

# Internship Report

A  
HIT 301 INTERNSHIP REPORT  
on an internship undertaken at  
**BELINA TIME SYSTEMS**  
submitted in partial fulfilment of  
requirements for the award of degree  
of  
BACHELOR OF TECHNOLOGY  
In  
SOFTWARE ENGINEERING  
By

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**HIT**

*success through innovation*

**Harare**  
**Institute of**  
**Technology**

**School of Information Science and Technology**  
**Department Of Software Engineering**  
**Harare Institute of Technology**  
**June 2020**

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## HARARE INSTITUTE OF TECHNOLOGY HIT 301 INDUSTRIAL INTERNSHIP REPORT DECLARATION

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I, **MARVELLOUS MUCHINGAMIRI**, hereby declare that this is a true internship report of work done at **BELINA TIME SYSTEMS** submitted in partial fulfilment of the requirement for the degree of **BTECH HONORS DEGREE SOFTWARE ENGINEERING** at **HARARE INSTITUTE OF TECHNOLOGY** and it has not formed the basis for the award of any other degree.

STUDENT'S SIGNATURE: ..... DATE: .....

---

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.....

RECEIVED BY **DEPARTMENT OF SOFTWARE ENGINEERING**

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INTERNSHIP COORDINATOR / CHAIRPERSON:

.....

DATE: .....

DATE

STAMP

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I **Noah Chabikwa** of Belina have worked with and supervised **Marvellous Muchingamiri (H170178B)** during her internship period.

**Comments**

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Signature

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Organisation stamp

HIT Supervisor signature:

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Date:

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## Preface

For ten months from October 2019 till August 2020, the student carried out an internship programme at Belina Time Systems (Private) Limited, a software company which focuses on developing and managing payroll, time control software and hardware, amongst other software solutions. Belina Payroll is located at 27 and 29 Van Praah ave, Milton Park, Harare.

This report serves as a partial fulfilment of the HIT 301 internship program, in this internship report the student will describe her experiences during this internship period, the purpose of an industrial internship is to bridge the gap between theories and principles learnt during the students' first two years at the institute and practical aspects of the degree programme. It exposes the student to the kind of environment that they will operate in when they eventually graduate and get permanent employment on the job market. This report contains an overview of the company of internship, the activities, tasks assigned and projects that the student worked on during internship.

It also provides a synthesis of theoretical approaches learnt and methods of implementing them in the business world, which is the relationship between theoretical and practical knowledge. An elaboration on the future works which can be persuaded as an advancement of the current work is also incorporated in this report. Due to limitations, shortcomings and successes that the student faced, in this report there shall be some recommendations and comments on the internship program.

## Acknowledgements

Special regards go to the Harare Institute of Technology through the department of Software Engineering. The student would like to thank the supervisor, Mr Mutandavari, for the patient guidance, encouragement and advice he has provided over the time

The student would also like to acknowledge her industrial supervisor Mr Chabikwa for diligently guiding her and mentoring her on how to be effective in the work environment. He made it easy for the student to improve by teaching and training her in various areas of interest.

The student wishes to acknowledge the support and great love of my family and friends, not forgetting my managing director, Mark Sheldon for awarding me the opportunity to be part of the Belina Team. They kept me going on and this work would not have been possible without their input. It is whole-heartedly appreciated that their great advice for my internship proved monumental towards the success of this internship program.



## Executive Summary

This report summarizes my twelve-month long internship program that the student successfully completed at Belina Time Systems in the Software support consultancy department, as a requirement of the Bachelor of Technology degree in Software Engineering at the Harare Institute of Technology.

The report will mainly focus on giving a review on Belina in regards to their stated vision and mission statement, it will also go on to state the relevance of the industrial attachment and how they were applied in the real business environment among other things. It also focuses on assessing the work that the student carried out, evaluate the relevance of the student's working experience and the practical experience acquired, assesses the problems encountered and solutions implemented and also provides conclusions and recommendations to both the school and the organization based on findings during internship.

During the student's twelve months at Belina she worked with the support, time control and digital services which is under software consultancy and business development. The student in her report gives a detailed account on the specific work that she did and tasks she fulfilled. The student also assisted in supporting the agile methodology adopted by the company, client technical issues be it onsite or offsite and also installing time and access control systems and some developments.

The student learnt to build a good rapport with her colleagues and trained herself to communicate confidently with authorities and clients. He also managed to gain valuable knowledge through active participation and inquisitive learning. The report goes on to give an account on the students internship programme and how it impacted on the students aptitude in various fields which include team work, report writing and even presentation. . In conclusion, this Industrial attachment had highly supplemented in the world of 'Tech'. It was undoubtedly a beneficial and educating experience for the student.

## LIST OF ABBREVIATIONS

### **Abbreviation**

### **Meaning**

NSSA	National Social Security Authority
ZIMRA	Zimbabwe Revenue Authority
PAYE	Pay as You Earn
FDS	Final Deduction System
VOIP	Voice Over Internet Protocol
ASA	Adaptive Security Appliance
HIT	Harare Institute of Technology
UAT	User Acceptance Tests
UI	User Interface
AWS	Amazon Web Services
SSRS	SQL Server Reporting Services
SQL	Structured Query Language
CDN	Content Delivery Network
DRM	Digital Rights Management
CSCS	Customer Service Control System
VPN	Virtual Private Network
SWOT	Strengths Weaknesses Opportunities Threats

## CHAPTER ONE: INTRODUCTORY CHAPTER

### 1.1 Introduction

This chapter is devoted to the enlightenment of Belina Time Systems operations, background, inter alia its organogram, various departments that make up the organisation. Belina Systems is one of the giants as far as the payroll and human resources industry is concerned. It has of late surged to be the leading player in the payroll and human resources industry within and beyond Zimbabwe's borders.

### 1.2 Company background

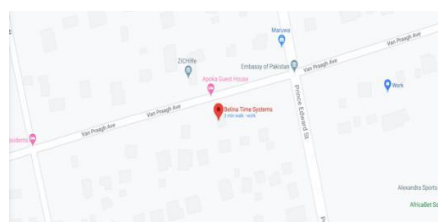
Belina Time Systems is a bespoke payroll software solution founded in 1993. Belina has over the years grown to have offices in Harare and Bulawayo, with authorized dealers who can provide sales and support in other cities like Gweru, Mutema, Masvingo and Victoria Falls. Belina also has a regional presence, with dealer-partnerships in Zambia and Malawi. By listening and responding to our clients' needs we have produced a World Class software which over the time has made unprecedented strides in providing service to match customer satisfaction.

