School of Engineering and Technology

Department of Electronic Engineering

Harare Institute of Technology

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HIT 302 INTERNSHIP REPORT

POS CLOUD

Submitted in partial fulfillment of the requirements for the award of the degree

OF

BACHELOR OF TECHNOLOGY (HONOURS) DEGREE

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Under the supervision of

FLAVIAN MACHIMBIRIKE(HEAD OF INNOVATION)

DECLARATION

I Marieta Makonese, do hereby proclaim that this presented internship report was solemnly prepared by myself and all the contents of the report are a compilation of the duties and the activities that I undertook during the 5-month period I was attached at Pos cloud as is per the academic requirement at the Harare Institute of Technology.

I also reaffirm that this document is compiled for purposes of my academic requirement only and not for any other reason. The report will not be used for the benefit or interests of the competitor corporate of Pos cloud.

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ACKNOWLEDGEMENTS

First and foremost, I want to thank my Heavenly father for granting me this opportunity to be at Pos cloud company. I also want to appreciate the support I received from my family and loved ones.

Secondly, I express my gratitude and appreciation to the managing director Mr G. Zhakata for allowing us to learn the various activities as provided by the hardware and online support department, for giving us students to work for the big organisations as learners.

I want to thank Mr Flavian Machimbirike the wonderful time they had with me. I was welcomed with warm hands to the hardware family. They were not , but he was a mentor and he taught so much. When I started my internship I knew almost none, but with the help of my supervisor it took me less than 2 weeks to start working on my own.

I would also want to thank Ihsaan Coventry and Takaruza for all their efforts in training and teaching me all the respective activities and tasks of the department. I spent most of my time with them and they taught me very well in both hardware and software related issues.

I want to thank my supervisor and lecturer, Mrs Duri for the assessment and support throughout the way.

EXECUTIVE SUMMARY

I have prepared my internship report based on the internship program that I am to complete at Pos Cloud working under the Hardware and support services. The report is submitted in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Electronic Engineering.

In this report I vividly described and shared experience gained on Industrial attachment. The report consists of four (4) chapters that explain in depth on the work I have done, my learning process and the achievement made during this period. The report is mainly focused on the Information Services industry reality and the skills I developed within the industry. It partly describes on how the theoretical knowledge gained in class was of great importance in the industry as it enhanced the practical skills required.

The first chapter is basically an introduction as it provides details on the Organization I am attached on. The company background, organizational structure, organizational values, organizational vision, organizational mission statement, organizational motto and some necessary information is provided in this chapter.

Chapter 3 of the document explains on the material that we rarely did and thus have considered as the projects we did during internship. This chapter also explained the challenges we faced and how we came about it.

Chapter 4 considers the recommendations and conclusion of the document. The areas that need to be improved concerning the organization's operations and the student's attachment.

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LIST OF ABBREVIATIONS

DUA	Device under attack
IPOS	Device
A90	Tollgate transacting machine
V71	Cordless Swiping machine
V37	New swiping machine
PC	Personal computer
MK	Master key
COM	Port
FBCH	FBC Holdings Limited
ZUPCO	Zimbabwe United Passengers Company

