Improving Academic Advisor and Student Engagement via Development of an Integrated Mentoring System

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Abstract: The purpose of this study is to develop a web-based information system for managing interaction between an Academic Advisor (Mentor) and students (Mentees) in the context of Malaysian higher education institutions. A preliminary study was conducted at the Faculty of Information Management, University Teknologi MARA, Cawangan Kelantan. The prototype of the system is developed based on Rapid Application Development (RAD) methodology. This study addressed three problems; (1) lack of platform to manage interaction between lecturer and students, (2) lack of tools to effectively measure the level of student's satisfaction and welfare, and (3) lack of tools to effectively measure the level of Academic Advisor engagement with their mentees. To solve the research problems, a study was conducted in three phases; (1) review of previous literature, (2) prototype development of iMAMS, and (3) empirical study to measure user satisfaction towards iMAMS. As a result, this study introduces novel ideas of CPS Score, SWi Score, and STCC Code. The prototype of iMAMS is protected under Copyright Act 1987 and can be commercialized as a software product and mobile application. Potential clients are universities, schools, NGOs, and government agencies. The prototype of iMAMS can be downloaded from Google PlayStore and also accessible via http://imams.uitmapps.com/v2018.

Keywords: Engagement, mentoring, mentor-mentee, human interaction, iMAMS, and student's welfare.

1. Introduction

Engagement is considered as high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties (Schaufeli et al., 2002). It is reflected as a useful, emotionally honest and authentic because of its links with commitment, bonding and even affection (Woodruffe, 2006). According to Baron (2012), engagement is good; engaged staff to work harder, perform better, give better service and as a result contribute more to the bottom line. The engagement means different things in different contexts and the drivers of engagement will vary considerably across both organizations and industries and for engagement to happen, it requires inputs of satisfaction, motivation and effectiveness (Baron, 2012). Albrecht et al., (2015) highlighted engagement as a key source of competitive advantage and financial profitability, while Albrecht et al., (2018) defined engagement as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption.

In short, it is important for organizations to ensure positive and continuous engagement among staffs and stakeholders to achieve organizational goals. In the context of high educational institutions, students have become the focus and their level of engagement and experience with Academic Advisor in some

way will influence academic and non-academic performance. Based on observation in UiTM Kelantan, it is tough for Academic Advisor (Mentor) and student (Mentee) to find a suitable time for consultation and to manage consultation activities through conventional practice due to both mentor and mentee daily tasks and commitments. For instance, mentor's daily duty as lecturer require them to attend classes to give lectures, carrying various responsibilities related to academic administrative works and attend academic and organizational meetings. While for mentees, they have to attend daily classes to listen for lectures, completing assignments and participate in non-academic activities and programmes throughout the semester as fulfilling university requirements.

The purpose of this study is to develop a web-based information system for managing interaction to improve engagement between an Academic Advisor (Mentor) and students (Mentees) in the context of Malaysian higher education institutions. A preliminary study was conducted at the Faculty of Information Management, University Teknologi MARA (UiTM), Cawangan Kelantan. The respondents were seven lecturers and nearly 200 students. The prototype of the system is developed based on Rapid Application Development (RAD) methodology. This project is developed to manages the engagement between mentor and mentees as part of initiative to improves mentoring method in UiTM and is expected to solves some problems in mentoring such as; (1) lack of platform to manage interaction between lecturer and students, (2) lack of tools to effectively measure the level of student's satisfaction and welfare, and (3) lack of tools to effectively measure the level of Academic Advisor engagement as mentor with their mentees. The objectives of this project are; (1) to develop a web-based application as an interaction platform between Academic Advisors and the student, (2) to develop tools and measurement scale for measuring student's satisfaction while dealing with their mentor, and (3) to develop tools and measurement scale for measuring Academic Advisor engagement with their mentees.