In 1999 Belina Payroll became the first Windows-based payroll software to be released in Zimbabwe. The product has now established itself as the most widely used payroll in Zimbabwe. In 2006 we launched Belina HR which then introduced, for the first time, Human Resource functionality.

In 2010 we included additional functionality in the form of a Time Control module which can produce a time register automatically from shift information set up or downloaded from computerized time recording devices.

Currently Belina has over 2000 clients operating in all the industrial sectors of Zimbabwe and Belina Payroll is now the leading provider of payroll, human resources and time management software in Zimbabwe, Zambia and Malawi. Our software is a 100% Zimbabwean product — fully developed and supported in Zimbabwe, and we have won numerous awards over the years including Best Payroll Firm two years running at the Annual IPMZ HR Excellence Awards.

### 1.3 Company location



*Figure 1.1 Belina Time Systems Location*

## 1.4 Company Vision, Mission & Values

### 1.4.1 Vision

To be the leading Payroll & HR Software.

### 1.4.2 Mission

We provide customized innovative world class products and services through convenient channels, technologies and dedicated employees.

### 1.4.3 Core Values

In pursuit of its vision and mission, Belina upholds the following principles and core values:

#### ***Hunhu / Ubuntu***

We are courteous, humble and appreciative of our stakeholders.

#### ***Excellence***

We exceed shareholder expectations and uphold and execute principles of high performance delivery and continuous improvement.

#### ***Professionalism***

We perform our work with expertise and dedication.

#### ***Integrity***

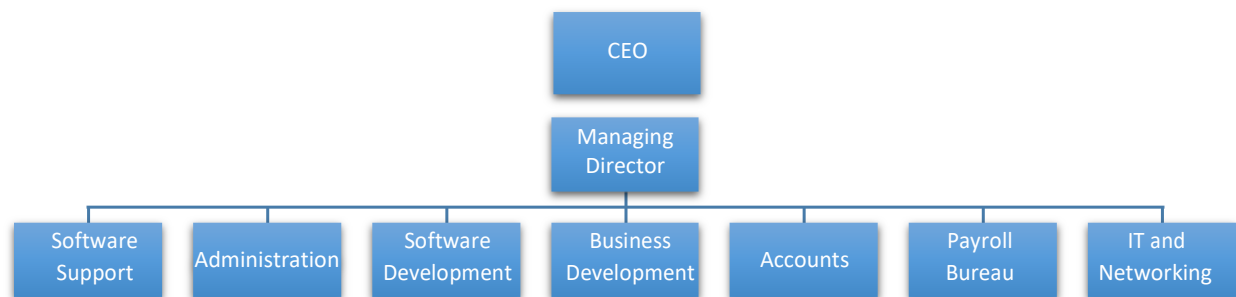
We are ethical honourable and transparent.

#### ***Innovation***

We meet the changing needs of our industry and market

## 1.5 Belina Time Systems' Organisational structure

The organogram below clearly shows the level of management and unit of command in Belina Time Systems. Belina has 7 distinctive departments as shown by the organogram, all of these departments report to the Managing director, who then reports to the Chief Executive Officer and he has the overall voice in Belina.



*Figure 1.2 Belina Time Systems Organogram*

## 1.6 Overview of the departments

### 1.6.1 Software Support

Software support is a range of customer services to assist customers in making cost effective and correct use of a product. Software support consists of online support, walk in client support and road support. It includes assistance in planning, installation, training, troubleshooting, maintenance, upgrading, and disposal of a product. Typical job responsibilities include:

- Communicating with clients and customers about their experiences with a product or service.
- Visiting clients' premises to provide our services.
- Providing advice on purchasing products or services.
- Answering client or customer questions about properly using or accessing a product or service.
- Taking or processing orders for a product or service.
- Listening to customer or client complaints or concerns and working to resolve their issues.
- Software installations and training.
- Belina product update functionality testing.

### 1.6.1 Software Development

They are responsible for the design, testing and maintenance of software programs for computer operating systems or applications. This department is generally responsible for the development, design and implementation of new or modified software products or ongoing business projects. Typically sitting within the IT team of a business, a Software Developer will be involved in liaising with the Business Analysts and Development Managers to ensure software projects meet requirements.

- Researching, designing, implementing and managing software programs.
- Testing and evaluating new programs.
- Identifying areas for modification in existing programs and subsequently developing these modifications.
- Writing and implementing efficient code.
- Determining operational practicality.
- Developing quality assurance procedures.
- Deploying software tools, processes and metrics.
- Maintaining and upgrading existing systems.
- Working closely with other developers, UX designers, business and systems analysts in the support department.

### 1.6.2 Accounts

This department deals with payment processing and

- Creating financial year budgets for the company as a whole and then per each department.
- Reconciliation of accounts and production of financial reports.
- Assessment of financial viability.
- Processing payments inclusive of staff salaries.
- Safe keeping of the bank's assets by designing, implementing, maintaining and continual assessments of the bank's internal controls.
- Establishment of financial and administrative policies and procedures.
- Tax reporting and compliance
- Financial auditing

### 1.6.3 Administration & HR

A distinctive approach to employment management which seeks to achieve a competitive advantage through the strategic development of a highly competent workforce using an integrated array of cultural, structural and personnel techniques. The Human Resources department has the responsibility for coordinating other departments by providing support whilst carrying out functions like employee management, facilities and housekeeping. The HR department is focused on providing support to other departments hence helping in the proper running of the organization in all aspects.

#### Roles of the Human Resources Department

- Recruitment and Selection
- Induction and orientation of new employees to their relevant departments of the company. Personnel manning and this includes making sure that respective sections of the bank have adequate personnel at the right time and at the right place.
- Remuneration and compensation of existing and out-going employees.
- This usually includes pension fund administration.
- Discipline and dismissal of workers who may have gone parallel to the company code of conduct. Safety, healthy and staff welfare.
- Industrial relations.

### 1.6.4 Business Development

Its members are responsible for a number of key objectives inside and outside the organization. They study the products, services and operations of companies, providing consultative help where needed.

