

# A TECHNICAL REPORT ON STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

#### **HELD AT**

## INTERNATIONAL TOBACCO COMPANY (ITC) GAA-IMAM INDUSTRIAL ESTATE ILORIN KWARA STATE.

BY

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#### **DEDICATION**

This report is dedicated to Almighty GOD for making everything easy for me Throughout my Student Industrial Work Experience Scheme (SIWES) programme and to My parent **Mr & Mrs Yinusa** on their contribution to the success of this project. May Almighty God give you long life and prosperity (Amen)

#### ACKNOWLEDGEMENT

All praise, glory, honour and adoration to Almighty GOD, the author and the giver of wisdom, knowledge and understanding for the success of this programme.

I appreciate my parents which are my source to this world **Mr &Mrs Yinusa** for their parental and spiritual support because, without their maximum understanding and support, this experience would have not come into existence including my brother and Sister for their support.

#### REPORT OVERVIEW

This is an industrial attachment report for the Students' Industrial Work Experience (SIWES)

programme carried out at International Tobacco Company Ilorin, Kwara State within the period of four months.

The report comprises the background of SIWES, the description and the structures of the organization, its aims and objectives, the experiences gained as an industrial training student and the summary, conclusions and recommendations.

It has a total of 4 chapters with sub-chapters. It also has the preliminary pages, such as the title page, report overview and table of contents and recommendations on the improvement of scheme.

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#### **CHAPTER ONE**

#### INTRODUCTION

#### 1.1 Background of study

Students' Industrial Work-experience Scheme (SIWES) is one of the Industrial Training Fund (ITF) programme which was introduced in 1974 due to the inability of engineering and technology students in Nigeria universities and polytechnics to meet the practical aspects of their training. That is, the needs to enable students match their theoretical school knowledge with the practical aspect of their training in industry. The Training lasts for six months. According to Ekpenyong (2011), one of the principles underlying any industrial work experience scheme for students in institutions of learning is the desire to marry the practical with the theoretical learning which characterizes conventional classroom situations with a view to striking a balance between theory and practice. The author stressed further that it was in realization of this that the ITF when it was established, set out to study the extent to which the theoretical knowledge that students in engineering technology and other allied fields in Nigerian institutions offering technology based courses related to the kind of work experience expected of them by employers.

The result of the ITF survey showed a great disparity between students' knowledge and their ability to apply it in relevant jobs. In order to bridge the gap between the two, the ITF in 1974 established a co-operative internship programme, which enabled students of technology to spend some part of their courses for relevant on the-job practical experiences in appropriate areas of the Nigerian industry (Ekpenyong, 2011). The author further stressed that the internship programme, SIWES, can therefore be seen as that which is intended to give Nigerian students studying occupationally related courses experience that would supplement their theoretical learning as a well of equipping the students with the needed skills to function in the world of work.

This need to combine theoretical knowledge with practical skills in order to produce results in the form of goods and services or to be productive is the essence and rationale for industrial training, and a basic requirement for the award of National Diploma.

#### 1.2 Brief history of SIWES

In the earlier stage of science and technology education in Nigeria, students were graduating from their respective institutions without any technical knowledge or working experience. It was in this view that students undergoing science and technology related courses were mandated for students in different institution in view of

widening their horizons to enable them to have technical knowledge or working experience before graduating from their various institutions. The Student Industrial Work Experience Scheme (SIWES) was established by the Industrial Training Fund (ITF) in 1973 to enable students of tertiary institution have technical knowledge of industrial work base on their course of study before the completion of their program in their respective institutions. The scheme was designed to expose students to industrial environment and enable them to develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major background behind the embankment of students in SIWES was to expose them to the industrial environment and enable them to develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major benefit accruing to students who participate conscientiously in Students Industrial Work Experience Scheme (SIWES) are the skills and competencies they acquire. The relevant production skills remain a part of the recipients of industrial training as life-long assets which cannot be taken away from them. This is because the knowledge and skills acquired through training are internalized and become relevant when required to perform jobs or functions.

#### **1.2.1 Vision Statement**

To be the prime Skills Training Development Organization in Nigeria and one of the best in the world.

#### **1.2.2 Mission Statement**

To set and regulate standards and offer direct training intervention in industrial and commercial skills training and development, using a corps of highly competent professional staff, modern techniques and technology.

