



International Journal of Advance Research, IJOAR .org

Volume 3, Issue 9, September 2015, Online: ISSN 2320-9186

MOBILE APPLICATION FOR EFFECTIVE INFORMATION DISSEMINATION IN HIGHER EDUCATIONAL INSTITUTIONS (HEIs): A CASE STUDY OF AFE BABALOLA UNIVERSITY

Babalola G.Oa., Abiola O.Ba. and Tenibiaje Ma.

+234 803 478 4332, +234 803 234 9377, +234 803 240 8343

aDepartment of Mathematical and Physical Sciences, Afe Babalola University, Ado-Ekiti, Nigeria.

*Email: *gbemibabz@abuad.edu.ng*

Abstract

Information is important in our everyday lives. Communication systems helps to make information dissemination easy. Speech, sight, call and text are different forms of communication systems we frequently use in our daily routines. However, where there is a redundancy and inefficiency in the communication of information within an organization such an organization may experience challenges that may impede progress.

In this paper we looked at the application of communication systems, and the dependence of such systems to an environment. A large consideration is given to HEIs and their current communication systems in use at present towards achieving a more efficient way for communication and disseminating of information.

Afe Babalola University Ado, Ekiti (ABUAD) Mail is an Android Based Application designed and implemented to facilitate communication via mail between users (such as lecturers, students, administrators, non-teaching staff etc.) to better improve the Institutional electronic communication in the environment.

The system was developed using Reverse Engineering methods with the Android, APK studio software and the Java Development kit (JDK) respectively.

This system will help foster effective communication within the University.

Keywords:

Information dissemination, Communication, Android, Mobile System.

Introduction

The need, use, communication and dissemination of information forms an important part of our everyday lives. Andras (2008), opined that information can flow from a source to a recipient over a channel, pipe, or other conduit and it can be diluted, compressed, or stored in vessels of specific capacity.

The latter has naturally become routine and naturally making it an important factor in our day to day activities. Thus, the means by which information is communicated is also very important. Organizations invest much these days in Information Systems and high speed processors in order to quickly access and process the latest information because the jobs and profit of many can totally rely on them.

Hence, the way in which Information is disseminated is very important in any environment and should be emphasized in its efficiency.

With the coming of the Internet, the Electronic Mail (e-mail) has been the most used communication method between and among management and staff in most organization in developed societies because it can ensure quick and efficient dissemination, security and also portability in the system.

Over the years the efficiency, use and importance of an e-mail has been amplified. Email now serve as sources of verification and can be used in transactions to confirm identity, also used to access different forms of social networks. However, it also has its challenges too such as its use by scam artists and hackers to elicit information from the user or by sending a virus into the user's system to serve a specific goal.

Above all, the gains of the use of an e-mail are many and widespread. Every organization or institution in this modern day should be able to boast of its own email system that efficiently run to provide efficient dissemination of information among its staff and management.

Problem Statement

It is observed that information does not efficiently get to the user in a non- electronically system of disseminating information. There is a bridge in the communication within an organization when information is manually disseminated. Furthermore, about 20% of students in a university take their time to check information on the notice boards and there have even been cases where students miss their tests and even examinations because they were not informed or for lack of proper channels of disseminating information.

Literature Review

Every day, at our work and in our leisure time, we come in contact with the use of varieties of modern communication systems and communication media. The most common being the telephone, radio, television, and the Internet. Through these media we are able to communicate (nearly) instantaneously with people on different continents, transact our daily business, and receive information about various developments and events of note that occur all around the world. Electronic mail has made it possible to rapidly communicate written messages across great distances.

Can you imagine a world without telephones, radio, and TV? Yet, when you think about it, most of these modern-day communication systems were invented and developed during the past century.

Communication System

Today, communication enters our daily lives in so many different ways that it is very easy to overlook the multitude of its applications. According to Simon (2011), the telephones at our hands, the radios and televisions in our living rooms, the computer terminals with access to the Internet in our offices and homes, and our newspapers are all capable of providing rapid communication from every corner of the globe. Communication provides the senses for ships on the high seas, aircraft in flight, and rockets and satellites in space. Communication through a wireless telephone keeps a car driver in touch with the office or home miles away. Communication keeps a weather forecaster informed of conditions measured by a multitude of sensors, indeed, the list of applications involving the use of communication in one way or another is almost endless.

