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Cawangan Kelantan
Kampus Machang

2nd KILIEx 2019

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EXTENDED ABSTRACT

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Student Project Monitoring System (SPMS) Using Text Recognition

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***Abstract*—Recently, most of the courses at the university require students to complete a specific project within a given timeline. Some courses contain several projects that have to be completed in several phases. Therefore, managing and monitoring students project can be nontrivial. One of the solutions to simplify project monitoring is by developing a system that can monitor progress of student project. Thus, we design and develop a student project monitoring system known as SPMS. The uniqueness of the proposed system is it integrates text recognition algorithm into student project monitoring system. At the same time, the proposed system has advantage to simplify student project monitoring process rather than manual process especially during report submission for each project phases. It also can be accessed online through any web browser. As a result, the proposed work is capable to monitor progress of student project effectively for students and lecturers. The proposed work can be implemented in relevant industry such as in monitoring the worker's task.**

***Keywords*—monitoring system, student project, text recognition, Tesseract OCR**

I. INTRODUCTION

Nowadays, most of the courses in university require students to complete a specific project within a given timeline. Some courses contain several projects that have to be completed in several phases. Lecturers are normally assigned a project that consists of several tasks whether in group of students or individual. Students need to complete and submit each task based on a specific date given by the lecturers. There is a situation that students submit their tasks at lecturer's room without meeting directly with their lecturer. They need to ask their lecturer in order to know the status of their submissions such as accepted or require a resubmission. This situation may produce problems to both students and lecturers in handling project progress. Therefore, managing and monitoring students project can be nontrivial for the lecturers. In this situation, project monitoring is very important to monitor students' project. Project monitoring can be defined as a process of keeping track of all project-related metrics including team performance and task duration, recognizing possible problems and taking corrective actions necessary to guarantee that the project is within budget, scope, and meets the specified deadlines [1].

One of the solutions to simplify project monitoring is by developing a system that can monitor progress of students' project [2]. Thus, we design and develop a student project monitoring system known as SPMS to monitor several students' project submission report such as project proposal, project implementation and final report. In this project, there are two main objectives to be achieved. The first objective is to design SPMS to effectively monitor the progress of student projects by lecturers. The second objective is to implement text recognition algorithm on SPMS in order to automate the report submission approval. The following sections will highlight the details of the SPMS project.

II. METHODS

To complete this project, there are two stages of process which are coding and interface design and text recognition algorithm.

A. Coding and Interface Design

To create online monitoring system using SPMS, we use PHP as a programming language and Notepad++ as an integrated development environment (IDE). PHP is used to create coding for web development of SPMS. PHP has many

advantages such as an open source language, free of cost and cross platform [3]. On the other hand, Notepad++ is a free source code editor that supports several languages such as PHP and C++. In SPMS, there are many interfaces has been developed such as interface for homepage, registration page, login page, view project profile page and enrol project page.

B. Text Recognition Algorithm

SPMS integrates text recognition algorithm to automate report submission approval as shown in Fig.1. In this project, we used Tesseract OCR. OCR is a short form for optical character recognition. OCR is one of the methods that converts the printed or scanned image document into an editable text document [4]. In general, Tesseract OCR is used to recognize characters from images. It is an OCR engine for various operating system including Windows. It was measured as one of the most accurate open source OCR engine and has been applied in many researches [4], [5].

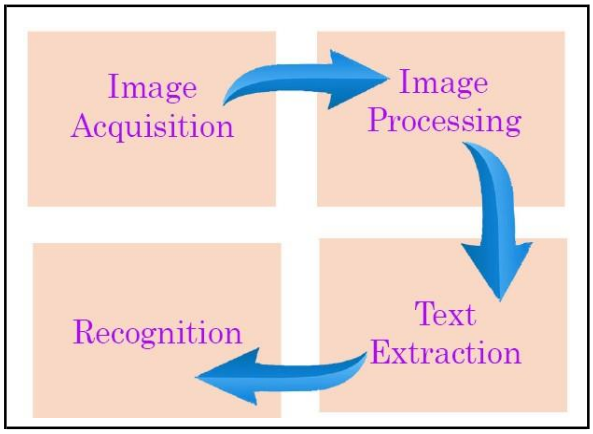

Fig. 1. Text recognition process

Specifically, SPMS integrates Tesseract OCR to recognize project title in cover page of student report. Then, it will convert into text and compare with selected task or phase during project submission report. If the text and the selected task is not match, the system will set as "Not approved". Therefore, student needs to resubmit a correct document of report.

III. RESULTS AND FINDINGS

Based on the objective, this section describes about interface of SPMS and automation of report submission approval.

A. Interface of SPMS

This SPMS has two main modules as depicted in Fig.2. User Management module is used for registration new user and update user information. On the other hand, Project Management module is used to manage progress of student project. Both of the module is used by the lecturer and student with different features.

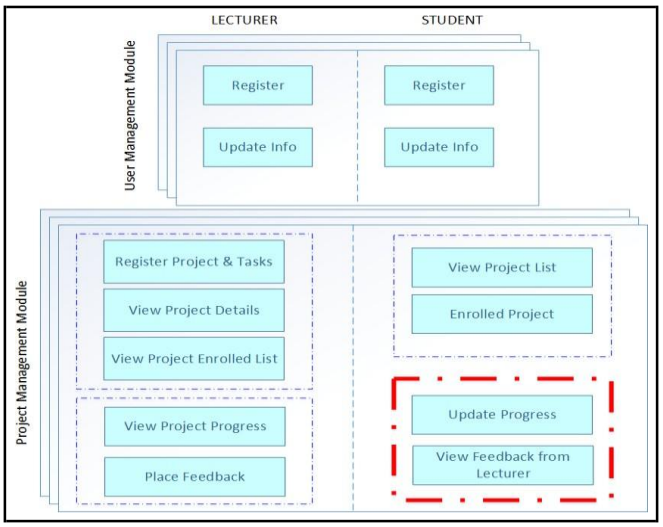

Fig. 2. Two main modules of SPMS

1) User Management Module

Two main functions of this module are user registration and update user information. New user need to register first before they can use the system. There are three types of user; admin, student and lecturer. The existing user can update user information after the registration process such as change password.

2) Project Management Module

This module has several different functions for lecturer and student. The lecturer can register new project and project details, view project details, view list of enrolled projects by student, view project progress and add comment or feedback to student task. Fig. 3 and Fig. 4 show example of interface for view project profile and view project progress by lecturer.

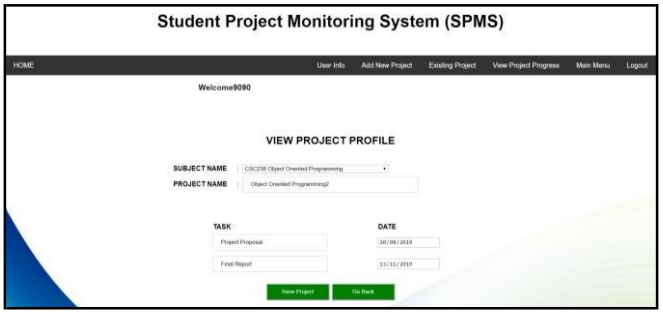

Fig. 3. Interface of view project profile

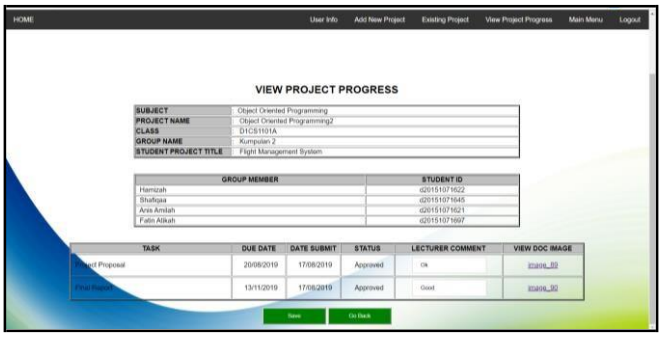

Fig. 4. Interface of view project progress by lecturer

On student's side, they can view project list and enrol project. To enrol student project, they need to add their project title, group name and add group members as shown in Fig. 5. Moreover, student can update the progress by submitting the report based on the due date set by the lecturers. They also can view feedback from lecturer whether their task is accepted or require for correction and need to resubmit new report.

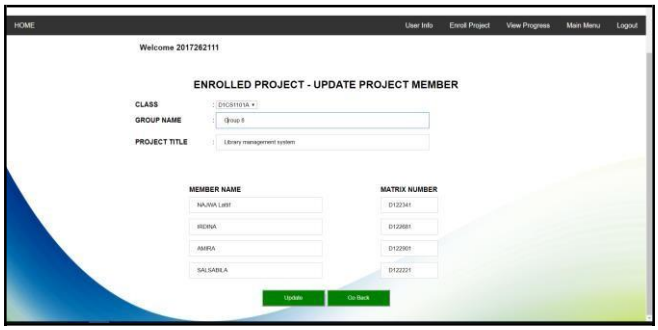

Fig. 5. Interface of enrol project by student

B. Automation of Report Submission Approval

As mentioned in Part A in this section, student can update project progress by submitting the report based on the due date set by the lecturers. For an example, if the project has two phases or tasks, so student needs to submit two different reports based on given due date. Therefore, student need to upload file for project report and select the specific phase or task as depicted in Fig. 6. SPMS will automatically recognize the text in the cover page by using text recognition algorithm. The submission of correct report will be assigned as "Approved" while the submission of wrong report will be assigned as "Not Approved". The system also will automatically set the submitted date into the system. By using the automation of report submission approval, it can produce an effective way of monitoring student project especially for lecturer.

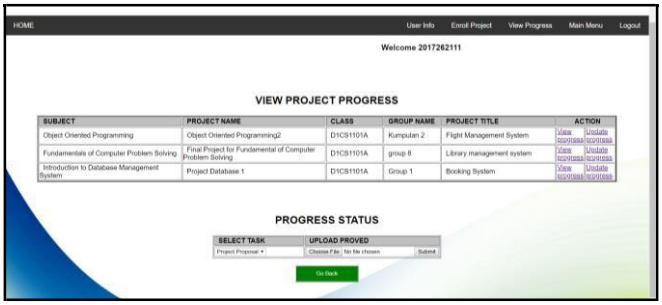

Fig. 6. Interface of submission project report

IV. CONCLUSIONS

As a conclusion, the proposed SPMS is capable to monitor student's project effectively for lecturers and students. The advantage of the SPMS is it can simplify student project monitoring process and can be accessed online through web browser. The limitation of the SPMS is this system can only recognize text for project title in cover page of project report. For future enhancement, we will upgrade this system to recognize the group members and other information in the cover page. The proposed system can be implemented in relevant industry such as in monitoring the worker's task.

ACKNOWLEDGMENT

The authors would like to thank the Universiti Teknologi MARA Cawangan Kelantan for encouragement of this project.

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STUDENTS' e-PROFILING

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Abstract— ***Having a complete and adequate data profiling system about students is very vital as it can be used to obtain statistics or informative summaries on any matters concerning students. Currently, in UiTM Cawangan Kelantan (UiTMCK), the students' data could be found in the data system which is only available at the Hal Ehwal Akademik Department but with limited access. There are two types of data keeping in UiTMCK namely paper printed version and soft copy. The data of paper printed version are kept in the students file gathered during registration and are quite comprehensive whereas the soft copy data is concerned students' academic results only. Thus, to have a one stop-center and fast-tracking of students' data profiling, a system to collect information is created known as Students' e-Profiling (SeP). This system is meant for collecting data in order to get information about students' background concerning non-academic matters. The system is unique in the sense that it can be accessed either by using QR code or a link for the students to fill up required particulars. The system is beneficial as it could help academic staff to identify the students in terms of income, health or any physical limitation that needs further attention. The information gathered through this system could be used in the process of zakat selection, food bank selection, time table preparation etc.***

Keywords— E-Profiling, students, Information, Selection

I. INTRODUCTION

Having a complete and adequate data profiling system about students is very vital as it can be used to obtain statistics or informative summaries on any matters concerning students. Currently, in UiTM Cawangan Kelantan (UiTMCK), the students' data could be found in the data system which is only available at the Hal Ehwal Akademik Department but with limited access. There are two types of data keeping in UiTMCK namely paper printed version and soft copy. The data of paper printed version are kept in the students file gathered during registration and are quite comprehensive whereas the soft copy data is concerned students' academic results only. Thus, to have a one stop-center and fast-tracking of students' data profiling, a system to collect information is created known as Students' e-Profiling (SeP).

Identify applicable funding agency here. If none, delete this text box.

II. PROBLEM STATEMENT

Academic staffs especially lecturers found that the data are hardly to be accessed as well as time consuming to obtain them. The data which are available in the hard copy version is very difficult to be analyzed. Electronic data can be accessible for student's result only The limited information on students' background lead to the being powerless for management of Faculty of Accountancy to foresee the students' problem especially the monetary and health problem. Failure to foresee this problems might lead to the less timely decision making on the students' issue which cause negative impact on students' performance.

III. OBJECTIVES OF THE STUDY

1. To collect and access students' data without facing any difficulties.
2. To have a complete and adequate data profiling system that could be used to obtain statistics and informative summaries on any matter related to students.
3. To have a one stop center of students' data collection.
4. To utilize the advantage of current technology advancement in respect of data collection and analysis if necessary. Units

IV. SIGNIFICANCE OF THE STUDY

1. Less time consumption in collecting, assessing as well analyzing data.
2. The data collection could be used to cluster the students based on the income group, leadership and physical and mental health

V. METHOD

This project is an applied research to solve problem on data collection. The instrument used in the project is Google form that consists of series of questionnaires. The questionnaires are developed on non-academic matters concerning students' income group, students' leadership quality and students' health. This study used convenience sampling, where the questionnaires in the Google form are distributed to the part one students of AC 110 via a link which can be accessed using mobile phone or computer.

The method we used in our research is a survey in the form of questionnaires which are divided into 3 parts:

1. First part concern about the students' background of their family's income, number of family members and etc.
2. Second part is to identify the students' leadership ability.
3. Third part concern on the students' health, the questionnaire developed is to identify the students' physical and mental health this part also concerned on the physical inability.

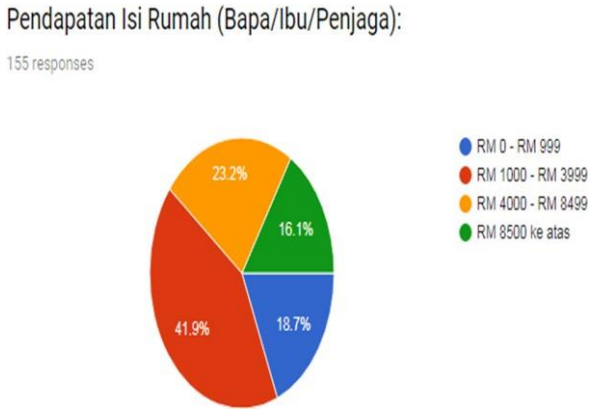
The first and second part of questionnaire developed based the needs of information about the students by lecturers especially the management of AC110. The income scale is based on Malaysians income group which are categorised into three different income groups: Top 20% (T20), Middle 40% (M40), and Bottom 40% (B40). This is based on the Department of Statistics' (DOSM) Household Income and Basic Amenities (HIS/BA) survey of 2016.

The third part of the questionnaire which consist of students physical and mental health. The mental health questions were replicate from "Take a Mental Health Quiz" from Goldberg (1996) .

VI. RESULTS AND DISCUSSION

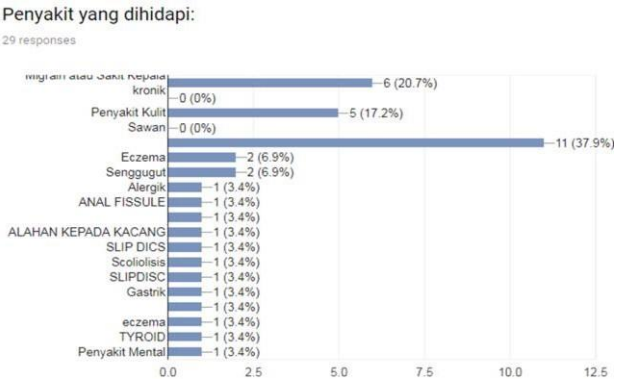
More than fifty percent (50%) respondents respond within 4 hours after the link to the questionnaires is provided to them, the average time consumption for each respondent in answering the questions is only within five minutes. After 24 hours after the link is being provided to the part one students of AC 110, the response rate turned out to be one hundred percent.

Fig. 1. Houshold Income



Based on figure 1 above, 41.9 % are from the income group of income RM1,000-RM3,999 which can be considered as B40, 23.3% of the respondents can be categorized as M40 with the income range of RM4000-RM8499. 18.7% of respondents with the income range of below RM1,000. This group is considered poor by "Kementerian Perumahan dan Kerajaan Tempatan". The income range of RM8500 and above which is from the T20 group is 16.1%.

Fig. 2. Health Issues



Based on figure 2 above, 29 respondents are identified with health problem,17 types of health issues identified with the highest percentage comes from…..(37.9%), migraine (20.7%) and 2 respondents are identified with slip discs. 1 respondent is identified to have mental issues.

The information gathered could be used in the process of the food bank and zakat selection, this selection can be based on the data of family income and background. Those students in category of poor should be highlighted to ensure that they get the proper assistance especially in terms of monetary. The time-table preparation can be based on the students' mental and physical health so as to cater those who are having limited ability.

Thus the accessibility of data by the respective person is very important to ensure planning and decision making process regarding the students can be made in timely manner, this system will assist the lecturers especially the academic advisor and the management of faculty to identify the students with potential problem in terms of monetary or health, the proactive measure can be done to overcome the potential problem.

This Students' e-Profiling has ensure that data of the students can be collected and accessed without facing any difficulties but without violating the confidentiality since only respective person is responsible for the information. A complete and adequate data profiling system that could be used to obtain statistics and informative summaries on any matter related to students.It is also a one stop center of students' data collection.this system is used to utilize the advantage of current technology advancement in respect of data collection and analysis if necessary instead of using manual system.

VII. CONCLUSIONS

SeP is beneficial as it help academic staff to identify student's problem related with income health physical limitation due to no cost incurred in developing and implementing it. The system is deemed to be cost effective, thus could be applied to Universiti Teknologi MARA, Cawangan Kelantan (UiTMCK) as a whole.

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We would like to thank UiTM for giving us the opportunity to involve in this event.

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Academic Advisors' Record Keeping and Monitoring System (AA-ReKeMoS)

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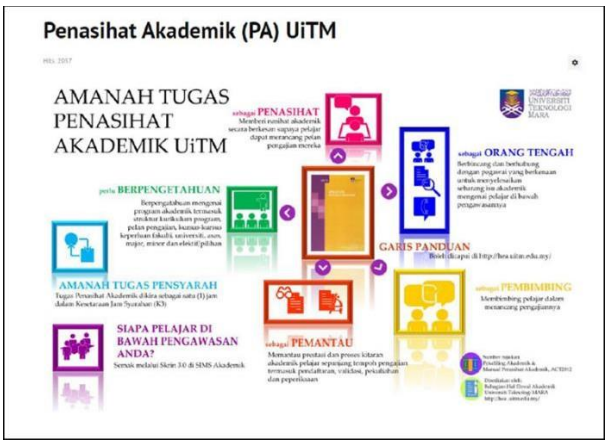
Abstract*—UiTM Academic Advisors or commonly known as 'Penasihat Akademik (PA)' are appointed among lecturers to be responsible for a group of students. PA is responsible to advice those students with regards to their academic planning, to monitor their academic activities as well as academic achievements. PA can play an important role in ensuring the students meet UiTM's academic objectives which include graduating on time with CGPA more than 3.00. However, due to demanding schedule of PA as lecturers, they seem to be having lack of time to schedule meetings with the students and unsystematic recording of PA-students meetings will make monitoring almost impossible. Consequently problematic as well as weak students cannot be identified sooner for appropriate actions leading to poor academic performance that would affects faculty's overall performances. Therefore, Academic Advisors' Record Keeping and Monitoring System (AA-ReKeMoS) is necessary to enable PA- students' activities to be frequently updated and the information can be made accessible to Head of Faculty for monitoring purposes. Apart from monitoring individual PA's activities, Head of Faculty can also obtain information about each student from the system. AA-ReKeMoS is cheap, manageable and can be widely applied since it utilized Microsoft Excel and Google Drive that can be easily accessed and are free for all the Academic Advisors.

Keywords*—academic advisors, Google Drive, Microsoft Excel, monitoring, record keeping

I. Introduction

Academic advising system is created to assist an academic institution in guiding students to perform excellently in accordance to university's vision and mission [1]. By appointing the academic advisors or commonly known as 'Penasihat Akademik' (PA) among lecturers, the advising, monitoring as well as most of university's academic functions and responsibilities are empowered to the academic advisors. In Universiti Teknologi MARA (UiTM) Cawangan Kelantan, each academic advisor is assigned to a group of students normally not more than 50 students. Academic advisors are responsible to guide and monitor students' academic performance throughout the years of their studies in UiTM [2]. With smaller groups of students as compared to the mass numbers of students that the university need to manage and monitor every semester, academic advisors can focus more on these job responsibilities.



II. Problem Statement

PA is responsible to advice those students with regards to their academic planning, to monitor their academic activities as well as academic achievements. PA can play an important role in ensuring the students meet UiTM's academic objectives which include graduating on time with CGPA more than 3.00. However, due to demanding schedule of PA as lecturers, they seem to be having lack of time to schedule meetings with the students and unsystematic recording of PA-students' meetings will make monitoring almost impossible.

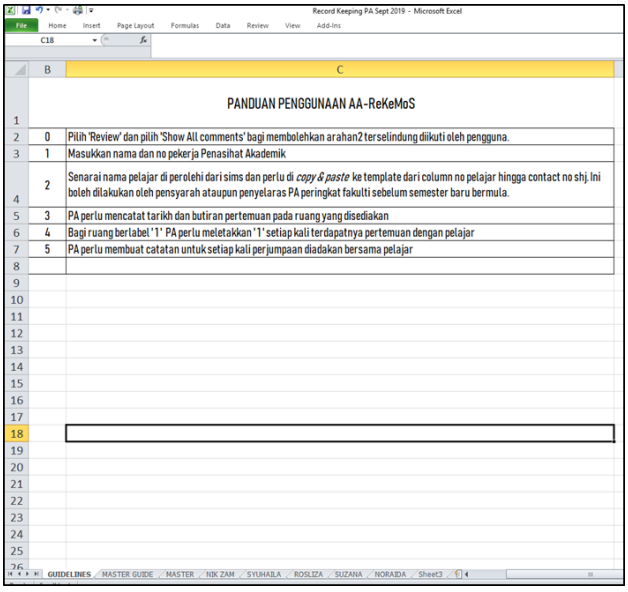
Consequently, problematic as well as weak students cannot be identified sooner for appropriate actions leading to poor academic performance that would affects faculty's overall performances.

III. Objectives

Therefore, Academic Advisors' Record Keeping and Monitoring System (AA-ReKeMoS) is necessary to enable PA- students' activities to be frequently updated and the information can be made accessible to Head of Faculty for monitoring purposes. Apart from monitoring individual PA's activities, Head of Faculty can also obtain information about each student from the system. AA-ReKeMoS is cheap, manageable and can be widely applied since it utilized Microsoft Excel and Google Drive that can be easily accessed and are free for all the Academic Advisors.

IV. Materials And Methods

AA-ReKeMoS was first developed using Microsoft Excel and was tested several times by its potential users. This process is to ensure that the final developed system will be more user-friendly. Once the formulated excel template is accepted, it will then be shared with the Academic Advisors in Google Drive. Therefore, each potential users of the system are required to have Gmail to allow them to access the Google drive. Every Academic Advisor is required to update information with regards to his/her students at the beginning each semester since the list will change from time to time.



PANDUAN PENGGUNAAN AA-ReKeMoS

0	Pilih 'Review' dan pilih 'Show All comments' bagi membolehkan arahan2 terselindung diikuti oleh pengguna.
1	Masukkan nama dan no pekerja Penasihat Akademik
2	Senarai nama pelajar di perolehi dari sims dan perlu di *copy & paste* ke template dari column no pelajar hingga contact no shj. Ini boleh dilakukan oleh pensyarah ataupun penyelaras PA peringkat fakulti sebelum semester baru bermula.
3	PA perlu mencatat tarikh dan butiran pertemuan pada ruang yang disediakan
4	Bagi ruang berlabel '1' PA perlu meletakkan '1' setiap kali terdapatnya pertemuan dengan pelajar
5	PA perlu membuat catatan untuk setiap kali perjumpaan diadakan bersama pelajar

Fig. 1. Guidelines for AA-ReKeMoS

Users of AA-ReKeMoS are provided with step by step guidance (Figure 1) on what information they need to key-in and update in order for the system to work effectively.

Firstly each academic advisor need to copy the 'Master' sheet and labelled it with their first name. Each academic advisor in a faculty is required to complete the process so that the whole AA-ReKeMoS of a faculty would contain the worksheets for all the faculty's members. This then would enable the monitoring process to be done by the Head of Faculty later throughout the semester.

Then the academic advisor need to copy the namelist of their advisees from Students' Information Management System (SIMS) and paste it to their own sheet as shown in Figure 2.

