**CHAPTER ONE**

**1.0 INTRODUCTION**

**1.1 Background of the Study**

Attendance is a basic and most important criteria needed in all the education system. Attendance is used as a record to assess student consistency and participation in the class. Therefore, student is required to attend all teaching activities held by the institutions. Once attendance is below the required policy, the student will be subjected to further action or suspended from taking the final exam depend on the respective institutions they are in. Student Attendance through Mobile Devices is a project that would be developed to accept records and manage daily student attendance in The Federal Polytechnic Bauchi (FPTB). Currently, FPTB is still practicing old method to take the students attendance which is by giving out attendance sheet to be sign by student.

This impractical method will lead to fraud on number of absentees by students. Beside, this method also easily allow for impersonation as some student may purposely sign on another student’s name. Besides, lecturer needs to analyze manually every attendance sheet to identify the number of the absentees for both lecture and lab classes correspond to subject. Then, lecturer needs to count and calculate percentage of present of all the students manually to identify when warning letter need to be given to the student depend on his or her number of absents without providing any medical certificate or notice. As a result, it is time consuming, increase number of works of the lecturer and prone to human error as it is difficult to ascertain whether the calculation made was correct or not. Moreover, student needs to spend unnecessarily time during class session to sign on the attendance sheet. This is also disturbing and student may lose focus when the attendance sheet is passing around during the class session.

Therefore, Student Attendance Through Mobile Devices would be proposed to help or reduce lecturer’s work. This system facilitates to access or manage the attendance information of all the classes. Student by default is assumed to be present as number of present will be higher than the absentees for most of the attendance report. After that, lecturer is allows to change or modify absentee’s attendance data. The system will automatically count the number of absents and the percentage of present for all the students based on the subject classes. Once the number of absents exceed the attendance policy, appropriate warning letter will be generated automatically to be given to the absentee.

Hence, this system provides a tedious work in maintaining attendance records besides saving time to analyze every attendance list and assuring the calculation made was error-free.

**1.2 Problem Statement**

Based on the observation, there is no available student attendance system in The Federal Polytechnic Bauchi (FPTB). FPTB is still practicing the manual way of taking daily attendance. Lecturer distributes attendance sheet to be sign by student during class session or personally marked the attendance sheet one by one by calling out student name accordingly. However, the attendance sheet can be lost easily and the whole attendance process is tends to human mistake.

Consequently, data loss may happen and the data in attendance list might be inaccurate due to deception. Besides, lecturer needs to manually analyze number of absences and calculate the percentage of present from the attendance list collected or recorded. Lecturer needs to identify number of absentees based on each subject with the respective classes that he or she taught. At the end of the semester, lecturer required to calculate the percentage of present of each student to make sure the student can take their final exam for the respective subject. Therefore, it is time consuming and the result of calculation might go wrong when lecturer missed out some of the data in the attendance record.

In addition, lecturer needs to manually write all the details about the attendance data to the appropriate documents when needed. On the other hand, attendance report also needs to be filled in by all the lecturers at the end of the semester based on each subject taught. This is to determine whether all the students met the Polytechnic attendance policy before student is allow to take the final exam. However, all the attendance data need to be analyzed manually first before attendance report document can be filled in. All this work has indirectly increases lecturers' work.

**1.3 Aim and Objectives**

The Aimof the work is to Design a Student attendance system to keep track of attendance in mobile devices for easy and proper evaluation of attendance.

The objectives are as follows:

1. Develop and implement an attendance system.
2. To create an Android application that will provide a User Interface to interact with the system.
3. To automatically calculate number of absences and the percentage of present of the students based on subjects with respective lecture and lab classes.

**1.4 SCOPE OF STUDY**

Scope that involved in Student “Attendance Management system using Bio metric cover the scope of the present system. It is a computer based system with the capability to easily check the attendance of the students of FPTB. This system cannot manipulate on its own and needs operator to able to be used by the students. This study covers purely the formulation of the proposed system as a replacement to the present system. The proposed system will be implemented within the limit of the existing human resource and material such as a co-computer requirement and the existing forms of the school.

**1.6 JUSTIFICATION**

The reason for developing this system is to suggest a new method for FPTB lecturers to record and update student attendance. Besides, FPTB, other universities or colleges such as ATBU (Abubakar Tafawa Balewa University), University are still using the same old method to record and update the student attendance.

