHAPTER 3

PROGRAM CHALLENGES

The following chapter contains a brief explanation and outline of different problems that I faced during the industrial training, which were caused by different factors including the technical part, location of the office together with the overall cost of different social services in the area

3.1 Psychological challenges

The physical location of our office was in urban Dar es salaam in a place called Makumbusho thus I faced traffic almost every day in which this reduced the time that I was expected to spend at the office because I had a lot of occasions where I arrive late at the office. On the other hand, it was expensive to travel from the place I reside to the office.

3.2 Physical Challenges

Unfortunately, my degree program was not considered by the government during loan allocations for industrial training. Where this was very difficult for me to handle my own life considering the highest cost of living in Dar es Salaam. Since I was required to use two public transports, even to get a single meal per day was very challenging to me. This actually led my attention and effectiveness at the office to descend to absolutely minimum.

3.3 Technical Challenges

Time scarcity, it was also evident that the task had required more time than what was assigned because most of the application features had required a lot of effort and time on learning them as it was a fresh start for us. And thus, we finished our industrial training time without actually finishing the final processes of testing and publishing the application which is also an essential part of Mobile Application development. For example, it was my first time to use flutter frameworks.

CHAPTER 4

RECOMMENDATIONS AND SUGGESTIONS.

4.1 Recommendations

Furthermore, I would recommend that the Government should be very careful and consider all university students with industrial training program while making loan allocations, as there are different levels of life in such a way that, being away from home together with being out of compass in a business city like Dar es salaam is, it requires more much money so as to attain basic needs such as meal and accommodation services. So, absence of such allocations to some students may led those students to live under very difficult condition, hence this hinders their learning activities while in industrial trainings.

Also, there should be more time dedicated to industrial training as I have realized that what a person can achieve during the period is more understanding and putting into actual use the skills that are taught in classes, in which it is the time when many students are collecting more skills which are currently with more popularity in the market thus having more time would result into students having more relevant skills in the area of information technology and build on their skills.

On the another, in our field of Information Technology, I came to realize that all the tasks that we will be required to perform while in the real development industry are practically done, then I would really like to recommend that, it is very essential deposit more strength on practical sessions than theoretical ones while students are still at university.

4.2 Conclusion

Industrial training program gives an opportunity for students to experience real working environment in related industry. Throughout 8 weeks industrial training at Tanzania Commercial Bank. The field provides a lot of new knowledge and working experience especially in IT related to manufacturing industry.

There are various of tasks given which are quite tough and challenging. The tasks given not only able to enhance technical skills but they also improve the capabilities of critical thinking and problem solving of an individual. Finally, the field enables the achievement of good software skills. There are several opportunities given during the industrial training such as to visit clients' factory to learn more about manufacturing process and to meet different person in charged.

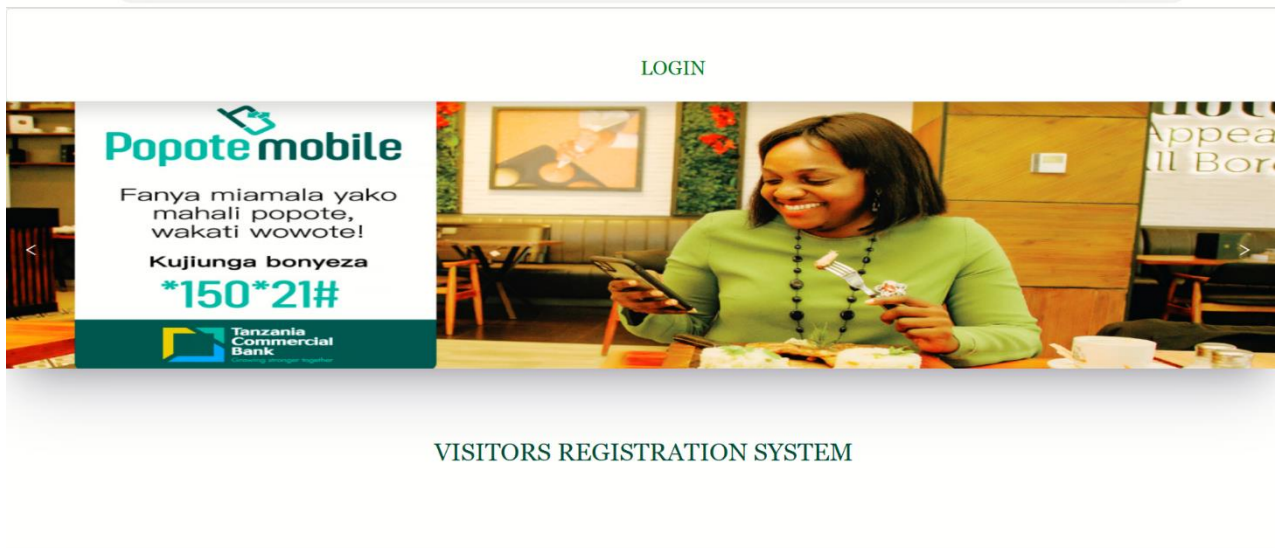
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APPENDENCIES