- Developing and sustaining solid relationships with company stakeholders and customers.
- Analysing customer feedback data to determine whether customers are satisfied with company products and services.
- Recruiting, training, and guiding business development staff.
- Providing insight into product development and competitive positioning.
- Analysing financial data and developing effective strategies to reduce business costs and increase company profits.
- Conducting market research to identify new business opportunities.
- Collaborating with company executives to determine the most viable, cost-effective approach to pursue new business opportunities.
- Meeting with potential investors to present company offerings and negotiate business deals.

#### 1.6.5 Networking & IT

This department oversees the overall network of the organisation. It oversees the distribution of computer software and hardware within the company and is responsible for its maintenance. The duties of this department includes

- Securing the organisation's network and making sure it's not prone to attacks from the outside and hackers by using firewalls to protect the network system.
- Maintaining the Belina local server as well as the cloud server.
- Configuring and wiring of network cables and routers.
- Connects all the Belina branches through the headquarters via a VPN client and allows these branches to access the servers.



## CHAPTER TWO: NATURE OF INDUSTRY

### 2.1 Introduction

Belina time systems is a human capital management firm and provides a range of software products and services to this cause. The products and services offered are Payroll, Time Control, Human Resources, Bureau, Training and Client Support.

### 2.2 Products and Services

Belina Payroll mainly focuses on providing payroll services for a range of clients from large organisations to individuals. The organization develops the software in-house.

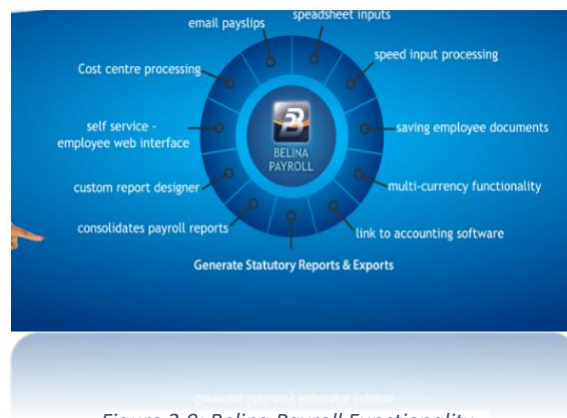


Figure 2.0: Belina Payroll Functionality

#### 2.2.1 Payroll Software (Belina Central and Inspire)

The Payroll module for Belina is the one responsible for the process of paying employees, keeping employee's records for an organisation as well as filling employment taxes. Belina Payroll is focused on helping you to bring efficiency and full control into your payroll and workforce management functions.

Belina payroll helps eliminate errors and delays in processing your Payroll and HR requirements. Belina Payroll includes all of the necessary reports required by the statutory bodies such as pension funds for submission on a periodic basis – all you need to do is print or email the report. Belina has comprehensive tax display with a full breakdown of the PAYE and FDS calculations. Some of the statutory bodies such as ZIMRA and NEC use Belina Payroll to pay their own employees.

### 2.2.2 Human Resources Software

This module provides functionalities such as benefits administration, recruiting and training as well as employee performance assessments and review of employee performance. It allows recording staff needed in certain departments and allows interview planning to fill the required positions. Belina HR counters complexity in human management and matches it with simplicity. Belina HR gives our clients the tools and modules that deliver the ease of use necessary to achieve effective and overall organizational efficiency.



Figure 2. 1: Belina HR Functionalities

### 2.2.3 Biometric Time Control

Our Biometric Time Control solution allows managing and recording of employee's actual arrival times and eliminates recording of fake arrival and departure time. It maximizes your ability to manage the value of the time worked by employees and encourage productivity and attendance discipline and integrates well with the Payroll and Human resource modules. The time control can be set to operate specifically in areas like schools, canteens and gym.

Belina's Time Control product is able to:

- Record clocking times using our Biometric terminals
- Automatically calculate overtime, short-time and leave based on your shift rotation
- Export approved times to your payroll system and seamless integration with Belina Payroll through the import of all data onto pay slip
- Display on-site presence or absence through the extensive reports or Belina Payroll's Self-Service Module web interface
- Record time worked against different job codes
- Produce a variety of reports

We are constantly adding new features to the software and developing our product for local needs and applications. We bundle our Time Control software together with the Biometric terminal hardware on a quarterly licensing basis to provide unbeatable value for money and a satisfaction guarantee for each client.

The biometric time control can also be modified according to user requirements and can be used as an access control module. This is set up so as to restrict access in certain areas of the organization for certain individuals. This is done by setting up biometric terminals at certain entry points and connecting these two doors and / or gates according to user requirements.



*Figure 2. 2: Biometric Time Control*

#### 2.2.7 Belina Training

Upon purchasing a Belina license the client is trained on how to use the software in a one day beginners training course. Training services are also offered to individuals who wish to be certified in using Belina and a recognised certificate is issued to the trainee. Belina training includes and is not limited to:

- Training users on how to navigate the system
- Alerting the clients of the tax laws and the boards responsible for passing these.
- Warning clients on tax evasion and its consequences of doing so.
- Calculations carried out by the systems and how they are done.
- Reports available in the system and how to access them

#### 2.2.4 Belina Connect Self-Service Platform

Belina Payroll's Belina Connect allows employees to access payroll and HR information and resources through the local network or the internet on a secure web-based platform. Belina Connect enables employees and senior staff to apply for, approve or forward leave, loan and overtime applications from any location – in the office or while travelling.



*Figure 2.3 Belina connect self-service platform*

#### **Reduce your workloads and improve efficiencies by empowering your staff to:**

- Access leave reports and leave balances.
  - Apply for leave, overtime or loans online and view the current status of any application;
  - Update their own personal email address and pay slip password for emailing pay slips;
  - Request previous pay slips to be emailed to their secure email address;
  - Update certain aspects of personal information
- 
- Manage all leave, overtime and loan applications online – approve an application or forward it for comment to a supervisor;
  - Automate the import of all approved leave, overtime and loans into the payroll accurately and efficiently;
  - Use the leave planner to consider departmental or team impact of a leave approval prior to approving;
  - Enable staff to update static personal details (addresses, contact details, ID photographs) themselves;

Belina Connect is part of our commitment to providing leading functionality and efficiency for your Payroll and HR departments.