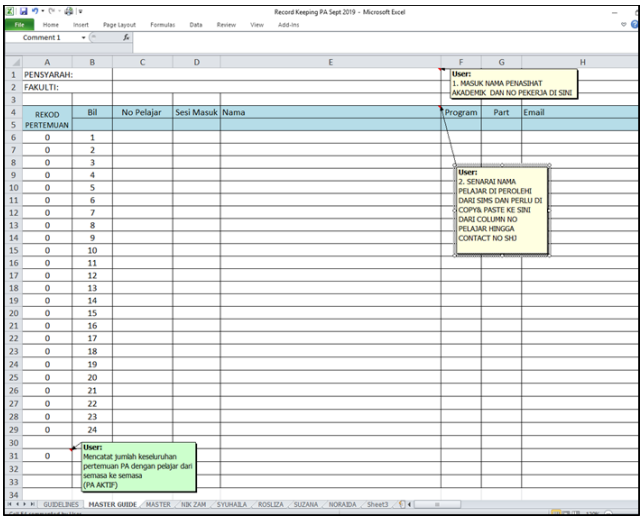


Fig. 2. Guidelines for AA-ReKeMoS

Once the name list is copied to the system, the academic advisor can record all meetings as well as consultations made with the advisees accordingly (Figure. 3). With this record keeping process, the academic advisors can systematically maintain the meetings' records with all their advisees throughout the semester. Since AA-ReKeMoS is shared on Google Drive, any information key-in by each academic advisor would be updated accordingly online.

As such, Head of Faculty can monitor the academic advisors' activities with regard to the academic advising and guiding students throughout the semester. The Head of Faculty would be able to identify who is actively involved with their advisees throughout the semester as well as aware of which academic advisors that manage to play their roles accordingly.

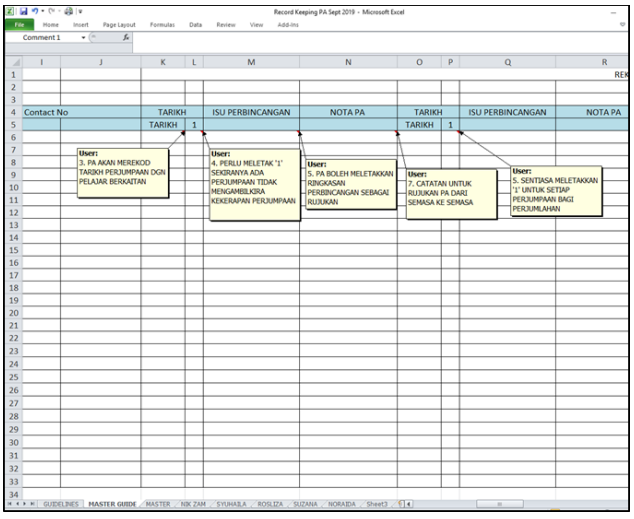


Fig. 3. Meetings and Consultations Recording Sheet

Apart from recording meetings and consultations by academic advisors, AA-ReKeMoS also notifies the frequency each advisee meets and consults their academic advisor (Figure 4). Therefore, the consultations and guidance provided to each

advisee/student especially those potential problematic students can be obtained and monitored. Such information would be relevant and usable in discussing matters related to any student with academic issues or even personal issues. The Head of Faculty may need to identify whether these potential problematic students received appropriate guidance and advice from the academic advisor.

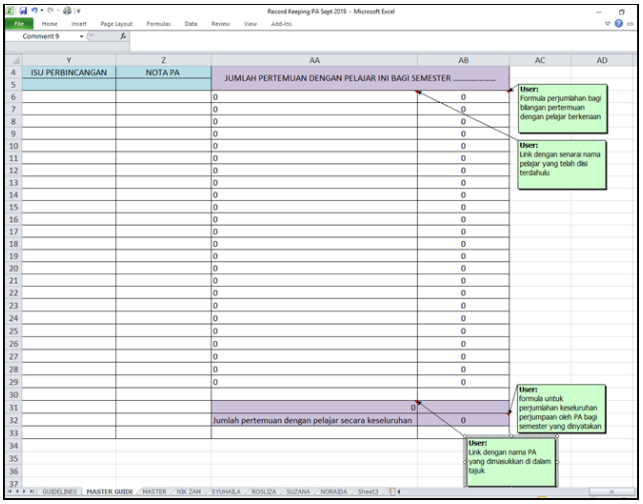


Fig. 4. Each Advisee Meetings and Consultations Record Sheet

V. CONCLUSIONS

AA-ReKeMoS is cheap, manageable and can be widely applied since it utilized Microsoft Excel and Google Drive that can be easily accessed and are free for all the academic advisors. This system is very important because it will strengthen the role of UiTM's academic advisors and supports UiTM's academic objectives. AA-ReKeMoS would assist systematic recording process and enable access to the necessary information quickly. Consequently, it would ensure students' needs of guidance are not abundance by the responsible parties including academic advisors.

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Synergism of Virgin Coconut Oil and Mulberry Leaves Extract as Agent in Free Alcohol Hand Sanitizer

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***Abstract*— Hand hygiene is foremost techniques in preventing the spread of any health care-associated infections and keeping the health cost under control. Hand sanitizer is the key for hand hygiene when limited resources and water access. The problem is alcohol-based hand sanitizer can cause health issues such as drying skin and alcoholic poisoning. Therefore, alcohol-free hand sanitizer becomes the next approach. Investigations on hand sanitizer without alcohol for their effectiveness on microorganism's infection are still scarce. Hence, the main objective of this study is to investigate the effectiveness of alcohol-free hand sanitizer on microbial hands carriage. The main focus is on inhibiting the growth of pure cultured bacteria from hands which were Streptococcus sp. and Staphylococcus sp. Production of alcohol-free hand sanitizer using natural products (virgin coconut oil and mulberry leaves extract) as antibacterial agents as an alternative to the current hand sanitizers in market. In the study, the antibacterial activity of alcohol-free hand sanitizer was compared with clinical hand sanitizer, commercial hand sanitizer and sterile water using disc diffusion method. Undoubtedly, clinical hand sanitizer showed the highest inhibition zone with 21 mm for both types of bacteria. On the other hand, alcohol-free hand sanitizer and commercial hand sanitizer surprisingly obtained almost similar size of inhibition zone with 14-14.5 mm. As conclusion, the alcohol-free hand sanitizer was effective in resisting the bacterial growth on hands and as promising option particularly in health impacts after use. The tested product can be introduced to selected market segments for example local pharmacies, clinics and hospitals.**

Keywords*— *hand hygiene, hand sanitizer, bacteria, antibacterial activity

I. INTRODUCTION (*HEADING 1*)

Hands are one of the main routes of transmission for microbes and any infectious agents among individuals [1]. As a personal protection, hand hygiene is foremost techniques in preventing the spread of any health care-associated infections and keeping the health cost under control [2]. Hand sanitizer is an alternative method for hand hygiene when limited resources and water access. Alcohol-based hand sanitizer is widely used especially in healthcare settings [3] but it distresses on many health issues such as drying skin, flammable and alcoholic poisoning. In addition, the alcohol hand sanitizer efficacy is reliant on amount of product is used, good practice, and usage consistency [4]. Therefore, alcohol-free hand sanitizer becomes the subsequent approach. Nevertheless, one of familiar in market in these days of alcohol-free hand sanitizer is Benzalkonium Chloride. It is comprised an active ingredient of quaternary ammonium but non-flammable, and relatively non-toxic with the low concentrations of Benzalkonium [4]. The use of chemicals as main agent in killing the microbes are still in safety concern among consumers.

There are various medicinal plants with bioactive compounds can be as antimicrobial agents and act alternative approach for antibiotic drug resistance to treat many infectious diseases. In many studies, Mulberry leaves (Morus alba) [5, 6] and virgin coconut oil (VCO) [7] are highly potential in contributing as antimicrobial agent by giving wide bioactivity spectrums against infectious organisms through multiple applications such as cosmetics, pharmaceutical and hygiene. Therefore, reliability of synergism between Mulberry leaves and VCO against infectious microorganisms in alcohol-free hand sanitizer is still not yet produced and investigated. The effectiveness of this alcohol-free hand sanitizer was then investigated by comparing with other types of hand sanitizers.

II. MATERIALS AND METHODS

A. *Pure bacteria culture*

The present study was conducted at Laboratory in Faculty of Applied Sciences, Tapah Road, Tapah, Perak, Malaysia.. Bacteria from hands were cultured directly from bare hands of two persons onto nutrient agar (NA). The NA plates were incubated in incubator 35oC and observed after 24 hours. All different types of colonies appeared were stained by using Gram staining to identify bacteria type. A total of four subcultures of bacteria were conducted and stained to get pure bacteria. The pure bacteria were clarified after obtaining similar types of bacteria for every subculture. Streptococcus sp. and Staphylococcus sp. were obtained from the 2 different individuals.

B. *Extraction of mulberry leaves*

Fresh mulberry leaves were collected in Tapah Road, Perak were picked, washed and dried in an oven at 50oC. The dried leaves were ground by using mortar pestle. A total of 15.05 g of dried mulberry leaves powder was weighed and soaked in 150 ml of 95% ethanol for 24 hours to acquire the extract. The homogenous extract solution was filtered by using the vacuum pump to get the pure solution of mulberry without impurities. The filtered solution was put into the sonicator to agitate particles in a sample. The rotary evaporator was used to distil the sample solution at 60°C. Therefore, the pure extraction of mulberry leaves was obtained in which the colour of solution was darker than the original colour.

C. *Mixture of alcohol-free hand sanitizer*

All these procedures were conducted in the biosafety cabinet to prevent any contamination. Sterile water was put into a beaker, followed by glycerine, solubilizer, and virgin coconut oil. The solution was stirred until became as homogenous mixture. Then, emulsifier was added to the solution and mixed thoroughly. Extract mulberry leaves was then added into the solution and mixed until completely homogeneous. The essential oil was lastly added with three drops while stirring it continuously. After, the solution of alcohol-free hand sanitizer was completely mixed, it was poured into universal bottle and kept it at room temperature.

D. *Antibacterial activity by disk diffusion method.*

Disk agar diffusion technique described was used for the evaluation of antimicrobial efficacy of hand sanitizers. The disk used in this method from Whatman filter paper that was cut into round shape with 6mm diameter. The disk papers were autoclaved before continuing for antibacterial activity. The two strains of pure bacteria obtained (Streptococcus sp. and Staphylococcus sp.) were swabbed entirely onto all NA plates surfaces. After that, the sterile disc papers were dipped into each solution of hand sanitizer including sterile water separately for 2 minutes before putting onto NA plates with pure bacteria. Every NA plate were divided into 4 divisions and every solution tested were conducted in duplicates. All NA plates were incubated for overnight in incubator at 35ºC. On the next day, inhibition zones of each tested solution of NA plates were observed and measured by using a ruler. All the data were recorded in mm. The alcohol-free hand sanitizer, clinical hand sanitizer, commercial hand sanitizer (Dettol) and sterile water were compared by disk diffusion method against the pure culture of Streptococcus sp. and Staphylococcus sp. The area used for conducting all the experiments were ensured near to the flame of Bunsen burner to reduce any contamination.

III. RESULTS AND FINDINGS

The diameter sizes of the inhibition zones were measured and compared between all the solution samples against the pure culture of Streptococcus sp. and Staphylococcus sp. (Figure 1). The solutions were alcohol-free hand sanitizer, clinical hand sanitizer, commercial hand sanitizer and sterile water. Clinical hand sanitizer showed the highest inhibition zone because it contains high volume of alcohol derivatives such as ethanol, n-propanol and isopropanol with typically act as antimicrobial effective above than 70% from total volume. The rub of alcohol hand sanitizer onto skin is completely evaporated, regularly requires only 15 to 30 seconds [4]. Though, the alcohol itself flammable can cause skin drying and not suitable for long usage. Alcohol based hand sanitizers were found still not effective to destroy some species of microorganism, as an example is E.coli. Alcohol-free hand sanitizer is potentially effective as commercial hand sanitizer proven by showing almost similar size of inhibition zone for both strains of bacteria. Commercial hand sanitizer is generally alcohol–based, whereas our hand sanitizer was made from non-alcohol based (glycerine) and other natural ingredients that is safe to be used. Glycerine is a simple polyol compound that can use as a gel-based and humectant in hand sanitizer as long as moisturize the skin without any irritation. Mulberry leaves extract was found to be the best antimicrobial properties against most bacteria and fungus [8, 9]. The VCO is also fruitful in alcohol-free hand sanitizer because many studies found its antibacterial properties against most of bacteria strains including Streptococcus sp. and useful for skin treatment. The potency of VCO as antimicrobial agent is due to lauric acid with acidic pH nature [7]. In addition, the use of lemon essential oil was astringent and yet to be well known as antibacterial properties. All of these natural ingredients were very good in attributing alcohol-free hand sanitizer that defeated commercial hand sanitizer as already favoured in market. In fact, some studies on commercial hand sanitizer have observed an apparent increase in the concentration of bacteria in handprints impressed on agar plates after using [10].

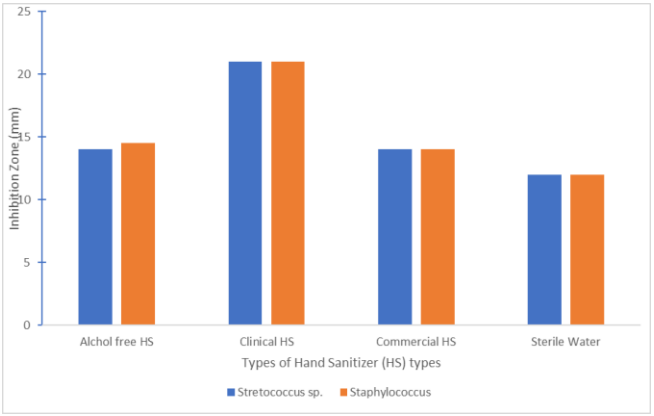

Figure 1: Comparison of different hand sanitizer (HS) including alcohol free hand sanitizer against Streptococcus sp. and Staphylococcus sp. by antibacterial activity.

IV. CONCLUSIONS

As a conclusion, the combination of mulberry leaves extract and VCO in alcohol-free hand sanitizer was effective in resisting the bacterial growth on hands and as a promising option to avoid any harm particularly health impacts due to alcohol application. This alcohol-free hand sanitizer is natural, biodegradable, non-flammable and potentially not harmful such as skin drying and alcohol poisoning. Further studies will be suggested to prove more on the side effect and with more strains of bacteria testing.

ACKNOWLEDGMENT

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An Efficiency Tool: Application of CCR and SBM models in measuring commercial banks' performance in Malaysia

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***Abstract*—Bank efficiency is very important in the banking industry. There are many methods involved to measure the efficiency of bank performance. This paper focuses on Slack Based Measure (SBM) and Charnes, Cooper, and Rhodes (CCR) model by comparing the result of efficiency. SBM gives the input excesses and output shortfalls for a decision many units (DMU) concerned. Meanwhile the CCR was interpreting as a reduction of the multiple outputs or multiple input situation for each DMU to a single "virtual output" and virtual input." Furthermore, the result from this research states using SBM model give a value of input excesses and output shortfalls for each bank inefficient. The result also indicates that SBM score efficiency for bank inefficient is less than CCR score efficiency.**

Keywords—Bank Efficiency, Slack Based Measure, CCR Model

I. INTRODUCTION

Efficiency analysis is essential for the evaluation of a bank's performance. A bank is considered to be efficient if it can generate the maximum of revenues by using its resources efficiently. Recently, there are many methods involved to measure the efficiency of bank performance [1]. In this study, we focus on Slack Based Measure (SBM) and Charnes, Cooper & Rhodes (CCR) models that have been introduced by Tone [2] and Charnes et al. [3]. The study uses secondary data collected from commercial banks. There are two types of data namely the input data and output data, whereby the input data refers to the banks' expenses such as labour cost, fixed financing cost, fixed financing asset and financing operating cash flow. Whereas the output data refers to the banks' incomes generated from sources such as commercial and industrial loan, housing loans, customer personal loans, other types of loans and revenue churned from customers' saving [4]. In this studies, we have two main objectives which are to measure efficiency of banks in Malaysia using input and output data of commercial bank in Malaysia and also to compare the efficiency score between Slack Based Measure (SBM) and Charnes, Cooper, and Rhode (CCR) models.

The rest of this paper is organized as follows: Section 2 discuss the detailed literature review of models involved. Then, proposed method is presented in Section 3. In section 4, we discuss the result obtained from CCR and SBM model. The conclusion are given in Section 5.

II. LITERATURE RIVIEW

Efficiency analysis is essential for the evaluation of banks' performance. A bank is considered to be efficient if it has the ability of generate the maximum of revenues and profits by using its resources efficiently and by minimize the expenses. According to [1], Data Envelopment Analysis (DEA) method has become increasingly popular in measuring bank efficiency. CCR-DEA model is a linear programming method that have been introduced by Charnes, Cooper and Rhodes [5] to measure the relative efficiency of homogeneous decision making units (DMUs) by employing multiple inputs and outputs [6]. This method is a most accurate method to measure efficiency of DMUs that are referred to a group of firms under study such as banks, hospital etc. [7],[8],[1]. The CCR-DEA model was first modified by Sherman [9] to measure banks performance in 1984, and since then, was extensively used by banking

industry around the world to measure banks operational efficiency [9]. Charnes et al. [3] imposed non-negativity restrictions to ensure inputs and outputs have positive weight values, so as the efficiency score assigned will be between 1 and 0, and no efficiency index greater than one. The less productive units or inefficiency are identified with efficiency score is < 1. Further expanding models for measuring the efficiency in DEA, Tone [2] has proposed a Slack Based Measure (SBM) model to measure performance in detailed by connecting input excesses and output shortfalls between the two continual terms. There are two types of data namely the input data and output data, whereby the input data refers to the banks' expenses such as labour cost, fixed financing cost, fixed financing asset and financing operating cash flow. Whereas the output data refers to the banks' incomes generated from sources such as commercial and industry loan, housing loans, customer personal loans, other types of loans and revenue churned from customers' saving [4]. Therefore, the aim of this article is to measure the efficiency of 11 banks performance by using CCR and SBM models that have been introduced by Charnes et al. [3] and Tone [2]. Besides that, this research also will present the results of efficiency analysis computed by both methods.

III. METHODOLOGY

A. CCR and SBM model for efficiency

In figure 2 show that several steps in methodology for measure efficiency using CCR and SBM model. The detail about every step also explains below.

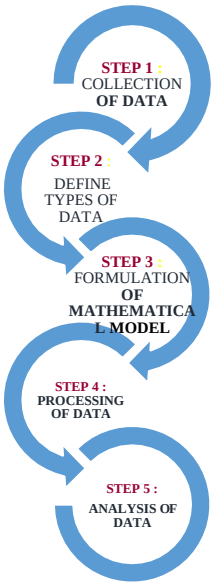

Figure 2: Flow of the methodology

STEP 1: COLLECTION OF DATA

There are two types of bank ownership, namely the local ownership and foreign ownership. However, as for this study, the focus will be on local bank ownership in Malaysia. In this step, the Decision Maker Unit (DMU) will decide the types of banks 'expenses and income.

STEP 2: DEFINE TYPES OF DATA

There are two types of data, namely the input data and output data. The input data comprises of labor cost, fixed financing asset, and financing operating cash flow, while the output data consist of commercial and industrial loans, housing loans, customer personal loans, other loans and increase of customers' savings.

STEP 3: FORMULATION OF MATHEMATICAL MODEL

In this study, there are two models used to measure the efficiency of commercial banks' in Malaysia. The model are Charnes, Cooper & Rhodes (CCR) and Slack Based Measure (SBM) model.

1) CCR Model

$$\text{Minimum } t$$

$$\text{subject to}$$

$$\sum_{l=1}^{n} x_{im} l_m \le t x_{i0} \qquad i = 1,\ldots,r$$

$$\sum_{j=1}^{n} y_{jm} l_m \ge y_{i0} \qquad j = 1,\ldots,s$$

$$l_m \ge 0 \qquad m = 1,\ldots,n$$

2) SBM Model

$$\text{Minimum } \tau = t - \frac{1}{m}\sum_{i=1}^{m} \frac{S^-_i}{x_{i0}}$$

$$\text{subject to}$$

$$1 = t + \frac{1}{s}\sum_{r=1}^{s} \frac{S^+_r}{y_{r0}}$$

$$tx_0 = XL + S^-$$

$$ty_0 = YL - S^+$$

$$L \ge 0,\ S^- \ge 0,\ S^+ \ge 0,\ t \ge 0$$

$$\text{with } S^- = ts^-,\ S^+ = ts^+,\ \text{and} \quad tL = tl.$$

where

$y_{j0} = j^{th}$ is total output of DMU_0

$y_{jm} = j^{th}$ is output of DMU_m

$x_{i0} = i^{th}$ is total input of DMU_0

$x_{im} = i^{th}$ is input of DMU_m

n = number of DMU

r = number of output

s = number of input

STEP 4: PROCESSING OF DATA

All the inputs and outputs are coded under LINGO 17.0 Software. The score efficiency result will be generated for both CCR and SBM model.

STEP 5: ANALYSIS OF DATA

Efficiency is measured on a scale of 0 to 1, where a value of 1 indicated the unit is relatively efficient and a value less than 1 indicates the unit is in efficient.

B. *Case study: Commercial Bank In Malaysia*

We use year-end secondary data for Malaysia commercial bank. To measure efficiency for this commercial bank, we consider three input and five output of banks that effect the growth of the bank organizations.

1) Input Data

Input data that we consider in this research from the bank expenses. The three inputs generally resource required to operate a bank: labor cost, fixed financing asset and financing operating cash flow [4]. The input data of commercial bank as shown in Table I.

2) Output Data

For output data that we consider from the bank income. The five output primarily represent: commercial and industry loan, housing loans, customer personal loans, other types of loan and revenue churned from customers' saving [4]. The output data of commercial bank as shown in Table II.

TABLE I. INPUT DATA OF COMMERCIAL BANK

TABLE II. OUTPUT DATA OF COMMERCIAL BANK

IV. RESULTS AND DISCUSSION

The summary results for the analysis via operating approach (for both CCR and SBM models) are represent in Table III and Figure 1.

TABLE III. CCR AND SBM SCORE FOR ALL BANKS

No	*Name of Bank*	*Efficiency Score, ρ using CCR Model*	*Efficiency Score, ρ using SBM Model*
1.	Bank A	0.7264217	0.4982464
2.	Bank B	1.0000000	1.0000000
3.	Bank C	1.0000000	1.0000000
4.	Bank D	0.6076928	0.4987553
5.	Bank E	1.0000000	1.0000000
6.	Bank F	0.9545454	0.7308603
7.	Bank G	1.0000000	1.0000000
8.	Bank H	0.8172656	0.3863394
9.	Bank I	0.7969327	0.4404905
10.	Bank J	0.8060983	0.5603653
11.	Bank K	1.0000000	1.0000000

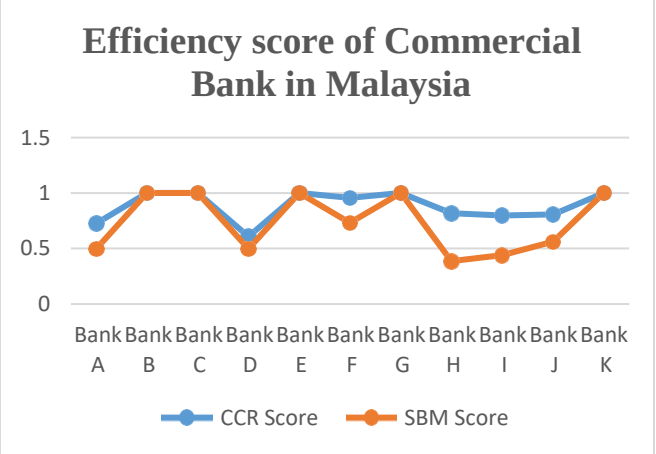

Fig. 1. *Efficiency score of Commercial Bank in Malaysia using CCR and SBM model*

Both models indicate the same result whereby 5 banks are considered to be efficient while another 6 banks are considered inefficient. However, the SBM model provide more detailed and accurate result for inefficiency score from the perspective of input excess and output shortfall.

From table III, negative value in input variable indicate the bank should reduce certain amount. On the other hand,

No	*Name of Bank*	*Input Variable*		
		Labor Cost (Million RM) Input 1	*Fixed Financing Asset (Million RM) Input 2*	*Fixed Financing Cash Flow (Million RM) Input 3*
1.	Bank A	178.328	762.592	650.88
2.	Bank B	102.505	433.517	359.018
3.	Bank C	55.555	143.316	122.35
4.	Bank D	583.351	1549.841	1444.62
5.	Bank E	60.085	111.628	97.274
6.	Bank F	137.097	305.24	262.018
7.	Bank G	138.975	421.969	357.057
8.	Bank H	791.219	3431.442	3102.395
9.	Bank I	307.085	1330.401	1254.863
10.	Bank J	354.419	1108.159	1005.736
11.	Bank K	124.423	527.732	458.263

No	*Name of Bank*	*Output Variable*				
		Commercial & Industry Loan (Hundred Million RM) Output 1	*Housing Industry Loan (Hundred Million RM) Output 2*	*Customer Loan (Hundred Million RM) Output 3*	*Other Loans (Hundred Million RM) Output 4*	*Demand of saving customers (Hundred Million RM) Output 5*
1.	Bank A	10.347321	4.44989	580.664	953.284	15.08925
2.	Bank B	5.818783	4.577328	533.008	195.573	11.13838
3.	Bank C	5.265357	2.565088	189.422	432.961	6.55384
4.	Bank D	23.332887	11.738798	1417.327	2424.122	42.54504
5.	Bank E	3.659408	1.508959	1.299	525.178	6.951964
6.	Bank F	5.833946	3.986763	696.302	481.894	10.03132
7.	Bank G	6.252395	4.042842	1448.645	688.329	17.25165
8.	Bank H	48.017919	18.035724	2814.78	1631.712	77.92641
9.	Bank I	9.353147	8.296077	1648.241	1150.953	29.95333
10.	Bank J	24.821081	8.512109	1177.495	1252.248	33.9831
11.	Bank K	6.773848	4.524215	1206.798	361.048	11.86788

positive value in output values represent addition of output value. It clearly be seen that, Bank A indicate inefficient score where Bank A need to reduce 4.5% labor cost (Input 1), 42.39% fixed financing asset (Input 2) and 42.38% fixed financing cash flow (Input 3) respectively. Meanwhile, Bank A should increase output for 55% of Commercial & Industry loan (Output 1), 76.50% of housing industry loan (Output 2), 39.23% of other loans (Output 4) and 33.14% of demand of saving customer (Output 5). The detailed result is presented in Table III.

