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The Design and Development of M-CLINIC Apps Mobile Applications

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ABSTRACT

During the Covid-19 epidemic, health facilities were important to everyone including students, however, the government hospitals and clinics were located in the city centre away from PMU and UITM Mukah. Added with the movement control order (MCO), only 80% of staff on duty, this makes students hard to contact the medical officer and fail to get proper treatment. In PMU and UITM students are allowed to return to the campus with some restrictions and procedures to follow. Hence M Clinic Apps mobile applications are created especially for students to make an appointment at Politeknik Mukah (PMU) and Uitm Campus's clinic or clinics located in Mukah Sarawak, Malaysia. Secondly is to determine the level of application usage among both institutions and propose recommendations. A total of 125 students participated in this study, which also used descriptive statistics. The result showed that most of the students agreed the Clinic Apps were useful during Covid 19 pandemic. In addition, this mobile application innovation project also has a benefit for both institutions because this application can improve the management quality of medical and health services. The management of medical and health services at both institutions needs to be improved because the health of students is important that needs to be taken into consideration, moreover our country is still in a phase where the covid-19 pandemic has not been over yet. Lastly, the students' health has become the responsibility and priority of the management of PMU and UITM Mukah once they returned to the campus.

Keywords: mobile application, business project, student, Covid-19, clinic.

INTRODUCTION

This Innovation Project is carried out to facilitate the affairs of PMU and UITM Mukah to connect with nearby clinics in times of emergency or health problems. Besides that, the existence of this application can make it easier for both institutions to get good health care. This is because the number of patients who tested positive for COVID-19 is still being recorded in our country. The first covid-19 case was identified in Malaysia on 25 January 2020 by Chinese tourists entering Malaysia from Singapore (UNESCO, 2020). Few studies in the medical field and other fields linked to health sciences have been done with COVID-19 (Abdulamir, & Hafidh, 2020; Meng, Hua, & Bian, 2020; Usak, Masalimova, Cherdymova, & Shaidullina, 2020). However, there is very little research done in the field of education on how COVID-19 or even SARS impacted the educational system (Yan, 2020 & Sintema, 202).

In phase three, working from home (WFH) implement, with only 80% capacity allowed for working in the institutions including the medical officers. This scenario makes students hard to contact the medical officer and causes insufficient access to quality healthcare among

students. The next factor is that the clinic is sometimes closed not according to the prescribed operating hours as provided on the notice board, this makes students who have been experiencing symptoms of covid-19 or who are suffering from other health problems seek treatment at an outside clinic. Therefore, it is important for higher institutions to improve instructional planning and health safeguards at the university. Such precautions can help to improve environmental hygiene and reduce infectious illness transmission (Lee et al, 2003). Hence the purpose of the innovations of M Clinicc Apps in mobile applications is to create especially for students to make an appointment at Politeknik Mukah (PMU) and Uitm Campus's clinic or clinics located in Mukah Sarawak, Malaysia. Secondly, it is to determine the level of applications among both institutions using the M Clinic Apps and propose the recommendations.

Among the interests of MClinic APPs mobile application innovation project is that this application can make it easier for students to achieve clinical info. Only at the fingertips, students can find a nearby clinic through this M Clinic APPs app using only a smartphone. This can make it easier for students to find out if the clinics are nearby around the Mukah and Bintulu area in addition to using services at PMU and UITM campus Mukah. In addition, this app applied can also save students time with faster online access. This is because using only the M Clinic APPs application students already know the operating hours of each clinic on the screen display of the user's mobile phone. Therefore, students do not have to commute from residential college to the clinic just to see how the clinic is open or closed.