#### 1.3 Aim of SIWES

The effort is aimed at helping/training students in the Nigerian tertiary institutions the practical aspect of their field of study by exposing students to machines and equipment, professional work methods and ways of safeguarding the work areas and workers in industries and other organizations.

#### 1.4 Objectives of SIWES

The Industrial Training Funds Policy Document No. 1 of 1973 which established SIWES outlined the objectives of the scheme. The objectives are to:

1. Provide an avenue for students in higher institutions of learning to acquire industrial skills and experiences during their course of study.

- 2. Prepare students for industrial work situations that they are likely to meet after graduation.
- 3. Expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
- 4. Make the transition from school to the world of work easier and enhance students' contacts for later job placements.
- 5. Provide students with the opportunities to apply their educational knowledge in real work situations, thereby bridging the gap between theory and practice.
- 6. Enlist and strengthen employers' involvement in the entire educational process and prepare students for employment in Industry and Commerce (Information and Guideline for SIWES, 2002).

#### 1.5. Importance of SIWES to Metallurgical Engineering

Ahmed (1990) stated that SIWES is perceived as a skill development programme by educators to complement, supplement, enrich and strengthen the instructional process of our educational institutions. It exposes students to more practical work methods and techniques in Metallurgical engineering.

- 1. It provides students in metallurgical engineering with an opportunity to apply their theoretical knowledge to real life situations.
- 2. It enables students in computer engineering to gain experience in handling equipment and machineries.
- 3. It provides an environment whereby students in computer engineering can develop their creativity and interpersonal skills through software design techniques.
- 4. It is one of the requirements for the award of National Diploma (ND) in Metallurgical Engineering

#### 1.6. About the company (International Tobacco Company ITC)

In Ilorin, the history of the tobacco industry is intertwined with the Nigerian Tobacco Company (NTC), which was established in 1951 as a partnership between British American Tobacco (BAT) and the Nigerian government to acquire BAT's assets in Nigeria.

Here's a more detailed account:

#### • Early Presence:

The history of the tobacco industry in Nigeria, including Ilorin, can be traced back to around 1904 when tobacco was initially imported.

### • International Tobacco Company (ITC) and the Nigerian Tobacco Company (NTC):

ITC established a depot for local distribution of tobacco products. Later, a pilot factory was established in Ilorin (Kwara State) in 1935, followed by the larger Ibadan factory two years later. The Nigerian Tobacco Company (NTC) was incorporated in 1951 as the successor to BAT.

#### • Ilorin's Role:

The NTC had factories in Ibadan and Zaria, with the Ibadan factory closing in 1994 due to economic issues. The NTC's factories processed tobacco leaves, with about 96% sourced locally and the remaining 4% imported from the USA and Canada for blending.

#### Expansion and Development:

In 1956, the NTC opened a factory in Port Harcourt, and three years later, another factory in Zaria.

The company is a fully owned subsidiary of the British American Tobacco Group.

On September 24, 2001 the Group signed a Memorandum of Understanding (MoU) with the Federal Government of Nigeria for an investment of \$150 million to build a state-of-the-art- factory in Ilorin, Kwara State. The investment started a process that has impacted all aspects of the tobacco industry, from leaf growing, through to the manufacture and distribution of tobacco products.

Under the terms of the MoU, British American Tobacco Nigeria made a commitment to work with the Nigerian government in the following areas;

- ✓ Regularizing the tobacco sector
- ✓ Building potential for regional exports
- $\checkmark$  Significantly increasing both the quality and quantity of tobacco grown
- ✓ Establishing an independent Foundation to address rural socio-economic development

On June 17, 2003, British American Tobacco Nigeria completed and commissioned its state- of-the-art factory in Ibadan.

The factory is staffed by first class Nigerian engineers and technicians, and research shows that products manufactured in the factory are of the highest international quality. This resulted in the certification of the factory to NIS ISO 9001:2000 by the Standard Organization of Nigeria on May 18, 2005 with recertification in February 2009.

#### 1.6.1. Staff

The staff – both past and present – are part of our history, part of which we are today and are an essential part of our future. We attract and retain experienced managers and graduate trainees who look forward to a challenging and rewarding career. The company's employment policies include a commitment to equal opportunity, which eschews any form of discrimination, ethnic or religious bias.