2. Literature review

Development software is one example of important elements that need to be considered for the purpose of system prototype development. Most developers usually prefer to code or develop a programme using open source software for cost saving. Open Source Software (OSS) can be a piece of software that can be downloaded for free from the Internet, a type of software license, a community of developers, or even an ideology of access and participation (The Linux Foundation, 2017). According to Opensource (2018), the term open source refers to something people can modify and share because its design is publicly accessible. The open source software is a software with source code that anyone can inspect, modify, and enhance. In the other words, the authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it. According to Pickett (2018), the open source software usually includes a license for programmers to change the software in any way they choose. They can fix bugs, improve functions, or adapt the software to suit their own needs. Some of the main advantages of open source software are such as high-quality results when the source code is passed around, tested and fixed, bugs are identified and fixed quickly, and most of the software is free. There are 10 basic criteria of the open source software which are including; free distribution, source code, derived works, integrity of the author's source code, etc (Opensource, 2007). Examples of open source softwares that are commonly used for system or software development are including Hypertext Preprocessor (PHP), Hypertext Markup Language (HTML), Cross-platform JavaScript Library (Jquery), Cascading Style Sheet (CSS), Structured Query Language (MySql) database management system and others.

In term of system development process, Davies et al.,(1999) have defined Rapid Application Development (RAD) as an approach to information systems (IS) development which is much discussed in the practitioner literature. A number of people see RAD as a complete approach to information systems development in that it covers the entire life cycle, from initiation through to delivery (Davies et al. 1999). RAD is also known as a concept that was born out of frustration with the waterfall software

design approach which too often resulted in products that were out of date or inefficient by the time they were actually released (Techtarget, 2016). According to Airbrake (2016), RAD describes a method of software development which heavily emphasizes rapid prototyping and iterative delivery. RAD uses predefined prototyping techniques and tools to produce software applications. It encompasses a graphical user interface (GUI) development environment, allowing end users to easily drag and drop required software application components (Technopedia, 2018).

3. Research methodology

In the process of executing this project, three main stages were outlined;

1. **Literature Review**
   Survey of literatures to investigate some determinants and features of successful information system implementation. The output was published in proceeding & submitted as project report.
2. **Prototype Development**
   Development of system prototype based on the previous literature findings. Integrated Mentor and Mentee System (iMAMS) was developed using an open source PHP, HTML5, JQuery, CSS3, and MySQL database. The development process of iMAMS followed the Rapid Application Development (RAD) approach and the output was the iMAMS Application Software.
3. **Empirical Study**
   Input gathering regarding the use of system in term of user feedbacks. A set of questionnaires measuring users' satisfaction towards iMAMS will be developed by adopting and adapting previous studies instrument by Masrek and Gaskin (2016). Empirical data will be collected from students enrolled for the diploma and bachelor's degree programme at the Faculty of Information Management, Universiti Teknologi MARA, Cawangan Kelantan. The output of this study will be published in journal publication.