### 2.2.5 Software support (Customer service)

Using software comes with its challenges and that added to the fact that software is dynamic and there is constant need for upgrade and updates Belina Time System with its clients' best interest at heart incorporated a software support team to offer direct customer service to the clients. This team is available to assist clients with changes made to the system as well as fixing systems as well as user generated errors so as to provide the best user experience for the Belina clients. The support groups are divided into two Road support and Office support.

#### **Office support**

This is where by support consultants are in the office and assisting clients virtually and physically for walk in clients. Office support consists of the following:

- Answering and assisting clients over the phone.
- Connecting with clients virtually using TeamViewer and Anydesk to help solve their issues.
- Responding to client emails.
- Assisting clients via various platforms such as Skype and WhatsApp.
- Supporting walk in clients and helping solve whatever issues they may be facing.

#### **Road Support**

On premises support for clients, this involves a Belina consultant visiting the client's place of work to help and fix whatever problem the client would have communicated. Our road support services are offered upon client request or after assessing the client's problem and seeing the need for the consultant to be on the ground.

### 2.2.6 Belina Bureau: Monthly Payroll Outsourcing Service

The Bureau is a monthly payroll service that offers secure payroll processing, and helps you to keep your business up to date with statutory regulations. It can be challenging trying to manage a payroll and keep up with all statutory regulations as well as day to day business operations. Any size business can benefit from the expert Bureau Service support offered by the foremost payroll and human capital management firm in the region.

- Secure payroll processing
- Professionally handled – guaranteeing data integrity
- Compliance with statutory bodies
- Data input as per request
- Soft and hard copy delivery of reports

- Encrypted communication and data exchange during the processing period.

### 2.3 Target Market

Belina's target market is quite large as the clients include an entity that processes payments for its employees, these range from large companies, hospitals and other institutions example HIT as well as many government entities e.g. ZIMRA and ZRP. Belina mainly deals with the HR, finance and /or sales departments of these clients.

## CHAPTER THREE: Expectations Vs Industrial Reality

### 3.0 Introduction

The industry provides with an environment different to what the student expected. This chapter outlines the student's expectations and the observed industrial realities

### 3.1 Expectation

The student expected to be working in one department and only be engaged with the duties of that department.

#### Reality

The student was required to work and assist in all various departments even in ones she had no knowledge how to operate in e.g. Business development.

### 3.2 Expectation

The student expected to be guided through and through whilst doing the required tasks and get assistance as soon as they needed it.

#### Reality

After The trainings tasks where given and the student had to work on their own and figure out how to finish.

### 3.3 Expectation

The student expected to work 8 hours from 8 am to 4pm and to not work during weekends.

#### Reality

The student worked for 9 hours from 8am to 5pm and was sometimes required to work during weekends

### 3.4 Expectation

The student expected to work with colleagues as a team and provide ideas that can be implemented.

### Reality

The student was able to work with a team of developers and team work was experienced and the student's ideas taken into considerations.

### 3.5 Conclusion

The expectations though not entirely fulfilled the reality provide with lessons and motivated hard work and commitment to the student's work and the internship as a whole was not affected by this variance.



## CHAPTER FOUR: KEY RESULT AREAS OF THE INTERNSHIP

### 4.1 Introduction

This chapter explores the student's internship program plan, that is the description of the work station, name of departments in which I got training in during the whole of the internship period. It also gives a detailed outline of the various duties that I performed in the respective departments that I was attached to and highlights the relevance of these tasks to the Bachelor of Technology in Software Engineering degree program.

### 4.2 TRAININGS UNDERTAKEN AND THE INTERN'S RELATIONSHIP WITH THE COMPANY

The student received training in various aspects of my internship programme so as to be able to carry out my duties promptly and swiftly which include:

#### 4.2.1 Induction training

In the 1<sup>st</sup> 2weeks of the internship programme I went through heavy induction training and team building. At this training the I was taught on the important take notes of Belina, was educated on how work is done at the company. This training included having me being taught on the company vision, mission statement and also the core values and how they all shape the company image as well as support the mission state and vision. During this period the I was also informed on the rules of the organisation such as how one is expected to dress, do over of the security regulations and also what is expected of one as an intern. At this training the student also went through team building whereby I was taught to work in a team and also how to make team work easy and fun while achieving their team goals.

#### 4.2.2 Front Office training

During my 6<sup>th</sup> week at Belina payroll I attended a Telephonist/ Receptionist & Front Desk Skills Training by Ulendo a human capital consultancy company. During this training we were taught how one is expected to dress at the workplace and front office. We were taught how to conduct clients both face to face and over the phone. We were taught the importance of Self Branding and doing SWOT analysis for yourself so as to discover areas of improvement. We were also taught how to apply the 4Cs of etiquette, which are courtesy, consideration, camaraderie and class in your everyday work life.

#### 4.2.3 Payroll administration

Payroll administration is defined as any of the tasks necessary to organize the compensation of employees for the hours that have been worked. This may include keeping totals for hours worked by employees, rates of pay and managing payments to employees. This was taught to me so I had a better understanding of our product and to be

able to give our clients the best advice possible concerning their payroll. This also taught me about Tax calculation and the statutory regulations that come with payroll processing.

#### 4.2.4 Biometric Terminal Technology training

Belina assembles time control terminals in house and hence as I was trained on how to assemble the various types of terminals, I was also taught how to set benchmarks for a user-friendly fingerprint/facial recognition product line for Access Control, Time & Attendance and Meal Management with its top notch proprietary algorithm and technology. This helped with my installations as was able to trouble shoot and fix problems

### 4.3 TASKS PERFORMED AND THEIR RELEVANCE TO THE DEGREE PROGRAMME

#### 4.3.1 Technical Software Support department

Offer direct customer service and technical support to user through phone, email, remotely and in-person. Support clients to answer queries, locate information and review technical requirements. Record customer change requests and technical requirements. Had to perform the following tasks to accomplish my duty:

- Logging the queries of customers.
- Analysis of call logs in order to discover any underlying issues or trends.
- Diagnosing and solving hardware or software faults.
- Testing and evaluating new technology in this case it will be new Belina updates, so we clean them for bugs.
- set up new users' accounts and profiles and deal with password issues
- respond within agreed time limits to call-outs
- work continuously on a task until completion (or referral to third parties, if appropriate)
- priorities and manage many open cases at one time
- rapidly establish a good working relationship with customers and other professionals, such as software developers
- provide support, including procedural documentation and relevant reports

In working in software support department I was able to see the relevance of applying customer service when providing software as a service as software is dynamic and the need to keep clients up to date as well as assisting with challenges they face in using the software

### 4.3.2 Installations and Trainings Duties

Upon purchasing a new license clients are offered installations and training on how to use the Belina applications. I was involved in offering these services to our clients my tasks included:

- Installing SQL server on client machine
- Installing Belina desktop application on client's machine
- Configuring application and database
- Introductory training on how to use Belina application and perform basic entries in Belina, how to generate desired reports and the calculations involved.
- Data import for the client this involves importing clients' employee information as well as history transactions.