Employees in ITC Nigeria are exposed to a whole range of International assignments which is a critical developmental channel. This is aimed at ensuring our managers can gain exposure, share and implement global best practice in their respective locations.

BATN have both permanent staffs and contract staffs.

#### 1.6.2. Nature of business

In 2002, British American Tobacco Nigeria took a decision to localize the manufacture of our brands with a subsequent improvement in product quality and freshness. Our international brands which were previously imported - such as Benson and Hedges, St. Moritz, Rothmans, Consulate, London, Pall Mall and Royal Standard - are now produced in Nigeria

Cigarettes have four basic components as shown:

- ✓ The tobacco rods
- ✓ The cigarette paper around the tobacco rod
- ✓ The filtration zones
- ✓ The filter and tipping around the filtration zone. These are some of our brands as shown:
- ✓ Dunhill
- ✓ Pall Mall
- ✓ Benson & Hedges
- ✓ Rothmans
- ✓ St. Moritz
- ✓ Consulate
- ✓ London King Size
- ✓ Sweet Menthol
- ✓ Royal Standard
- ✓ Three Rings

International Tobacco Company Ilorin factory does not just produce cigarettes for Nigeria only; in fact ITC Ilorin factory produces cigarettes for all West Africa.

#### 1.6.3. Departments and their functions

ITC Ilorin factory is divided into 8 major departments;

- 1. **Logistics and Supply chain Department-:** Logistics and supply chain department oversees the governance of supply chain functions. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third- party logistics services providers.
- **2. Engineering Department-:** The main responsibility of the engineering department is the maintenance and upkeep of various machines and appliances in the factory. They are needed to keep machines in existing condition and away from failure or decline. They are responsible for power generation, and processes such as welding, repair of air conditioning units, water generation etc.
- **3. Finance-:** The main goal of The Department is to provide the financial statements with relevant, accurate and timely information and to guarantee that the required financial revision is closely adhered to in order to protect the assets of the company.
- **4. Human resources-:** The Human resource department oversees recruiting, training, and dismissal of employees.
- **5. Information Technology -:** The Information Technology (IT) Department develops and maintains an internal network of over 600 desktop workstations, digital office equipment and the networking equipment, operating systems and servers to tie them together. Network maintenance, computer systems maintenance, hardware software and malware management.
- **6. Operations/Manufacturing-:** Processing of tobacco and manufacturing of cigarettes. This place is usually referred to as the shop floor (The shop floor (Fig. 4) consists of Cigarette producing machines, Quality testing machine, manuals cabinet, spare parts morgue and other necessary equipment's used during CIL (cleaning, inspection and lubrication), and other maintenance activities).
- **7. Quality Assurance Department -:** Quality control functions influence almost all operations. Quality control staffs examine received materials to verify if it meets the specifications under which it was ordered.
- **8. Security-:** Management of access cards and other security related issues.

#### **CHAPTER TWO**

#### **WORK DONE**

During my four months of internship at International Tobacco Company, as an Engineering student I worked at Secondary manufacturing department/ Information technology. With the help of the Maintenance lead (Mr. Innocent), Technicians and my Supervisor (Mrs. Angela), I gained a lot of technical experiences in Manufacturing. I was able to learn a lot about the manufacturing processes and operations of each machines, the working principles of those machine the HMI (Human Machine Interface) at every transformation point, the importance of Data in Industrial Settings and networking concept.

Below is the summary of my day to day work at International Tobacco Company Ilorin Kwara State Nigeria.

- Creation of OPL (One Point Lesson) and Understanding every failure modes of Problems on Cigarette producing Lines (Mechanical, Electrical and Computer).
- Data Collection from HMI (Human Machine Interface)/ Live Event System (ANT) and Documentation (Excel, Word and PowerPoint).
- Follow up of all necessary standards e.g. Centre lines, CIL (Cleaning Inspection and Lubrication), Pulsar (safety) and maintenance.
- Report writing and delivery (Microsoft Outlook).
- Networking

#### 2.1. The cigarette producing machines

Cigarette is being manufactured by machines, which are being operated by human. There are different types of cigarette producing machine based on what they do either by making the cigarette itself or parking it into bundles. We have the packing machine and the making machine.

#### 2.1.1. The making machines

There are three parts of the making machine the GD121, AF12 and T10/AM14.