TABLE III. RESULT OF SCORE EFFICIENCY WITH INPUT EXCESS AND OUTPUT SHORTFALL OF BANK

No	*Name of Bank*	*Efficiency Score, ρ*	*Output Variable*							
			s_1^-	s_2^-	s_3^-	s_1^+	s_2^+	s_3^+	s_4^+	s_5^+
1.	Bank A	0.4982464	8.027 (-4.5%)	323.26 (-42.39%)	275.82 (-42.38%)	5.793 (+55.98%)	3.406 (+76.50%)	0	373.94 (39.23%)	5.001 (33.14%)
2.	Bank B	1.0000000	0	0	0	0	0	0	0	0
3.	Bank C	1.0000000	0	0	0	0	0	0	0	0
4.	Bank D	0.4987553	0	44.96 (-2.9%)	159.79 (-11.06%)	31.96 (+136.97%)	15.17 (+129.2%)	571.68 (+40.33%)	2212.15 (+91.25%)	26.27 (+61.74%)
5.	Bank E	1.0000000	0	0	0	0	0	0	0	0
6.	Bank F	0.7308603	26.85 (-19.59%)	0	2.4779 (-0.95%)	2.3395 (+40.10%)	0.3202 (+8.03%)	0	247.47 (+35.54%)	3.2551 (+32.45%)
7.	Bank G	1.0000000	0	0	0	0	0	0	0	0
8.	Bank H	0.3863394	0	1382.73 (-40.30%)	1353.77 (-43.54%)	26.14 (+54.43%)	18.18 (+100.74%)	0	4487.26 (+275%)	15.516 (+19.91%)
9.	Bank I	0.4404905	0	449.08 (-37.51%)	547.12 (-43.68%)	15.484 (+165.5%)	4.4098 (+53.16%)	0	998.81 (+86.78%)	6.802 (+22.71%)
10.	Bank J	0.5603653	9.075 (-2.56%)	217.27 (-19.61%)	245.18 (-24.38%)	7.9097 (+31.87%)	7.419 (+87.16%)	0	1439.15 (+114.92%)	6.757 (+19.88%)
11.	Bank K	1.0000000	0	0	0	0	0	0	0	0

V. CONCLUSIONS

This paper utilizes the Slack based Measure (SBM) method as compared to the traditional method, Charnes, Cooper and Rhodes Model (CCR) for efficiency procedure. The SBM and CCR model allows full evaluation of efficiency in local banks' performance to make a report to the manager. This innovative model can resolve critical problems depends on new application efficiency tool especially for the kinds of societal problem, private, public and profit sector. It is also responsible for allows organizations to stay relevant in the competitive market with improvement of an efficiency level. For furthers aims, this model target person is manager as a high-level organization person to sustain the improvement of the company, policymaker as share partner of the company will forecast the profit in future, and researcher as a literature study to get more familiar of the efficiency method and subsequently they can improve their research method. Finally, in order to make this model more valuable, the target sales also considered by a provided consultancy for individual and group or industry committee from the expertise.

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Al-Falah: Sistem Pengurusan Rekod Masjid

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***Abstract*—Mosques are classified as not for profit organization that deal with public funds received mainly form government allocations, corporate bodies as well as public donations. Hence, the recording and bookkeeping is one of the crucial aspects to be considered, especially in handling funds received and disbursed by them. The fact that those handling the mosques' funds may not be financially literate posed a key challenge to an efficient and proper management of cash flows. Owing to that, the objective of Al-Falah is to assist these trustees of mosques funds in bookkeeping and recording their daily receipts and disbursements. Al-Falah is system that is simple to understand yet easy to operate among computer users. It can run under a moderate computer specification. The base was Microsoft Excel and it contains several key features of recording monthly receipts, disbursements and generating monthly report. At the month end, users will be able to determine the remaining funds to be brought forward to the next period. The added feature of auto generating a statement for the current month is an important record for auditing of funds by the governing body. Al-Falah is expected to solve some criticism for improper recording and reporting of receipts and disbursements of mosques. Henceforth, Al-Falah shall be updated, adding more useful features such as yearly recording to it and is expected to be used by every mosque in Kelantan.**

Keywords— Al-Falah, bookkeeping, mosque, public funds, recording, system)

I. INTRODUCTION

In accordance with Islamic outset, the mosque is a center for community development. Mosques is a not for profit organizations where Muslims gathered, worship their creator as well as acquiring Islamic knowledge. It plays an important role as a center for any communal activities and gatherings. It is a center for transforming government Islamic-related policies within the society. In mosques, these programs and activities are held to strengthen and instill Islamic values among the members in the community.

The trustees of mosques will manage charitable funds such as collections (sadaqah) and also endowments (waqaf) entrusted by the public. As such, it is important for a mosque to maintain strong financial condition to achieve its strategic mission. It has become a key challenge in managing these funds and ensuring efficient and proper financial management practices. Proper financial management practices significantly increase the efficiency, effectiveness as well as value maximization of mosques [1].

To achieve a better fund management, chairman and treasurer need to play a crucial role, as they were the persons who has been accounted for the public funds. However, it has been a debate that there is lack of accountability in managing accounting system and improper recording and reporting of income by some mosques [2]. In another study, embezzlement of funds from religious organization is found to be more common due to lack of accounting and lack of commitment to accounting [3].

Al-Falah: Sistem Pengurusan Rekod Masjid (Al-Falah) is a simple system developed to aid trustees of mosque funds to properly record their receipts and disbursements of funds. The objectives of the system are threefold: (1) to assist these trustees of mosques funds in bookkeeping and recording their daily receipts and disbursements, (2) to ease the auditing of funds by the governing bodies, (3) to enhance understanding of layman regarding essentials of a proper record keeping and money management.

II. LITERATURE REVIEW

A. Accountability demand for the non- profit organization

The term accountability has been a debate for years. Accountability has been used to describe the responsibility of those who manage or control resources to others [4]. The concept, in general, shows a relationship between two parties in which one party is directly or indirectly accountable to another party for something [5][6]. Concern on accountability about a non-profit organizations (NPOs) has been raised by many researchers and related stakeholders. A recent case of embezzlement as reported by Channel News Asia (Singapore) uncover some shocking criminal breach of trust charges, done by a former chairman of a mosque's management board involving a loss of Singapore Dollar $370,000 from mosque donations over 7 years [11]. Therefore, the demand significantly raised to a higher level for NPOs to be more accountable due to various stakeholders are involved. Unlike a normal profit-making organization, NPOs deal with public money entrusted to them. Hence, these NPOs are expected to deliver to its intended purpose.

B. Financial management in non-profit organization

Some criticism lingers around NPOs with claims that NPOs generally have poor internal control, inadequate accounting system with lack of accounting expertise, as well as lack of commitment to financial management. Some people view that financial procedures such as accounting and internal control procedures are regarded as secular activities and therefore, as secondary to sacred activities of the mosques [10]. The findings by prior literatures [13] [14] [15] supported the notion that there was much deficiency in the management, finance and accounting department of which leading to lack of accountability to its stakeholders. A study conducted in mosques under a semi structured interview with mosques committee members, mosques volunteers and mosque officials revealed that the trustees have to figure out on his own on how to record the flow of funds as nobody would teach them on how it should be done. With the current attention given on financial management by these NPOs, it is expected that now these organization need to show a greater level of accountability by reporting their activities properly to the stakeholders [7].

C. Accounting system and financial reporting

Financial reporting is seen as one of the ways to demonstrate accountability and building trust amongst the stakeholders. Since these mosques are governed by the State Islamic Religious Council (SIRC), the requirement to periodically submit financial reports are not strictly enforced as mosques committees are generally volunteers and have low skills in reports preparation [12]. Accounting for receipts and expenditure of funds is the major aim of financial reporting and this can improve the stakeholders' trust. With respect to that, a simple accounting system named Al-Falah is developed to ease trustees of these public funds to record monthly receipts, disbursements and generating monthly report. At the month end, users will be able to determine the remaining funds to be brought forward to the next period.

Developed from a base of Microsoft Excel, the system contains an added feature of auto generating a statement for the current month is an important record for auditing of funds by the governing body. As mosques is also considered as NPO that hold public funds from donations and endowments, nearly every transaction is likely to affect some stakeholders' interest. Therefore, accountability relationships and the need for financial reporting arise with every transaction. Clearly, there is a reciprocal relationship between accounting and accountability [8]. Thus, financial reporting has been used as the core accountability tool by various NPOs, irrespective of their objectives and missions.

III. METHODS

The system Al-Falah was introduced and applied in five workshop series in a program held by Faculty of Accountancy, UiTM Cawangan Kelantan (UiTMCK) and Majlis Agama Islam & Adat Istiadat Melayu Kelantan (MAIK) for 43 mosques located in Machang districts. After the end of each workshop series, a questionnaire was distributed to all of the participants. The participants involved were imams and treasurers for each mosque under governance of MAIK. At the end of the series, certificates were issued to each of the participants in an official ceremony.

The questionnaires contained several aspects including questions on participants background, Al-Falah user experience and how well users could understand the system. Finally, users are given a section to suggest for future improvements on the system. The questionnaires were distributed to approximately 105 participants with a usable response rate of 80%.

IV. RESULTS AND FINDINGS

The analysis of results from users indicates the following findings. Generally, 67 out of 84 (or 80%) of the imams and treasurers of these mosques have no strong accounting background. The remaining 17 trustees (or 20%) either have experience in handling accounting records or works in the related field. The findings were in agreement to [9] that found most mosques board have no qualifications to play active role in managing mosque funds.

The series of workshops held by the Faculty of Accountancy helped these trustees in understanding the essentials of record keeping and reporting. Previously, before being introduced to Al-Falah, 70% of these trustees were using manual records using files, while 30% of them typed the records using application in the computers, based on the practices of the predecessor trustees. Hence, it was discovered that 75% of the trustees were taking months to a year to prepare the financial statements before being introduced to Al-Falah. Upon asked about the user interface features and their understanding on how the system works, 70% agree that Al-Falah is convenient and easy to understand. Finally, with the help of the facilitators from the Faculty of Accountancy UiTMCK, 90% of the trustees are certain that they are going to keep using Al-Falah for the upcoming reporting period.

These findings somehow indicated that the use of a simple system would actually improve the level of commitment by these imams and treasurer on the financial reporting management. Consequently, this leads to enhanced awareness on financial reporting that shall gradually diminishes the criticism of mosques committees' lack of skills and commitments towards financial reporting [3]

V. CONCLUSIONS

In a nutshell, financial reporting is an imperative tool to improve productivity and accountability of mosques' financial management. With a simple system such as Al-Falah, any layman with some or little knowledge on recording and bookkeeping will be able to prepare a simple financial statement for reporting purposes. The potential commercialization is palpable, as currently Al-Falah has been introduced into a second phase of workshop series involving 50 mosques in Kota Bharu, Kelantan. In future, taking into account the comments for future improvements by current users, the system is expected to be further improved by adding sheets for yearly recordings and probably an external link to Google Drive for users to scan and upload the source document for instant retrievals.

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Accounting Pick and Paste

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***Abstract*— The teaching and learning process has evolved over time. Nowadays, educators have to continuously search and develop tools to successfully engage their students in learning process, especially if the students are mature learners or very young children. Accounting Pick and Paste (APP) is an interactive learning product developed with the objective to facilitate learners who want to learn basic accounting concepts in a very simplified and fun manner. This product can help educators overcome students' inattentiveness problem by making lessons more enjoyable, personally interesting and motivating. Instead of merely memorising, learners would also be able to apply what they have learned during class in a more realistic way.**

Keywords*— basic accounting, creative teaching, educators, interactive learning

I. INTRODUCTION

Accounting subjects have always been perceived as boring and difficult. Some students may loss interest or feel demotivated in the classroom. [1] highlighted that lack of interest in accounting subject, poor study skill and inactive class participation were factors that contributed to poor performance. According to [2], teaching students with traditional method is not as effective and efficient as before due to changes in lifestyle.

[3] stated that students perform better when their lessons are taught using multimedia or instructional technology. Well-designed games create an engaging atmosphere, provide non-threatening, playful, and competitive environment in which to focus on content, reinforce and apply learning [4].

II. OBJECTIVES

The purpose of this interactive learning product is to enhance the learning experience through interactive learning environment. This product can help educators overcome learner's inattentiveness problem by making lessons more enjoyable, personally interesting and motivating. By using "Accounting Pick and Paste" (APP), it would facilitate learners who want to learn basic accounting concepts in a very simplified and fun manner. Instead of merely memorizing, learners would be able to apply what they have learned during class in a more realistic way.

III. RESEARCH DESIGNS

The research design of this study includes four stages:

A. First stage – Creating the story board

The story board has been created to ensure the teaching and learning process on accounting elements is attractive and enjoyable. The story board starts with identifying pictures according to their elements such as assets, liabilities, receipts and payments.

B. Second stage – Development stage

The "Accounting Pick and Paste" (APP) is developed using a magnetic board, magnetic sheets, glossy sticker papers and pictures from the internet.

C. Third stage – Design stage

The design stage consists of selecting pictures from the internet, printing the pictures on glossy sticker papers and pasting the pictures on the magnetic sheets. Since the target users were mosque administrators, the pictures were specifically chosen so that they can be associated with the mosques' surroundings and activities. The whiteboard is decorated to make it more attractive and create interest among the mosque administrators. The headings of each element are also available to make it easy for users to identify the correct pictures according to their elements.

Product descriptions are as below:

- APP is mainly focused on basic accounting concepts, but can be easily customized for other subjects as well
- Decorative magnetic whiteboard
- Attractive and colorful pictures on magnetic sheets
- Provide fun, yet effective learning experience

D. Fourth stage – Feedback from users

APP had been tested on mosque administrators from Machang in 2018 and Kota Bharu in 2019. An entrance and exit survey had also been administered on 75 and 101 respondents from the Machang and Kota Bharu districts respectively. The survey provides insight on the effectiveness of the game on the teaching and learning process.

IV. RESULTS AND FINDINGS

Table 1 shows the result of entrance and exit survey for understanding level on learning of accounting elements. In the comparison between entrance and exit survey average value, it shows an increment of 2.25% and 2.15% for Machang and Kota Bharu districts, respectively. This result indicates that through interactive learning helped them better understand and apply the accounting elements.

TABLE 1: UNDERSTANDING LEVEL ON LEARNING OF ACCOUNTING ELEMENTS

Districts	***Entrance***	***Exit***	***Increase (%)***
Machang	1.78	4.03	2.25
Kota Bharu	1.91	4.06	2.15

Meanwhile, the feedback from the selected respondents for the interview session has been positive. Comments from respondents provide support for the effectiveness of learning process using APP. Among the positive feedback received are stated below:

"Eye catching with good graphic, suitable pictures for each accounting element and use of attractive colour which able to attract learners to use the board game".

"Very attractive and colourful magnetic board game. The learning activity is simple and fun. So, easy to understand and memorize the accounting elements".

"Background and colour of APP is very attracting, and easy to use the board play".

"Nice learning board. Easy to understand since use the simple word and not bored to learn with attractive background and colours".

V. CONCLUSIONS

The APP provides an alternative way of interactive learning that will lead learners to have strong interest to cooperate and to get involved in discussions. It will increase the visual-spatial skills, memory skills, and multitasking ability of the learners. Learners will be able to learn, remember and apply the concepts better as they get personally involved in completing the activity. Being non-electronic is also an advantage because it can be used anywhere, anytime, and suitable for mature learners as well as young children.

The APP is exposed to mosque administrators on elements of accounting in particularly related to mosque. By using the "Accounting Pick and Paste" (APP), mosque administrators can understand and distinguish each element, thus facilitating them in recording transactions. This play board is fun and very helpful for mosque administrators in identifying each element accurately. Given proper guidance and support, the mosque administrators would be more capable in documenting proper financial records. Most importantly, it will promote good record keeping and eventually enhance credibility and public trust, as well as accountability

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Autonomous Attendance Monitoring System

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***Abstract*— Absenteeism is an act of habitual absence from work or schools. Absenteeism is considered as one of the worst social problem that may lead into another social problems, such as theft, drug, and bullying. Chronic absenteeism affects the performance of the individual; as well as those around them. In the context of Malaysian, Ministry of Education recorded that more than 37, 000 students were found absence from schools in the year 2017. Recent survey on the similar issue within the university context show that approximately 15 students were barred from examination due to poor attendance. Henceforth, there is a need for a new mechanism to replaced conventional attendance taking method. Therefore, Autonomous Attendance Monitoring System (AMoS) was developed in three stages. First, a qualitative study was conducted to investigate the problem with attendance monitoring. Then, the prototype of AMoS was developed based on PHP programming language, MySQL database, HTML5, CSS3, and jQuery. Lastly, a quantitative study was conducted to measure the extent of user satisfaction towards using AMoS. In term of novelty, AMoS improved the current absenteeism workflow implemented at UiTM, introduce new novel ideas of autonomous YY-ZZ monitoring, and a new absenteeism scale Ami-X. The system can be commercialized to any organization, such as academic institution; kindergarten, schools, universities, boarding schools, etc. The prototype of AMoS is protected by Copyright Act 1987, and available online at Google Play Store.**

Keywords*— *autonomous, attendance monitoring, information system, absenteeism, and social problem.

I. INTRODUCTION

Malaysia Higher Education level additionally been known as the post-secondary education, third-level or tertiary education. It is an optional final stage of formal learning that occurs after completion of secondary education. Usually delivered at universities, academies, colleges, seminaries, conservatories, and institutes of technology, education is additionally obtainable through sure college-level establishments, as well as job colleges, trade colleges, and different career schools that award educational degrees or skilled certifications. Absenteeism is one of the crucial problems faced by organization nowadays. Companies, schools, and universities are all facing the same problem when it comes to absenteeism. For example, universities undertook many approaches to prevent student absenteeism. One of the approaches is attendance taking. Attendance is a form of a basic tool and most important criteria needed in all the education system. In the context of Malaysian educational institution, many private and public universities are still practicing the conventional method of taking daily students' attendance. Academic staff usually needs to print out the printed attendance sheet and bring it with them to the class. However, sometimes using the conventional method can cause problem such as: (1) Forgetting to print out the attendance sheet, (2) missing or misplaced of the attendance sheet, (3) Did not bring the attendance sheet to the class, (4) miscalculate number of absenteeism, and (5) probability of student to cheat friend signature. Attendance Monitoring System is proposed to help or reduce lecturer's work. This system facility 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 allowed to change or modify absentee's attendance data. This system will automatically count the number of absents and the percentage of present for the entire student based on the subject classes. Once the number of absent exceed the attendance policy, appropriate warning letter will be generated automatically to be given to the absent. Hence, this system provides a tedious work in maintaining attendance records besides saving time to analyse every attendance list and assuring the calculation made was error-free.

II. LITERATURE REVIEW

According to Merriam Webster dictionary [1], absenteeism means chronic absence. If it is being talk in context of education, it's the habitual or intentional failure from going to school. This issue cannot be denied that no matter whether now or then, it is will continuously happen if there were not action taken. Student who absent to class will miss some education activity that may leads to many

problems that soon will gives bad impacts on their academic progress for their study. Besides that, in the context of higher education level like university itself faced many issues when were talk about the absenteeism. As an example for the attendance, lecturer got the responsibility to take the student's attendance before or after they start the teaching and learning process. Attendance is one of the most important things that needs to be taken as to know which students attend or absent to class. But, currently there are many problems that had faced by the lecturer especially in taking and managing the attendance.

According to Astrid Schmulian and Stephen Coetzee [2], there is a positive correlation between class attendance and academic performance. The study discovered that absenteeism leads to negatively impacts in education. Commonly issues that appear was lecturer (person in-charge) sometimes forget where they put the attendance, student cheats on helping their friend signed the attendance who absent to class, lecturer forget to bring the attendance to the class and so on. This problem will affect the validity and management of the attendance itself. Each of attendance consists of vital information that are very useful to determine and proof whether the student is guilty or not whenever they were called by the management when their attendance is lower from the percentage's attend to class that a student need to follow. As to mention more detail, student who less attend to class and got lower percentage will get a warning from the management before the next action be taken. The students need to take the warning as a serious matter because they could be dispelled from their study. Usage of manual methods in taking and handle the attendance leads to many bad factors. As to ensure the management could be parallel with the latest technology revolution nowadays, author proposed the action is taken attendance will be done in computerized or digitized so that it will be more smooth.

In another study, Raid [3] proposed the development and implementation of another medium or strategic that could be use in a long term as to manage the process of collecting student attendance to the class more effectively. Besides that, based on this article proposed methods, it's stated that the process of taking and managing the attendance will be easier to organize, monitor and evaluate if it is being use. So, its mean that by using more systematic methods in managing the attendance, it will be more precise and better. In a simple word, the author wants to make the improvement or revolution of the ways the attendance was managed right now change to be better into computerized.

Moreover, according to Patel, Patel, and Gajjar [4], student's attendance is one of the important part for any organizations or institutions. Recording and monitoring of class attendance is an area of administration that can require significant amounts of time and effort no matter whether in a school or university environment, largely due to the amount of time required in lectures to get the necessary information. Besides that, the authors also stated and proposed the usage of online student's attendance monitoring system in classroom using radio frequency identification technology may lead to better student's attendance management. RFID technology one of the powerful tool that are very useful in helping to manage student's attendance throughout the education process and also enhance classroom security. RFID technology already been applied to solve problems where it is necessary to take automatically record the movements and locations of students in a classroom of school or university environment. A real time intelligent system is implemented in conjunction with RFID hardware to record students' attendance at lectures and laboratories in a school/university environment. RFID is a technology that allows for a tag affixed on identity card to communicate wirelessly with a reader, in order for the tag's identifier to be retrieved.

Furthermore, according to Othman, Ismail and Raus [5], the development of an information system must follow a proper development methodology. The study is focussing on the development of a web-based attendance register system or also be called as ARS. The reason why this system was proposed and developed because the authors knew that the capability of web-based system that now become one of the important thing or preferable technologies as to ease the process of managing data and records resulted from the attendance taken. Besides that, the authors also stated in the article that, the efficiency and effectiveness of the web-based system in handling rapid access of documents and its ability in supporting multi-users simultaneously, thus saving a lot of time and hassle free.

III. METHODOLOGY

Autonomous Attendance Monitoring System (AMoS) was developed in three stages. First, a qualitative study was conducted to investigate the problem with attendance monitoring. Then, the prototype of AMoS was developed based on PHP programming language, MySQL database, HTML5, CSS3, and jQuery. Lastly, a quantitative study was conducted to measure the extent of user satisfaction towards using AMoS. However, due to the limitation of this research paper, this study will only discuss the quantitative methodology of AMoS. The previous stages have been submitted for a journal publication elsewhere.

A. Instrument Development

A quantitative approach was adopted for data collection. Items were adopted from similar previous study. The completed instrument was sent to the experts for pre-test. The instrument was modified based on the recommendation and suggestions from the expert review process. Then, the instrument was distributed for a pilot test; Cronbach alpha was used to determine the reliability of the instrument. Actual data collection takes place for 2 months. Respondents selected were students at the Faculty of Information Management, Universiti Teknologi MARA Kelantan Branch. The respondents were selected based on convenience sampling. The following table 1 shows the variables use in the study.

TABLE I. LIST OF VARIABLES

Variable	***Number of items***
System quality	4
Information quality	4
Service quality	4
Perceived usefulness	3
Perceived ease of use	3
User satisfaction towards AMoS	3

IV. RESULTS AND FINDINGS

The following section discuss the result of data collection. The findings will be discussed in term of descriptive analysis.

A. Demographic profile

The following table II shows the demographic profiles of respondents. A total of 44 respondents involved in the data collection process. Most respondents were female (65.9) while male was 31.1%. In term of study mode, the majority of student enrolled for fulltime course (95.5%), while part-time and SML made up the rest.

TABLE II. DEMOGRAPHIC PROFILES

Item	*Description*	*Frequency*	*Percentage (%)*
Gender	Male	15	34.1
	Female	29	65.9
Study Mode	Fulltime	42	95.5
	Part Time	1	2.3
	SML	1	2.3
Study Level	Diploma	14	31.8
	Degree	30	68.2

Table III shows the mean and standard deviation for system quality. From the table, it can be concluded that respondents agreed that system quality does contributing to the user satisfaction towards the use of AMoS. The highest mean is 6.1818 while the lowest mean is 5.9091.

TABLE III. SYSTEM QUALITY

Item	*Mean*	*Std Deviation*
AMoS has an easy navigation to information	6.1818	0.89632
AMoS has fast response and transaction processing	6.2500	0.75097
AMoS can be used anytime when I want to use it	6.0909	0.83019
AMoS keeps error free transaction	5.9091	1.00737

Table IV shows the mean and standard deviation for information quality. From the table, it can be concluded that respondents agreed that information quality does contributing to the user satisfaction towards the use of AMoS. The highest mean is 6.1364 while the lowest mean is 6.0455.