Simon (2011) also say that there are, of course, many other forms of communication that do not directly involve the human mind in real time. For example, in computer communications involving communication between two or more computers, human decisions may enter only in setting up the programs or commands for the computer, or in monitoring the results.

E-mail Client

Hutzler, et al (2007) defined an e-mail client or email reader or more formally mail user agent (MUA) as a computer program used to access and manage a user's email.

A web application that provides message management, composition, and reception functions is sometimes also considered an email client, but more commonly referred to as webmail.(Hutzler et al.,2007)

Like most client programs, an email client is only active when a user runs it. The most common arrangement is for an email user (the client) to make an arrangement with a remote Mail Transfer Agent (MTA) server for the receipt and storage of the client's emails. The MTA, using a suitable mail delivery agent (MDA), adds email messages to a client's storage as they arrive. The remote mail storage is referred to as the user's mailbox.

Emails are stored in the user's mailbox on the remote server until the user's email client requests them to be downloaded to the user's computer, or can otherwise access the user's mailbox on the possibly remote server. The email client can be set up to connect to multiple mailboxes at the same time and to request the download of emails either automatically, such as at pre-set intervals, or the request can be manually initiated by the user. (Hutzler, et al., 2007)

Android Operating System.

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google. Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear). The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it has also been used in game consoles, digital cameras, regular PCs, and other electronics. As of 2015, Android has the largest installed base of all operating systems. (Manjoo, Farhad 2015)

Android is popular with technology companies which require a ready-made, low-cost and customizable operating system for high-tech devices. Android's open nature has encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users or bring Android to devices which were officially released running other operating systems. The operating system's success has made it a target for patent litigation as part of the so-called "smartphone wars" between technology companies. (Ganapati, Priya 2010)

K-9 MAIL

K-9 Mail is an independent mail application for the Android operating system. It is made available as Free/Open Source Android Software under the Apache License version 2.0. The program is marketed as a more functional replacement for the default mail application included on most phones. It supports both POP3 and IMAP mailboxes and provides push notifications with IMAP.

This application has been downloaded from the Google Play Store between 5 million and 10 million times since its release and has been rated by over 40,000 people with either 4 or 5 stars. It has been widely reviewed and praised in the media as a replacement for the default mail application. (Paul, Ryan. 2011)

The Existing System in Afe Babalola University

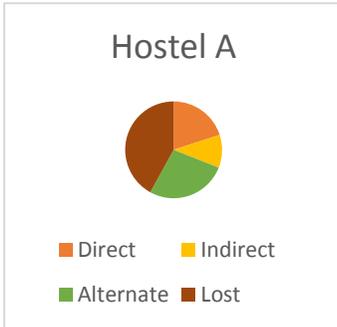
The existing system is made up of manual dissemination methods using notice boards and speaker systems. In the analysis of the system specified target audience of students were interviewed within the Afe Babalola University male and female hostels. The results are presented under the following headings.

Efficiency

In analyzing the efficiency of the current system, information was posted on notice boards and left for days. A total number of 300 students in three different hostels(100 each) were interviewed orally.

In the first male hostel, out of the 100 students that entered the hostel (100 is the base number for evaluation) only 20 students made use of the information system pasted on the notice boards in the hostel, about 11 said they had already received the information by viewing it at another location and about 27 other students had received the information either orally or digitally from a friend. In a one day period for our information in Hostel A, it had been directly accessed by 20 students, 11 had recognized it from another medium and 27 other students had gotten it from a friend or another form.

Hence in Hostel A.



Direct: Direct represents the number of people that directly accessed the information from the current information system.

Indirect: Indirect represents the number of people that accessed the information but from another location.

Alternate: The number of people that recognized the information but had not received it from any information system

Lost: The number of people oblivious to the information.