#### 2.1.1.1. GDI21 Machine

After the treatment of tobacco leaves from the Primary Manufacturing Department the tobacco is transported directly to GD121 hopper, through high pressured pipes, the tobacco is then grinded again at the hopper unit, then a conveyor belt sends the tobacco to the splice and inker unit where the tobacco is rolled in cigarettes papers and the ends of the papers are glued together to form the cylindrical cigarettes shape during this

process the cigarette paper also passes through the inker unit which prints the brand name and embosser on the cigarette paper, this varies for different brands.

#### 2.1.1.2. AF12 Machine

After GD121 rolls the tobacco in cigarette paper it is sent to the AF12, which cuts the rolled cigarettes in to lengths of 70 mm to 84 mm depending on brand specifications, also the filter is loaded and joined to one end of the rolled tobacco a tipping paper is used to wrap the filter.

This is the end of the making process, during this process there are setting sensors in place that ensures defective or unproperly rolled cigarettes don't advance to the packing side we call these REJECTS. The making machine runs at a speed of 10,000 cigarettes sticks per minute. GD121 and AF12 merged together

#### 2.1.1.3. T10/AM14 Machines

The T10 and AM14 acts as reservoirs in case of Stop or breakdown on the making side. The T10 receives cigarettes sticks from the AF12 and allows a portion of cigarettes to pass through it directly while at the same time loading trays with cigarettes and sending it to the tray elevator which lifts itself went fully loaded with two trays. The operator then carries the loaded trays from the elevator arm and loads it on the AM14 tray unloaded.

#### 2.1.2. The packing machines

After the cigarettes have been produced, it must be put in a suitable form for preservation and for marketing. This is done with the packing machine. The packing machine is made up of three sub-machine parts GD X3 and the C-600.

#### **2.1.2.1. GD X 3 Machines**

The GDX3 machine arranges the incoming cigarettes in a bundle of 20s (7-6-7) wraps the bundles in foil paper, attaches the inner frame and finally packages the cigarettes in packets. The formation of cigarettes packs is also one of the major functions of the X3, in this process flat pieces of the production brand called blanks are arranged serially in bundles on the blank transfer belt which then transfers it to the cigarettes boxing unit, which folds the blanks unto the already foiled wrapped cigarettes, producing a geometrically boxed cigarette packet.

#### 2.1.2.2. C-600 Machine

The C-600, otherwise known as cellophane wrapper wraps each packet of cigarette with cellophane and then overwraps the packets in tens.

The C600 machine, consists of the;

CH unit which wraps each cigarette pack with cellophane and applies the tear tape to the packet.

CV OVEWRAP unit which wraps the cigarettes packets in bundles of 10s which is then arranged into cartons by an operator.

#### 2.2. Human Machine Interface

HMI is the acronym for Human Machine Interface, and can be designed as just that; an interface between the user and the machine. An HMI is considered an interface; a very broad term that can include MP3 players, industrial computers, household appliances, and office equipment. However, an HMI is much more specific to manufacturing and process control systems. An HMI as shown in provides a visual representation of a control system and provides real time data acquisition. An HMI can increase productivity by having a centralized control centre that is extremely user-friendly. Usability of the human-machine interface is the degree to which the design makes using the system effective, efficient, and satisfying (Desney et al , 2104).

Two components are needed in a human machine interface. The first is an input. A human user needs some way to tell the machine what to do, to make requests of the machine, or to adjust the machine and the output to show or display result.

#### 2.2.1. How does an HMI work?

First consider the other components that are necessary to make a manufacturing control system operate. The production line consists of all the machinery that performs the work required in the production of the product. First, consider the various input/output sensors that monitor temperature, speed, pressure, weight and feed rate. Second, decide on the programmable logic controller (PLC) that will receive the data from the input/output sensors, and converts the data into logical/ binary combinations.

#### 2.2.2. Use of HMI in industrial processes

In industrial Process/ activity, HMI can be used to:

- Visually displayed data required
- Helps operator in tracking production time, trends, and tags and identify STOPS
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- Oversee KPIs
- Helps in monitoring machine input and output
- Helps in regulating variable parameters
- And more

#### 2.2.3. Cigarette Machines HMIs

Cigarette HMIs are made to work with the mechanical part of the cigarette producing machine. Both the making machine and the packing machine have HMI incorporated with them. HMIs help in identifying Machine stops which affect the performance of Production. Without the HMIs the machine operator cannot identify which type of stop happened and where exactly the stop comes from.