4. Result and discussion

4.1 System context diagram

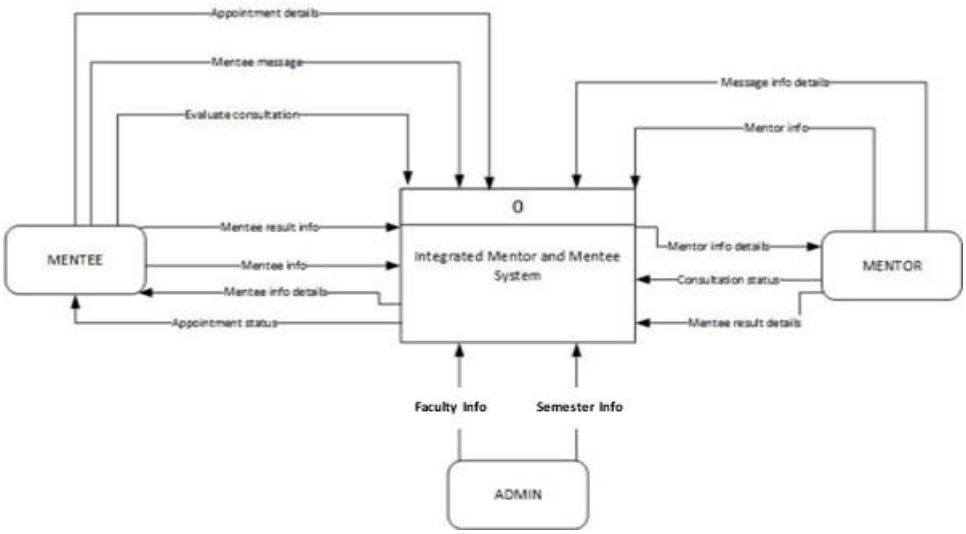

Figure 1: Context Diagram of iMAMS

Mentee is provided with several functions to updates and to views personal information, provides academic result information, proposes appointment session to mentor and to checks appointment status, sends message, and to evaluates appointment session. While for mentor, the functions provided are including to updates and views personal information, checks and monitor mentee academic result, approves appointment session proposed by mentee and views message. The admin is responsible to register faculty and semester into the system.