Performing these duties helped me in familiarising with application licensing and the need for it as well as the need for it in applications. I also was able to interact with clients and improve my communication skills.

### 4.3.3 Network Administration department

Under networking department, I was involved in assisting in the maintaining of security and availability, and connectivity of the Belina network. To protect from total network shutdown Belina as 3 different networks ZOL 1, ZOL 2 and Dande Mutande networks I was responsible for contacting the network provider in case one of the networks went down under the supervision of the network administrator. My tasks in this department included:

- Troubleshooting network issues
- Deploying and updating software
- Configuring firewalls, we used the CISCO ASA as a perimeter firewall and the Fortinet firewall as the main firewall.
- Writing firewall rules
- Restricting access to certain internet sites by the use of firewalls
- Authentication of machines to access the Belina Network using the Level 2 network authentication (Mac address authentication).
- Assisted in redrawing the network diagram in case of office renovations.
- Assisted in migrating the companies' VOIP from an in-house server to the new cloud server being hosted by AWS.
- Managing and maintaining the CSCS which still resides on the in-house server and is yet to be migrated to the cloud server.
- Setting up and changing the emailing domain from belina.co.zw to belinamail.com.

Due to the Covid-19 pandemic adjustments had to be done in terms of the network access I got was able to participate in:

- Setting up a new VPN client (Mobile VPN client) and pass through one firewall so that people working from home could access the in-house server from home.

Working I this department introduced me to hands on networking and the need and importance of strong firewalls in network security. I was introduced to more networking tools.

#### 4.3.4 Time control Support Duties

Was responsible for giving out support about our Biometric terminals. Common biometrics include fingerprints, palms, eyes, and faces. Biometric systems are a set of hardware and software that collect, process, and assess these characteristics and compare them against existing records to create a match. My duty was to, build as most come not readily assembled, and repair these systems. I did the following task for my duty to be complete

- Installations and repairs of the terminals
- Installations and repairs of access control systems
- Refurbished and build terminals
- Networking of the controls
- Diagnosing and solving hardware or software faults.
- Testing and evaluating new technology.
- Performing electrical safety checks on the client's computer equipment.
- Responding to call-outs in a timely fashion.
- Following instructions, either written or in diagram form, in order to set up a system or fix a fault

#### 4.3.5 Business development department

Due to the nature of the degree I am pursuing I had some duties cut out for me in this department and I undertook them to the best of my ability. These duties are fully described below:

- Website management & updates - assisted in the website management and updates of the Belina website. Also assisted in the editing of some menus, links, block layout, content types on the website and in adding content to the website thus articles, Software user guides, programmes adverts, price structures, and vacancies. I also assisted in the removal of outdated articles and information on the website.
- Software demos - Business development is at the forefront of the sales process. When a prospective buyer enters the sales funnel, they are first passed off to the business development team. Assisted in demonstrating the product to clients and trying to win over the clients into choosing us over our competitors.

#### 4.3.6 Front Office Duties

During the course of my internship I was also on the front office duty this being the face of the company i.e. the first place a client sees as they enter our company my tasks included.

- Welcoming clients as they walked in and ask how they would want to be helped.
- Assisting clients by directing them to the person they would want to see or calling the person in question.
- Handling company enquires
- Receiving and processing payments made by clients.

#### 4.3.7 Software Development Department

The Belina Payroll, HR, Time Control and Connect products are in-house developed, by this department. My duties in this department were to:

- Assist in coming up with and designing a new user interface for the web application using applications such as Adobe XD and Photoshop
- Web application development
- Front-end and back-end development
- Testing
- Fixing bugs that were found during functionality testing
- Assisting in modifying system functionality according to user requirements.

##### 4.3.7.1 Technology Stack

The following technologies are used by the development department at the organization. The Belina connect web application it resides on the MVC model. The programming languages and technologies used were

- C# (.Net Framework 3.5)
- jQuery a JavaScript library
- Ajax
- SQL
- Visual basic
- Crystal reports
- SSRS
- AWS Server

Working in this department largely impacted my degree program as I had the chance to apply the knowledge of programming that I learnt whilst at school and was able to not only apply but improve on this as I learnt new languages in the process.

## 4.4 Projects Carried Out

### 4.4.1 Belina Connect version 2

Connect version 2 is an online self-service platform for employees to apply leave and for their superiors to approve of the leave or decline among other things. It is an improvement from the Belina Connect Version one in terms of functionality, user- interface as well as hosting. The project is still on going.

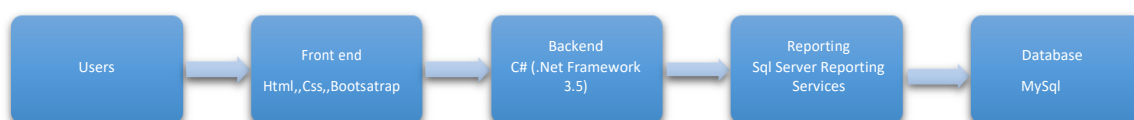
I took part in both the front-end and back-end development. It is worth noting however that when I arrived this project had already started however the development team made efforts to get me on board.

The development team as directly involved in the functional as well as non-functional testing. During my time in the development department I also took part in system testing. As the development team we conducted alpha tests, site speed tests (that are the CDN tests) using Cloudflare, DRM tests and user acceptance tests (UATs). I was assisted in a variety of tasks from solving UI issues and bug fixing.