The M Clinic APPs application development process is perceived ease of use used in the Theory Acceptance Model (TAM). The Theory Acceptance Model (TAM) has been considered one of the most fundamental and influential theories in predicting the use of m-learning. The technology acceptance model identified a relationship between external variables, perceptions of usefulness, perceptions of ease of use, and behavioral attitudes. The ease of use associated with themed learning systems is considered an important factor in encouraging consumers to practice mobile learning. Based on the theory of reasoned Davis (1986), Theory Acceptance Model (TAM) more specifically predicts the acceptance of an information system. The purpose of this model is to predict the acceptability of a tool and to identify the modifications that must be brought to the system to make it acceptable to the user. This model shows that the ability of an information system is determined by two main factors: it is usable and easy to use. The content development process of M Clinic APPs is content based-used in the Computer Based Assessment Acceptance Model (CBAAM).

The content development process of M Clinic APPs is based on the content used in the Computer Based Assessment Acceptance Model (CBAAM). The Computer Based Assessment Model (CBAAM) is a model that describes a student's desire to use computer-based assessments satisfactorily. The Perceived Content (PC) of CBAAM is defined by two factors: the user's perception of the content of the application and the user's perception of the questions asked during CBAAM. As a result, students first assess content based on their existing knowledge, the experience gained during the use of this application, such as if it is difficult, interesting, and useful, and secondly during CBAAM, if the questions are clear and understandable. There are eight constructs used in this model: Perceived Playfulness (PP), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Computer Self Efficacy (CSE), Social Influence (SI), Facilitating Conditions (FC), Goal Expectancy (GE) Content (C) and behavioral intention (BI).

LITERATURE REVIEW

A. Innovation Implementation Methods

M-Clinic Apps developed using two methods namely Google Sites and Thunkable. The software will then generate a single-user version (standalone) application in APK format when the e-content has been produced. This APK format can be installed on any smartphone, including iPhones, Samsung Galaxy phones, Oppo phones, and others. Furthermore, the development of e-Content requires minimal storage and data usage, allowing consumers to begin learning as soon as feasible. Information in e-Content is also integrated with user understanding without modifying the original meaning of the text, in addition to the application of support activities. Users can also go to any area of the display without following the order or finished reading on one display first. Thunkable and Google Sites are used by the mobile application software to upload the notes.

After that, the developer will post their materials on the Google Play store for students to download. Students were instructed to download the M Clinic Apps mobile application software for free after completing the process. Once downloaded into student-owned mobile devices, these apps are very simple to use. It can also be taken any place by students and does not require an internet connection. The M Clinic Apps application development method is based on the Theory Acceptance Model's Perceived Ease of Use (TAM). The content development method for M Clinic Apps is based on a computer-based acceptance model (CBAAM).

For data collection methods, our group conducted a questionnaire surveying through Google Forms, a Case Study on Existing Clinics in Institutions. With the availability of questionnaire study methods conducted by our group, our group came up with the idea to produce this application through feedback given through distributed questionnaires. The Google Forms questionnaire study method involving student respondents involves questions related to problems that occur in students at existing clinics provided in the institution.

B. Innovation Development Design

Figure 1: Inside Thunkable view

Figure 2: Front Cover View

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Figure 3: Inside the Apps View

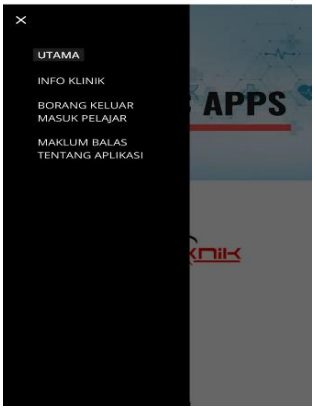

Figure 4: Slide View

RESULTS AND DISCUSSION

Reseach Result

The scope is focused on students in both higher public institutions PMU and UITM Campus. Of the total of 200 questionnaires distributed to both institutions only 125 gave feedback. The limitations of students going back to campus due to Covid 19 pandemic were around 250 students inside both campuses during Covid 19 pandemic. Further, under time and budget constraints, the chosen sample is justified. Due to time and cost constraints, convenience sampling is used in this research. This study deployed a survey method to obtain data. Refer to the tables below; the questionnaire instrument contained three sections. The first section focused on obtaining respondents' demographic profiles such as age, gender, institutions, and area. The second section of the questionnaire is the M Clinic APPs application. There were 15 questions in this section to identify the usage of the applications of students. The questionnaire adapts from Moridis et al, (2017). The relative importance of each construct was assessed by the 5 Likert Scale.