CHAPTER ONE

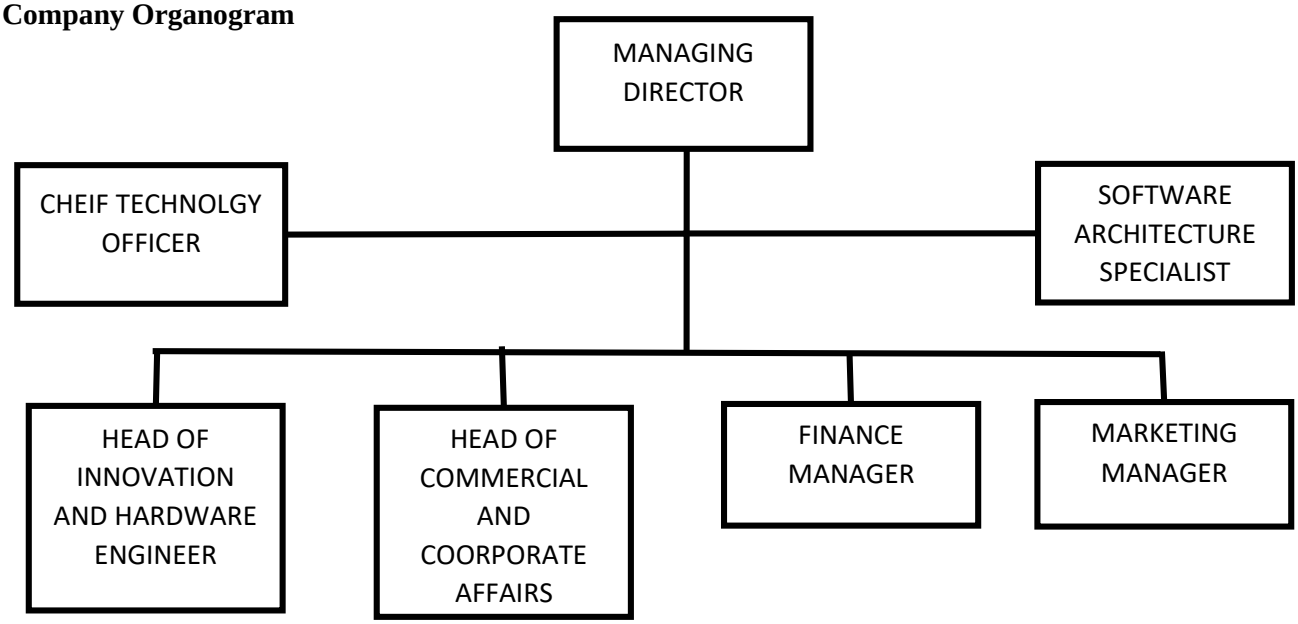
1.1 Introduction

This chapter focuses on the introduction of the Pos cloud company, the nature of its industry, services offered, organogram and corporate culture among other attributes in the organization.

1.1.1 Background Of The Organization

Pos-cloud is a wholly owned Zimbabwean Financial Technology company that specializes in the provision of hardware and software solutions for both banking and non-banking institutions. Our operations commenced on the 1st of July 2017 and by the 1st of November,2017, our transactions went live. Pos-Cloud has an exclusive distributorship agreement with Vanstone Electronics (Beijing)Co. Limited, a State Owned Chinese Company listed on the Shanghai Stock Exchange that manufactures Aisino branded Point of Sale devices.

Company Organogram



Corporate Philosophy

The corporate philosophy of Pos-Cloud is summed up as below.

Vision

Our vision is to become the leading FinTech company in Southern Africa by leveraging our exclusive international partnerships to bridge the gap between financial institutions and the public through offering adaptive, intuitive and cost effective payment solution technologies.

Mission

To become one of the world's leading innovators in the financial technology space enabling banks and non-banking institutions to realise their full potential.

Values

- Simple
- Swift
- Secure

1.2 Nature of Industry and Industry requirements

When I joined Pos-Cloud group, I was attached to the Hardware department. The department falls under hardware maintenance and online support .The Hardware department focuses on the following aspects:

- Configurations
- Installations/deployment
- Repairs
- Online support

These aspects are applied on all hardware devices used by the organization including A90, v71, v37, v36.

Any desk is the software application used to support merchant is they are encountering any challenge with the device.

1.3 Products and Service Markets

- POS Device Supply and management
- Merchant Hosting
- Custom Software Development
- Near Field Communication
- Postilion System
- Data Analytic
- Real-Time Monitoring
- 24/7Support
- Payroll Services