TABLE IV. INFORMATION QUALITY

Item	*Mean*	*Std Deviation*
AMoS provides complete information	6.0455	0.86144
AMoS provides accurate information	6.1364	0.82380
AMoS provides reliable information	6.1364	0.73424
AMoS provides information in appropriate format	6.0455	1.09872

Table V shows the mean and standard deviation for service quality. From the table, it can be concluded that respondents agreed that service quality does contributing to the user satisfaction towards the use of AMoS. The highest mean is 6.1591 while the lowest mean is 5.9773.

TABLE V. SERVICE QUALITY

Item	*Mean*	*Std Deviation*
AMoS anticipates and responds promptly to user request	5.9773	1.08881
AMoS instills confidence in users and reduces uncertainty	6.0000	0.94006
AMoS understands and adapts to the user specific needs	6.1591	0.93866
AMoS provides follow-up service to users	6.0000	0.86266

Table VI shows the mean and standard deviation for perceived usefulness. From the table, it can be concluded that respondents agreed that perceived usefulness does contributing to the user satisfaction towards the use of AMoS. The highest mean is 6.0909 while the lowest mean is 6.0455.

TABLE VI. PERCEIVED USEFULNESS

Item	*Mean*	*Std Deviation*
AMoS improves my learning performance	6.0909	0.88444
AMoS increases my learning effectiveness	6.0455	0.91384
AMoS enhances my learning experience	6.0909	0.88444

Table VII shows the mean and standard deviation for perceived ease of use. From the table, it can be concluded that respondents agreed that perceived ease of use does contributing to the user satisfaction towards the use of AMoS. The highest mean is 6.2955 while the lowest mean is 6.2045.

TABLE VII. PERCEIVED EASE OF USE

Item	*Mean*	*Std Deviation*
Learning to operate AMoS is very easy for me	6.2045	0.82348
It is easy for me to become skillful at using AMoS features.	6.2500	0.75097
My interaction with AMoS is clear and understandable	6.2955	0.73388

Table VIII shows the mean and standard deviation for user satisfaction. From the table, it can be concluded that respondents are satisfied with the use of AMoS. The highest mean is 6.3409 while the lowest mean is 6.2955.

TABLE VIII. USER SATISFACTION TOWARD AMOS

Item	*Mean*	*Std Deviation*
All things considered, I am very satisfied with the AMoS performance	6.3182	0.73998
All things considered, I am very pleased with the experience of using AMoS.	6.2955	0.70148
Overall, my interaction with the AMoS is very satisfying.	6.3409	0.71343

V. CONCLUSIONS

The study attempted to investigate the extent of user satisfaction with Attendance Monitoring System (AMoS). A quantitative study was conducted at the Faculty of Information Management, Univesiti Teknologi MARA Kelantan branch. A total of five determinants were identified; each was descriptively discussed in the findings section.

However, this study is not without limitation. First, we only use minimal number of variables for this study. Future study should include more variables to gain more insight from the data analysis, such as task complexity, task resources, and individual factors. Second, due to lack of respondents involves with the pilot run of the information system, this study can only rely on the small number of respondents. Future data collection should be conducted when the propose system have been fully implemented.

ACKNOWLEDGMENT

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SECI-SYS: Secretariat Database Management System

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Abstract*— SECI-SYS is a system software developed as a platform to store, retrieve, and update data regarding information management. Secretariat, in this regard acts as the people responsible for maintaining effective records and file administration. In conjunction with 2nd Kelantan International Learning and Innovation Exhibition 2019 (KILIEx 2019), SECI-SYS is established to ensure the management of data is consistently organized and remained to be easily accessible by the end users. SECI-SYS is governed by the information processing cycle which consists of four major stages; input, processing, storage and output. In brief, the procedures include data entry (input stage) followed by data coding and updating (processing stage), data keeping (storage stage) and finally producing desired data for respective users (output stage). Due to the varying needs from multiple angles, SECI-SYS plays a pivotal role as the core data feeder to enable the committees to access the information. In the absence of SECI-SYS, missing of files, overlapping of information, and miscommunication as a whole, shall be expected to occur. Consequently, database management system for KILIEx 2019 will be dysfunctional thus, disrupt the flow of the event. With this SECI-SYS, the management of database will be made convenient due to its multiple access, user-friendly, cloud storage function and zero charge for its development. SECI-SYS allows room for additional features to be included in order to maximize the functions for advanced users such as the merging data for managing pharma commercialization due to its marketability.

Keywords — database, information management, event management, data access

I. INTRODUCTION

SECI-SYS: Secretariat Database Management System is a system software developed as a platform to store, retrieve, and update data regarding information management. Secretariat, in this regard acts as the people who are responsible to maintain effective records and file administration for the KILIEx 2019.

The management of data and information is assisted by an information system, designed to transform data to information [1]. This system (Microsoft Excel) aids people with less experience to create database and manage information at hand. Microsoft Excel makes it easy to store data, perform numerical calculations, format cells, adjust layouts to generate the output and reports to share with others. Additionally, its advanced features such as subtotals, power pivot tables and pivot charts, analysis toolkit and many other templates make it easy to accomplish a wide range of tasks as designed in SECI-SYS.

II. CONTENT DEVELOPMENT

SECI-SYS is governed by the information processing cycle which consists of four major stages; input, processing, storage and output. In brief, the procedures include data entry (input stage) followed by data coding and updating (processing stage), data keeping (storage stage) and finally producing desired data for respective users (output stage).

The use of online Excel spreadsheet in the management of database for KILIEx 2019 employs the service of cloud computing. Cloud computing is a technology that harmonizes the operations of different computer systems via a network so that file portability is improved [2]. Therefore, this enables the secretariat to deal with large data files which primarily consist of the participants' personal information, details of their research designs and innovations, as well as keeping track of their progress prior to the exhibition day itself. Generally, cloud storage does not require complex infrastructure setup nor large instruments in the management of information hence proven to be cost-friendly for the execution of KILIEx 2019[3].

Due to the varying needs from multiple angles, SECI-SYS plays a pivotal role as the core data feeder to enable the committees to access the information. In the absence of SECI-

SYS, missing of files, overlapping of information, and miscommunication as a whole, shall be expected to occur. Consequently, database management system will be dysfunctional thus, disrupt the flow of the event. [3] cautioned that it is also crucial to note that the occurrence of data loss is inevitable regardless of the infrastructure used thus, the online Excel spreadsheet for KILIEx 2019 is not an exception. Nonetheless, regular auditing of the database is one of the measures advised to be taken in order to ensure the validity of the stored data in the cloud.

III. DISCUSSIONS

With this SECI-SYS, the management of database will be made convenient due to its multiple access, user-friendly, cloud storage function and zero charge for its development. SECI-SYS allows room for additional features to be included. Any additional features required by the users will be tailored to their specific needs based on the desired functions and features.

The SECI-SYS can be utilized for various purposes related to database management of conferences and invention, innovation and design (IID) competitions. The feedback received upon this SECI-SYS system will be used for future improvement. Most of the users agreed that by using this database system, it will not only make their tasks easier but also boost their motivation to participate in secretariat team in the future events. They found that SECI-SYS is a user-friendly database system as many teams simultaneously can update and manage the data at their convenient time and place. This special element attracts the users to continue using this database system in the future. Thus, the use of SECI-SYS database management system is proven to assist secretariat team in managing their database.

IV. CONCLUSIONS

The SECI-SYS has proven its functionality and efficiency in the database management of KILIEx 2019 processes starting from the input stage, processing stage, storage stage and the final one, output stage.

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Learning about Healthy Food through Interactive Game

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***Abstract* — Food education is very important to our life as it gives knowledge, skills and enables kids to make decisions on choosing the food that they must consume on daily life. Kids nowadays are not aware of their daily food consumption. Junk foods always be the favorites to the kids because of the flavor and some additional ingredients such as MSG that are added to the food. When the kids are addicted towards its taste, they might do not care about the quantity they consumed daily. Thus, Game of Food Block is created based on food pyramid and as an early education for kids to know about food pyramid. This interactive learning is created to entertain the children about the importance of a healthy lifestyle through food pyramid and spread the awareness about the bad of junk foods. Game of Food Block is one way to make food education become more fun and easier to learn especially for kids from the age of 3 to 12 years old because the fact says that kids learn faster than adult. This Food Block is the combination of puzzles and education, this method used because kids are highly attracted to the colorful images and moving media in games such as puzzle because it can develop problem-solving skills and strategies on how to solve the problems. This product is made for parents and teachers as a teaching tool to teach kids about the food education. Game of Food Block also can be the guideline for the kids to help them in their food consumption.**

Keywords: food education, food pyramid, game, healthy lifestyle, kids.

I. INTRODUCTION

In accordance to National Review of Health and Morbidity (NHMS) III in 2016, one of every five children in Malaysia has nutritional problems. This problem caused by the over-eating and nutrient deficiency [1]. This is because most children only eat the foods that were given to them by their parents without knowing the nutrition contains in the foods. Moreover, children nowadays are picky in their food consumption and do not want to eat green foods because of its taste then only want to eat junk foods. Thus, parents should teach the children to eat healthy foods based on food pyramid to their children [10]. This is because healthy foods provide energy and nutrients to the body and allows the body to function ideally. Children should eat up the right amount of nutrients, such as carbohydrates, protein, fats, vitamins and minerals, according to their age and have optimum growth [2].

In [3], Dr. Kurt Squire says studying games can contribute hugely in education sector to the digital age students. Digital age students consist of millennial and generation Z who have used comfortably internet and technology since very young age. Games also have particular potential in teaching and learning, comparing to other medium. Squire has no doubt that play implements the intellectual and social growth of the children for the long term and absorb into their learning repertory.

II. LITERATURE REVIEW

The findings from Malaysia's National Health and Morbidity Survey (NHMS) 2016 disclosed that there was still a high prevalence of stunting, 20.7%, and underweight, 13.7%, in youngsters below five years old, whereas the prevalence of overweight has magnified to 6.4% [1]. Poor eating habits comprise under- or over-eating, not having enough of healthy food we'd like daily, or overwhelming too many varieties of food and drink, that square measure low in fiber or high in fat, salt and sugar. Poor nutrition will impair our daily health, welfare and lessen the ability to guide a pleasant and active life. In the short period, poor nutrition will contribute to worry, weariness and our capability to work and over time. It will contribute to the chance of developing some diseases and different health issues, such as obesity, high blood pressure, high cholesterol and some cancers [4]. Thus, parents should actively care about their children's daily meals. Every meal

should contain every nutrient based on food pyramid, such as carbohydrate, protein, vitamin, and dairy products. This is because eating healthy food with the right amount can avoid serious illness and also avoid high amount of added salt or sugar in every meal. Other than avoid serious illness, eating healthily can help each child to lose weight and reduce the risk of chronic conditions. Moreover, unhealthy foods will lead to obesity, which can increase a human risk of developing cancer. Deliberation inside a healthful vary could cut back this risk [5].

In order to make children understand more about the healthy food, game-based learning principle is applied. Game-based learning (GBL) may be a branch of significant games that deals with applications that have been outlined learning outcomes. GBL balances subject material learning and game play with the objectives of retentive and applying aforementioned subject material within the world [6-7]. It has been agreed that children should not allocate each single second of their day by looking at a computer screen. Notwithstanding, education and online gaming actually are not enemies either. In fact, taking part in online plays is also one thing which may enhance a child's learning and development. First and foremost, games will increase a child's memory capacity as every child need to keep in mind aspects so as to resolve the game, memorize crucial sequences, or track narrative components. In addition, games also can help with fast strategic thinking and problem solving. This is because every child needs to exploit his/her logic to assume three steps ahead so as to unravel problems and complete each level. It will help the children later in their life as they develop their logic, accuracy and ability to determine on their own shoes and out of the box [8-9].

III. METHODS

Game of Food Block is described as interactive game because its combine of puzzles and education. As Dr. Kurt Squire says studying games can contribute hugely in education sector to the millennial and generation Z especially because they are more comfortable with advanced technology [3]. Thus, Game of Food Block can help the kids to understand about healthy food that they need to consume daily in order to avoid serious illness. Quantitative approach had been used in order to support this study. The questionnaires are given to the parents living in Peninsular Malaysia, as it is related to parents' opinion on this study of "Learning about Healthy Food through Interactive Game". As a result, 72 data have been collected and manually keyed in through SPSS version 22.0 then analyzed. The hypotheses were tested using frequency analysis.

IV. RESULTS AND FINDINGS

Respondents' Demographic Profiles

Table 1.1: Frequency and percentage distribution by demographic profile

Demographic	N	%
Gender		
Male	32	44.4
Female	40	55.6
Total	**72**	**100**
Age		
3 years old and below	32	44.5
4 to 6 years old	18	25.0
7 to 9 years old	7	9.7
9 to 12 years old	15	20.8
Total	**72**	**100**

A total of 72 respondents participated in this study and has been summarized in Table 1.1 as above. The demographic for gender of respondents' child was female is 55.6 percent, while only 44.4 percent were male. For the age of the respondents' child are mostly 3 years old and below, holding 44.5 percent. 25.0 percent were 4 to 6 years old, 20.8 percent were 9 to 12 years old, while 9.7 percent were 7 to 9 years old.

Frequency Analysis

Table 1.2: Frequency and percentage distribution by questions

Questions	N	%
Have you ever experienced any interactive games on healthy food using gadget?		
Yes	31	43.1
No	41	56.9
Total		
What is your opinion about learning from games through gadget?		
Strongly Agree	10	13.9
Agree	31	43.1
Average	19	26.4
Disagree	6	8.3
Strongly Disagree	6	8.3
Total	**72**	**100**
Do you agree Kementerian Pelajaran Malaysia should encourage teachers to be more creative to use games in teaching kids?		
Strongly Agree	23	31.9
Agree	29	40.3
Average	12	16.7
Disagree	4	5.6
Strongly Disagree	4	5.6
Total	**72**	**100**
Do you agree with some parents believing kids could not achieve the learning objective while playing interactive games?		
Strongly Agree	3	4.2
Agree	14	19.4
Average	26	36.1
Disagree	22	30.6
Strongly Disagree	7	9.7
Total	**72**	**100**

Table 1.2 summarizes the result of frequency and percentage by each question. When the respondents were asked about their experiences of interactive games on healthy food, majority had no experience which is 56.9 percent, while 43.1 percent has been exposed with this kind of interactive games. Next, they were asked about their opinions on learning from games through gadget. 43.1 percent of respondents agreed with the technology and 13.9 percent were strongly agree. However, there were 26.4 percent indicate average and there were equal percentage of respondents disagree and strongly disagree, which were 8.3 percent.

A further question is about parents' opinions if they agree that *Kementerian Pelajaran Malaysia* (KPM) should encourage teachers to be more creative to use games in teaching kids. Majority of the respondents were agreed to support KPM, 40.3 percent were agreed and 31.9 percent were strongly agreed. 16.7 percent indicate average and they were also 5.6 percent disagree and strongly disagree. Finally, only 4.2 percent respondents strongly agree with some parents that believe kids could not achieve the learning objective while playing interactive games and 19.4 percent were agree. It has been opposed by 30.6 percent that disagree and 9.7 percent were strongly disagree, however 36.1 percent indicate average.

V. CONCLUSIONS

Game of Food Block is the best alternative for the parents and educators to teach the millennial and generation Z about the healthy food through interactive game. The idea of Game of Food Block is related to the Industrial Revolution 4.0 where most activities are done by technology. The time that the kids spent on the gadgets is more beneficial as they will gain a new knowledge and also help them to have a healthy lifestyle through this interactive game. This interactive game requires effort, energy and time from all parents, educators and kids in order to fulfill the objectives of this project, Game of Food Block. Thus, it is important to teach our young generation to use technology wisely and bring the good impact to their life.

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Sculpting the Brainstem: Understanding Brainstem Anatomy Using Modelling Clay

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***Abstract*— Preclinical science students lack the understanding of complex structures such as the central nervous system as they lack firm understanding of its basic anatomical structure. As brainstem anatomy is essential to the function of the central nervous system, a weak grasp of its basic structure stands as a barrier when students delve into more complex matters such as neurophysiology and neuropathology. The aim of this teaching and learning method is to ease and improve students understanding of the brainstem, its relations with surrounding structures as well as the anatomical origin of the cranial nerves. This method is unique as it incorporates sculpting and modelling into a modern learning environment as well as developing students fine motor skills alongside visual-spatial cognitive abilities. This method allows creativity, imagination and fun into the learning environment without neglecting the main aim of understanding anatomical structures. Clay modelling and sculpting has tremendously impacted student understanding towards the focused structure as it lifts 2D images from textbooks into handmade 3D models. By studying 2D diagrams, and making 3D models, students have a better appreciation and understanding towards complex anatomical structures as they are required to study deep structures first before building towards superficial structures. After constructing the brainstem model, students find it easier to identify structures of the brainstem as well as its relation towards other structures. This method stands as a precursor towards better anatomy teaching and learning resources and will benefit anatomy students worldwide ranging from primary to tertiary education.**

Keywords*— Anatomy education, Brainstem, Modelling clay, Sculpting, Teaching innovation

I. INTRODUCTION

Understanding the brainstem and its structures is essential for students studying neuroanatomy. However, the structures of the brainstem are many and are complicated for new students. Neuroanatomy teaching and learning, in general, relies heavily on identification of structures and forming concepts through 3D visualization [1]. A weak grasp of basic neuroanatomy will stand as a barrier for students to understand more complex subjects such as neurophysiology and neuropathology. Teaching via textbook and conventional slides are insufficient for the students to properly appreciate the interconnecting structures of the brainstem. The use of commercial plastic models are essential for teaching and learning anatomy, however, they are limited and are not easily accessible generally [2]. Dissections is without a doubt the best way to study human anatomy [3]. However, cadavers are not easy to obtain due to factors such as availability, feasibility, ethics and financial reasons. Furthermore, cadaver dissections of the neuroanatomy structures requires long hours of practice and a high level of dissection skill which preclinical students lack. To overcome this teaching and learning hurdle, various innovative teaching methods ranging from computer aided visualization softwares to 3D printed models have been studied [4]. The use of computer softwares in teaching anatomy are already being practiced in major medical schools throughout the world. However, these softwares require high-tech computers or tablets that are not readily available in small teaching institutions throughout the world. A few studies have focused on using cheaper alternatives in studying anatomical structures. Alternatives such as using paper cut outs and recyclable materials have been conducted [1, 5-7]. These alternatives have been found produce positive outcomes. Modelling clay has also made its way into the world of anatomy teaching. According to several studies, modelling clay has been proven to be effective in learning human anatomical structures [8, 9]. However, limited study has been conducted regarding its efficiency and practicality in studying neuroanatomy. The aim of this study was to look into the effectiveness of using modelling clay to teach and learn anatomy of the brainstem, its relations with surrounding structures as well as the anatomical origin of the cranial nerves. This study also aims to improve and implement a novel teaching method, improve student engagement and understanding towards anatomy as a whole.

II. MATERIALS

In order to achieve a low-cost easy to construct 3D anatomical model, minimal materials have been chosen for this study. Each group of students were given modelling clay packets of various colours, one manila card for mounting and display, a few wooden sticks for structural stability and several coloured markers for labelling.

III. METHODS

The study involved second year undergraduate dentistry students (n=78) within the faculty and was conducted in the Preclinical Sciences practical laboratory. The study was conducted during their fourth semester, where the students were introduced to the Central Nervous System module. Two assignments where given to demonstrate the effectiveness of using modelling clay for teaching brainstem anatomy. Primary teaching using didactic lectures regarding the brainstem was conducted prior to the study. The students were not notified regarding the assignment as it was crucial they did the assignment according to what they understood from the one-hour lecture given and what they understood from personal revision. Students were randomized and are analogous in age, gender and study performance.

A. Assignment 1

All 78 students were given 10 minutes to draw and label the brainstem according to want they understood from the one-hour didactic lecture using conventional slides that was given to them the previous week. Students were also asked to identify the origins of all 12 cranial nerves on their drawings. Their drawings were collected and analysed.

B. Assignment 2

Immediately after Assignment 1 was conducted, during the practical session, students were divided into 7 groups whereby each group were given 1 hour to build a 3D model of the brainstem using modelling clay. Students were allowed to refer to anatomy textbooks and atlases whilst modelling the brainstem. After modelling, students were asked to present what they had understood regarding the anatomy of the brainstem. Students were asked regarding the origin of the cranial nerves and their significance to test their knowledge regarding clinical neuroanatomy. At the end of the session, students were asked to give feedback concerning the assignments given as well as the method of teaching. Student feedback was taken via a structured questionnaire and rated on a score of 1-5 according to the Likert scale (Table 1).

IV. RESULTS AND FINDINGS

In Assignment 1, all students managed to submit the assignment after the allocated period, however to a varying degrees of success. Drawings were collected and were classified into 3 categories by 3 lecturers (Fig. 1). The categories are:

i. Category 1: Poor drawings indicated student has minimal knowledge.

ii. Category 2: Average drawings indicated student show incomplete knowledge and unconvincing understanding.

iii. Category 3: Good drawings indicated student has perfect, or near to perfect understanding.

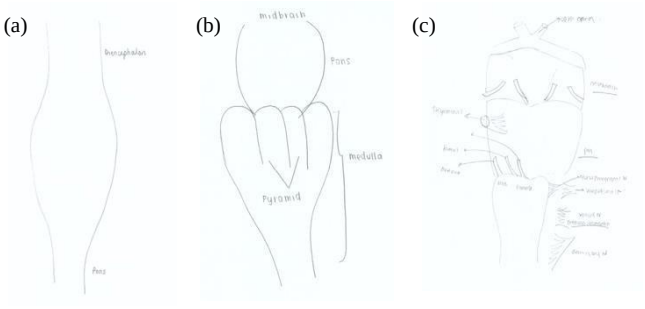

Fig. 1. Assignment 1: (a) Category 1 (b) Category 2 (c) Category 3

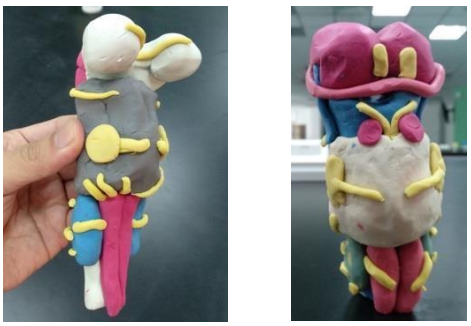

Fig. 2. Assignment 2: 3D brainstem model constructed by students

After blind assessment by individual lecturers, it came to agreement that 50 students sat under Category 1, 25 under Category 2 and only 3 students sat under Category 3. It was concluded that more than 90% of the students did not have a firm understanding of brainstem anatomy after going through a one hour didactic lecture as well as personal revision.

In Assignment 2, all groups managed to complete the brainstem model within the allocated time (Fig. 2). Upon inspection and review by lecturers, all groups managed to display the medulla, pons and midbrain as well as the origins of the cranial nerves. All groups managed to present their models well and their knowledge regarding the anatomy of the brainstem were satisfactory according to lecturers feedback. During the practical session the students showed creativity, active participating, engagement between peers, independent and self-confidence. As students were permitted to use textbooks for reference, they reviewed personal knowledge regarding the organ structure whilst constructing the brainstem. Students feedback conducted at the end of the practical class showed positive response (Table 1).

Nearly 100% of the students preferred learning anatomy via 3D models while more than 80% claimed modelling assisted them in visualizing the images shown in lectures and textbooks. Nearly 80% of the students agree that team based learning and small group discussions had positive impact on their learning and overall interest. Their written responses on can be clustered under a few categories:

i. Student Engagement: Students agreed the activity encouraged active student participation, vibrant discussions between peers and promoted self-learning.

TABLE I. STUDENT FEEDBACK QUESTIONNAIRE WITH RESPONSES (%)

	Question	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
1	I prefer learning anatomy via 3D models	61.5	38.5	0	0	0
2	Sculpting helped in understanding/visualizing the anatomy of the brainstem explained in textbooks	42.3	44.9	12.8	0	0
3	The task given is an effective way to test what I have learned and studied	34.6	48.7	15.4	0	1.3
4	I contributed to my best extent during the activity	17.9	59.0	19.3	3.8	0
5	Team based learning helped me understand neuroanatomy in a better way	32.1	48.7	12.8	6.4	0
6	Small group discussion is better than didactic lectures	66.8	8.9	17.9	3.8	2.6
7	The task helped me generate more interest towards neuroanatomy	60.2	24.4	11.5	2.6	1.3
8	The activity reduces the amount of time needed for self-study	26.9	53.8	10.3	6.4	2.6
9	It challenged me for a better performance	6.4	47.4	34.6	6.4	5.2
10	It had positive impact on my attitude towards learning	7.8	82.0	6.4	3.8	0

ii. Spatial Dimensionality: The activity demanded students to visualise the 3D structure of the brainstem from 2D images from textbooks and atlases.

iii. Cost and Practicality: The activity conducted was safe and used only readily available and low-cost materials. Students can easily replicate the activity at their own leisure.

iv. Kinesthetic Learning: The activity encourages students to use their hands in studying anatomy, thus knowledge is explored via the senses of vision, auditory and touch.