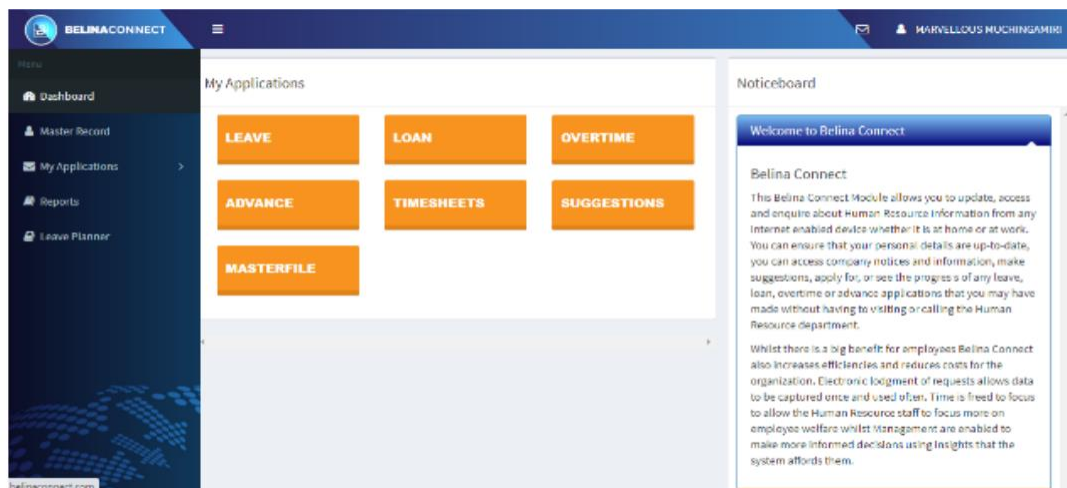
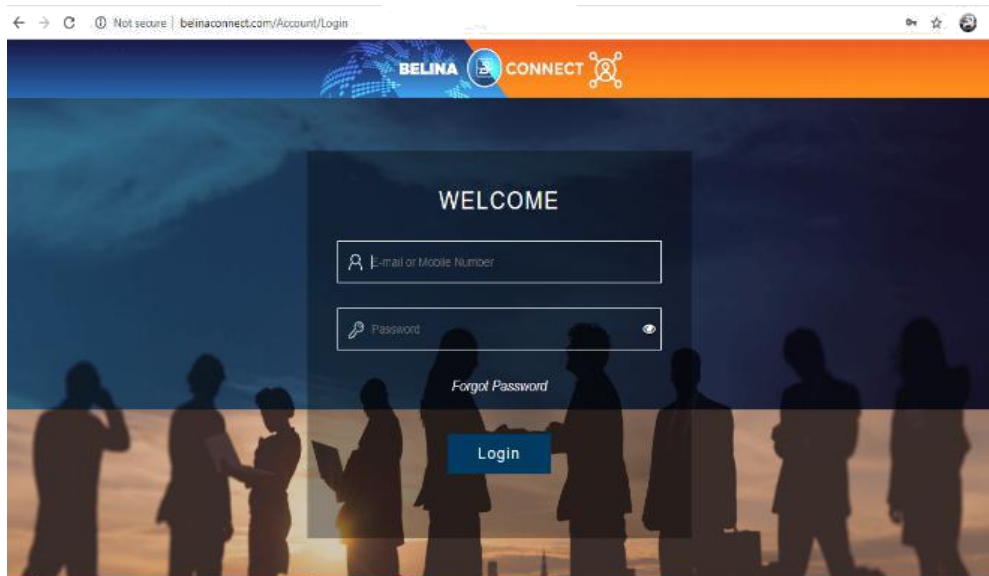
I was tasked to conduct a Belina staff training on how to use Belina Connect version 2 as it was being used by Belina employees and supervisors as a way of functionality testing and bug fixing.

I was also tasked to create a user manual for Belina connect which would then help everyone to get to speed with the front end navigation and functionality.

### 4.4.2 Belina Connect Tech Stack







Client Code	Name	Description	SerialNo	Employees	Expiry Date
ZW13473	TRINITY PHARMACY (PRIVATE) LIMITED	Trinity	ZW1347485	75	20/06/2020
ZW16352	CREDIT GUARANTEE CORPORATION OF ZIMBABWE	CREDIT GUARANTEE CORP	ZW234033	25	04/07/2020
ZW17181	BP GLOBAL SOLUTIONS ZIMBABWE (PVT) LTD	BP GLOBAL SOLUTIONS	ZW260358	200	25/08/2020
ZW17554	GETBUCKS MICROFINANCE BANK	GETBUCKS MICROFINANCE BANK	ZW278891	300	01/08/2020
ZW417	BELINA TIME SYSTEMS	BELINA TIME SYSTEMS	ZW0	10000	05/12/2020
ZW417	BELINA TIME SYSTEMS	ALEXANDER	ZW103422	500	31/12/2020
ZW417	BELINA TIME SYSTEMS	SABELO	ZW119836	300	31/12/2020
ZW417	BELINA TIME SYSTEMS	Phillip	ZW151878	10000	31/12/2020
ZW417	BELINA TIME SYSTEMS	BELINA - EDMORE TEST	ZW164482	1000	31/12/2020
ZW417	BELINA TIME SYSTEMS	TRIPPLE E	ZW61822	9000	31/12/2020

Figure 3.0 Screenshots of the Belina Connect Project

## CHAPTER FIVE: RELEVANCE OF THEORY TO PRACTICE

### 5.1 Introduction

During the internship period, the student got an opportunity to appreciate the theoretical concepts learnt during the first and second years at the university. This chapter gives a detailed description of the tasks that the student performed and their relevance to the degree program.

### 5.2 Object Oriented Programming

My arrival at Belina Time Systems coincided with the development of the Belina Connect Version 2 project which significantly required knowledge in object oriented programming. I had learnt two object oriented programming courses and two other programming courses at school during my first and second years, therefore it did not take me much time to be on board with C# programming which was new to me. Programming proved to be the backbone of software development. Programming courses learnt at the university did not only help me during this development but also in several other small projects during the internship period.

### 5.3 Electronics

I was able to apply my and advance the knowledge I acquired from my electronics classes as I was involved in the assembling of time control and access control terminals. I got the chance to apply knowledge acquired from analogue electronics. This was further developed in the terminal configuring and installations on client premises.

### 5.4 Introduction to Software Engineering and Software Project Management

The courses mentioned in the heading are two of the most relevant courses that I used during my time at Belina Time Systems. I was able to appreciate the importance of certain critical but often overlooked aspects of project management such as documentation and also tests such as (UATs). These courses helped throughout projects that I was part of such as Belina Connect and updating of other modules. I worked on several major documents with the help of the theoretical concepts I learnt in the two courses during my first and second years at HIT.