Besides that, this system is also developed to reduce the workloads of updating the student attendance. Currently, the method used by FPTB is very time consuming. The larger class size, the longer time needed to update the student attendance. It is because the student attendance is updated one by one by a single person

**1.7 DEFINITION OF TERMS**

In order to facilitate an understanding and clarify terminologies used in this research, the following have been defined:

**Attendance-**is the act of attending, act of being present.

**Attendance System-** a set of related procedures develop according to an integrated plan for performing major activities in time and time out of lectures and labs

**Attendance Report-** list of person on the time

**Bio metrics-** a device that enables to scan a finger for verification.

**Code-** set of instruction/programs that have been converted from source code that only computer can understand.

**Data-** factual information stored on a magnetic media that can be used generated calculations and make decisions.

**Database-** large group of integrated data that can be retrieve and manipulate to produce information.

**Data Flow Diagram-** this is a diagram that shows the flow and logic of the data within a system.

**DTR-** abbreviation of Daily Time Record.

**Entity Relationship Diagram-** is a graphical illustration that shows the relationship between entities in a system.

**Input-** pertains to the necessary data that will be used to carry out a particular task produce to reliable information.

**Internet-** a network of the entire world wherein it uses a telephone line, modem and computer unit to transmit a message through e-mail and voice mail.

**Manual System-** a process of making forms using their hands; it utilizes more time and effort in performing task.

**FPTB :** The federal polytechnic Bauchi

**Android:** This is a Open source Linux-based operating system developed for smart phones or tablet computers.

**Output-** pertains to the result of the information transmitted by the users.

**Program-** set of instruction to be carried out by computer written in computer language.

**Retrieving-** retrieves previously created documents from a storing device.

**Software-** refers to the programs used by a computer to perform a desired task.

**CHAPTER TWO**

**2.0 LITERATURE REVIEW**

**2.1. Student Attendance Management**

In the journal paper of “Student Attendance Management” (Dhanashree A. G., 2011), it had known that attendance system software is required to replace the traditional attendance system for a purpose to reduce the processing time and the paper work cost used in traditional attendance system. This journal paper main objective is to indicate the disadvantage of the traditional attendance system compared to the proposed system. In addition, the journal paper had also indicated the characteristic of the proposed system. On the other hand, from the journal, it had shown that the proposed system only provide a very simple application with some features that allow the users to manage their student attendance more easily and effectively As mentioned in the journal paper, it did not include any special hardware (such as fingerprint scanner, mobile phone, bar code scanner, and etc.) in order to make the software work. It only requires basic equipment such as a set of desktop computer. In short, the proposed system only requires the users to install the software to their laptop/desktop for managing their student attendance. Based on the journal paper, there are two modules introduced which is admin module for managing the classes and report module for generating the attendance report.

**2.1.1 Strengths:**

There is some strength that can be found in the student attendance system (Android) First of all, the system can be known as a computerized system that reduces the workload of the users in managing the attendance records. Compared to the traditional attendance system, it offered cost-effectiveness since it reduces the paper needed to process the data of the student attendance records. In addition, it will also help the lecturers save up a lot of time in recording the attendance of the students throughout the whole semester. In addition, since the proposed system does not require any special hardware to make it workable, so it will be very easy to use due to its simplicity. At the same time, it will reduce the training cost required to train the user in operate that student attendance system. Besides that, it only require local database to store all the information of the students attendance which mean the lecturers do not need to worry about the network coverage issues. Other than that, as mentioned in the journal paper, the attendance system was designed in extremely simple graphical user-interface which allows user to easily deal with the system.

**Weaknesses/Limitations:**

However, there is some drawback that can found from the solution in using student attendance management system (Android). First of all, the system will still require the lecturers to key-in student attendance records in every class. Although the system had developed to be work in computerization, but it still require an operator to manage the storing and retrieving of information frequently. So, the proposed system had only converted the traditional attendance system to computerization but everything still have to be done manually such as key-in student attendance and etc. In addition, it only reduces the cost used for paper work but the system does not save up much time from record the student attendance. Other than that, those kind lecturers may try to help those student who always absent from the class to prevent get barred from the final exam by fake the student attendance by their own since lecturers is the one who key-in the attendance records in every class. Other than that, the proposed system only provides very basic functions to be used by the lecturers.

**2.2 RELATED WORKS**

[1]“Attendance Management system”, S.R.Bharamagoudar etal., this paper assist in automating the existing manual system. It can be monitored and controlled remotely. This paper provides accurate information always. All years together gathered information can be saved and can be accessed at any time. The purpose is to design a mobile attendance management system which contains up to date information of the polytechnic (FPTB) that should improve efficiency of student attendance record management.