4.2 Interface design

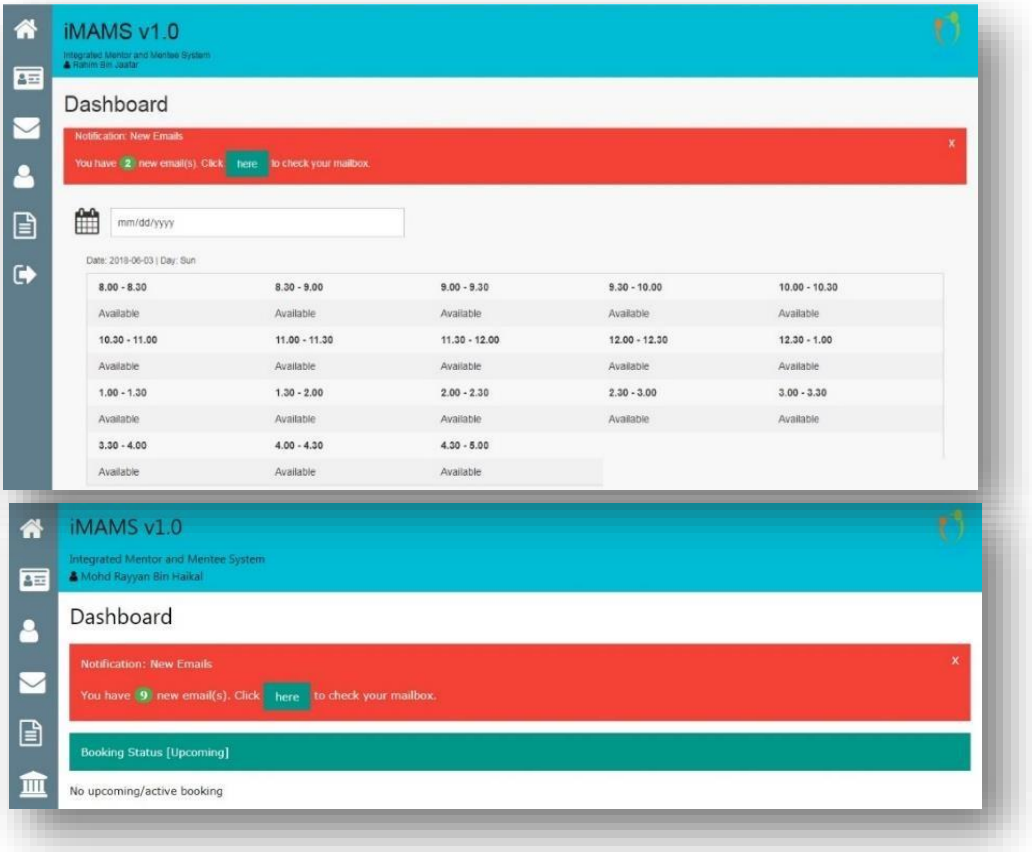

Figure 2: Mentor & Mentee Dashboard

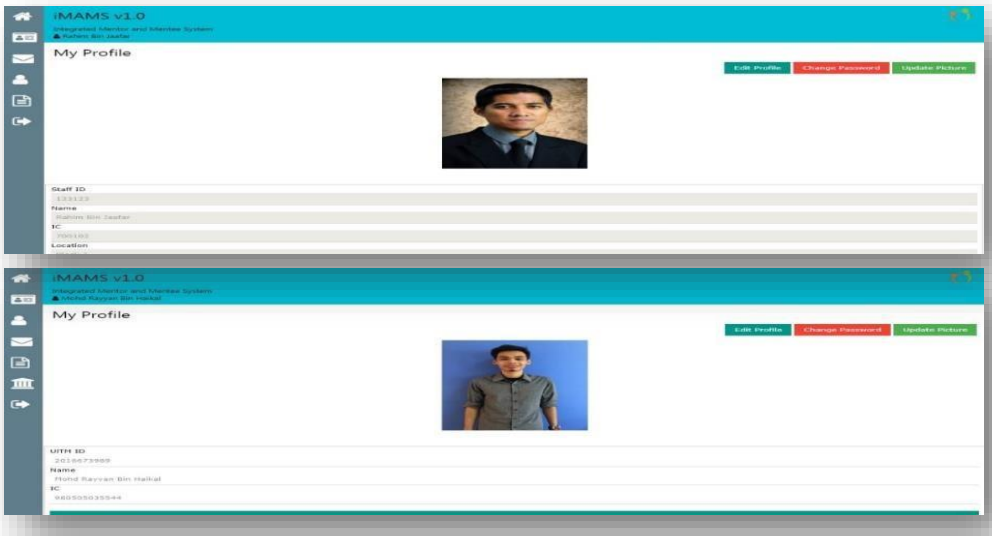

Figure 3: Mentor & Mentee Profile Page

5. Novelty

This project introduced four novel ideas of; (1) Consultation per Semester (CPS) Score – Measurement scale to measure Academic Advisor engagement with their mentees, (2) Students Welfare index (SWi) Score – Measurement scale to measure student's satisfaction while dealing with their mentor, (3) Student Transaction Confirmation Code (STCC) – An improved version of TAC code to ensure quality and reliability of communication records. The STCC could be send by three methods which are through Email, SMS, and mailbox, and (4) Circle of Trust (COT) – A medium for mentor and mentees to share experience and support each other.

6. Commercialization

iMAMS application system is protected by Copyright Act 1987 [5 (2) and 5 (3)] and can be commercialized as a software product to potential clients range from universities, schools, associations, NGOs, to government agencies. From the development of iMAMS, this project has given solutions to some issues related to the consultation activity by; (1) providing cheaper and easy solution to two-way communication tool for student and lecturer to solves the issues, (2) prevents duplication or clash of appointments, (3) facilitates mentor to checks and monitors mentees academic performance, (4) facilitates online consultation activities and enhances mentoring experience, and (5) enables mentor to manages consultation session and process.

7. Conclusion

iMAMS with the aim to enhance consultation process between mentor and mentees; assists its users by preventing and solving consultation issues. By the use of iMAMS, mentor and mentee are able to communicate via online and this system allows both users to communicate at anytime anywhere as long as their digital devices are connected to internet. The system will also help to enhances communication and consultation experience by preventing the duplication or clash of appointment with different mentees and solving other related issues. The performance and features of iMAMS application system can also be improved and upgraded from time to time to cater end user needs. In short, iMAMS is a web based information system designed to improves communication, interaction and relationship between mentor and mentees in UiTM Kelantan. Nevertheless, this application system is not limited for the use by high education institutions only, but also highly recommended to be commercialized to public and private sector organizations that aim to improve organizational mentoring experience.

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