### 5.5 Net-centric Principles and Design

Being a part of the development team that was developing the Belina Connect web application was an opportunity to apply the knowledge I acquired from my net centric course. I was also able advance my knowledge in this field as I was able to acquire knowledge on how to use C# (.Net Framework) in web development.

## 5.6 Database Concepts

All Belina applications reside on a MySQL database. Whilst working at Belina Time Systems I got a chance to apply and improve on my database management skills as I was involved in configuring the application and the database during Belina installations as well as whilst solving client issues and also during Connect development.

## 5.7 Graphics and Visualization

I was able appreciate the use of graphic design concepts as I helped in the designing of the user interface. I got to appreciate the use of applications such as Adobe XD and Photoshop.

## 5.8 Data Communications and Networks

As I worked in the networking department I had a good appreciation of the relevance of the data communications and networking in the industry and the need for a person working with computers to have knowledge in networking. It was a great opportunity to apply and improve the skills I had acquired in this course.

## 5.9 Technical Communication Skills

The training received at the university from the Technical Communication Skills module proved valuable in providing guidelines on how to professionally present one's self as well as general conduct within the workplace. The skills learnt in this course where the most crucial for the job description I was majorly employed in as a Software support consultant and this meant I dealt directly with clients and communicating was key. My skills were further developed as I was taught on how to respond to emails, engage with clients over the phone and face to face.

## 5.10 Technopreneurship (1-4)

I was able to appreciate the importance of this course as I was able to apply it in the business development department for the time I was working there.

## 5.11 Hit 200 presentations

This experience taught me the importance of teamwork and how to be a good team player as I was programming with a team of 5 different people. The skills I learnt in this course enabled me to provide with useful ideas that contributed to the ongoing project.

## CHAPTER SIX: PERSONAL AND PROFESSIONAL DEVELOPMENT

### 6.0 Introduction

Part of the learning experience was realizing that the work and school environments are different but relevant environments as one prepares you for the other. Below are the skills that the student gained and was able to develop during my internship period.

### 6.1 Personal Development

#### 6.1.1 Critical Thinking

Being employed as a Software Support Consultant my main task was troubleshooting client problems and this required serious critical thinking skill as a solution would be needed. In Software Engineering as a whole, critical thinking is an essential skill one needs to have. Each new day presented a different challenge that needed a completely new way of solving it.

#### 6.1.2 Problem Solving

Facing a problem head on and having to solve it for a client harnessed me into an initiative person thus enhancing my problem solving skills. This helped improve me as an individual and in terms of work as I was able to help clients faster and more effectively.

#### 6.1.3 Communication

Conducting Demos, trainings and client support contributed to the improvement of my communication skills as I was able to interact and deal with people of different ages and races. I also was able to improve my communication using platforms such as phone, WhatsApp, skype and email as all these are used to communicate with clients. Communication was improved in terms of how I communicated with my colleagues and superiors. Not only did I learn how to gather information for reports, but also learnt how to properly write reports that were to be reviewed by management and other stakeholders. Gained skill on how to be articulate and effective in their communication through the reports.

#### 6.1.4 Negotiating Skills

During the internship period, I interacted with various stakeholders like Branding agencies, tax officers. Through experience, learnt how to negotiate for lower prices and suggest terms of service between the company and the partners. This would be a skill that can be applied in the future as they work under marketing and sales or business development as I was.

### 6.1.5 Personal Evaluation

This is a procedure to systematically observe, analyse and value your own professional action and its results in order to stabilize or improve it. During this period I managed to identify my own strengths and weaknesses, which helped me to improve how I carried out my work. The department has created an environment whereby I would feel comfortable to contribute ideas to the organization and this helped build me into a confident person. This organization was ideal for this student's period of work-related learning for it afforded him with skills relevant for the Information and Technology degree programmes mostly.

### 6.1.6 Emotional Intelligence

This is ability to regulate and understand one's emotions as well as being aware of others'. During my internship, each day there was always a concept that was new to me, I learnt to be passionately curious for me to learn which one of the emotional intelligence components is. Being a support consultant means I dealt with clients on a daily basis, and assisting with trouble shooting and trainings amongst other things, there was a vast room of getting angered or upset. I became good at handling how I reacted in cases of offensive incidents with clients. During this internship I learnt to accept criticism as constructive feedback without defending myself or showing frustration as well as accepting corrections from my co-workers and supervisors.

### 6.1.7 Branding

My time at Belina helped me to appreciate the importance of branding and helped me to work on my personal branding. It motivated me to acquire skills that define me to the world and makes me relevant. It provided me with a clear focus for my personal development while establishing me as a thought leader

### 6.1.8 Self Confidence and initiative

Being given tasks to complete with minimal supervision is ideal for confidence boosting. The trainee was given an opportunity to do various tasks from the Department to the extent of being sent to major clients with minimal supervision. Was given freedom of experiment of ideas that they would come up with and thus I became confident enough to try new things

## 6.2 Professional Development

### 6.2.1 C# Programming

I was introduced to programming with the object oriented programming language C#. Even though the language was new it was easy for me to get on board as I had an OOP background from Python programming at HIT. I learnt the use of .Net framework and ASP .Net as programming frameworks for web programming.

### 6.2.2 Web programming

I got an opportunity to see web programming in a whole different way and that helped improve my understanding. I then ventured into studying other languages like PHP as I became more curious about other web programming languages.

### 6.2.3 Business Etiquette and communication

Learnt that in business there are a number of mannerisms that are considered to be professional and non-professional. These included avoided getting personal with other employees and observing boundaries with management and other stakeholders. Moreover, I learnt how to communicate effectively, translate ideas and convey information in such a way that it is understood. Also learnt on different channels of communication in lines of verbal and written, in a professional manner

### 6.2.4 System Networking, Installation and Configurations

Was able to get the knowledge of biometric systems and how to do all the necessary fixes and repairs to clients. Also since I offered direct support to clients about the payroll system I gained the ability to be able to network servers to machines and have a seamlessly connection so the software functions well. I also gained knowledge on how to do server networking as well as wiring and cabling of networks and being a hands on network administrator.