These findings are congruent with previously reported teaching methods using modelling clay. Chang-Seok Oh et al. (2009) incorporated clay modelling into gross and neuroanatomy classes to help students better understand cross-sectional anatomy by comparing the clay models with real CT and MR images [2]. In their study, a total of 70 students ranging from second year and fourth year students medical students asked to make clay models of their organ of interest. The students constructed the organs on a part-by-part basis using coloured modelling clay whilst referring to anatomy textbooks and atlases. After completion, the students made transverse cuts on the models and compared the models with CT and MR images taken at the same level. Feedback surveys amongst the students were performed to investigate the degree of satisfaction of this method of teaching. Effectiveness of the clay modelling technique in learning cross sectional anatomy was studied by giving a CT examination to a group of students from another medical school who did not use modelling clay as a method study and comparing their results to the test results of students in their in-house study. They found out that their students who performed the clay modelling task scored significantly higher than the students who did not use modelling clay. Motoike et al. (2009) used modelling clay as an alternative teaching method to teach human muscles [10]. The study was conducted in a community college involving 181 students across 2 semesters. The students were randomly distributed into 2 groups whereby one group studied human muscles via cat dissections while the other group were given modelling clay and were asked to model out human muscles. A survey was conducted at the end of the semester to compare the methods of teaching. Their results show that the clay modelling method was as effective or better than performing cat dissections. Students using modelling clay did significantly better in identifying human muscles as their counterparts.

Studies have also found that students have a better appreciation towards anatomical structures when learning via clay modelling as students are made to construct deep structures first and building on to them the superficial structures [10]. This stands as a key benefit when compared to dissections, as dissections will need to students to remove superficial structures to access deep areas. Clay modelling also allows the involvement of kinesthetic learning in the classroom. Kinesthetic learning, as opposed to visual and auditory based learning, is defined by learning with aid from the senses of touch, smell and taste [11]. Kinesthetic learning activities on the other hand are classroom activities conducted by students that physically engage the learning material [12]. Kinesthetic learning activities enrich the teaching and learning process as students are allowed to participate actively in the lesson taught. This method improves learning as knowledge is gathered via multiple senses; visual, auditory and kinesthetic, as well as via interactive group work [13, 14]. This study indicates the practicality and efficiency of using modelling clay as a teaching method by which it stands as a complementary teaching method to conventional didactic lectures. Students understanding of brainstem anatomy improved after completing the second assignment. It is generally known that neuroanatomy itself is a challenging discipline and difficult for preclinical students. Traditional lectures have somehow made the subject mundane as a lot memorizing is required and the structures are not easily isolated and recognizable as compared to bones or muscles of the body. Due to this, students rely heavily on passive learning and memorization [15]. As understanding is the goal in education, and memorizing is not understanding, we believe 3D construction of organs using modelling clay is a beneficial method of teaching human anatomy.

V. CONCLUSIONS

Teaching brainstem anatomy using modelling clay is effective in understanding basic brainstem anatomy. This innovative teaching strategy had successfully fostered interacting learning process. Cognitive and physical engagement among students were excellent and coordinated teamwork was shown. This form of short duration practical session that imparts fun activities would be able to improve their focus and concentration towards the learning material. This form of teaching strategy should be emphasized in the future as it could benefit students for their learning.

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Reservation System for Premier Lounge

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Abstract*— Technology is the application of scientific knowledge for practical purposes, especially in industry. Technology is also used to make things easier in our daily life. For the reservation systems we are focusing more in the reservation of the premier lounge that is located in the UiTM Cawangan Kelantan. This is because in order to use the premier lounge, they have to write on the whiteboard and that become a problems because it can be easily erased and have no security over the reservation. The objective of the reservation system is to make the reservation in using the premier lounge become easier in the university. This reservation system also save time and increase the security in making the reservation. This system can help the user to know the availabilty of the premier lounge and help to reduce and avoid redundancy in making the reservation of the premier lounge.The reservation systems were invented to help the user in the process of the reservation of the premier lounge in order to make the its easier to do work in that premier lounge. The reservation will be more secure and will be easier because it speed the time to reserve the room. This system can be used in the university which can help to increase the effiiciency of the management in the university.

Keywords---reservation, secure, system, technology, time

I. INTRODUCTION

A premier lounge is a place that is located in Universiti Teknologi MARA (UiTM), Kelantan, Malaysia in which the place is being used as the main place for the students and the staffs to do their programs. A premier lounge is a room that is used for relaxing and entertaining guests [1]. The premier lounge can be used as a place to have dinner, banquet, and the most important thing that the premier lounge is used is for the VVIP person to eat. This is because the premier lounge is comfortable with its own facilities such as air condition, tables and chairs. Premier lounge is located at the centre of the UiTM so it easier for the students to use the premier lounge. Nowadays, information and communication technologies include different services such as e-mail, telegraph, telephone, and the internet. However, the internet is the latest in long series of communication technologies [2]. The meaning of a system is a set of computer equipment and programs used together for a particular purpose. [3]. A reservation system is a system that allows an event vendor to maintain a stand-alone inventory control system which ties directly to an active reservation server, which in turn is distributed through internet-based reservation systems (web sites) to the users of the internet. [4]. The reservation system includes a local event server that provides the means of maintaining the inventory and the communications with the active reservation server. The local event server allows the event vendor to allocate, control and reserve their inventory at their place of business. Web applications are used to implement webmail, online retail sales, online auctions, wikis, discussion boards, weblogs, MMORPGs and many other functions [5] but we want to take the challenge to create a reservation system that will be helpful in the near future.

In the university, there is many organizations that want to use the premier lounge. There are mostly 50 clubs that are actively engaged with programs in the university so they need to use the premier lounge. There is also another organization in the university such as Corporate Unit that always use the premier lounge. The students and the staff will have to compete to use the premier lounge. The current system of the reservation of the premier lounge is been done manually at the Corporate Unit. That is not secure, outdated and clash of reservation is always happened. Therefore, the reservation system of premier lounge is made to avoid all of these problems that is occur in the reservation of the premier lounge. Furthermore, the system can save time, energy and make the reservation of the premier lounge become more secure.

II. METHODS

This research used quantitative approach to test the questionnaires by the Google Form in order to get responses

from the students and staff of Universiti Teknologi MARA Cawangan Kelantan about the reservation system for Premier Lounge. The tool to collect the data was by questionnaires and 253 respondents were answer the questions. The responses are helpful for further research.

III. RESULTS AND FINDINGS

Table 1.1 Frequency and percentage distribution by demographic profile.

Demographic	N	%
Students or staff that have booked Premier Lounge		
Yes	200	78.9
No	53	21.1
Total	253	100.0
Frequency booked in a year		
1-3 times	152	60.1
4-5 times	68	26.8
More than 6 times	33	13.1
Total	253	100.0

A total of 253 respondents involved in this study and summarized in Table 1.1 as above. For the 78.9 percent of the total numbers of respondents have booked Premier Lounge, while 21.1 percent respondents never booked Premier Lounge. For the frequency booked of Premier Lounge in a year, 60.1 percent were booked in 1-3 times, 26.8 percent were booked in 4-5 times and 13.2 percent were booked the Premier Lounge more than 6 times in a year.

Frequency analysis

Table 1.2 Frequency and percentage distribution by questions

Questions	N	%
Did you know that Premier Lounge reservations need to be done manually (offline) in Corporate Unit?		
Yes	188	74.4
No	65	25.6
Total	253	100.0
Have you ever done the reservation for Premier Lounge on the same date with other event?		
Yes	153	60.5
No	100	39.5
Total	253	100.0
Does the online reservation system is easier for users of Premier Lounge?		
Yes	128	50.6
No	97	38.3
Maybe	28	11.1
Total	253	100.0
Would you use a Premier Lounge reservation system if it made online?		
Yes	154	60.9
No	99	39.1
Total	253	100.0

Table 1.2 shows the results of frequency and percentage by each question. When the respondents were asked about the current reservation of Premier Lounge need to be done manually in Corporate Unit, 74.4 percent indicate Yes and 25.6 percent indicate No. The next question was asked about have they done the reservation on same date with the other event. It was found that 60.5 percent of the respondents answered Yes, while 39,5 percent answered No. Further questions were asked about the online reservation system will be easy for the users of Premier Lounge, and the answered by respondents were 50.6 percent Yes, 38.3 percent No and 11.1 percent were Maybe. Lastly, 60.9 percent of the total respondents answered Yes and 39.1 percent answered No to the question on if the system reservation for Premier Lounge made online.

IV. CONCLUSIONS

In a nut shell, the reservation system for premier lounge is very applicable in the university where the students and the staff that want to make the reservation can just open the reservation system with their laptop or on their phone. The reservation system can make the user of this system become easier to make the reservation for the premier lounge. This system will help in reduce the redundant of the reservation when the students and staff make reservation. Its also very easy, save time, save energy of the user because everything can just be done at the tip of the finger.

In this project there are many questions that is undertake by the students in the university with the performance of reserving the premier lounge. With the help of many people the reservation system of the premier lounge has be the solution for their worry and demand. According to the survey that is been asked mostly of them positively recommend and want to make the reservation of the premier lounge to be made online because this will become a benefit for them in making the reservation of the room. This system also can be used in mobile web and laptop which is easier to access. The user also can make the reservation in a simple way with the interface of the system that is easy to follow and understand.

ACKNOWLEDGMENT *(Heading 5)*

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University Key Performance Indicator Management Model (e-KPI*us*)

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***Abstract*— Coordinating numerous projects conducted by various parties within the university is a daunting task as it involves many individuals and groups. To make it easier for Strategic Planning Unit (UPS) of UiTM Cawangan Kelantan to monitor all projects being worked on, an application named the Key Performance Indicator Management Model (e-KPI*us*) was developed. The 'e-KPI*us*' is a systematic approach to data collection, and supervision of the project progress by the top management and serves as an information sharing platform. e-KPI*us* gives significant and valuable contributions to UPS as it ensures the quality control and improvement in the context of UPS data management. Although the idea of the application developed is undoubtedly convincing, the effectiveness of the application is yet to proof. Thus, a study was undertaken aiming at assessing the effectiveness of e-KPI*us*. A total of 40 respondents consist of project executors, and performance indicators (PI) keepers at UiTM Cawangan Kelantan participated in this study. Findings revealed that e-KPI*us* has received a favorable response from users. This project suggested that the e-KPI*us* can be used to enhance the quality of data management process in UPS and has a great potential to be extended to other departments to ensure better quality of performance management.**

Keywords*— *performance, indicator, management

I. Introduction and literaTures

Based on the past record, few issues has gain attention of the top management, which requires UPS to find effective solution to the issue. First, UPS has face the difficulties of collecting and recording data from each unit or PI holder. Coordinating numerous projects conducted by various parties within the university is a daunting task as it involves many individuals and groups. Second, a need for top management to gain access to PI targets and to get updated information on the progress and other relevant information required for planning and decision making purposes. Third, a need for UPS to enhance the monitoring process in spite current PI achievements. Based on the JKEN report, top management also wishes to improve UiTM Cawangan Kelantan's KPI achievement for future year.

Systematic approach to data collection, supervision of the project progress by the top management and information sharing platform are the important element in quality control [1-3].To make it easier for Strategic Planning Unit (UPS) to monitor all projects being worked on, the objective of this project is to develop an application named the Key Performance Indicator Management Model, UiTM Kelantan (e-KPIus). The 'e-KPIus' is a systematic approach to data collection, and supervision of the project progress by the top management and serves as an information sharing platform. The project also aims to examine the effectiveness of the KPI management model among users.

II. Methodology

Figure 1 shows the flow chart of the study methodology carried out to achieve the main objectives of the study as follows; 1) Developing University Key Performance Indicator (KPI) management model for Strategic Planning Unit (UPS), UiTM Kelantan ; 2) To study the effectiveness of e-KPIus among users.

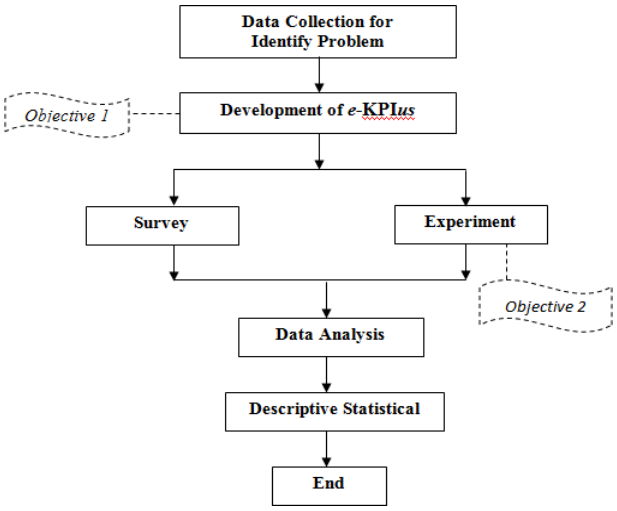

Figure 1: The flow chart of the study methodology

III. ANALYSIS AND RESULT

The study succesfully developed *e*-KPI*us* management model based on Systems Development Life Cycle (SDLC) that contains four main phases as in Figure 2. Table 1 explain the details in each phase of *e*-KPI*us* management model.

TABLE 1 *e*-KPI*us* MANAGEMENT MODEL

Phase	Details
Planning	identifying the planning information to form groups representing groups of activities.This phase consists of two main processes: • The collection of PI-based planning information is outlined by the CSPI, Shah Alam, the mandate of the Vice Chancellor of UiTM, and the mandate of the UiTM Kelantan Branch. • Distribution of PI to responsible owners. The owner is appointed as the Project Manager. The project manager is responsible for planning and ensuring that planning is in place.
Designing	Forming a team to implement the PI that is assigned to the Project Manager. This phase involves the following processes: • Each designated project manager is responsible for preparing his or her own blueprint to achieve the PI target. The Blueprint is used as a guide by executives (faculty, divisions, units) to plan activities / programs. • Executives provide planning as outlined by the project manager. • The project manager is responsible for selecting or refining activities / programs / participation based on PI goals. • Based on the planning provided by all the faculties, divisions, and units involved, the project manager builds the project team to make the plan successful.
Implementation	Gathering information on the implementation of planned activities. To facilitate data collection, UPS recommends owners and executives use the information sharing method. Here's the process for this phase: • The project manager lists all approved activities according to the project team that has been formed. • The project team / Executor must report the activities that have been carried out or participating in by the project manager. • The project manager needs to report the achievements every two months to the UPS Coordinator. • The UPS coordinator will report the latest achievements every two months to the UePMO system, CSPI.
Evaluation	Evaluating the achievements and monitor all of the PIs assigned to the Project Manager in particular and the Kelantan Branch UiTM in general. Action requires;1) UPS coordinators need access to achievements issued by CSPI through the UePMO system every two months. 2) The UPS coordinator needs to provide intervention reports for PI who have not met the target and are reported to the CSPI. 3) The project manager must cooperate to provide feedback on the pending PI to the UPS Coordinator. 4) The UPS Coordinator should provide current achievement report information to all those involved in strategic planning as a guide to planning implementation.

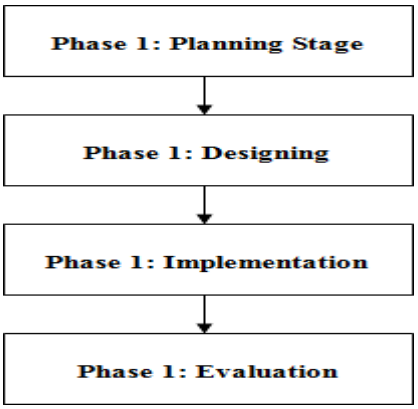

Figure 2: *e*-KPI*us* management model

Although the idea of the application developed is undoubtedly convincing, the effectiveness of the application is yet to proof. Thus, a study was undertaken aiming at assessing the effectiveness of e-KPIus among project executors, and performance indicators (PI) keepers at UiTMCK. Findings as in Table 2 revealed that e-KPIus has received a favorable response from users.

TABLE 2 RESULT OF EFFECTIVENESS SURVEY

Effectiveness of *e*-KPI*us*	**Neutral**	**Agree**	**Strongly Agree**
Data management processes using *e*-KPI*us* is more systematic	-	100%	-
The time taken for data collection via *e*-KPI*us* is shorter	-	100%	-
e-KPI*us* is a good platform for information sharing	-	67%	33%
e-KPI*us* makes the projects' monitoring process easier	-	67%	33%
e-KPI*us* is a user-friendly interface	33%	67%	-

IV. CONCLUSION

e-KPI*us* ensures the quality control and improvement in the context of UPS data management. This project suggested that the e-KPI*us* can be used to enhance the quality of data management process in UPS and has a great potential to be extended to other departments to ensure better quality of performance management.

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IM-Vative Sandbox: Fun Learning in Mastering Hypertext Markup Language (HTML)

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***Abstract*— Hypertext Markup Language (HTML) is one of the most popular languages for website development. Since its inception, many academic institutions have integrated the knowledge of HTML within their syllabus. However, previous research shows that many students are having difficulties to be proficient in HTML language. Several problems are identified; (1) lack of effective online content, (2) lack of supporting tool to code HTML, (3) portability issue of authoring software. Therefore, IM-Vative Sandbox was developed based on PHP Programming Language (PHP), MySQL Database, and jQuery. The sandbox provides real-time generation of HTML source codes; compared to the conventional method of using Notepad, Sublime, or any other authoring tools. In terms of commercialization, the application can be accessed through mobile and desktop and suitable for beginners who want to learn the basics of HTML.**

Keywords*— basic web design, contents management, sandbox, learning styles.

I. INTRODUCTION

Nowadays, teaching and learning activities do not only rely on face-to-face classroom learning but, with today's technology, learning is also more flexible and open. This ultimately affects teaching techniques, where technology enables new learning concepts to be viewed from multiple angles and perspectives [1]. Information technology is now progressively involved in various teaching and learning activities, whereby educators may use the new technologies according to educational needs [2]. During this 21st century, the information of higher education has also progressively increased, whereby using information technology and digital resources become common routine, as well as utilizing information platform of education to improve the conventional teaching and learning approaches.

In the process of curriculum development, blended learning emerged as a new type of teaching concept and indicated several potentials [3]. Thus' the "e-learning" term has become a common and important platform for knowledge transfer. The rising popularity of e-learning is attributed to its ability to allow learners to learn without time and location constraints, as well as decreasing training costs for some organizations. Thus, the implementation of e-learning is one of the solutions for learners to be aware of new technology and while attracting them to improve their knowledge [4].

E-Learning applications are now getting recognized by learners as another learning opportunity apart from face to face learning. A project developed by [5] suggested that learners prefer online education as compared to traditional classroom coaching. Likewise, a study by [4] indicated that e-learning can affect self-efficacy especially in upgrading

knowledge and skills of learners and suggested that the educational institutions' management should maintain the technology facilities to ensure e-learning could be useful.

Furthermore, by focusing on teaching and learning of programming language, learning how to write codes using various languages to develop a website or a system has become part of the curriculum offered by many educational institutions. As a result, a lot of concerns become apparent related to what to teach (the contents) and how to teach it (teaching approaches) to build skills and competencies of the learners [6].

Knowing developing websites, mobile applications and information systems are one of the most important knowledge of today. In a world without boundaries, we can meet anyone in the cyber world using web-based software. Graduates who have expertise in developing a website can be considered having value-added and ought to high market demand in the world of employment. Realizing the importance of this knowledge, many academic institutions have integrated the knowledge on Hypertext Markup Language (HTML) within their syllabus as one of the basic and popular languages for website development. However, it is not an easy task for instructors to produce technology-savvy students. It is said that one of the greatest challenges in teaching technology is pacing, as some students may understand the concepts quickly, while others need repetition and may struggle to keep up [7].

Moreover, there were studies conducted to identify problems occurred in learning programming languages. A research by [8] identified four main problems, including (i) the lack of skills in analyzing problems, (ii) ineffective use of problem representation techniques for problem solving, (iii) ineffective use of teaching strategies for problem solving and coding, and (iv) the difficulty in mastering programming syntaxes and functions. Besides, another study indicated that many students are having difficulties to be proficient in HTML language. Several problems are identified, which are lack of effective online content, lack of supporting tool to code HTML and issues on portability of authoring software [9].

Thus, a recent study suggested that a visual programming language (VPL) learning environment may reduce the difficulties and it is appropriate for many levels of learners, including those who are not computer science majors. VPL has vast potential for programming courses in the general education of universities [10]. It offers learners to learn through practice, apply the concepts acquired in the classroom learning into realistic outcomes and view the results.

Therefore, by taking into considerations that ineffective teaching strategies and lack of supporting tools are among the problems that have been identified by previous studies, a tool to support programming language learning is developed, known as IMVative Sandbox. The objectives of this project are; to provide a fun learning application for users in mastering Hypertext Markup Language (HTML), to facilitate the learners to access a 24/7 open platform by giving freedom and independence in learning, as well as to increase learners' proficiency in learning coding languages with technological tool assistance.

II. MATERIALS

IM-Vative Sandbox was developed based on PHP Hypertext Preprocessor (PHP) programming language, MySQL Database, and jQuery. This project can be viewed and accessed from a personal desktop computer, and also made available in the mobile application version.

III. METHODS

The project was developed by following the System Development Life Cycle (SDLC). The stages of system development consist of planning, analysis, design, implementation, and maintenance.

A. Planning

This stage involves a thorough review of the literature to identify previous studies and projects of teaching and learning for programming languages. A needs assessment was also conducted by analyzing students achievements (students' grades) before the project are developed and implemented, of which it was found that some changes are required to help in increasing the achievements. Also, a total of five (5) respondents were selected from the Faculty of Information Management, UiTM Kelantan. These students were chosen because of the researcher's easy access to the sampling frame and they are enrolled in the web development subject. The development team had interviewed to gain information regarding their problems with the programming languages and existing teaching approaches.

B. Analysis

Problems identified from the achievement analysis and interview sessions were then grouped into specific categories. These categories facilitated in identifying specific criteria to be included in the project while ensuring academic requirements can be tailored with and fulfilled.

C. Design

A working model (prototype) of the system was developed based on Joint Application Development (JAD) and CASE tools. Users were consulted to provide input and feedback of the PHP Sandbox. The system was improved according to the feedback received.

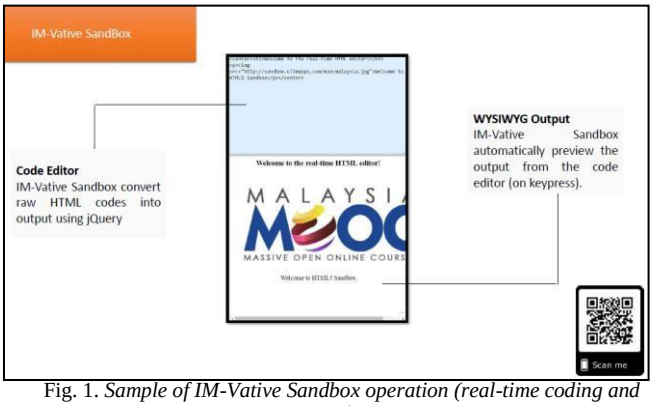

Fig. 1. *Sample of IM-Vative Sandbox operation (real-time coding and output)*

D. Implementation

The application was developed based on PHP, JQuery, CSS, and HTML5 (coding and programming languages) together with MySQL database. Users were still allowed to

provide feedback, especially on the interface design. At the end of this stage, a user acceptance test (UAT) was conducted to ensure requirements are fulfilled. Five respondents involved in the acceptance test and few corrections were made to the system based on the test.

E. Maintenance

Scheduled maintenance (backup) was defined to ensure data are securely kept and protected. Adaptive maintenance was also conducted from time to time to ensure interface and requirements are constantly updated in-line with academic requirements.

IV. RESULTS AND FINDINGS

Establishment of IM-Vative Sandbox has produced few results as follows;

A. Solve academic issues

This tool can be used as a diagnostic tool for the continuous improvement of students' performance. It may help educators to monitor learners' progress and make any recommendations as needed.

B. Fulfill academic requirements

This tool may also facilitate educators to improve teaching delivery by focusing on specific criteria which suit with academic requirements (a course or subject requirements). As a result, effective learning experience among learners can be achieved.

C. Improve productivity

Besides, the application can also be used by many levels of learners, including students, working individuals, and the community. This will contribute to enhancing the skills of digital citizens.

D. Save cost and generate income

IM-Vative Sandbox promotes various commercial values and potentials in terms of its usability, consultation and training, convenience and easy learning kit. There is a potential in writing a publication of book and e-book as users' handbook to introduce the Hypertext Markup Language (HTML) and opportunities to conduct web design and development consultancy. Furthermore, income can be generated by utilization of AdMob, Adsense, and introduction of the application via Google Play and App Store. Utilization of online platform serves the needs in saving the cost of printed materials while supporting green technology.

E. Increase students' interest in learning web development course

This web-based application allows learners to view real-time results of their coding, of which this condition may ease learners to practically involved in the learning process. Besides, it also allows its administrators to provide consultancy and training to all learners as it can be accessed through any electronic device, anywhere and anytime. As it supports learning, the application could be commercialized to other academic institutions and public/private sectors in giving web development training for the new workers.

V. CONCLUSIONS

The introduction of this new IM-Vative Sandbox educational tool is intended to improve students' understanding and performance in using HTML language for website development. It provides a fun and interesting way of learning and can also be used as a diagnostic tool for continuous improvement of users' web programming skills since the educators can monitor users' progress and suggest any recommendations needed through the online channel. This tool is not only considered as supporting the green initiatives, but also rather as a speedy medium of teaching and learning process.

ACKNOWLEDGMENT

We would like to express our greatest gratitude and appreciation to all those who provided us the possibility to accomplish this project. Special thanks go to the Academic Affairs, UiTM Kelantan (UiTMCK) and Faculty of Information Management for always supporting innovative ideas and projects. Also, we would like to express our gratitude to the developers of "IM-Vative Sandbox", which is IM-Vative team, from Faculty of Information Management, UiTMCK. Finally, thanks to the teammates who worked wholeheartedly in finalizing this project.