Appendix I. System homepage

This is the first page experienced by users, where when opening the Visitors Management System, it looks like this.



Appendix II. Page that shows Users Legislation

This page is viewed by the System Administrator only who is able to create roles that could enable the users of the system to access the system.

USERS-ACCOUNT | BACK-HOME

USERS REGISTRATION FORM

USER NAME	FIRST NAME	MIDDLE NAME
<input type="text"/>	<input type="text"/>	<input type="text"/>
LAST NAME	ROLE	PASSWORD
<input type="text"/>	<input type="text"/>	<input type="text"/>

Register

Appendix III. Roles Page

This system interface shows all roles created by the SuperAdministrator to the specific users of the System.

ADMIN DASHBORD					
#	Name	Description	Created_at		
1	Super Administrator	This role allows to perform all actions	2023-11-15 17:59:01	View	Delete
2	SecurityManager	This role is next to super Admin	2023-11-15 17:59:01	View	Delete
3	Security Guard	This role allow to register Visitors	2023-11-15 17:59:01	View	Delete

Appendix IV. The System login page

The following system interface is accessible to the Super Administrator of the system, security manager and security Guard only by their roles.

The screenshot displays a login interface for the 'VISITORS REGISTRATION SYSTEM'. A modal window titled 'LOGIN' is centered on the screen, featuring input fields for 'Username' and 'Password', a green 'Login' button, and a 'Close' button. The background is a dark grey area with two advertisements: one for 'Popote mobile' by Tanzania Commercial Bank and another for 'Appea il Boro'.

LOGIN

Username

Password


Login

Close

VISITORS REGISTRATION SYSTEM

Appendix V. Security Guard Interface

On this interface Security Guard is now able to registers or signing in and out all visitors who visiting the Bank and all who leave after visiting.



VISITORS-ACCOUNT | LOGOUT

VISITORS REGISTRATION FORM

FULLNAME (JINA KAMILI)

PHONE NUMBER (NAMBA YA SIMU)

VISIT FROM (KUTOKA)

VISIT TO (KWENDA)

ID TYPE (AINA YA KITAMBULISHO)

ID NUMBER (NAMBA YA KITAMBULISHO)

ASSETS (THAMANI ALIZOBEBE)

CARD NUMBER (NAMBA YA KADI)

VISITING TIME (MUDA ALIOINGIA)

POLICE GUARD (POLISI Z WA ZAMU)

Register

The following shows details of all registered Visitors

VISITORS ACCOUNT DETAILS													×
													
NO	NAME	PHONE	VISIT FROM	VISIT TO	ID TYPE	ID NUMBER	ASSETS	CARD NUMBER	TIME IN	STATUS	TIME OUT	CTEATED AT	ACTIONS
1	Halima Shabani	0786987675	Mwenge	HR office number 10	NIN	20001015626790000127	No assets	04	2050	Returned	22:06	2023-11-15 18:06:08	<div>View</div> <div>Delete</div>
2	Omary Said	0672488849	Makumbusho	HR office number 10	Student	26996/T.2021	only bag	03	17:45	Returned	18:11	2023-11-15 18:06:37	<div>View</div> <div>Delete</div>
3	Eliatosha Nicodemus	0788218003	Dodoma	Others	NIDA	109010	Laptop	12	14:55	Returned	23:06	2023-11-15 18:06:54	<div>View</div> <div>Delete</div>

Close

VI. Security Manager Dashboard

Here Security Manager is able to see both visitors who signed in and out but here depends with the actions performed by Security Guard if visitors registered then here the numbers will be shown.