The following are some of the Information that can be gotten from Cigarette HMIs.

- STOPS history
- Efficiency
- Machine Speed/Graph
- Shift Performance
- Reject
- Production
- Average run time
- Production time
- Waiting time
- Utilization

#### 2.4.2. TCP/IP networking model

The Transport Layer includes several protocols, and most widely known are Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), which are part of the TCP/IP suite of protocols. This suite is well known because it is the standard used on the internet.

TCP is known as a reliable connection-oriented protocol. It uses the three-way handshake, windowing, and other techniques to guarantee that the data gets to its destination safely.

Many protocols use TCP, including Telnet, HTTPS, and FTP (although its sits at the Application Layer, it does use TCP).

#### 2.4.3. IP Addressing

An IP address is a numeric identifier to each machine on an IP network to specify the location of a device on the network. IPv4 address is a software-based address, unlike MAC address which is a physical address of a host. IPv4 address is a 32bit binary numbering system and it's mostly stored as a text file but displayed as a human understandable concept as a series of numbers, like 128.11.3.1 (a class B IPv4 address). The binary representation of the class B IP address 128.11.3.31.

**Network address:** This gives network nodes a unique identity to communicate with each other.

**Broadcast address:** This is the address used by applications and hosts to send the information to all nodes on a specific sub network.

#### **2.4.4. IP Routing**

IP routing is required to send data from one network to another network. It's a Layer 3 protocol, which means a Layer 3 device router is needed to enable communication.

#### **IP** Routing can be classified into two parts:

Static Routing: In static routing, the network admin needs to manually add routes to each router's routing table. Static Routing is good for very small networks, where only a few routers need to be configured. But if the network grows it is quite impossible for a network engineer to add, modify and delete the route into each router's routing table manually.

**Dynamic Routing:** Dynamic routing is when protocols are used to find networks and update routing tables on a router. Dynamic routing can be classified into two parts: Interior Gateway Protocol (IGP) and Exterior Gateway Protocol (EGP). IGP: Interior Gateway protocol is a routing protocol that is used to exchange routing information within the same autonomous system (AS). IGP can be divided into two categories: distance-vector routing protocol and link- state routing protocol. EGP: Exterior Gateway protocol determines network reachability between autonomous systems.

#### 2.4.5. IP Subnetting

A sub network/subnet is a logical division of a larger network into a smaller network. By using subnetting techniques, a network designer can reduce network traffic and manage the network better to enhance its performance.

#### **Subnet Mask**

Subnet mask is a 32-bit value that allows the recipient of IP packets to distinguish the network ID portion of the IP address from the host ID portion of the IP address. The first octet of a subnet mask if all are 1 means the binary number 11111111

converts into a decimal number which is 255. For that reason, the subnet mask of Class A network address is 255.0.0.0,

#### 2.6. Technical skills acquired and experience gained

Technical Skills Acquired

My attachment at ITC was fruitful and mind broadening in terms of technical skills acquired. As simple as it may sound, I learnt how to use a screwdriver properly but that is just 'by the way'. A lot was learnt, and they are listed below;

- Troubleshooting: It takes patience and deep thinking to find the cause of a problem. What I learnt was that finding the cause isn't good enough. As a matter of fact, finding the cause to a problem would not get you anywhere. What is important is finding the root cause to the problem. For instance, when the machine is running, there would be some unwanted stops happening at intervals. A common cause of this stop is 'incomplete cigarette pockets. The cause of the stop has been identified but it doesn't tell us how to solve the problem, therefore, we ask why the cigarette pockets are incomplete, hence a new problem arises. We discover the pockets are incomplete due to broken cigarettes. We find the cause of the broken cigarettes and keep recycling the problems till the root cause is obtained. In this case, the root cause could be a malfunctioning sensor. The sensor is fixed, and the number of stops is reduced.
- Handling of tools properly is very important. Not only does it make work safer, it also makes it faster.
- Networking and its industrial applications
- In the making and packing machines, there are over six hundred (600) sensing elements that control the machines. Learning what theses sensing elements can do was a lot to take in, especially how to get them to control mechanical parts through different motors Learning the key concept of networking and its application and Being safety conscious.
- Taking responsibility for actions and Improved leadership skills.