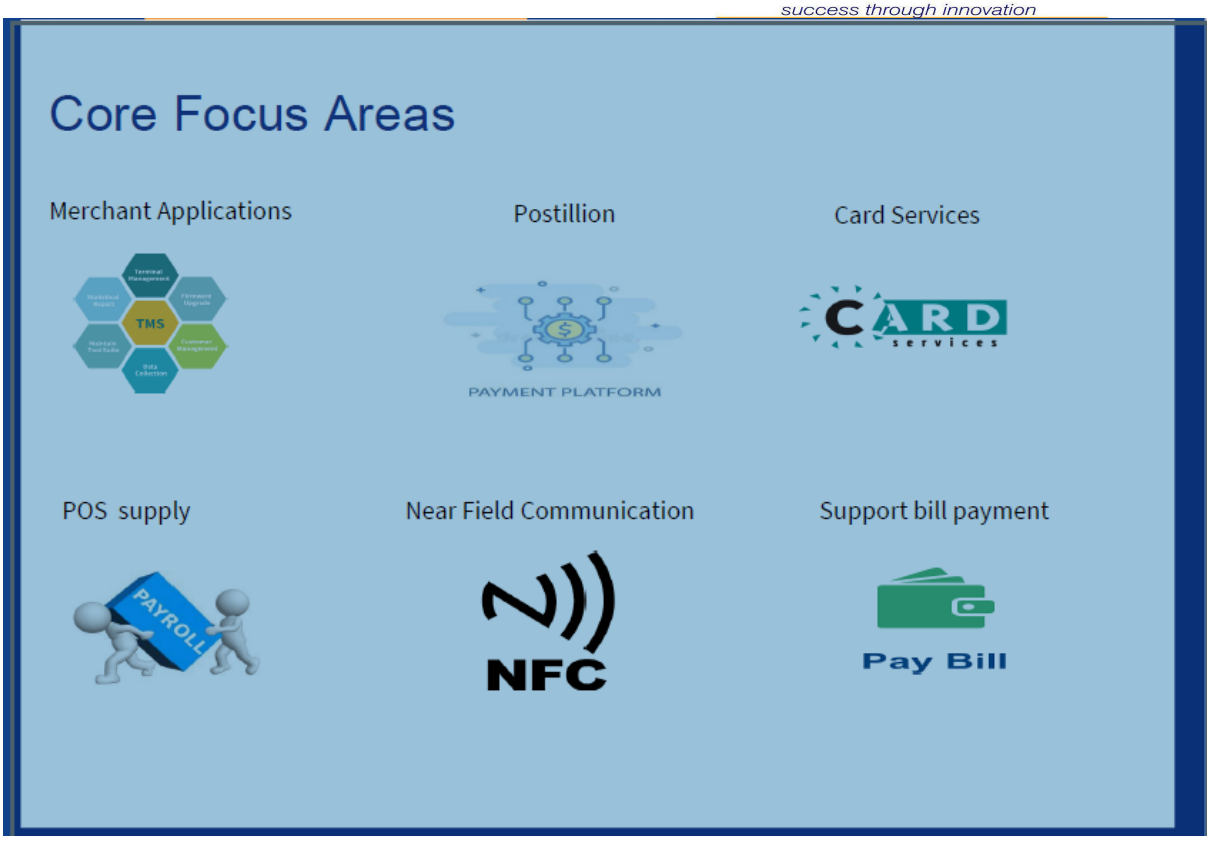


Figure 1 Core Focus Areas 1

Figure 2 Core Focus Areas 2

1.3.1 POS Device Supply and management

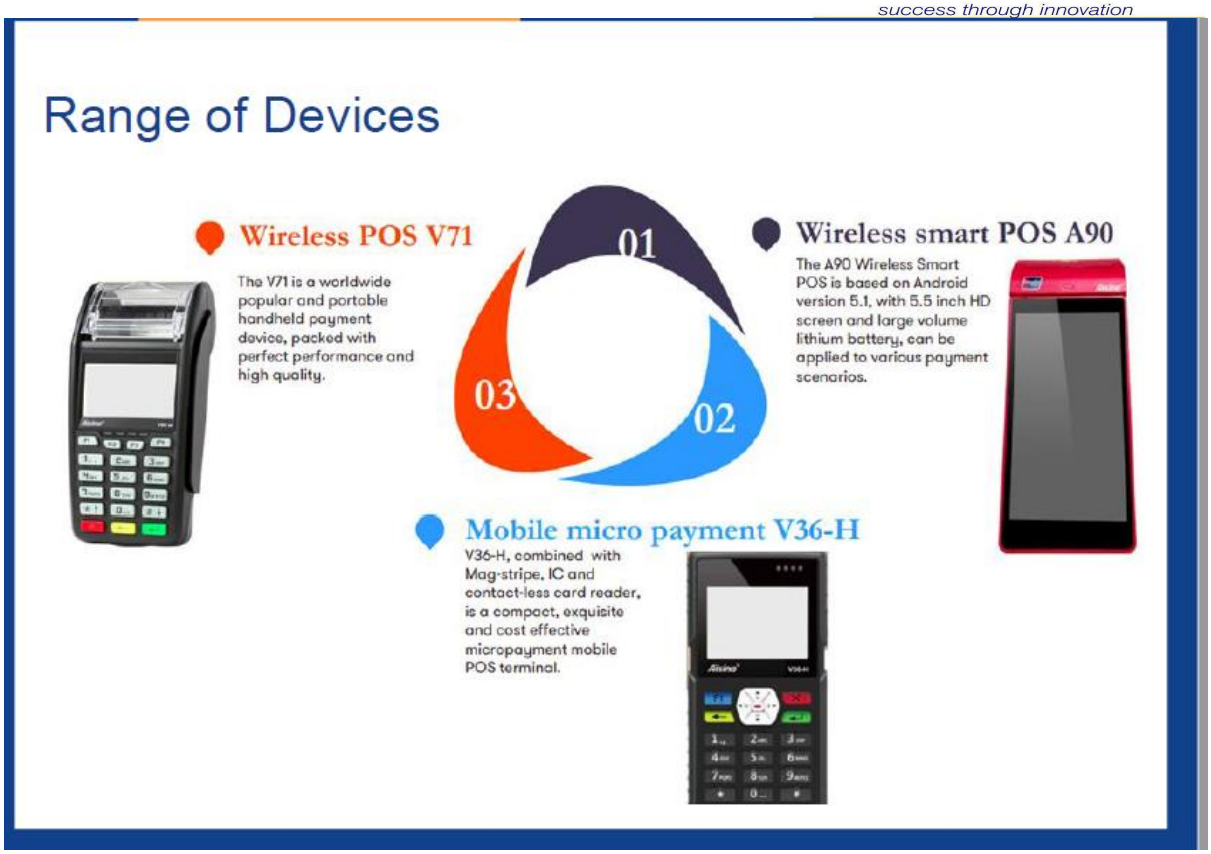


Figure 3 Range of Devices

Pos-Cloud has an exclusive distributorship agreement with Vanstone Electronics (Beijing) Co. Limited, a State-Owned Chinese Company listed on the Shanghai Stock Exchange that manufactures Aisino branded Point of Sale devices. Our team is trained to provide after sale POS device support, repair and maintenance.

1.3.1 Merchant Hosting

Pos-Cloud provides several interfaces for developing custom-built payment platforms that will allow our clients to accept payments in real-time from their secure server and have complete control over their payment page, without having to redirect their customers to a Hosted Payment Page.

1.3.2 Custom Software Development

Pos-Cloud designs and builds software solutions to address unique needs for its clients. With vast experience in IT, Pos-Cloud provides all-round custom software development services to deploy highly customized software with speed and quality.

1.3.3 Near Field Communication

Pos-Cloud offers Near Field Communication services. Near Field Communication (NFC) is a set of short-range wireless technologies, typically requiring a distance of 4cm or less to initiate a connection. Pos-Cloud NFC services are currently being offered through an offline prepaid card (**TapCard)** facility. The card is currently being used by CBZ and NMB for **ZUPCO & ZINARA**.

1.3.4 Postillion System

Pos-Cloud's Postillion system, "Pay 263" is a system that provides banking transaction switching software that routes financial transactions.
Our Postilion switch software servers are set up in a relatively simple fashion, whereby transactions flow into the switch, which then sends them through to their appropriate destination.

1.3.5 Data Analytic