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Fhtm2u

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***Abstract*—The Faculty of Hotel and Tourism Management (FHTM), UiTM Terengganu, offers food and beverage (F&B) practical classes. The Faculty operates three mock restaurants, namely Bayu Grill, Mock Restaurant, and Kafe Kreatif. These classes are open not only to the UiTM staffs and students but also to external customers. However, customers face difficulties searching for information about the menu, venue, price, and other details offered in the practical classes. Thus, the objective of this project is to invent a user-friendly application to assist customers to select the menu, venue, price, and time of choice from these restaurants. Moreover, this innovative systematic reservation application, *fhtm2U*, will also provide a list of tourist attraction places for the customers to get an idea for sightseeing while visiting the UiTM Dungun campus. Also, *fhtm2U* has the potential to be commercialized, as it will bring in more customers. Users can download this application via Android or iOS. This application could drive up student menu sales and marketing strategy. Indirectly, it will also promote FHTM programs to the public.**

Keywords—Application, Menu, Reservation, Restaurant, Tourism

I. INTRODUCTION

Recently, online reservation systems have become more popular among both restaurants and consumers. These systems have been associated with increased revenue, improved capacity, improved management productivity, improved transactional marketing, and better customer relationship management [1]. On the other hand, in the food service/restaurant operations sector, very few studies have been done on this area [2] with most focusing on employees rather than customers. Understanding restaurant customers will help the industry to gain better insights into how their customers think about and use platforms such as these. It will also address the knowledge gap in understanding the consumer's usage of online reservation systems [3]. The Faculty of Hotel and Tourism Management, UiTM Terengganu, operates three mock restaurants that offer different student menus, venues, and a style of service every week in every semester of study. These mock restaurants serve as training restaurants. Previously, the student menu sales and marketing strategy were based on manual practices where students would distribute flyers and receive reservations via phone call. However, the customers would face difficulties searching for information about the menu, venue, price, and other details offered in the practical classes. Hence, only a few external customers were aware of the student menu operated by the faculty and that it is open to outsiders.

Besides, in practical classes, there is a need to implement an efficient and effective system to control customer reservation. Such a system can indicate the effectiveness of the whole operation and could give a huge impact on the entire performance of the mock restaurant business. Therefore, it is necessary to develop an application that would enable people to reserve a table at the restaurant efficiently and conveniently. Managing increasing demand, price, and table utilization is critical to restaurant business profitability [4]. Therefore, this study aims to invent a user-friendly Web application to assist customers to select the menu, venue, price, and time of choice. Web apps have become more trendy and have increased the sales of products and services nowadays. These apps are multi-platform-supported, easy to develop, and are known to be stable [5]. According to a past study [6], the web application is a powerful medium for delivering information and software services over the Internet.

II. METHODS

This study used the wix.com website to create a *fhtm2u* website that is compatible with all devices. Wix.com was used because it is a functional website builder that incorporates features of advanced e-commerce tools [7]. Besides, the website builder does not require any programming skill [8] because it already has ready-made templates for consumers to choose from and mix and match accordingly. A website builder is much easier to use to build

a website compared to coding, i.e. the conventional way [8]. Figure 1 shows a snapshot of the wix.com website.

Figure. 1. The *fhtm2u* website based on a template from wix.com.

This website builder is also the cheapest and most cost-effective way of developing a website. Consumers can manage and control the website themselves and maintain the website without hiring any programmers [8]. The view of *fhtm2u* on a mobile device is shown in Figure 2.

Figure. 2. The view of the *fhtm2u* website from a mobile device.

The *fhtm2u* web app consists of a description about the restaurant, the menu of the week (Figure 3), and booking reservations, all of which are integrated into the website via Google Docs, Google Forms, and Google Sheets. This integration is an important part of the website, as it helps the customer to book reservations. First, the customers need to choose the menu and then book a table by filling up the Google Form, as shown in Figure 4.

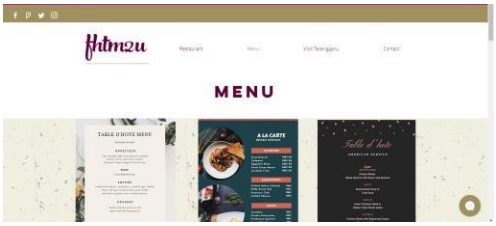

Figure. 3. Example of the menu of the week.

Figure. 4. The booking reservation form.

After that, the booking reservation completed by the customer will appear in the *fhtm2u* database, which uses Google Sheets. This database, especially the number of reservations for that particular day, will be monitored by the coordinator of services. The three restaurants can only cater to 20 people per session. Figure 5 shows the database that has been integrated with Google Forms.

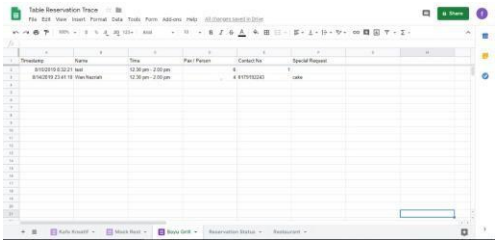

Figure. 5. The database in Google Sheets

Next, this website was integrated with the *fhtm2u* application created using AppsGeyser.com, a free app creator that makes it easy to build an app platform. Through this app, a QR code that is compatible with all devices is generated, as shown in Figure 6.

Figure. 6. The QR code generated by the *fhtm2u* app

III. RESULTS AND FINDINGS

A pilot test was conducted on 35 respondents (UiTM students, staffs, and external customers). The results obtained are shown interactively based on the highest item scored by the respondents. It can be seen that the respondents rated trust the lowest. The respondents agreed that the app was convenient, user-friendly, and functional with each having an equal number of respondents. Figure 7 below shows the user responses regarding the *fhtm2*u reservation website.

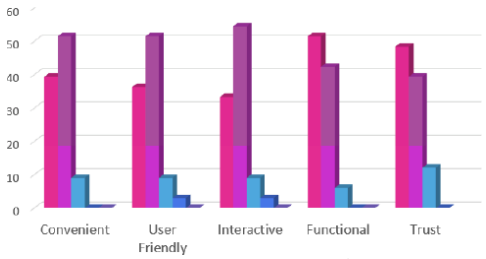

Figure. 7. Responses to the survey regarding the fhtm2u reservation website.

The results show that the customers were able to search for quality information regarding the menu, venue, price, and other details offered in the practical classes on their own. Moreover, the Web app saved the customers' time in making decisions to dine in at the restaurant and reserve a table. It was also time-saving for the students to gain customers as potential guests. Besides, the app offers a cost advantage to students and lecturers because it is free to make while the flyer printing and transport cost money and are not guaranteed to reach potential customers.

IV. CONCLUSION

fhtm2u is an online reservation web app that displays the variety of student menus offered at three mock restaurants operated by The Faculty of Hotel and Tourism Management, UiTM Terengganu, namely Bayu Grill, Mock Restaurant, and Kafe Kreatif. This Web app displays the student menu of the week based on several menu types such as the Table D'hote/A la Carte/International Buffet. It also provides unique places of attraction for the customers to gain ideas for sightseeing on the campus. To date, many established restaurants have used websites and integrated apps for booking and reservations primarily for commercial usage. This study is an attempt to develop a basic mock restaurant reservation website, so it is hoped that the app and website will be a useful tool to reduce the issues regarding the mock restaurant reservations. In particular, it is hoped that it will be a useful tool to reduce the issues regarding mock restaurants reservation in UiTM Cawangan Terengganu. In conclusion, this initiative was developed to promote the student menu in the mock restaurants to the public whilst giving exposure to the students to experience actual restaurant reservation processes, operations, and dealings with real customers. Furthermore, this Web app also has the potential for commercialization by gathering external customers. Its continuous usage also aligns with the practical class lifetime, besides being a user-friendly application and offering valid information and procedures regarding student menus at the fingertips. Last but not least, with this Web app, the customers get to experience the services of the students, eat well, and spend less.

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Users' Intention to use I-POS Web System

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***Abstract*— I POS (Integrated Point of Sale) Web System is a system developed to manage inventory records aimed at SME (Small Medium Enterprise) business organizations including purchase and sale records, and stock movements using calculation automation systems. There are problems faced by SME business organizations such as lack of tools for inventory management and a lack of skills in monitoring profit and sales records. In addition, improvements need to be made to improve existing systems to better meet current situations and problems that cannot be solved by using present poor systems that make it difficult for SME business organizations to achieve their goals. I POS Web System functions to alert and notify sellers to order stocks of bestselling, exhausted, reduced to ensure stocks are always up-to-date based on the FIFO concept (stocks that have expired will undergo appraisal process whether dumped, recycled, etc.). Besides, I POS Web System will record the number of existing stock, and the seller will be able to identify the amount of stock to be added. Additionally, the I POS Web System can also produce statistics and graphs on high demand items so that sellers are always ready to add stock before they run out. After that, commercialization potential of this system targeted among Malaysia SME business organizations that can use through web based system successfully and also potential of systems to be integrated into mobile applications to be more responsive and flexible to rise up market value of system.**

Keywords*— *inventory management, SME management system, SME* business *organizations, enterprise system, automation calculation system

I. INTRODUCTION

I POS Web System provide the latest, reliable POS System solution to organize, grow and promote a business. I POS comprehensive yet affordable solution is designed to meet the needs of a variety of businesses in a multitude of industries, including retail and wholesale, food and beverage especially for SME (Small Medium Enterprise) I POS Web System has solution such as Inventory Management System, POS System for restaurant, hardware stores, beauty salons, pet shops, accessory shops, bookstores, stationery stores, boutiques, laundries, organic shops, music schools, optical shops, souvenir shops, photograph shops, camera shops, motor shops, tea houses, smartphone shops, vegetable, fruit stores, florists, toy shops and etc. In addition to I POS Web System functionality, there is an inventory management system, which helps to order based on stock levels and selling rate. This will make sure that the store will never to run out of popular and high demand items. Along with this is a vendor management system that provides better communication between the user and suppliers. A loyalty or membership program can reward loyal customers while boosting sales.

According to several SME entrepreneurs in the interview session, it was found that most of them had to hire a third party to manage inventory records, sales calculations and profits. This is because they have no accounting skills and are not able to hire full-time staff with those skills. Not many SME in Malaysia are adopting financial management tools in their organizational activities. Arguably, SME need to be aware of the accounting information and use it for better management control and decision making process in order to remain competitive in the corporate world.

Besides, interviews with SME entrepreneurs also found that most of them were less aware of the importance of financial records management. One of the reasons behind the fact that SME do not properly keep their accounting records is that there is no statutory requirement for the SMEs' financial information to be publicly disclosed. Although, this may indicate that there are no violations of the statutory regulations but somehow it demonstrates that SME are not being responsive to the importance and safety of accounting records.

A part from that, it was found that most SME entrepreneurs rarely use ICT tools, leaving them with no tools to maintain a more systematic and lasting record of business transactions. All information needs to be

computerized to establish a fast and beneficial link with the customers, and the suppliers, which can ease the business operations terms of saving time and cost. They need to be equipped with the Information Technology (IT) knowledge to remain relevant in the current business environment. Therefore, I POS Web System is designed to improve the work flow of business transaction management; provide appropriate management of SME business record in line with National Archives Act 2003; and inculcate digital transformation on conventional SME business approach in line with Industrial Revolution 4.0 (IR 4.0).

II. LITERATURE REVIEW

Based on National Archive Act [1], the purpose of a public record, including an electronic public record, is to serve as an authoritative, authentic, and reliable source of information and as the means of documenting decisions. Most importantly, it would serve as evidence to the transactions that transpired in government.

SMEs are establishments employing less than 200 employees and having fixed assets less than RM2.5 million [2-3]. In Malaysia, SMEs are the dominant form of business establishments. Out of the 662,939 business establishments, 97.3 per cent are SMEs. More than three quarters of the total SMEs establishments were micro enterprises, followed by 20 per cent small-sized enterprises, and 3 per cent medium-sized enterprises [4].

A study revealed that the causes of the failure of SMEs are both internal and external. Internal factors include lack of management experience, lack of functional skills and poor staff training and development and poor attitudes towards customers. External factors include nonavailability of a logistics and supply chain, high cost of distribution, competition, rising costs of doing business and lack of finance [5].

There has been a vast increase in the application and adoption of ICT in organizations for the storing, processing, distributing, and information exchange within the firm and along their supply chains [6-7]. The implementation of ICT solutions to support SCM by SMEs can be cost saving for an organization in several ways [8]. It can increase flexibility, reduce the occurrence of errors in paper-based activities, achieve faster response times, and lower the cost of labor [9].

Several theories and models were developed from the perspective of IS; Technology Acceptance Model [10], Unified Theory of Acceptance and Use of Technology [11], Task-Technology Fit [12], Theory of Planned Behavior [13], and Theory of Reasoned Action [14].

Technology Acceptance Model (TAM) is to explain the general factors of computer acceptance that lead to clarify users' behaviour through a wide range of end-user computing technologies and user populations [10]. TAM is specifically tailored for modeling users' acceptance of information systems or technologies. Large number of studies carried on applying TAM to explain and predict the voluntary use of systems, very few studies considered systems that were for mandatory use [15]. Attitude may have important effects on system use and therefore need to be reconsidered in the TAM Model [16].

Unified Theory of Acceptance and Use of Technology (UTAUT) is a unified model based on social cognitive theory with a combination of eight prominent information technology (IT) acceptance research models [17]. The effort expectancy construct in UTAUT, like its predecessor 'ease-of-use' in TAM, captures how much effort users expect to invest in order to be proficient in using a system.

The proposed Task-Categorization-Technology Fit model is an enhanced model of the Task-Technology fit model [18]. Task Technology Fit (TTF) model is applied to evaluate the performance impact of CCT on individual in the organization. TTF model views technology as a means by which a goal-directed individual performs tasks. TTF focuses on the degree to which system characteristic match the user's task needs. Higher task-technology fit will result in better performance [12].

Theory of planned behavior is a prominent reasoned action model, its conceptual foundation, its intellectual history, and the research it has generated from its roots in propositional control and expectancy theory, the TBP emerged as a major framework for understanding, predicting, and changing human social behavior. According to this theory intention is the immediate antecedent of behavior and is itself a function of attitude toward the behavior , and these determinants follow, respective, from belief about the behavior's likely consequences, about normative expectation of important others, and about the presence of factor that control behavioral performance [19].

Fishbein and Ajzen's theory of reasoned action has been a leading theory in social psychology for the last few decades, it also has been an object of criticism for much of that period and subject to definitional issues about what an attitude is [20].

III. METHODOLOGY

Given the nature of the research question, the most appropriate method for this study is a quantitative study and System Development Life Cycle (SDLC) for system development. At the first stage, an online questionnaire was developed by adopting previous instruments by other researchers. Prior to the data collection, the instrument was pre-tested with several experts in the field of the information system. The instruments were revised based on comments and suggestion from the expert review process. Then, a pilot test was conducted with 30 students and reliability test was performed using Statistical Package for Social Science (SPSS) version 22 software.

The population of the study was students enrolled for the bachelor's degree and a diploma in the Faculty of Information Management, Universiti Teknologi MARA (UiTM) Kelantan, Malaysia. These students were selected because of researchers' easy access to the sampling frame, and they were also involved in the pilot testing during the implementation of I-POS Web System. The following sections explain the finding of the study.

A. Instrument Development

A quantitative approach was adopted for data collection. Items were adopted from similar previous study. The completed instrument was sent to the experts for pre-test. The instrument was modified based on the recommendation and suggestions from the expert review process. Then, the instrument was distributed for a pilot test; Cronbach alpha

was used to determine the reliability of the instrument. Actual data collection takes place for 2 months. Respondents selected were students at the Faculty of Information Management, Universiti Teknologi MARA Kelantan Branch. The respondents were selected based on convenience sampling.

The following Figure 1 shows the list of variables in research model of the study.

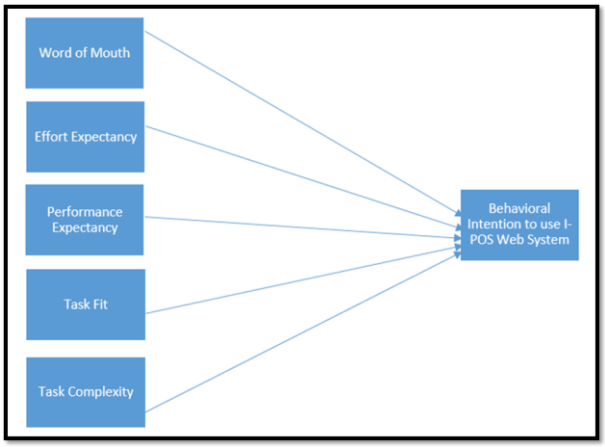

FIGURE 1: RESEARCH MODEL OF I POS WEB SYSTEM

B. *System Development Life Cycle (SDLC)*

System Development Life Cycle (SDLC) methodology is a standard process to conduct all the steps necessary to plan, analyze, design, implement, and maintain information systems. The five elements in this process are completed step by step. The following Figure 2 shows the cycle of system development.

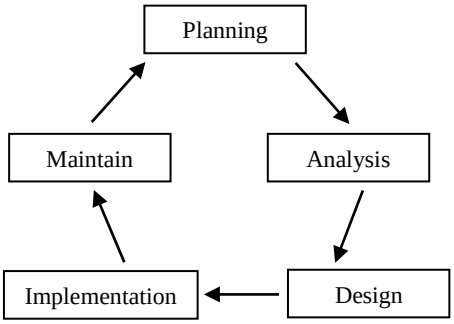

FIGURE 2: CYCLE OF SYSTEM DEVELOPMENT

The first step is planning. Process started to understand the concept in the process of inventory and point of sale (POS) system development methodology. Then continued with the gathering the information about Small and Medium Enterprise (SME) that can be used in decision making indirectly determine the current problem of SME such as lack of knowledge on transaction management, lack of proper record keeping, and lack of ICT usage. The information gathered from online article then the system selected and continued with the consultation of the systems with lecturer for approval. The proposal needs to be prepared when the system was selected and approved. The approved system is POS system that focuses in SMEs' business. Then, abstract drafted to determine the system introduction, function, objective, commercial value, and others.

The process continued to analysis section. This section consists of determine other system from website. Analysis to other system shows the features in the system that can be idea for improvement. Other functions of the I POS Web System also need to be analyzed so that the functions for inventory, registration, updates, removals, sales, purchases and more are fully interactive.

The next step is design process. Storyboard created based on the development page of Integrated Point of Sale (i-POS) System that represent the system's features. A storyboard is a graphic organizer in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence. The storyboard consists of interface design, input, and output. Then, the next step involves the programming process started with pages design using Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). To ensure that the system is able store data, the programming process is carried out using Personal Home Page (PHP) and MySQL which are Oracle-backed open source Relational Database Management System (RDBMS) based on Structured Query Language (SQL). The software used in this design is Adobe Dreamweaver and Wamp sever.

Next is implementation process. Implementation is a process whereby information system is coded, tested, installed and supported in the organization. The activity in this process is content development which is the system need to add as a data. The content development consists of Entity Relationship Diagram (ERD) development and system development. The table of ERD created based on the data requirement in the system. The example of the table is admin, company, staff, customer and more. The table needs to connect to each other as a database. Then, develop the system that can be used as well. The data flow and context diagram created to show the process of this system.

Last is maintaining process. In this step, the system needs to be tested by using both Alpha tester and Beta tester. Alpha tester is the first tester that user testing of a completed information system using simulated data. This session is to test the process of the system. Then followed to the Beta tester which is user testing of a completed information system using real data in the real user environment. Then system development needs to be recorded. Final preparation needed by team belong to the system and report. Any issues will fix in this preparation. Lastly, final presentation needs to show the system development.

IV. RESULTS AND FINDINGS

The following section discusses the result of data collection. The findings will be discussed in term of descriptive analysis.

A. *Demographic profile*

Table 1 shows the demographic profile of the respondents. A total of 150 respondents involved in the study. Based on the data collection, 58% of respondents are female, while 42% male. In term of the semester, the highest percentage of respondents is from semester 3 with 28.0%. Most respondents underwent fulltime studies 98.7%, while part-time studies contributing the rest. In term of level of study, 31.3% of respondents with a bachelor while 68.7% of

respondents with a diploma. The respondent with the age range of 21-22 years represents the highest percentage.

TABLE I. DEMOGRAPHIC PROFILES

Item	*Description*	*Frequency*	*Percentage (%)*
Gender	Male	63	42
	Female	87	58
Current Semester	Semester 1	11	7.3
	Semester 2	20	13.3
	Semester 3	42	28.0
	Semester 4	40	26.7
	Semester 5	31	20.7
	Semester 6>	6	4.0
Mode of Study	Fulltime	148	98.7
	Part Time	2	1.3
	SML	0	0
Level of Study Age	Diploma	47	31.3
	Degree	103	68.7
	18-20	30	20.0
	21-22	85	56.7
	23-25	34	22.7
	Over 25	1	0.7

B. Descriptive Analysis

Table II shows the mean for word of mouth. From the table, it can be concluded that respondents strongly agreed that word of mouth does contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.91 while the lowest mean is 4.83.

TABLE II. WORD OF MOUTH

Item	1	2	3	4	5	*Mean*
I will say positive things about I-POS Web System to other people.	0	0	3	10	137	4.89
I will recommend I-POS Web System to anyone who seeks my advice.	0	0	2	12	136	4.89
I will refer my acquaintances to use the I-POS Web System.	0	0	4	9	137	4.89
I suggest I-POS Web System that I satisfied to my friends	0	0	1	15	134	4.89
I tell positive I-POS Web System experiences to my friends	0	0	3	19	128	4.83
I make positive ratings regarding I-POS Web System.	0	0	1	12	137	4.91
I comment on successful products and brands.	0	0	1	13	136	4.90
I talk with my friends about features of I-POS Web System.	0	0	4	14	132	4.85
I talk about I-POS Web System satisfactions.	0	0	3	8	139	4.91
I make sharing about successful I-POS Web System.	0	0	2	19	129	4.85

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5-Strongly agree

Table III shows the mean for effort expectancy. From the table, it can be concluded that respondents agreed that information quality does contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.89 while the lowest mean is 4.83.

TABLE III. EFFORT EXPECTANCY

Item	1	2	3	4	5	*Mean*
Learning how to use I-POS Web System is easy for me	0	0	2	14	133	4.86
My interaction with I-POS Web System is clear	0	0	2	16	132	4.87
My interaction with I-POS Web System is understandable	0	0	5	8	136	4.86
I find I-POS Web System easy to use.	0	0	2	10	137	4.89
It is easy for me to become skilful at using I-POS Web System.	0	0	3	16	130	4.83

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5-Strongly agree

Table IV shows the mean for performance expectancy. From the table, it can be concluded that respondents strongly agreed that performance expectancy does contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.90 while the lowest mean is 4.84.

TABLE IV. PERFORMANCE EXPECTANCY

Item	1	2	3	4	5	*Mean*
I would find I-POS Web System useful in my job.	0	0	2	13	135	4.89
Using I-POS Web System enables me to accomplish tasks more quickly.	0	0	3	14	133	4.87
Using I-POS Web System increases my productivity	0	0	1	10	138	4.90
If I use I-POS Web System, I will increase my chances of gaining more profit.	0	0	2	17	130	4.84

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5-Strongly agree

Table V shows the mean for task fit. From the table, it can be concluded that respondents strongly agreed that task fit contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.93 while the lowest mean is 4.87.

TABLE V. TASK FIT

Item	1	2	3	4	5	*Mean*
I found I-POS Web System appropriate for the business task that my group performing	0	0	1	13	136	4.90
I-POS Web System displayed in a readable	0	0	1	8	141	4.93
I-POS Web System displayed in an understandable format	0	0	2	11	137	4.90
I-POS Web System presented in a useful format	0	0	1	14	135	4.89
The information on I-POS Web System is what I need to carry out my tasks.	0	0	2	15	133	4.87
I-POS Web System adequately meets my information needs.	0	0	1	11	138	4.91

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5-Strongly agree

Table IV shows the mean for task complexity. From the table, it can be concluded that respondents strongly agreed that task complexity does contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.89 while the lowest mean is 4.82.

TABLE VI. TASK COMPLEXITY

Item	1	2	3	4	5	*Mean*
I frequently deal with unstructured business problems.	0	0	3	13	134	4.87
I frequently deal with ad hoc	0	0	5	17	128	4.82
I frequently deal with non-routine business problems.	1	0	4	14	131	4.83
The business problems that I deal with frequently involve more than one organizational group.	0	1	5	13	131	4.83
The business problems I work on involve answering questions that have never been asked in that way before.	0	2	1	15	132	4.85
In my job, there is a great deal of variety problems, issues, or questions for which I need data.	0	0	1	15	134	4.89
The business problems I deal with frequently involve more than one business function.	0	0	2	15	133	4.87
In my work, I frequently have to think about business problems	0	1	4	10	135	4.86

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5-Strongly agree

Table IV shows the mean for behavioural intention. From the table, it can be concluded that respondents agreed that behavioural intention does contributing to the user satisfaction towards the use of I-POS Web System. The highest mean is 4.92 while the lowest mean is 4.87.

TABLE VII. BEHAVIORAL INTENTION

Item	1	2	3	4	5	*Mean*
I intend to use I-POS Web System for communicating with others in the context of my work.	0	0	2	11	136	4.92
I intend to use I-POS Web System in doing performance-based activities at work.	0	0	2	8	140	4.91
I intend to use I-POS Web System for coordinating business.	0	0	2	10	138	4.90
I intend to use I-POS Web System for collaborating in performance-based activities.	0	0	1	13	136	4.90
I intend to continue using I-POS Web System	0	0	1	13	136	4.87
I predict I would continue using I-POS Web System.	0	0	2	15	133	4.89
I plan to continue using I-POS Web System	0	0	1	14	135	4.89

1- Strongly Disagree 2- Disagree 3- Moderate 4- Agree 5- Strongly agree

V. CONCLUSIONS

As a conclusion, this system is best applied to all SMEs because the system is standard and has the functionality required by each SME. The use of this system is very appropriate, as this system is capable of accessing everywhere using the internet. With this functionality, enable the company to make updates anytime and anywhere. New SMEs are designed to use this i-Post system, as data can be stored securely. The data need to manage by the system especially nowadays. This is because; there are several things in SMEs that need to reduce time in their operations. For example, in manage the stock, the SME need to get the accurate data of the product. This leads the company best decision-making.