[2] “Attendance Management System G.Gangagowri etal., t This software is can be used to send the student attendance reports easily to their parent’s. This system can store their data about the students and those cares absent student details. It is an efficient method to store the attendance in the database rather than wasting the paper. It also updates the student report directly on the server.

[3] “Online Student Attendance System”, P. N. Garad et al, in this project, we gave access to three user i.e. Admin, Student, Others. This project is based on android. In this project teachers or the admin will be filling attendance and sending message to the student who is absent. They will have privilege to fill attendance form, update attendance form, send message to the guardian’s account whose child is absent, also those attendance is less than 75%. The staff can also view the message whenever they want and also can modify the details of students. Parents have privilege to view attendance and to view message sent by the teacher. Students also have their account with the privilege to view message sent by the subject teacher and to view the attendance.

[4] “Student Attendance management system”, Pranjul Khare1 et al, the scope of the project is the system on which the software is installed, i.e. the project is developed as an ANDROID application, and it will work for a particular institute. Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google with a user interface based on direct manipulation approaches to software development have puttees emphasis on planning tasks and more emphasis on development. It has revealed that an online system for recording and reporting students ’attendances is indeed a needed application in order to make the process more efficient and time -saving where more than 70% of the sample group agreed to that matter.

[5]. V. Somasundaram et al presented a mobile-based attendance system using visual basic .Net (VB.NET) and SQL server. This system is used to store, organize, find and manage the information of the students and helps to generate the reports of the student information

[6]. K. Akhila et al proposed an android-based mobile application for student attendance tracking system. It offers reliability, time saving, and it is easy to control and to take the attendance using android mobile phones. It can reduce the efforts of the staff members towards attendance maintenance. It is an efficient and user friendly android mobile application for attendance monitoring [7]. Rakhi Joshi et al developed an android-based attendance management with smart learning system. The web-based mobile application is developed with a SQL server. This system is used to mark attendance through smart phone and gives a prior intimation to student as soon as their attendance goes below the specified level through SMS

[8]. Moreover, Amita Dhale et al.presented a survey on “smart connect”, android and web based application for college management system. It is developed using SQL server. It is mainly used to store the details required for the institutions

[9]. The mobile operating system (MOS) place a key role in the development of mobile application since the application for one MOS is not compatible with other MOS. Therefore, before developing the mobile application for a particular application the MOS must be considered and the application must be developed for the same. Thus, the student attendance management and monitoring systems are developed for the Android MOS. Akshay A. Kumbhar et al presented an automated attendance monitoring system using android platform. It is then used to maintain the attendance of the student regularly

[10]. Jessenth Ebenezer et al presented an android-based student activity register system. It is used to mark the attendance and to store the details of the students so that the professors or higher officials can view the attendance of the students and regulate them if they are not regular to the classes

The mobile application-based attendance management system is employed in the polytechnic to mark the attendance of the students. S.P. Avinaash Ram and J. Albert Mayan presented a mobile application for student registration and mobile attendance. It is used to update the student attendance regularly and track their attendance. Moreover, it is helpful to the staff and the authorities to take the attendance. This system is also used to know the number of student easily and to monitor whether they are regular to class. This system also provides the details of every student

In addition to providing the authentication in the polytechnic, the location-based attendance management system is also practiced. Mohammad Salah et al presented a mobile application for time and attendance system based on the location. This application is used to take the attendance of the students based on whether they are in the same location or not. This application is developed using android.

According to Co-build learners dictionary Attendance is the fact that someone is present at an event or go regularly to an institution, or the attendance at an event is the number of people who are present at it. Furthermore, if someone is in attendance of a place or event, they are present. Empirical evidences have shown that there is a significant correlation between students’ attendances and their academic performances