At Pos-Cloud we help clients make the right sense of data while tracking the effectiveness of their processes and strategies, & measuring performance. Our data management & analytic capabilities and research skills bring together context and data to generate meaningful business insights. We are one of the leading data analytic consulting services companies offering marketing analytic, customer analytic, research analytic, sales analytics, and other data analytic services

1.3.6 Real-time Monitoring

To enable us to respond to problems right away, Pos-Cloud uses real-time monitoring tools. By tracking real-time monitoring data over time, our clients can reveal and predict trends and performance. The data also helps to adjust resources if needed based on traffic.

1.3.7 24/7 Support

Pos-Cloud offers 24hour support services through the Help-desk where issues can be logged at any time. Turnaround time for issues is 2 hours maximum. Being available for our clients' needs at any time, including weekends, also recommends us as a service provider of choice. Below is the link to the help desk:

1.3.8 Corporate culture

The main aspects I have come across in Pos cloud regarded as main aspects on culture are among many others time management. The organization is very particular about time as is governed by the Human Resources Department. Normal work time is 8 o'clock however an individual is expected to be at work by 7:45. The workers are also well groomed on terms of dressing as they wear formal hence portraying a good image about the organization. The working environment is always clean with the exception of the hardware department where the cleaners have difficulties cleaning as they might throw away necessary tools. The organization is comprised of people who are willing to work until after hours without the need for requesting for overtime (dedication to work).