While in the second male hostel we will name Hostel B



Legend

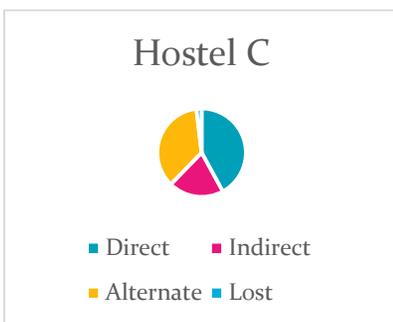
Direct: 27

Indirect: 15

Alternate: 30

Lost: 28

While in the Female hostel, Hostel C



Legend

Direct: 27
Indirect: 13
Alternate: 23
Lost: 37

Hence from our evaluation of the ABUAD Male Hostels it was discovered that the direct efficiency of the information system is 38% and this includes both direct and indirect since they had access to the information, the percentage lost is 36%.

The difference between both factors shows that this information system isn't really efficient and is largely dependent on alternate methods of distribution amounting to 27% of the total.

Speed

This is the rate of transfer of the information through the information system. From the analysis which is a direct visual analysis, within a 12 hour range of 8am-8pm, out of the 107 students only 67 students had recognized that information meaning in an average time of 12 hours, information could be accessed or was accessed by 67 students, meaning this manual information system had a transfer rate of about 6 students per hour.

A specific department was targeted to know the efficiency of using a media communication system and it was discovered that the information passed was only relevant to 20 hence such information was rendered worthless in the minds of the remaining 80 students.

Hence, a media communication system with only a 47% efficiency rate is not an efficient media of communication in a university environment due to the fact that they need to work with emergency and fast response and more than half of its efficiency is already wasted.

CAPACITY

There is no definite method for measuring the capacity of the current system with the spread of notice boards and posters, but in practice, the current information systems capacity is rather miniscule with an average of 10 notices or articles that can be posted at a given point in time.

Shortcomings of the Existing System

The current method of communication available in Afe Babalola University environment is not efficient and there is need for it to be addressed which necessitated this work.

The Proposed System

The system proposed by this project should be able to;

1. Individually specify the functions and features available for every characteristic user of the system.
2. Put up a level of abstraction that will allow for increased privacy and security.
3. Provision for vast capacity and processing of different file types.
4. It should ensure overall efficiency and portability and be able to monitor the conveyance of information through the system.
5. Monitor the type and sensitivity of information provided to the users.
6. To make allowance for specification and classification. A teacher can have the ability to easily specify for one class, department etc.
7. To provide an instant notification system that will enable real time action and conveyance of important information.
8. To allow for an overall user friendly and comfortable medium for the end user to be satisfied with.

The Proposed System

The proposed new system works by first registering a new user into the Email system by means of a school administrator to counter parties from outside the school registering into the email.

The new user inputs his login details with the school domain address into the system and further inputs in the server setting for the Afe Babalola University email into the application. The user is now registered into the application and naturally guided to the inbox of his new mail also making provision for him to add contacts and send emails to them also. The System also has a notification system that alerts the user when he/she has received a new email.

Design of the System Output

The proposed new system has varying outputs in the function that may not be used from the new user settings by simply changing the theme of the system. The application screen first displays the log in screen for the application at the first time being the only time you would use it if you input the correct settings.