1. There was also a claim stated that the students who have poor attendance records will generally link to poor retention
2. This is also agreed by Mazza and Dimitrova where they both claimed that the students’ attendances to the course may indicate their behaviors towards the subject where it can be used to judge their tendency and commitment to the course
3. Attendances of every student are being maintained by every school, college and university. Faculty has to maintain proper record for the attendance. The manual attendance record system is not efficient and requires more time to arrange record and to calculate the average attendance of each student. Hence there is a requirement of a system that will solve the problem of student record arrangement and student average attendance calculation. The proposed system should store the absent and present student’s attendance details in electronic format so that management of attendance becomes easy. Old conventional methods for student attendance are still used by most of the universities. As this method is used, many students are helping their friends by signing in their attendance in case of their absent in the institute. So while this method is used, attendance records are analyzed and maintained manually by the faculty to know the present and absent student list. The Faculty has to take attendance again if the attendance sheet is being lost and in this case absent students get chance to make their present in new sheet. This procedure, besides being troublesome for lecturer, it will also affect students as time is expended on signing, verifying and submitting the attendance sheet manually. Therefore, a computerized system that can manage and help the lecturers to take attendance easily and maintain that attendance has to be developed. The faculty can easily access this system. Manipulation and management of student attendance data have to be taken care by the system so that the manual analysis of student attendance by the faculty will be removed. The system should automatically analyze all the data as it was transferred by the faculty. There are some problems in conventional attendance tracking system like one is a student missing out their name, while the other leads to a false attendance record. Another issue of having the attendance record in a hard copy form is that a lecturer may lose the attendance sheet.
4. For student attendance analysis, to obtain the student attendance percentage, manual computation has to be performed by faculty. Technological improvements can be useful tools to help in the development of new systems to eliminate the disadvantages of the classical methods while enhancing its advantages. All of this review has shown that in most of the higher academic institutions attendance records have primarily become the proxy to determine the student’s success.

According to Turban Mclean. Wetherbe (1998) from their book Information Technology For Management , it was stated that the term information system is a collection of component that collects, processes, stores, analyses and disseminate information for a specific purpose, like any other system. An information system includes inputs (data, instructions and output reports, calculation).

According to A.N Aniekwu and Jone Akpodvado (1999) from their book fundamental of practical computer a computer is a machine that performs calculation and processes automatically at high speed according to prescribed sequence of operations to an electronic machine also to one of a mechanic, analogue or other variety.

Geoffrey K, Nick W, Paul C and John E (1987) added that computer system consist of individual element working together with the common aim of processing data > process > information.

C.S French (1996) in his book Computer Science asserts that a record is information relating to one person, production e.t.c in database, a record contains information about one person.

Larry long and Nancy long (1993) Computer is able of interpreting and executing programmed command for input, output, computation and logic operations.

Aghawra E.D (2002) Operate Your Computer asserts that computer are electronic devices that can be programmed to accept (input), program the input, store it and output useful information as technological society becomes more complex.

Akin Fapohide (2005) says that, computer is a machine that follows instructions in order to process data, solve specific problem or accomplished task is referred to as program.

Attendance Management System facilitates the attendance information of a particular student in a particular class. The information is sorted by the operators, which will be provided by the lecturer for a particular class. This system will also help in evaluating eligibility criteria of a student to sit for an examination.

**2.3 DATA PROCESSING SYSTEM**

Data processing system are conned with the transaction, handling and record keeping, usually for a particular functional area. Data are entered and stored in a file format, the stored files are updated during routine processing. The major drawback of data processing system is that, they are flexible and control/ accommodates data, information needs that are not already built into the system.

**2.4 INFORMATION SYSTEM CAPABILITIES**

Information system includes all use of computer that support administrative aspect of an organization, example includes, application of payroll system, registration system, hospital patient bill system, registration combination of hardware, software , peoples procedure for an information system. A computer based information system provides an organization with data processing. Information system has four capabilities as a computer system, which includes the following: input, processing, storage and output.

**2.5 WORKING OF PRESENT SYSTEM**

In the present system all work is done on paper. The whole session attendance is stored in register and at the end of the session the reports are generated. We are not interested in generating report in the middle of the session or as per the requirement because it takes more time in calculation. At the end of session the students who don t have 75% attendance get a notice.

**Disadvantages of Present Working System**

* Not User Friendly: The existing system is not user friendly because the retrieval of data is very slow and data is not maintained efficiently.
* Difficulty in report generating: We require more calculations to generate the report so it is generated at the end of the session and the student does not get a single chance to improve their attendance.
* Manual control: All calculations to generate report, is done manually so there is greater chance of errors.
* Lots of paperwork: Existing system requires lot of paper work. Loss of even a single register/record led to difficult situation because all the papers are needed to generate the reports.
* Time consuming: Every work is done manually so we cannot generate report in the middle of the session or as per the requirement because it is very time consuming.
* Less security: Security of data is less in manual systems. This is because majority of the records are stored as statements or in registers. Moreover, these data can be accessed by anyone and even they can modify any important data.