1.3.9 Company and society connection

Since Pos-Cloud started recently , they are trying to employ attaches of different fields to offer experience and they are so concerned about attaches receiving some allowances during the period.

CHAPTER TWO

EXPECTATIONS AND REALITY

I started my internship on a 20 April 2021, it was my first time to be employed so was very nervous .I saw that life is full of surprises since what I expected was not what was happening, I thought people would make me feel like I am not part of the family . I thought maybe I would be just do repairing ipos devices(v37, v36 and A90) without knowing there were other tasks beside that. I always thought that the company does production of devices from scratch creating their own persona motherboards only to realise that they are imported from Vanstone in China we only do installation, repairs and maintenance of devices.

2.1 Expectation before Internship

I was going to sit in an office all day and only work on projects directly related to creation of mother boards.

Corporate Reality

Although I was an intern, I worked just as the permanent works. The system (Front View) did not consider that you were an intern or not, it just assigned jobs treating you equally with the permanent workers. It was an interactive experience that enabled me to expand my knowledge within the hardware and support services. I would move around merchants helping to solve problems associated with devices. This also enabled and in sighted me with ideas to better myself in the real world. From the basics of configuring swiping machines, troubleshooting and solving hardware and software issues and assisting users on systems they use in the day to day running of the organisations, I have gained skills that have prepared me for the future when I get into the IT and marketing industry.

2.2 Expectation before Internship

I thought I was good enough and the workers were not going to take me for who I am.

Corporate Reality

Miracles are still happening, it didn't take me a week, and I was already part of the hardware family. All my colleagues were very keen to teach me new things. At first I thought they were pretending on to make me feel at home but the love was real. Most of the people from other departments they don't even know that I am an intern.

2.3 Expectation before Internship

As an intern at a large Organisation, I would only work minor tasks since I was only learning.

Corporate Reality

I worked did tasks just like other workers. Through having that worked load, I learned so much from day to day. I got exposure and more knowledge and experience. I worked at a very conducive environment for learning, this environment is helping me in my career development and work related experiences, also in applying my theoretical knowledge. This strengthens me in terms of teamwork and developed my professional skills and competencies.

2.4 Expectations before internship

I always thought that there was too much pressure at HIT, and that I would be free at attachment.

Corporate Reality:

There is always pressure whether you are at HIT or not. The pressure at work is not about competition but it's about repairing a device in short of time. The pressure at the organisation was huge due to many responsibilities that I had to take care of and satisfying our customers.

Conclusion

There is a culture at every organisation, and you should follow that culture. The best thing is to to accept that you know nothing but willing to be a fast learner. I also gaining lot of industry experience as I am having hands-on exposure about what I had learnt at school. At attachment money is not the core but learning as much as possible, knowledge is more powerful than money. Being at this organisation gave me the much light that have somehow made my degree programme worth doing and feasible in the real world.

Personal and Professional Development

Formal Learning courses

The purpose of attachment is to learn, gain exposure and also be able to apply the acquired theoretical knowledge. By working at an organisation like Pos-Cloud, there is much to learn on daily basis. This chapter high lights skills acquired and maintained as well as weakness

during the course of the placement year. It also indicates the work experience during the training year built on the skills, personal and professional development.

Key skills development

I have learnt so much from my internship. Now I am able to repair devices working with screws. Internship is not all about school related learning but also its about learning on how to adopt to new culture and work with others professionally.

Problem solving skills

The only way to find a reliable solution is by first understanding the project. There is no problem without a solution. The internship taught me to understand the depth of the problem before looking for a permanent solution. I realised that most of the problems associated with the same device have a common ground. I was taught to record every problem and its solution for future use.

Flexibility

The world of business is the most flexible world. There is probably no single solution of solving a problem. With that many companies have adopted to the use of technology for researching and selling their products. The technology advancement is now at a higher level and it is becoming more complex. Thus there is more pressure in every Information service department in every company. At Pos-Cloud I learnt to be able to work on different tasks in different environments. This routine taught me to be able to adapt in the quickest possible time and to respond to change. It also helped me to tackle difficult situations with a positive and passionate mind with the goal of solving the issue.