#### **CHAPTER THREE**

#### CHALLENGES AND SOLUTIONS PROFFERED

There are challenges that were encountered during the industrial training, but I was able to overcome those challenges which really exposed me to some real life and technical problems that can occur and how to tackle or solve these problems.

#### Change in lifestyle

The first challenge I encountered during the industrial training was adapting to a new lifestyle, new environment with different set of professionals. At university, where you woke up late and attended a few classes, work. As an intern can turn your life upside down. After being at work seven to five, you may find yourself going home, eating, showering, and sleeping early.

Solution: I did not get into a routine without any excitement. I was mindful of the food I eat, I avoided eating food that could make me feel dizzy at work unlike when I was in school. I also avoided long stretch work over the weekend to make me get fully energised for work the following week.

#### **Building a relationship**

At first, it seemed like you don't get along with people, or maybe even your peers. Very often, an intern is seen as a temporary employee, and may not be given the appropriate attention.

**Solution:** I find out the best way to interact with people and peers on a personal level. The easy way I did this was during break or time to have meal together. When talking about work, I usually convey how I can contribute. This portrays an image of someone who wants to be a productive member of the team and it really helped me in improving my relationship with people.

#### Knowledge

At times, you may find that you don't know a few aspects of the job. The question is whether to ask your Supervisor or anyone for answers, or to figure it out on your own.

**Solution:** Most times I find a solution on my own. By checking the internet, referring to any guidelines provided by the company, asking peers (fellow interns), and finally approaching my supervisor. I ensured I have a list of all the questions at hand and suggest solutions. I avoided asking the same question twice. If needed, making a note of the solution.

#### **Time Management**

The problem of time management was inevitable, a lot of activities needed to be completed in a limited time.

**Solution:** In solving the time management problem, I had to schedule all my activities in such a way that I can perform more than one activity that are not conflicting simultaneously.

Most of the time I approach works based on order of importance. Sometimes on order of arrival.

#### **Technical challenges**

Working in manufacturing department I was faced with the problem of having low production and not meeting production target. This occurs as a result of machine breaking down intermittently due to STOPS and Faulty HMI's (Human Machine Interfaces). Dealing with stops is one of the most annoying things working in a factory. This reduces machine overall performance and efficiency.

**Solution:** As an intern, my contribution in dealing with STOPS was creating a well-documented troubleshooting guide that allows the EO's (Equipment Operators) to deal with simple STOPs that they can handle without the help of the technicians. This was to reduce over-dependence on technicians.

#### **Self-Development challenge**

The problem of balancing office work with programming. It was really a tough one waking up 5:30am every day and getting back home 6pm in the evening and having to get to your personal computer to program.

**Solution:** I made use of every little time I have on weekends. Also, during factory shutdown, I was able to improve my programming skill.

#### **Networking**

Working in information technology department, I was also faced with few difficulties in perfectly networking devices; any connection not perfectly fitted, or slightly wrong configuration of the networking devices leads to a consequential network failure.

**Solution:** For the minor challenges faced in networking, I solved them with useful Cisco Networking tools such as the Packet Tracer and Networking manuals.

#### **CHAPTER 4**

#### **SUMMARY AND CONCLUSION**

#### 4.1 Summary

I can only be grateful for such a wonderful and mind-blowing learning opportunity provided by ITC as so much value has been added positively to starting my career as a Metallurgical Engineer. It was a memorable and very educative one. It exposed me to the formal industrial setting which can only be understood by going through the training and meeting and learning to work with people with ideas, background and philosophies.

In summary, the SIWES program was a huge success and should be well emphasized. It gave me the opportunity to serve and learn at ITC which was a very good learning environment that provided me with the necessary guidance on how to operate in the industry.

#### 4.2 Conclusion

The Student Industrial Work and Experience Scheme (SIWES) is a very good program for student of Engineering, Technology and Environmental Design Management to gain some practical knowledge to benefit them in their course of study. Throughout my months of training, I have been able to acquire some practical experience to support and combine its application with the theoretical aspects being taught in class. The following were the educational goal achieved during my training;

- I have acquired industrial skills and experiences in Engineering.
- I have been exposed to working methods and techniques in handling equipment and machinery not available in the academic environment. I also had the opportunity to interact with a larger spectrum of people in industrial set up. Hence, helping me grow mentally and psychologically for the industry.

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