To strengthen the elements and functions of this system, Researchers conducted a quantitative study to investigate the extent of user satisfaction towards using I-POS Web System. A convenience sampling method was adopted.

The contributions of the paper are as follows. First, researchers identify a list of predictors for information system success in the context of the point of sales process. Second, the researchers proposed a conceptual model of behavioral intention based on previous literature. Third, we discuss the findings and discussion for future study.

This study will be limited in several ways. Firstly, the researchers only use a minimum number of variables for the study. Future study should include more variables such as system quality, service quality, perceived usefulness and attitude towards the information system. Secondly, the researchers only include small numbers of the respondent from single university.

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Koch Snowflakes Batik Design

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***Abstract*—Batik in Malaysia is a very popular textile, especially in Malaysia's east coast, Kelantan, Terengganu and Pahang. Its uniqueness in batik designs reflecting local identity, distinguish it from its counterpart, the Indonesian batik. The most popular motifs in Malaysian batik are leaves and flowers as well as some geometric designs such as spiral. However, more innovative ideas are needed to meet the demand in designing Malaysian batik. An effort to provide such great inspiration to the designer is through a project using mathematics geometry with the aid of sophisticated computer software and graphics. Mathematics and art have a long historical relationship, commonly known as fractals. Koch snowflake is a kind of geometrical shape and is one of the earliest fractals. Koch snowflake has great potential to be a motif design for Malaysian batik because of its simplicity and beauty and yet never been extensively explored before. The impact of this product to the society is to demonstrate the importance of mathematics in the world of fashion as well as enhancing the commercialization of Malaysian Batik using fractals**

Keywords—design, fractals, Koch snowflakes, Malaysian batik

I. INTRODUCTION

Batik in Malaysia is a very popular textile especially in the east coast of Malaysia, running along the states of Kelantan, Terengganu and Pahang. Motif design creates the identity of Malaysian Batik and it differs from the Indonesian Batik. Most popular motifs in Malaysian Batik are mainly leaves and flowers as well as some geometric abstract designs. Motifs depicting human or animals are rare because of Islamic background of the region that forbids living things used for decoration.

The making of Malaysian Batik is different from the Indonesian (Javanese) Batik. While the pattern is simpler and larger in size and yet seldom or never uses canting to create intricate patterns on the fabric, it merely rely heavily on brush painting method. The colours tend to be lighter and more vibrant than the deep coloured Javanese Batik. In line with the Malaysian government aspiration to endorse batik as a national dress code, a strong call for local designers to create new batik motifs to reflect the Malaysian identity.

However, to be innovative and creative in designing is not an easy mission. Inspirations will come if accessibility of computer graphic software are made possible as well as the availability of ready - made coding from computer programs. One such coding based on mathematical equations is known as Fractal.

Fractals have played a vital part in creating beautiful arts in recent years. Some examples of famous fractals are Mandelbrot sets, Julia sets, Koch Snowflakes, Pythagoras trees, Pascal triangles and many more. In addition, there are natural fractals such as clouds and smokes, mountains and trees as well as cardiovascular systems. Fractals also contribute to new knowledge in understanding many important scientific concepts like the growth of bacteria and brain waves.

Batik is a type of a traditional art resulting from the hand drawing process using either canting or block technique and colouring on suitable fabrics. Generally, Batik is synonym in Malaysia and Indonesia, but it can also be found in other countries like Egypt, Africa and India [1]. In Malaysia, the products of Batik are mainly from the two states i.e Kelantan and Terengganu. As for the Batik industries in Malaysia, they are run mostly by small enterprises and yet they contribute significantly to the economy via indirect effects [2].

Fractal is a branch of mathematics blended with arts. It is a rough or fragmented geometric shape that can be subdivided into parts, each is (at least approximately) a reduced size copy of the whole. Fractal is generally self-similar and independent of scale. The Koch snowflake (also

known as the Koch curve, Koch star, or Koch island) is a mathematical curve and one of the earliest fractal curves to have been described. Consequently, the snowflake has a finite area bounded by an infinitely long line. In [3], the von Koch curve has features in many ways similar to those listed for the middle third Cantor set. It is made up of four 'quarters' each similar to the whole, but scaled by a factor 1/3.

II. MATERIALS AND METHODS

Koch Snowflakes fractal is created based on a simple geometrical concept, beginning with an equilateral triangle follow by a series of defined mathematical steps a basic shape is generated. This is made possible with the aid of powerful mathematical software such as MATLAB. Furthermore, a combination of image processing techniques is applied to the fractal by using Adobe Illustrator to create a more artistic and unique graphics. Its shape is stylized through design processes such as rotations, enlargements and repetitions. However, one of the shape inverses from white to black colour and together with the variety of outlines thickness of each shape a new desired motif is formed.

Processing the Koch Snowflakes Malaysian Batik is tedious and delicate. It is a block stamping technique known as hand batik copper block print design**. T**he copper block is handmade based on the Koch Snowflakes design, dipped into a certain dye before printing onto a white fabric. This process is repeated over a series of steps until a certain design is desired. The list of innovative features in this construction is seemingly endless yet its appearance is uncomplicated and pleasing to the eye.

III. RESULTS AND FINDINGS

The results and discussions of this product will be explained in this section. From figure 1, it can be seen that how a Koch Snowflake formed from the basic equilateral triangle by using MATLAB. As more iterations are run, more designs are created. Figure 1 shows some mathematics curves producing using MATLAB software for the first three iterations. In the first iteration the number of side is 12, iteration 2 48 sides and 192 sides in iteration 3. The length of a side in iteration 2 is 1/3 the length of a side in Iteration 1. After iteration 3, the Koch Snowflakes show the beautiful art and suitable to adopt as a Malaysian batik motif.

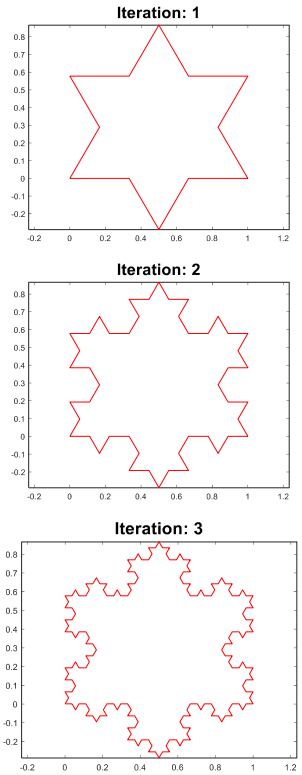

Figure 1: The first three iterations of the Koch snowflake

The shape of Koch Snowflakes after iteration 3, the art is designing using Adobe Illustrator. The results of Design Process in Adobe Illustrator can be seen in Figure 2. Some experiments with the design process in software Adobe Illustrator produces supporting images to the Koch Snowflakes. Finally, after the combination of all shapes, the Koch Snowflakes art graphics are ready to be apply as a motif.

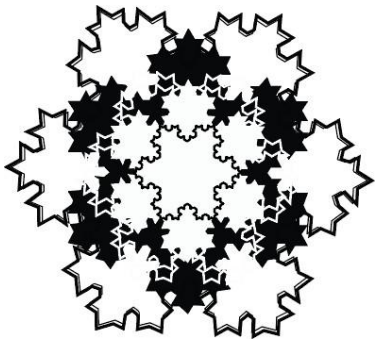

Figure 2 : The Koch snowflakes image results through Design Process in Adobe Illustrator's software.

Figure 3 : The Koch snowflakes copper block

Figure 4 : The Koch snowflakes batik

In figure 3, the Koch snowflakes copper block is produced based on the image created in figure 2. This Koch snowflakes copper block is made from copper. Figure 4 shows the design of Koch snowflakes batik by applying the hand stamping copper block method. It is proved that the pattern of Malaysian batik is beautiful and artistic with Koch snowflakes.

IV. CONCLUSIONS

In this paper, our aim is to introduce an application of abstract mathematical concept, visually and physically. People in general are attracted to beautiful things including arts. We believed more intrigue designs can be generated using fractals because the technology in computer graphics is growing fast. Fractal graphics can be generated easily once the inspiration comes and making it feasible to have the designs on any Batik fabric in the near future.

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The Regulatory Mapping of Kelantan State Government

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***Abstract*—Nowadays, most of the governments in the world facing a challenging task of reviewing and updating laws and regulations that have been established for centuries. Most of these rules are outdated, obsolete, and sometimes overlapping and duplicative. The aim of this study is to reduce the number of unnecessary regulations and requirements. It is also to make the regulations are simpler, transparent and focuses on the legitimate regulatory process. To obtain a holistic view about this matter some personal interviews have been conducted against the respondents who are involved and responsible for the law enforcement. In fact some questionnaires had been distributed in order to collect primary and secondary data. This paper involved two (2) main phases: (i) gathering data and information regarding the existing regulations (ii) identifying any outdated, overlapped and duplicated regulations and need to be reviewed for improvement. 12 legal officers of all local authorities were interviewed, and face to face questionnaire surveys were distributed to state agencies officers to gain feedback on the existing regulations of Kelantan State Government. The findings indicate that there were existing regulations that have amended and repealed, however, there is a problem of inconsistent regulations, overlapped regulations and gazette but not implemented. This study benefits to the state government by producing a systematic regulatory mapping known as catalogue that can solve the problems of reviewing and updating existing regulations. These processes are important to make sure all the regulations are updated according to current changes. This study is regarded as the first attempt to investigate the existing regulations of Kelantan State Government**

Keywords— Deregulation, Good Regulatory Practices, Regulations, Regulatory Mapping Introduction

I. INTRODUCTION

Government agencies face a challenging task of reviewing and updating laws and regulations that have been established for centuries. This problem happened due to the government agencies did not have proper recordkeeping of all regulations they have. The consequences of having improper recordkeeping of the regulations are high probability of having outdated, obsolete, and sometimes overlapping and duplicative. According to the World Regulatory quality Index 2017, Malaysia ranked 47th out of 193 countries. It is high time for Malaysia to enhance the quality of its regulations by practicing good regulatory practices. It is vital to ensure that the regulations are effective in addressing the desired public and investor's expectations; thus, will provide higher returns to the government. It is noteworthy that from their point of view, the reviewed and updated regulations could change the manner in which they obtain and interpret the regulations.

Our study contributes to the literature dedicated to the regulations and legislations in Kelantan State Government in several ways. First, there are very limited studies on the regulations and legislations discussed in state government. Most of the studies discussed on the legal and regulatory framework for Malaysian Islamic Finance [1,2,3,4]. Moreover, in Malaysian state government, most of the studies discussed on the roles and functions of local government [5,6,7].Thus, this is the first study conducts on the regulatory and legislations of the State Government. Second, our results add to the evidence that the regulatory mapping is essential to reform the reviewed and updated regulations and legislations in Kelantan State government, to some extent have a positive impact on the publics as well as investors. Third, this study has useful implications to regulators, administrators and policy makers in light of the consequences of the reviewing and updating the regulations and legislations, it can be attributed to the fact that each state has it own different regulatory frameworks and different economic environments [8].

II. LEGISLATIONS IN MALAYSIA

A. Primary Legislation in Malaysia

Legislative authority is the power to enact laws applicable to the Federation as a whole under Article 66(1) of Federal Constitution. However, Article 4(1) states that any law passed after 31 August 1957 which is inconsistent with

the Constitution shall be void. At the Federal level, the legislative power is vested in a bicameral Parliament headed by the Yang di-Pertuan Agong and comprises the Dewan Negara (House of Senate) and Dewan Rakyat (House of Representatives). The Dewan Negara has 70 members, of whom 44 are nominated by the Yang di-Pertuan Agong, and 26 elected by the State Legislative Assemblies. The Dewan Rakyat is fully elected and has 222 members. The duration of the life of each Parliament and State Legislatures is about five years and is split into one-year sessions, after which the session is terminated or prorogued, usually in September.

The distribution of law-making authority between the Federal and State Governments is enumerated in the Ninth Schedule of the Federal Constitution, and is set out in a Federal List, State List and a Concurrent List. The main subject areas of the Federal List are external affairs, defence, internal security, civil and criminal law, citizenship, finance, commerce and shipping industry, communications, health, and labour. The State List comprises matters such as land, agriculture, forestry, local government, riverine fishing, Muslim law, etc. The Concurrent List, under authority of both the Federal and State Governments, covers social welfare, scholarships, protection of wildlife, and town and country planning. Should any inconsistency between federal and state law exist, federal law takes precedence over state law.

B. The Importance of Regulatory Mapping

There is broad acceptance of the objectives of updating and reviewing the regulations and legislations by conducting regulatory mapping. For instance, one of the most significant things that public and investors expect from their government is a clean and healthy environment and business procedures. It is important for them to follow all guidelines and specifications in relation to business activities and processes. However, it is often contentious to implement expenditure and regulatory programs. Disagreement over public policy is inevitable in a culture where the values, views, incomes and interests of people differ extensively and the government's scope has increased significantly [9]. Apart from that, the deregulation is high level concern for developing countries because most of the regulations are correlated with negative consequences because they are abused by the government authorities. Consequent to this, the dictatorship could be eliminated. However, in developed countries, specialized courts are becoming an increasingly appealing solution to regulation [10] .

III. METHODS

This project involved two (2) main phases: (i) gathering data and information regarding the existing regulations (ii) identifying any outdated, overlapped and duplicated regulations and need to be reviewed for improvement. Survey methods specifically a face-to–face questionnaire survey coupled with in depth interview was employed in this study. It was conducted to validate and seek insight into the specific issues and loopholes encountered. The respondents for this study were the 12 legal officers in every local authority in the state of Kelantan who involves in formulating the regulations and face to face questionnaire surveys were distributed to state agencies officers to gain feedback on the existing regulations of Kelantan State Government. This study has a limitation as for the survey an in-depth interview was focusing on one group (the regulators and administrators) which was gathered within three months. However, in order to answer a research question, this method was considered sufficient [11]. The respondents were asked to fill the regulations that have been used in their organisations and list the date of establishment and date of the amendment (if any).

IV. RESULTS AND FINDINGS

The qualitative opinions on non-compliance (inconsistent regulations, overlapped regulations and gazette but not implemented) were gathered from the respondents. Thus, from the regulatory mapping, the state government able to identify the status of the regulations that never been reviewed, outdated, overlapped and duplicate. Such information is important for the state government to take further actions either maintain, simplify or eliminate them

V. CONCLUSIONS

The present study has contributed to the existing knowledge on existing regulations and legislations in Malaysia particularly in Kelantan State Government. This study has offered preliminary insight into the efficiency and effectiveness of the State Government to enhance their roles to take further actions either maintain, simplify or eliminate the inconsistent regulations, and thus more studies need to be conducted on the inconsistent regulations in State Government. For example, future studies could embark on investigating on the factors contributing to the inconsistent regulations particularly in Local governments.

ACKNOWLEDGMENT

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Authentic Internship Journal Assessment of Industrial Training Application

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***Abstract*—Authentic internship journal assessment of industrial training program application is a web-based system for students, the industrial training coordinator, the academic supervisor and the industry supervisor. It was created due to the limitations and problems occurred from conventional methods. In paralleled with the change of internet technology the application is developed to manage the industrial training process. The application will become a solution to improve the current process of managing and monitoring the industrial training which were previously being done manually.**

Keywords—Authentic internship journal assessment, industrial training program, logbook, student report

I. INTRODUCTION

Industrial training refers to the placement of students at selected organizations in their respective field of study. Usually, it involves several parties such as the students, the industrial training coordinator, the faculty supervisor and the industry supervisor. However, most activities are still performed manually including student's placement, obtaining industrial training application letter and update logbook. In addition, integration among all parties is still lacking.

Most of the time, before students go for industrial training, lecturers need to complete the registration manually for students. The preparation of letter to selected organization, offer letter from organization to accept students from the faculty and students must inform the faculty their attendance at the organization are all traditional process and takes time to be settled. Many problems arise since all processes are still been done manually, such as data missing and redundancy, delay in grading process, communication problems and most crucial is student monitoring [1].

A logbook is an important document which is a permanent record of students' progress throughout training session. A logbook is a way to record and keep track of events in your classroom. Logbooks are important classroom management tools that can be used in a variety of ways such as recording tardy students entering the classroom, communication with students' parents, and student-teacher conferences. Some logbooks may be used by the students, whereas others are for use by the teacher only. Traditional assessment which involves multiple-choices tests, fill-in-the-blanks and essay writing may not be suitable with evaluating the student's performances in industrial training program. The training component that need to be assessed include daily logbook activity report, the technical report, oral presentation and the performance skills [3].

This objective of this article is:

1. To develop a web-based application for managing industrial training process
2. To obtain live reports.

Nowadays, computerized management system developments are expanding over the past years and most of these systems are increasingly replacing the manual system. In order to develop good and effective system, developers should understand and know what users actually want from their system. In order to develop good and effective system, developers should understand and know what users want from their system. Developers should try and error in developing system especially in the process of planning, analysis and designing. Errors can be fixed if it is still at early stage. If the errors cannot be detected at early stage, it will drag the system down. Reference [2] said "one of the major concerns in developing an online system is to enhance user's accessibility to relevant information by providing

users with useful relationships or navigations." Based on [4], navigation represents the action of jumping from one page through another hyperlink.

II. MATERIALS AND METHODS

Authentic Internship Journal Assessment is designed and developed specialized for Faculty of Information Management, UiTM Machang, Kelantan Branch. The development of Authentic Internship Journal Assessment is for students who are enrolling Industrial Training (IMC690) subjects. It involves several parties such as the students, the industrial training coordinator, the faculty supervisor and the industry supervisor. To ensure the project run in accordance to the date that has been assigned, project timeline or Gantt chart was used to ensure all the task was completed as following the deadlines. Moreover, project's timeframe was planned properly in order to overcome overdue of the project planning. Project planning is referring to assessing schedule feasibility in which it is related to project duration. Project planning helped in determining all potential time frames and completion date schedules can be met and that meeting these dates will be sufficient for dealing with the needs of the organization. Gantt chart was used in order to estimate the time frame of Authentic Internship Journal Assessment development. The cost and budget involved in Data Flow Diagram (DFD) was calculated. System development life cycle (SDLC) was used to develop Authentic Internship Journal Assessment. SDLC is very important to ensure that during development and the end of the system will produce the actual deliverables or good result. By following the phases step by step, it can provide the best output from the project. The five phases of SDLC are planning, analysis, design, implementation and maintenance.

A. Planning

In planning phase, preliminary study or known as feasibility study was conducted to collect information needed for system modules. Then three team created consist of project manager, programmers and system analyst. All resources required was identified and the timeline set was followed to avoid overdue of time. There are few things to be considered in feasibility study such as project feasibility, technical feasibility, economic feasibility and schedule feasibility. Firstly, for project feasibility, during the Authentic Internship Journal Assessment development, the team need to ensure no problems are encountered current and future. Secondly, for technical feasibility, what are the software and hardware needed for developing Authentic Internship Journal Assessment is identified. Thirdly, for economic feasibility, financial benefits and costs associated with Authentic Internship Journal Assessment development was identified. Fourthly, for schedule feasibility, setting the timelines for each phase to develop the system before the team met the deadlines.

B. Analysis

In analysis phase, interview was used in order to gain more information about industrial training and search information on the internet and find similar systems to Authentic Internship Journal Assessment. The features for the Authentic Internship Journal Assessment were created according to the flow of industrial training process and also referring to related documents that contain information about industrial training.

C. Design

Authentic Internship Journal Assessment has multifunction that focuses on various users. The users are LI coordinator, students, faculty supervisor and industry supervisor. A diagram for a structure of data was created, in order to fully meet all users' needs to our system. The design is accurately designed with actual structure by identifying using context diagram, data flow diagram, and entity relationship diagram. The data structure design used in developing the system easily by following the structure, arranged it systematically and enabled the team to develop the system smoothly without any problem. Besides, in developing the Authentic Internship Journal Assessment, the most popular and familiar use computer languages in used to write web pages. It is the combination of Hypertext Mark-up Language (HTML) with hypertext pre-processor or the popular name is PHP language. For database, WAMP software that contains MYSQL was used as a platform of the database that keeps the data, to open MYSQL it uses phpMyAdmin and stores the data insert by users.

D. Implementation

Implementation phase is the most expensive and time-consuming phase of the entire life cycle. The work that are completed during this phase are coding, installation, testing, documentation and training. Coding is a process by which the physical design specifications are created by analysis team and the programming team turned it into programming working code. After Authentic Internship Journal Assessment is completely done, testing process or user acceptance test is conducted in UiTM Machang, Kelantan Branch. Few samples were taken from a student, Faculty of Information Management course coordinator and the industrial training coordinator. Comment from sample regarding Authentic Internship Journal Assessment was recorded for improvement. For installation, it is the process of replacing the manual system to the new system, user documentation or user's manual were created to assist users to adapt to Authentic Internship Journal Assessment. It is provided for each user of the system. User documentation or user manual is provided to give assistance to the users so that they know what they should do once they log into the system. For training, we conducted training for all users in UiTM Machang, Kelantan Branch, specifically for Faculty of Information Management. The training process will be conducted for five days. During training process, users was exposed on how to use the system.

E. Maintenance

In maintenance phase, any flaw based on comments given by users was used to correct the Authentic Internship Journal Assessment during implementation phase. Improvements based on minimum bugs and errors from implementation phase. During maintenance phase, debugging and fix errors was performed. Initially Authentic Internship Journal Assessment were using 5.7.31 the but webhost server support PHP version 5.7.30. Therefore, another initiative was done which is to debug the code. Other problem occurred where the interface shown in Authentic Internship Journal Assessment but images cannot be loaded. Therefore, the team fix the errors and manage to upload it back. During testing phase, user fails to update their profile picture because the file size is too big. Alteration on the coding was done so that user can upload files with larger size. Regular backup will be conducted y so that all record in Authentic Internship Journal Assessment is not lost

III. RESULTS AND FINDINGS

Analysis phase is essential to identify system requirements and gather as many information as possible from the client. The client share their expectations of IMS and they had explained who are the user and how they will make use of IMS. As a team, there is a need to understand the needs of client because each one of information given is critical to develop IMS as requested by the client. After they provided the requirements, analysis phase were began in order to avoid problems with system functionality.

A. Analyzed Existing System

Faculty of Information Management in UiTM Machang, Kelantan Branch still manage their activities manually. Students communicate with the organization by phone call, e-mail and sometimes they have to post letter to the organization to request placement for industrial training. Students also have to find for the organization by themselves. Using IMS, industrial training coordinator registers the lists of organizations for students. So, students do not have to worry about the placement. Table I shows the comparison of manual system applied by Faculty of Information Management and Fig. 1 shows computerized system after IMS has been implemented.

B. System Developed Discussion

IMS help students to find qualified organizations for industrial training. The industrial training coordinator will register faculty supervisor, industry supervisor, approve students' application of industrial training placement in order to obtain the auto-generated industrial training application letter. Once students are registered into IMS, they can apply for organizations they want. Then, industrial training coordinator will approve or reject their application first because to find out whether there is any vacancy left. Industrial training coordinator will assign industry supervisor and faculty supervisor to students. During industrial training, students will update their log book. From the log book, remarks will be given by the industry supervisor and faculty supervisor. Remark is like a brief comment of their daily activities. Students are also required to report their special project.

TABLE I. COMPARISON BETWEEN EXISTING SYSTEM

Module			
	Industrial Training Management System – UiTM Perak	***Internship Management System – UiTM Melaka***	***Internship Management System – UiTM Kelantan***
Online System	YES	YES	YES
Industrial Training Place Application	YES	YES	YES
Auto-generated industrial training application letter	NO	NO	YES
Report special project	NO	YES	YES
Daily activity	YES	NO	YES
Upload report	NO	NO	NO
Assessment	NO	NO	NO

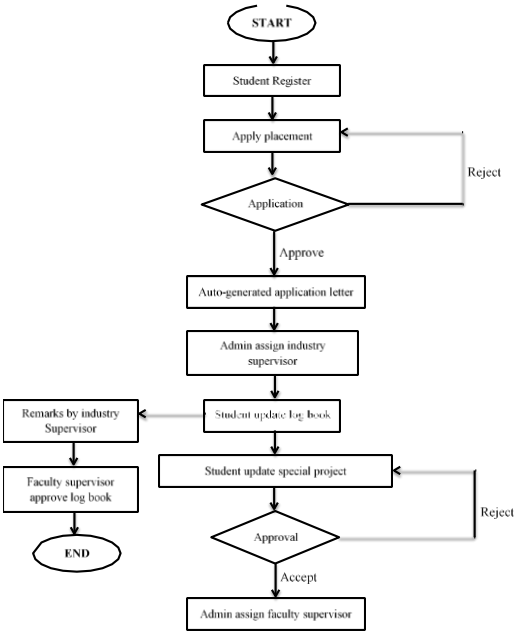

Fig. 1. Computerized System

C. Illustration of Diagram

Fig. 1. IMS Homepage Interface

IV. CONCLUSIONS

Authentic assessment intends to determine how well a student can use knowledge. The log-book report is produced to analyze the overall performance, measures the assessment and determines the effectiveness of the industrial training for further improvements. Authentic internship journal assessment run virtually online and can be adapted to suit any preferences of an organization or faculty. It also be able to generate data which can be customize by administrator. The product may apply to other faculty which in need to manage internship.