Personal development

During the internship, I developed awareness on my strengths as well as my weakness. I have gained so much knowledge in the hardware and IT industry. Now I know that I can work under pressure and I am very effective in many working environments. The internship gave me direction and in-depth knowledge of electronic engineering. Now I know what to pursue after finishing my degree.

Self-discipline

This involves the following

- Set alarm to avoid going late for work and I didn't miss work even a single day.
- Managing my vocabulary when having conversations with my co-workers
- I managed to form my task sheet which helped me achieve my task within the desired time.
- I managed to have self-discipline especially when I didn't have knowledge, so I was shy or afraid to ask for help.
- I developed decision making skills since I was the one to decide if a device was to be repaired or was beyond repair.

Maturity

Maturity knows the right time to do something. During the internship I matured on my dress code, now I dress formally. I developed the ability to respect people despite of their positions at work. Through maturity, I managed to follow the rules, and being punctual. `With the loads of work, my supervisor taught me the relevance of maturity through implementing professional attitude that is not taking the pressure you are given on work personal or emotionally but however to see it as an opportunity to learn more.

Self-understanding

I got the chance to evaluate myself and understand my own interests within the industry. I managed to achieve both self-awareness and environment awareness. I attained self-awareness through the tasks that were presented to me. After solving the task, I would take time to reflect on it, judging with the amount of research that I had to put through or the lectures I had been through, my eagerness to solve the given task and how I was feeling when solving that task.

CHAPTER 3

PROJECT

3.1 Introduction

Under this chapter, there is description of the project that was undertaken during the internship period which is of introducing another type of a swiping machine called v37.

3.2 Background of study

One of the major services offered by Pos cloud is the supplying of pos devices. So the devices are supposed to be efficient, making fast transactions and always reliable. Thus with rapid change or advancement in technology, a need arises for the organisation to upgrade to the newer technological machines or devices to meet the rising demands in the market.

3.3 Problem Statement

Since nowadays due to technology many people are doing cashless transaction using ecocash and swiping machine, there is a need of improving a way of making transactions. At pos cloud there is a machine supplied called v71. It does perform transactions just like other devices. The problem arises when the there is a hardware fault on the device it will need to go for repairs and it means during that time the merchant will not be transacting.

3.4 Proposed Solution

Introduction of another type of a swiping machine called v37 to merchants.

3.5 Aim

Upgrading the type of swiping machine.

3.6 Objectives

1. Recording the new v37s in the record books before working on them
2. Configuring the devices in relation to fbc standards.
3. Joining the fbc.ipos domain.
4. Installations of devices to merchants.

3.7 Scope of study

- The specifications of the v37 device.

The new pos had far outweighing features and specifications than the older ones we were being used. Below are the well explained specifications of the new pos devices in comparison of the previously used pos.

3.7.1 Battery less

The v37 is powered by the computer to which it is connected to a cable which is attached to the device. This avoids problems of device showing not charging hence reliable.

3.7.2 Outside printer

This avoids cases like faint printer or not printing because an outside printer can be easily replaced rather than the v371 where you have to solve the problem by opening from scratch.

3.7.3 Windows

The device works on a computer with windows 10 and it misbehaves when its on windows 7.

3.8 Procedures

1. When the machines come from Vanstone in china they are recorded and sent to fbc bank.

2. At fbc they register the pos to ipos domain, and to branch and merchant to where its going to be transacting.

3. As Pos-Cloud we collect the devices and do configurations, loading some applications and fbc image and loading MK.

4. Devices are distributed to the merchants and installations are done and the devices start transacting.

3.9 Results

The activity was a great success and all devices became active. All merchants transacted well and they appreciated the device..

Conclusion

During the process of this project, there are some problems which were encountered;

1.Windows Challenge

Some devices would refuse to be active because the merchant's pc will be having windows 7 while the ipos needs windows 10. This challenge was solved by upgrading windows to windows 10.

2.Internet challenges

For installation there must be the presence of internet so you would find other branches not having internet. We would wait until they do installation of internet.

3.Resistance from workers

Due to fear of trying new things, workers would discourage our machines. We solved it by conducting a lesson teaching them how to use the ipos.