System Architecture

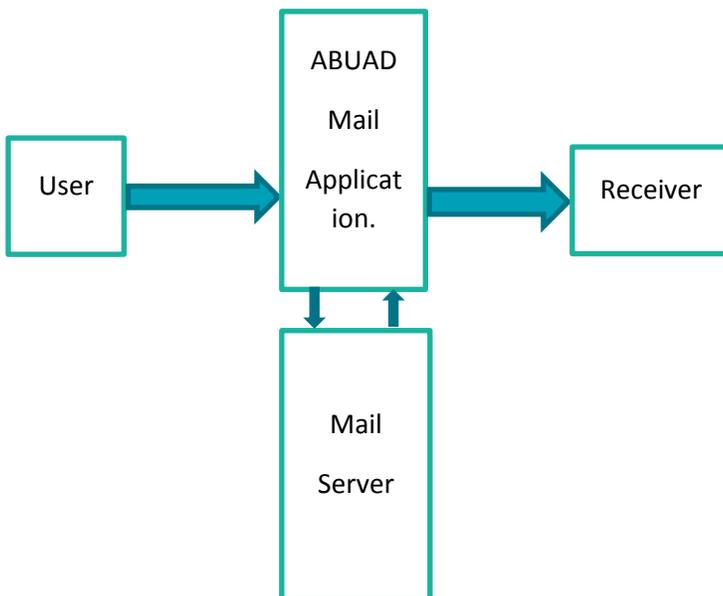


Figure 1: The proposed System Architecture

System Flowchart diagram

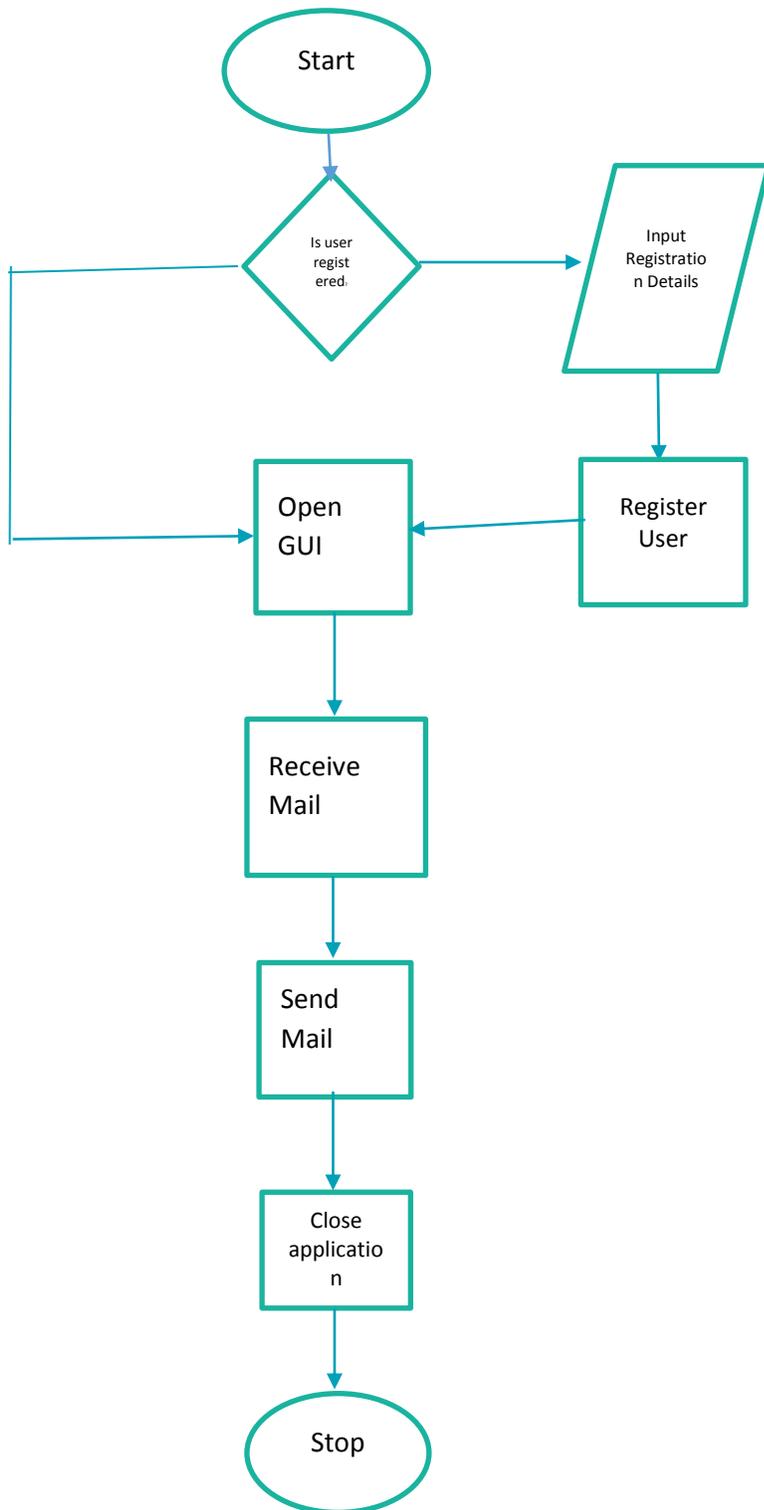


Figure 2: The proposed System Flowchart

Use case diagram of the System

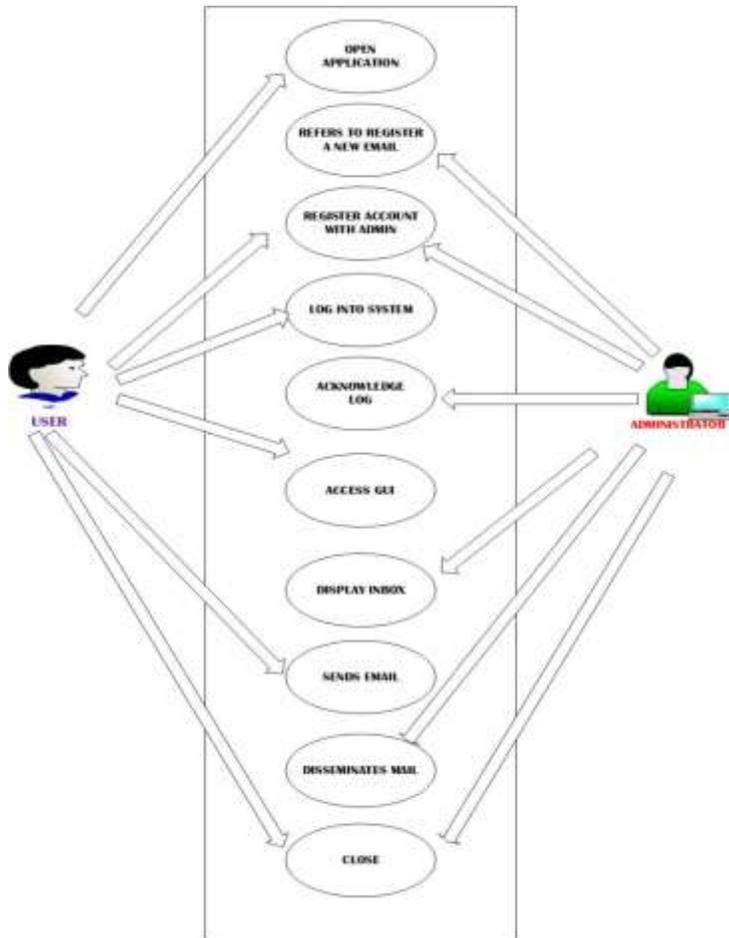


Figure 3: The Use Case Diagram for the Proposed System

System Design

The available prototype was made with Android Studio and APK Studio with K-9 Mail as the code host. K-9 Mail is an independent mail application for the Android operating system. It is made available as Free/Open Source Android Software under the Apache License version 2.0. The program is marketed as a more functional replacement for the default mail application included on most phones. It supports both POP3 and IMAP mailboxes and provides push notifications with IMAP.

Firstly, the available array of resources on the Android System were utilized by exploring Open source applications on the internet. Where K-9 mail was discovered. An open source mail application developed by k-9 dog-walkers. It was hosted on an online forum where developers were allowed to modify or edit the available code. Then the Android Studio application was made to work with it using the reverse engineering processes.

An APK Studio was run on the K-9 Mail android package which decompiled it and gave direct access to its Java resources within the application especially the Android Manifest of the exam and the class.dex file.

APK Studio was recompiled once again and ran our project in the emulator and the project ran efficiently. The main purposes of this system is to offer direct and instant communication between the student and lecturers, administrators etc.