Table 1 Reliability test item Mclinic Apps applications.

Reliability Statistics	
Cronbach's Alpha	**No of Items**
.880	15

The result of the Cronbach Alpha reliability test was 0.880 at a good level exceeding 0.60. This shows respondents understand the question of the distributed survey.

Table 2 The demographic background of the respondents.

Respondent Profile		**n**	**(%)**
Age	18 to 20	97	73.6
	21 to 23	27	21.0
	24-26	6	4.8
Gender	Female	63	50.4
	Male	62	49.6
Institutions	PMU	90	72
	UITM	35	28

Refer to Table 2, 125 students from PMU and UITM Mukah as respondents. Most of the respondents aged between 18 to 20 years of age (97 %), followed by 21 to 23 years (27%) and 24 to 26 years (3%) up there is only six. The respondents were 63 female (50.4%), while the male was 62 (49.6%) only. Most of the respondents are from PMU (72%) and UITM (28%).

Table 3 : Mean and Standard deviation for M CLINIC APPS

Descriptive Statistics				
No.	Item	n	Mean	Std. Deviation
1.	Using M CLINICc APPs is better than the traditional method.	125	4.3040	.75374
2.	M CLINICc APPs design is good.	125	4.2160	.71374
3.	M CLINICc APPs system is user-friendly.	125	4.0480	.81177
4.	M CLINICc APPs interface is very attractive.	125	3.8960	.82133
5.	M CLINICc APPs important for providing better ways of communication between students and medical assistant.	125	3.9760	.84685
6.	M CLINICc APPs are easy to install.	125	4.0800	.78904
7.	Using M CLINICc APPs easy to contact the nearest clinics	125	4.0160	.80306
8.	M CLINICc APPs cannot be used offline.	125	4.1200	.71392
9.	I can use M CLINICc anytime.	125	4.2000	.76200
10.	M CLINICc APPs can be used by android and iOS systems.	125	4.4080	.82399
11.	M CLINICc APPs can be installed using a smartphone, tablet, and laptop.	125	4.2320	.94302
12.	ICT skills and knowledge are important in M CLINICc APPs	125	3.9440	0.9780
13.	M CLINICc APPs are useful during the Covid-19 pandemic.	125	4.5760	.58564
14.	M CLINICc APPs s is free to install	125	4.3280	.71590
15.	Overall M CLINICc APPs are asy to use.	125	4.2000	.85194

As shown in Table 3, the level of mobile application usage among PMU and UITM Mukah students is as high as the mean is between 3.50 and 4.49. For this category, the highest mean value of (4.5760), M CLINICc APPs were useful during Covid-19 pandemic. The lowest mean value in this category is related to ICT skills and knowledge that are important in M CLINICc APPs (mean = 3.9440).

CONCLUSION

In conclusion, in the innovations of our group's M CLINICC APPs application, objectives have been achieved, where students can make appointments more easily and should save students time. This is supported by the finding from Grossman et al, (2018), which mobile apps offer the potential to provide just-in-time information for problem solutions, and stress management measures and improve health and quality of life far more effectively than more traditional methods. The second objective which M CLINICc APPs useful during the Covid-19 pandemic, this support by(Zhou et al., 2021) which the apps were primarily utilized for accessing COVID-19 information including COVID-19 replies, informing users, securing users' personal information, and adapting to their contexts.

Lastly, for the recommendations, to collaborate with more clinics, where available clinics will have access to the M CLINICc APPs application. In addition, we recommend that M CLINICc APPs be registered and published in Google Play and Apps Store. This is because to make it easier for users who want to use the M CLINICC APPs app to upload this application. Finally, the recommendation is to add more interactive activities to the app. This is because we want the M CLINICC APPs application to be a more attractive app for users to like to use it. The study was conducted online through the WhatsApp's app due to the pandemic that has hit the country at this point and until now has been unable to conduct face-to-face studies with group members.

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