Recommendations

There were problems faced during the whole running of the project. During the transfer of the assets, many difficulties were present in recording these assets. A recommendation would to introduce the system of automatic of recording these assets once they are installed.

CHAPTER 4

4.1 CONCLUSIONS

During my internship period under hardware support at Pos-Cloud, I was exposed to the following areas from which I obtained knowledge and experience;

- Installation of V37 device(swiping machine)
- Configuration of the V37 device
- Repairs of a V71 device
- Using trigger unlock tool
- Repairs of V36H machine (tapping machine)
- Online Support of v36 devices

4.1.1 Installation of V37 device

Installation of devices means enabling a device to work on a merchant's computer. So they are certain procedures followed on installations. They are certain files used for installations. Firstly the Java application is installed into the merchant's pc. Then java is certified using cacerts then copy it into paste into some certain files. RxTx files to java JDK Bin. Then deal with RxTx files to system 32. Finally installation of Vcomm which is a file which enable ports . Then installation is said to be complete once the device displays device active and it starts making transactions. I got some idea on some communication between the computer and the device. I also learnt to troubleshoot a problem because if it fails to be active I was supposed to check for what I missed starting from the beginning of the process.

4.1.2 Configuration of the application software

This is loading an application software which will be used by a device. This is when the application is loaded in the machine. Also the fbc image is loaded on the device so that it always display the image when its not transacting. Certain procedures are followed involving selecting pos type, selecting com and mk.

4.1.3 Repairs of V71

A V71 device is a swiping machine /which is cordless . Pos-Cloud supplies such devices to NMB customers. So mostly problems will be indicated on the device written on the screen with a marker but if not indicated troubleshooting is done. If it's a printer not working, the printer is opened and clean every pierce which is the printer and a printer is tested to see if

its working properly. If the printer is not working after repaired then it is changed . If the device is not charging probably the charging port will be damaged so a new mother board with a good charging port is replaced with the bad one. If the device is not swiping then a new card reader is replaced with the one with the problem. If the device is under attack then a trigger unlock software is used to unlock the device from attack. If its pinpad its replaced with a new pinpad. I had an experience of working with screw drives because the device is opened from scratch until all parts are separated.

4.1.4 Using trigger unlock

Trigger unlock tool is an application which is used to unlock a device when its under attack (a problem which is reflected when a device is opened or falls). A device is connected to the pc using a USB to serial cable which is connected to an Aisino cable.

4.1.5 Repairs of V36 machine

A V36 is a tapping machine from zupco which works with tapcards. Mostly when theres is a faulty its indicated on the screen or trouble shooting is done. If the card reader is not working it is replaced and it works with near field communication. Not powering on is solved by putting a new power button. EMF means there is a need of reloading the application.

4.1.6 Online Support

Online support is a service which is offered by Pos-Cloud technicians to fbc customers such as booties phamarcy and bhola hardware. So when then are having a problem with their v37 they notify us then the problem is fixed

4.2 Conclusions

I have learnt so much at my internship, with the knowledge and technical skills I have acquired I can start my own company. I have learnt to interact with the customers during installation and and doing online support. In every organisation there are always problems and from them you always learn something new. The internship programme was beneficial mostly at a professional level and at a personal level. There has been a lot that I have learnt from pos cloud.

RECOMMENDATIONS

- I propose that there should be a database to manage what comes in and out of the hardware workshop rather than depending on pen and paper.
- There should be a system that phases out devices after being used for a given period of time upgrading to new devices due to technology.

- Electronic engineering students should be given the chance to go through to the Networks department as the program also covers networking to some extent. This will allow us as students to have a wide spectrum of knowledge gained and thus after finishing school will be able to choose what we want to major in.
- When devices are imported, extra separate parts like printers, motherboards must be imported also rather than repairing using parts of another devices.

The internship program though good, it had some drawbacks which when implemented can improve to a greater extent the industrial skills obtained by students.

- Industrial visits should be encouraged for courses for practical courses, Objectives of industrial these visits will to providing students an insight regarding internal working of companies before they even go for internships.
- Students' are not allowed to make conclusions or to suggest on system improvements in anything concerning the bank hence I suggest that should be changed.
- Supervisors should ensure that students are not placed into departments that are not different from their area of learning. For example, an Electronic Engineering student placed in a computer science field.