### 6.2.5 Software Testing

Being part of the development system improved the software testing skills I had acquired during my HIT 200 as I was involved in both the functional and non-functional testing. I was introduced to CDN testing using Cloudflare and other software testing tools such as Devops.

### 6.2.6 Version Control

One thing I learnt in doing big projects is that no cautious person or team starts a project without a backup strategy. The backup strategy I learnt the most was version control and managing revisions using Devops as a version control tool.

### 6.2.7 Team orientation

Working with and relying on other people for help in the workplace helped harness me into a good team player.

### 6.2.8 Ability to handle pressure

During my internship I had to work on several tasks for different departments in a single day. This enhanced my multitasking skills as well as the ability to handle pressure. Also, the tight project schedules that were set helped in building this skill as well. There are times that I would have to assist more than one clients at a time this also helped improve this skill as I was now able to multitask

## CHAPTER SEVEN: CHALLENGES FACED AND POSSIBLE SOLUTIONS

### 7.0 INTRODUCTION

This chapter will serve to highlight some areas where the trainee identified some shortcomings which might or are affecting the organisation. Possible solutions are to be highlighted also in this chapter. These solutions should come handy to be able to realize, effective and commendable performance or production of the organisation.

### 7.1 Conflict between organizational and personal goals

Upon arrival at the company of attachment, I was given my work description which was supporting clients over the phone, the tasks appeared trivial and repetitive. This was a big dent to my expectations of learning software development as I expected to be coding and working in the development department and being able to carry out some bigger tasks.

#### 7.1.2 Solution

I was given the opportunity to experience and work in all departments that are relevant to my degree program and this included me working with the development department. Also, I managed to recognize the significance of being a support consultant and worked harder to improve my troubleshooting and problem solving skills which made me relevant in this department as well as all other departments.

### 7.2 Fear of Asking Questions

Days after the internship programme started, the student felt the pressure to be an independent and self-sufficient worker to ask questions and seek for clarity. When there was an influx of work but, the student felt the need to prove relevance of joining the Belina team.

#### 7.2.1 Solution

The student followed one rule, 'not to assume.' Whenever I was not sure, had to ask this assisted greatly in avoiding silly mistakes.



### 7.3 Dealing with difficult clients

On a day to day dealing with clients I encountered difficult clients and some would even shout or speak in an offensive manner and having to deal with them without getting angry or emotional was a challenge.

#### 7.3.1 Solution

I would ask my supervisors or my colleagues to attend to the client in my place however as I grew my emotional intelligence I was able to calm the clients and resolve issues without getting angry or emotional.

### 7.4 Tight deadlines

Due to having so many projects to be delivered there was always pressure on the need to have all projects released and solve all clients' issues.

#### 7.4.1 Solution

The corrective method taken was always the need to prioritise the projects and clients issues so as to make sure that the deadlines are met. Also, asking for assistance from my colleagues helped ensure I overcome this challenge.



## CHAPTER EIGHT: RECOMMENDATIONS

It has been understood from the beginning that the main objective of the attachment program is to give students a taste of the working world. The attachment journey allowed me to explore various aspects of the company to which I was attached, its industry, the products it offers, the structure and culture and generally how things are done.

I also managed to do a critical evaluation of the degree program to determine its strength and weakness with respect to relevance to industry requirements. Below are suggestions on what the company can do to improve its whole business.

Recommendations to the Institute are also covered in this chapter.

### 8.1 To Belina

#### 8.1.1 Revising the current organisational structure

Adjust the current organizational structure – with the over lapping and inter linked duties it will be of paramount cause to adjust the structure to run effectively and swiftly. Currently some duties that being neglected i.e. in the business development as somehow their seen as not of great importance. Of which it's not the case cause this department today is to, focus of all

the business entities are getting connected in the spot of growing your network and expanding your business. Another very important responsibility of one business developer is creating, developing and nurturing the relations with new potential clients.

The easiest way to begin creating the optimal organizational structure for your business is to design one as if you haven't opened your doors yet. Doing this allows you create a management and staff structure that best suits the needs of your business model, rather than one that best suits the needs of your current staffing levels. Pretend you are able to structure your organization without regard to any staff you currently have or honouring any commitments you've made to see how your company should be set up, then work from there to tweak the organizational chart based on the realities of what you have in place.

#### 8.1.2 Enforcement of effective communication

Despite Belina having a medium sized workforce, a lot of communication breakdowns happened, almost on a daily basis. Some employees failed to communicate important information across departments which created a lot of complaints from the clients. I recommend that management should express the importance of effective communication across all departments. Information should be passed across all team members with ease so as to avoid unnecessary crisis and customer dissatisfaction

### 8.1.3 Need for a Testing and Quality Assurance Team

When I took part in the Connect version 2 development, I also recognized that as the company grows there is critical need for a software testing and quality assurance team. It was difficult for the current development team to undertake thorough system tests given the ongoing development that was happening. A separate team for testing and quality assurance will ensure all end-to-end, white-box and black-box tests are done thoroughly before launching any software product which therefore reduces the number of queries that will be posed to the development team once a product is out in the market.

## 8.2 To the Harare Institute of Technology (HIT):

### 8.2.1 Help students with placement

With the recent economic situation, it is difficult for most students to get placement with compensation for basic needs like transport and food. Despite the student allowance, some students had a hard time finding internship places that related to the curriculum, hence, students settled for placement in less institutions that did not offer that much exposure in terms of the curriculum. Would recommend that the department assist student in getting placement within the relevant institutions. This is to help in adding the appropriate work knowledge for the student as they get work experience related to the curriculum. It would be of great assistance if the Software Engineering department would give more recommendations for the students so that they gain the right exposure of the working environment.

### 8.2.2 Training programmes

Training programme outlines to students going on attachment - University should offer a training programme to students going on attachment that outlines the areas which a student is expected to go through. This gives a sense of direction to students and reduces fear of the unknown.

## 8.3 CONCLUSIONS

An Industrial attachment serves as an eye opener. It enabled me to learn work-based skills and to cope with work pressure as well as different characteristics of attitudes you are likely to find at any workplace. It enabled the trainee to carry theory and practice, the exposure to different systems and platforms that are used within the university. In addition, the

exposure to different clients improved the trainee's listening and communication skills. The relationship between HIT and the Industry should be maintained

## References

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- <http://belinaonline.com/>