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Sistem Pencarian Pakar Oleh Unit Pengurusan Kualiti UiTM Cawangan Kelantan

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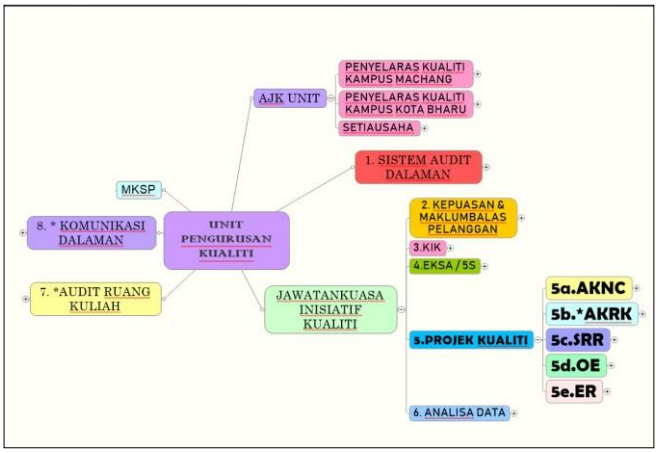
Abstrak*—Unit Pengurusan Kualiti (UPK) sesebuah organisasi adalah merupakan satu unit yang penting berperanan untuk memastikan kualiti perkhidmatan yang ditawarkan adalah pada tahap yang terbaik sentiasa. Bagi membolehkan kualiti perkhidmatan sentiasa ditambahbaik, kecekapan pengurusan unit tersebut adalah sangat penting. Oleh yang demikian, tadbir urus Unit Pengurusan Kualiti perlu dilakukan oleh staf yang cekap, berpengalaman serta berpengetahuan luas. Pemilihan ahli jawatankuasa untuk mengurus unit ini perlu dilakukan dengan teliti bagi memastikan ahli yang terpilih menepati kriteria yang dinyatakan.Bagi memenuhi tujuan ini, Unit Pengurusan Kualiti UiTM cawangan Kelantan telah mengambil inisiatif menwujudkan satu database menggunakan Microsoft Excel bagi membolehkan ahli yang pakar di dalam unit dikenalpasti untuk diketengahkan sebagai ahli jawatankuasa untuk tadbir urus UPK. Mana-mana staf yang telah dilantik sebagai ahli jawatankuasa di dalam UPK akan disenaraikan di dalam database ini dari semasa ke semasa dan dan ahli yang cekap dan pakar dalam bidang tertentu boleh dikenalpasti dengan segera dari database ini.

Katakunci—cekap, database, Microsoft Excel, pakar, pengurusan kualiti

I. PENGENALAN

Unit Pengurusan Kualiti (UPK) sesebuah organisasi adalah merupakan satu unit yang penting berperanan untuk memastikan kualiti perkhidmatan yang ditawarkan adalah pada tahap yang terbaik sentiasa[1]. Kualiti perkhidmatan diselia melalui rangkaian jawatankuasa yang mempunyai peranan masing-masing (Rajah 1). Bagi membolehkan kualiti perkhidmatan sentiasa ditambahbaik, kecekapan pengurusan unit tersebut adalah sangat penting[2]. Oleh yang demikian, tadbir urus UPK perlu dilakukan oleh staf yang cekap, berpengalaman serta berpengetahuan luas [3]. Pemilihan ahli jawatankuasa untuk mengurus unit ini perlu dilakukan dengan teliti bagi memastikan ahli yang terpilih menepati kriteria yang dinyatakan.



Rajah 1. Jawatankuasa di Unit Pengurusan Kualiti UiTMCK

II. PENYATAAN MASALAH

Walaubagaimana pun, Ketua Unit Pengurusan Kualiti (KUK) adalah merupakan satu jawatan yang dilantik dari kalangan pensyarah ataupun pentadbir untuk tempoh lantikan selama 2 tahun. Memandangkan jawatan KUK bukan jawatan yang disandang secara tetap maka perlu ada kesinambungan pengurusan dan tadbir urus unit tersebut. Tanpa kesinambungan ini maka KUK yang baru dilantik berkemungkinan akan mengalami kesukaran untuk mengekalkan dan menambahbaik tadbir urus yang telah dilakukan oleh pengurusan kualiti terdahulu. Antara kesukaran yang akan dihadapi adalah mengenalpasti individu-individu yang boleh dilantik sebagai ahli jawatankuasa-jawatankuasa di bawah seliaan UPK UiTMCK.

Sebagai contohnya, ahli pasukan audit kualiti dalaman perlu dilantik dari kalangan individu yang telah menjalani kursus audit dalam dan diberikan sijil untuk melaksanakan aktiviti audit dalaman. Manakala lantikan penyelaras sesuatu jawatankuasa sepatutnya dilantik dari kalangan individu yang pernah menganggotai jawatankuasa tersebut bagi memastikan mereka mempunyai pengalaman untuk meneruskan kesinambungan perancangan serta berpengetahuan menguruskan dokumentasi yang berkaitan.

III. OBJEKTIF

Inisiatif Pencarian Pakar UPK UiTMCK ini diwujudkan bertujuan untuk:

1. Mengenalpasti staf yang pernah dilantik sebagai ahli jawatankuasa di dalam UPK UiTMCK
2. Mengetahui sejarah penglibatan seseorang individu di dalam UPK bagi membolehkan mereka diketengahkan sebagai ahli jawatankuasa untuk tadbir urus UPK.

IV. BAHAN DAN KAEDAH PERLAKSANAAN

Satu database menggunakan Microsoft Excel diwujudkan bagi membolehkan ahli yang pakar di dalam UPK dikenalpasti untuk diketengahkan sebagai ahli jawatankuasa untuk tadbir urus UPK. Mana-mana staf yang telah dilantik sebagai ahli jawatankuasa di dalam UPK akan menerima surat lantikan yang disediakan menggunakan mail merge. Bagi membolehkan kemudahan mail merge ini digunakan sebaiknya senarai nama staf beserta maklumat yang diperlukan perlu direkodkan terlebih dahulu di dalam Microsoft Excel.

Untuk membolehkan Inisiatif pencarian pakar ini dimanfaatkan sepenuhnya, semua senarai nama staf beserta maklumat yang diperlukan seperti jawatan yang disandang dan tempoh lantikan perlu di gabungkan di dalam satu Microsoft Excel Worksheet bagi membolehkan fungsi ‘Find’ digunakan.Dengan menggunakan fungsi ‘Find’ nama staf yang ingin dikenalpasti perlu ditaipkan sebagai perkataan yang ingin dicari.

Setiap senarai nama yang telah diwujudkan untuk mengeluarkan surat lantikan akan digabungkan di dalam database ini bagi memastikan ianya sentiasa terkini.

V. KESIMPULAN

Database ini perlu sentiasa dikemaskini oleh kerani yang ditugaskan di UPK. Walaupun KUK akan silih berganti namun maklumat di dalam database ini akan kekal dan sentiasa dikemaskini dari semasa ke semasa sepertimana keperluan. Database ini akan dapat mewujudkan kesinambungan maklumat ahli / individu yang pernah terlibat dengan UPK. Ianya boleh dijadikan rujukan kepada mana-mana KUK untuk memastikan penambahbaikan yang berterusan dalam melantik AJK di dalam mana-mana jawatankuasa di bawah UPK.

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VCO-Trigonatural Cream

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Abstract*—Minyak Kelapa Dara atau VCO (Virgin Coconut Oil) merupakan minyak yang dihasilkan daripada santan muda. VCO digunakan secara tradisional dan moden dalam dunia kecantikan. VCO-Trigonatural Cream adalah inovasi produk alami yang unik dihasilkan daripada campuran bahan utama iaitu madu kelulut asli dan VCO. Menurut kajian saintifik, VCO mempunyai kelebihan iaitu sifat antivirus, antibakteria serta baik untuk kesihatan tubuh badan. VCO mengandungi pelbagai vitamin terutamanya vitamin E yang baik untuk kulit. Kajian juga telah membuktikan madu kelulut asli memilik ciri-ciri penyembuhan luka. Ia merangsang pertumbuhan tisu dan mengurangkan pembentukan parut, serta kaya dengan antioksidan yang boleh melindungi kerosakan sel kulit disebabkan oleh radikal bebas yang menyumbang kepada proses penuaan. Dengan manfaat dari sumber asli ini, inovasi terhadap bahan-bahan ini diterjemahkan melalui produk VCO-Trigonatural Cream. Produk ini dihasilkan dengan tujuan utama untuk berkongsi penggunaan bahan semulajadi yang dulunya diguna secara tradisional dalam mengatasi masalah kulit, namun kini boleh didapati dalam produk yang ringkas, yang telah dimodenkan melalui inovasi penyediaannya. VCO-Trigonatural Cream dihasilkan dengan bahan-bahan campuran tradisional yang lain seperti 'propolis' dan 'bee bread'. VCO-Trigonatural Cream merupakan produk kosmetik yang selamat kerana bahan-bahan yang digunakan bahan alam semulajadi. Kelebihan VCO-Trigonatural Cream ini adalah untuk merawat serta memberi kesegaran pada kulit pengguna yang mempunyai masalah tidak kira lapis usia. Produk ini juga dapat membantu menguatkan tisu dan struktur kulit menjadi lebih sihat. Di samping itu, VCO-Trigonatural Cream ini dapat membantu mengurangkan masalah kedutan kulit dan melambatkan proses penuaan. Ianya sesuai digunakan oleh semua lapisan masyarakat tidak mengira umur dan juga jantina.

Keywords— Minyak Kelapa Dara(VCO), Madu Kelulut, VCO-Trigonatural Cream

I. PENGENALAN

VCO-TrigoNatural Cream dibuat dengan 2 bahan utama iaitu madu lebah kelulut dan minyak kelapa dara serta campuran bahan-bahan tradisional bee pollen dan propolis.

Madu kelulut dan minyak kelapa dara(VCO) merupakan bahan alami dan mempunyai fungsi kebaikan seperti antioksidan, antiradang, vitamin E dan antivirus.

VCO-Trigonatural Cream ini dibuat secara semulajadi dan menggunakan bahan tradisional untuk mengoptimumkan kesan kebaikannya kepada semua pengguna.

Objektif penghasilan produk ini adalah untuk mengurangkan masalah muka seperti jerawat dan bintik hitam khususnya. Ia juga bertujuan untuk melembabkan serta menyegarkan kulit. Disamping itu, ia juga dapat mengekalkan kebaikan bahan semulajadi yang dulunya digunakan secara tradisional kepada satu produk yang moden serta boleh dikomersialkan.

II. BAHAN – BAHAN UTAMA

A. Madu kelulut Trigona

Madu kelulut trigona mempunyai kelebihan sebagai antibakteria yang mana dapat mencegah jerawat. Ia bersifat antioksidan yang melambatkan proses penuaan. Ia juga dapat memberikan kelembapan dan menyegarkan kulit, menjadikan kulit semakin cerah.

B. Minyak kelapa dara

Minyak kelapa dara bertindak sebagai pembersih kulit secara semula jadi. Ia dapat mengelakkan kedutan dan kekeringan pada kulit. Ia juga dapat membantu menentang penuaan kulit yang pramatang.

C. Bee Pollen

Bee pollen pula berfungsi untuk meningkatkan sistem ketahanan badan dan menjaga sel-sel kulit dari rosak.

D. Propolis

Propolis mempunyai kandungan 'flavanoid' yang tinggi dan mempunyai ciri-ciri anti-mikrob dan anti-radang yang dapat melegakan kulit.

III. PROSES PEMBUATAN

Proses pembuatan produk ini melibatkan beberapa langkah. Langkah-langkahnya adalah seperti berikut:

- Langkah pertama, VCO direndamkan bersama dengan *propolis* dan *bee pollen* dan dibiarkan selama sebulan.
- Langkah kedua, madu kelulut trigona yang diambil segar dari ladang, akan dicampurkan dalam VCO.
- Langkah ketiga, rendaman dari langkah pertama tersebut akan diadunkan pula bersama krim asas dan air mineral serta ditambah dengan ekstrak betik.
- Langkah keempat, larutan madu kelulut dari langkah kedua akan dicampurkan dengan adunan dari langkah ketiga.
- Langkah kelima, krim siap untuk proses pembungkusan.

IV. HASIL DAN MAKLUM BALAS PENGGUNA

Produk yang telah dihasilkan dari inovasi ini adalah seperti berikut:

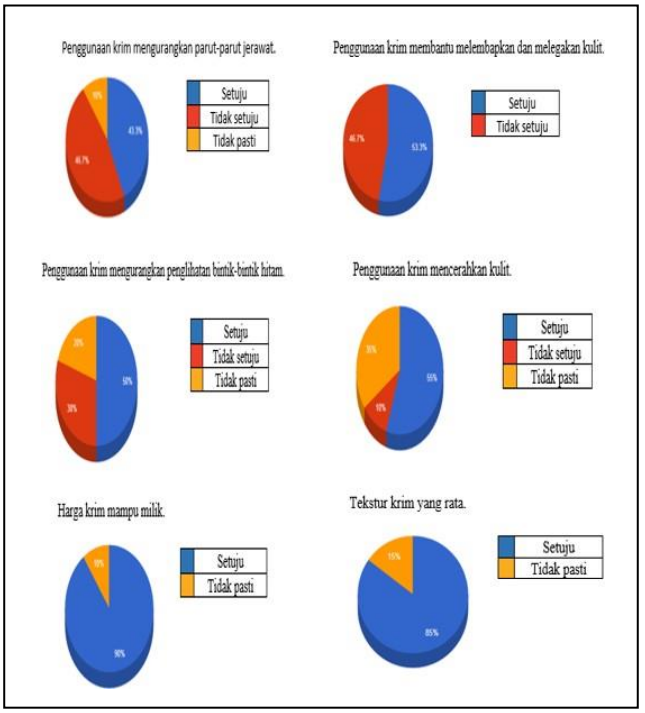
Rajah 1. Produk VCO-Trigonatural Cream

A. Maklum balas pengguna

Produk ini telah diagihkan kepada 10 orang pengguna pada 1 Januari 2019 dan mendapat maklum balas pada 20 Januari 2019 iaitu selepas 2 minggu penggunaan.

Hasil dari maklum balas yang diterima, pengguna menyatakan bahawa penggunaan produk ini telah mengurangkan parut-parut jerawat pada wajah mereka. Mereka juga menyatakan kulit wajah menjadi lebih lembut dan mengurangkan bintik-bintik hitam. Mereka juga berpendapat bekas yang digunakan sangat unik dan mudah dibawa ke mana-mana sahaja.

Sebilangan kecil daripada pengguna tersebut juga ada memberikan kritikan. Mereka menyatakan produk ini lambat memberikan kesan keatas kulit wajah mereka. Ini adalah kerana produk ini dihasilkan secara semula jadi dan tidak dicampurkan dengan bahan kimia yang boleh memberikan kesan yang cepat tetapi juga memudaratkan pengguna jika digunakan secara berterusan. Selain itu juga ada yang menyatakan bekas yang digunakan bersaiz kecil. Produk ini tidak memerlukan penggunaan yang banyak kerana penggunaan yang sedikit sudah memadai dan ia juga senang di bawa ke mana-mana sahaja kerana saiznya yang kecil.



Rajah 2. Maklum balas pengguna mengenai produk

Rajah 3. Testimoni pengguna

B. Keunikan produk

Produk ini mempunyai keunikan yang tersendiri. Antaranya adalah seperti berikut:

- Diperbuat daripada madu lebah kelulut dan juga Minyak Kelapa Dara yang merupakan bahan semulajadi. Ia dapat memberikan keselesaan dan melembapkan kulit.
- Kaya dengan bahan semula jadi : madu kelulut, minyak kelapa dara, bee pollen, dan juga propolis
- Dapat membantu masalah kesihatan luaran serta memberi keselesaan pada kulit.
- Produk ini merupakan produk tradisional yang diketengahkan kebaikannya kepada penggunaan secara moden
- Sesuai kepada semua golongan usia tidak kira tua mahupun muda.
- 100% buatan Malaysia dan *homemade*

C. Nilai Komersial

VCO-Trigonatural Cream boleh dipasarkan secara meluas serta mampu bersaing dengan produk yang sedia ada berikutan keistimewaan yang tersendiri.

Penyediaan produk ini secara "homemade" serta secara tradisional melibatkan kos yang lebih rendah, menjadikan produk ini lebih ekonomi, mampu dimiliki oleh semua pengguna.

Pada masa akan datang, produk ini akan dikomersialkan secara meluas berikutan kejayaan sebelumnya sudah berada di pasaran umum dan produk ini juga akan ditambah baik dari sudut bahan kandungannya supaya kebaikan krim ini dapat ditingkatkan.

V. KESIMPULAN

VCO-Trigonatural Cream adalah produk yang diinovasikan daripada bahan alami yang digunakan secara tradisional yang mana kini dimodenkan dalam bentuk yang sedia untuk digunakan. Melalui produk inovasi ini, diharapkan dapat memberi manfaat yang sama seperti dulukala kepada pengguna terutama golongan muda yang lebih mempercayai produk yang moden untuk mengguna pakai produk tradisional turun temurun yang telah diformulasikan, disesuaikan dengan peralihan masa untuk kemudahan penggunanya.

PENGHARGAAN

Kumpulan kami mengucapkan terima kasih kepada Universiti Teknologi MARA Cawangan Kelantan (UiTMCK), Malaysia atas sokongan dan peluang untuk terus menyumbangkan idea dalam bidang penyelidikan, penulisan serta inovasi. Terima kasih juga pada Jabatan Pertanian Negeri Kelantan atas bimbingan dalam usaha mengenengahkan projek ternakan lebah kelulut.

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Sistem e-PA

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Abstract*—Penasihat akademik adalah pensyarah yang diberitanggungjawab sebagai penasihat dan pembimbing pelajar dalam merancang pelan pengajian mereka, sebagai orang tengah untuk menyelesaikan sebarang masalah akademik mengenai pelajar di bawah seliaan mereka dengan pihak berkenaan dan juga sebagai pemantau prestasi akademik pelajar sepanjang tempoh pengajian mereka. Sistem e-PA dibangunkan untuk memberi kemudahan kepada pensyarah untuk menyelia dan memantau semua pelajar di bawah seliaan mereka. Di samping itu, Sistem e-PA boleh membantu menyelesaikan masalah pensyarah yang susah untuk memantau pelajar di bawah seliaan mereka. Pensyarah boleh mendapatkan segala maklumat berkenaan dengan pelajar di bawah seliaan mereka walau di mana berada. Ini kerana, melalui soal selidik yang dibuat di bawah Unit Kualiti UiTMCK telah mendedahkan terdapat pelajar yang tidak pernah langsung bertemu dan membuat rundingan dengan pensyarah yang menjadi penasihat akademik mereka. Pelajar juga memberi maklumbalas mengatakan pensyarah atau penasihat akademik mereka terlalu sibuk dan tidak membalas mesej yang dihantar. Sistem e-PA ini beroperasi dengan pelajar memasukkan segala butiran yang diperlukan oleh pensyarah atau penasihat akademik mereka di dalam ―excel worksheet‖ yang dibangunkan oleh pensyarah di –web-based‖ iaitu –Google Drive‖. Dengan adanya Sistem e-PA ini, para pensyarah atau penasihat akademik mudah untuk menyelia dan memantau pelajar–pelajar mereka walau di mana berada dengan menggunakan telefon pintar. Jadi, hubungan yang rapat antara penyarah atau penasihat akademik dengan pelajar-pelajar di bawah seliaan mereka secara tidak langsung member kesan yang positif, meningkatkan prestasi pelajar dalam bidang akademik dan bukan akademik serta boleh meningkatkan peratus ―graduate on time‖ di kalangan pelajar-pelajar.

***Katakunci*—e-MYPA, ―Graduate On Time‖, Penasihat Akademik**

I. PENGENALAN

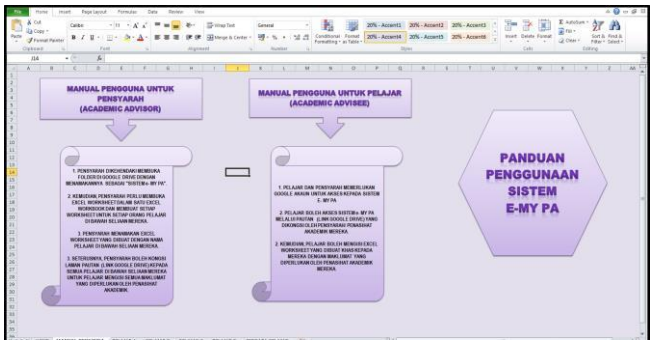
Penasihat akademik adalah pensyarah yang diberi tanggungjawab sebagai penasihat dan pembimbing kepada pelajar di institusi pengajian tinggi dalam merancang pelan pengajian mereka, sebagai orang tengah untuk menyelesaikan sebarang masalah akademik mengenai pelajar di bawah seliaan mereka dengan pihak berkenaan dan juga sebagai pemantau prestasi akademik pelajar sepanjang tempoh pengajian mereka [1]. Jadi, memang tidak dinafikan bahawa peranan penasihat akademik sedikit sebanyak mempengaruhi pencapaian para pelajar di universiti dan pelaksanaan penasihat akademik ini dibuat oleh semua institusi pengajian tinggi di seluruh dunia [2]. Penemuan dari kajian-kajian yang telah dibuat berkenaan dengan peranan PA kepada pencapaian pelajar menunjukkan ada hubungan yang positif [2][4]. Namun demikian, terdapat cabaran yang dihadapi oleh kedua-dua pihak terutamanya di kalangan para pelajar. Jadi, sistem e-MYPA dibangunkan untuk memberi kemudahan kepada pensyarah untuk menyelia dan memantau semua pelajar di bawah seliaan mereka. Di samping itu, Sistem e-MYPA boleh membantu menyelesaikan masalah pensyarah yang susah untuk memantau pelajar di bawah seliaan mereka. Pensyarah boleh mendapatkan segala maklumat berkenaan dengan pelajar di bawah seliaan mereka walau di mana berada. Ini kerana, melalui soal selidik yang dibuat di bawah Unit Kualiti UiTMCK telah mendedahkan terdapat pelajar yang tidak pernah langsung bertemu dan membuat rundingan dengan pensyarah yang menjadi penasihat akademik mereka. Pelajar juga memberi maklumbalas mengatakan pensyarah atau penasihat akademik mereka terlalu sibuk dan tidak membalas mesej yang dihantar. Ini selari dengan penemuan kajian yang dibuat oleh Patrick Severine Kavenuke (2015) menyatakan cabaran utama yang dihadapi oleh pelajar untuk mendapat bimbingan dari penasihat akademik mereka adalah ketiadaan mereka ketika pelajar memerlukan mereka [2]. Di samping itu, pelajar tidak memahami atau tidak mengetahui peranan penasihat akademik yang disediakan oleh pihak universiti kepada mereka [3][5] juga adalah penyebab tiada hubungan yang rapat diantara penasihat akademik dan pelajar. Dengan kata lain, para pelajar tidak mengetahui secara mendalam apakah perkhidmatan rundingan yang mereka boleh dapat dari penasihat akademik.

II. KAEDAH PELAKSANAAN

Sistem e-MYPA ini beroperasi dengan pelajar memasukkan segala butiran yang diperlukan oleh pensyarah

atau penasihat akademik mereka di dalam "excel worksheet" yang dibangunkan oleh pensyarah di "web-based" iaitu "Google Drive". Panduan lengkap penggunaan Sistem e-MYPA adalah seperti berikut:

- Sistem e- PA telah dibangunkan menggunakan Microsoft Excel dan telah diuji kepada pensyarah untuk memastikan sistem ini lebih mudah difahami oleh pensyarah dan juga pelajar.
- Setelah template excel yang dirumus diterima, ia akan dikongsi bersama dengan pelajar di Google Drive.
- Oleh itu, setiap pengguna sistem ini (pensyarah dan pelajar) perlu mempunyai akaun Gmail untuk membolehkan mereka mengakses pemacu Google Drive.
- Setiap pelajar dikehendaki mengemaskini maklumat yang diperlukan pada awal setiap semester kerana maklumat yang diperlukan berubah dari semasa ke semasa.
- Para pelajar juga disediakan panduan mengisi maklumat dalam bentuk template komen di template excel.



PA : Penasihat Akademik

III. KESIMPULAN

Antara objektif pelaksanaan Sistem e-MYPA adalah:

1. Merapatkan hubungan di antara pensyarah dan pelajar sepanjang pensyarah tersebut menjadi penasihat akademik kepada pelajar.
2. Memudahkan pensyarah mengakses maklumat berkenaan pelajar di bawah seliaan mereka apabila diperlukan oleh pihak fakulti dan juga pengurusan UiTMCK.
3. Menjimatkan kos (paper less)

Sistem ini telah diuji dengan beberapa Penasihat Akademik beberapa kali dan versi pertamanya siap untuk dikongsi dan digunakan oleh kumpulan Penasihat Akademik yang lebih luas pada Semester September 2019 yang lalu.

Sistem e-MYPA adalah murah, mudah dan boleh digunakan secara meluas kerana ia menggunakan Microsoft Excel dan Google Drive yang boleh diakses dengan mudah dan percuma untuk semua Penasihat Akademik.

Perhubungan yang erat di antara penasihat akademik dan pelajar di bawah seliaan mereka dapat membantu meningkatkan pencapaian para pelajar dalam bidang akademik, kerohanian dan juga tingkah laku yang lebih baik ketika mereka di universiti. Ini dibuktikan dengan kajian-kajian yang dibuat oleh pelbagai universiti di dalam dan luar negara berkenaan dengan peranan penasihat akademik mempengaruhi pencapaian para pelajar di universiti [2][3][4][5].

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