So a registered student and lecturer can directly communicate with each other, have instant access to information and resources and can also help with assignments, project etc.

System Implementation



Figure 4: Login Page



Figure 5: The Setup Page

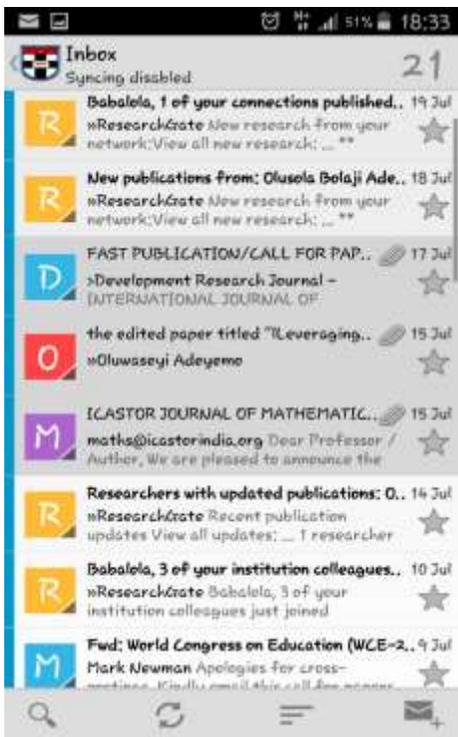


Figure 6: The MailBox

Conclusion

A mobile application was implemented for efficient information dissemination through the use of Android Mail facility. The proposed system will solve the problems discussed in the current system. The application will further improve communication between the students, lecturers and the university environment.

References

C. Hutzler; D. Crocker; P. Resnick; E. Allman; T. Finch (November 2007). "Email Submission Operations: Access and Accountability Requirements". *Best Current Practice*. IETF. Retrieved 24 August 2011.

"The Android Source Code: Governance Philosophy". *source.android.com*. December 17, 2014.

Manjoo, Farhad (2015-05-27). "A Murky Road Ahead for Android, Despite Market Dominance". *The New York Times*. ISSN 0362-4331. Retrieved 2015-05-27.

Ganapati, Priya (September 30, 2010). "Study Shows Some Android Apps Leak User Data Without Clear Notifications | Gadget Lab". *Wired.com*.

Haykin S. (2011). *Communications Systems* 4th Edition. Adeel Nayyer

Dhawan S.M. (2015). *Basics of Information Dissemination*

Paul, Ryan (2011). "Excellent K-9 mail app for Android keeps your messages on a leash". *Ars Technica*.

Yacoub, H.B. (2008) "Tips: How to install apk files on Android Emulator".

Open Handset Magazine.

Chibucks (2008). "Learn to Fish: General Structure of an APK". SDX Developer Forum. Simple Machines Forum

Frailey, C.M.A (2012). *Augmentative and Alternative Communication; Terms to know*.

Drew, O. (May 2013). "Google Launches Android Studio and New Features for Developer Console, Including Beta Releases And Staged Rollout". *TechCrunch*. AOL.

Dobie, Alex (May 15, 2013). "Android Studio unveiled at Google I/O keynote". *Android Central*. Mobile Nations.

Haslam, Oliver (May 16, 2013). "Download Android Studio IDE For Windows, OS X And Linux". *Redmond Pie*.

Honig, Zach (May 15, 2013). "Google intros Android Studio, an IDE for building apps". *Engadget*. AOL.

Ducrohet, Xavier; Norbye, Tor; Chou, Katherine (May 15, 2013). "Android Studio: An IDE built for Android". *Android Developers Blog*. Google

James Flynn and Sherlene Kentx (2011). *Introduction to Communication Systems*.

Rappaport, T. S. (1996). *Wireless communications: principles and practice*. Upper Saddle River, N.J.: Prentice Hall PTR.

Schwartz, M., Bennett, W. R., & Stein, S. (1996). *Communication systems and techniques*. New York: IEEE Press.

Kornai, A. (2008) *On the proper definition of information ETHICOMP 2008*