The Attitudes of MTUN Students towards m-Learning Usage during COVID-19 Pandemic

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***Abstract*—Open and Distance Learning (ODL) is an online Teaching and Learning (T&L) method that has been implemented to all educational institutions in Malaysia to curb the spread of COVID-19 pandemic. The purpose of this study is to identify the attitude level of Malaysian Technical University Network (MTUN) students towards the Mobile Learning (M-learning) usage in ODL methods during the COVID-19 pandemic situation. The total number of respondents involved was 481 engineering students from four MTUN institutions. The study design used is quantitative which uses a questionnaire as a research instrument. The questionnaire used measures three elements of students' attitudes in the aspect of affective, behavior and cognitive towards M-learning implementation. Results were analyzed using descriptive statistics involving the use of mean and standard deviation while inferential statistics involved One-way ANOVA analysis. Result shows that attitudes level of MTUN students towards M-learning was at moderate level for two (2) aspects of affective and cognitive while the behavior aspect was rated at high level. Meanwhile, the result of one-way ANOVA showed no significant difference between the attitudes of student towards ODL across year of studies. Therefore, it can be concluded that the students of MTUN institutions had positive attitudes towards the implementation of M-learning with year of study in the university does not have influence on student's attitude towards M-learning environment. It is advisable that the use of M-learning in the future needs to be enriched with the features of 21st century learning as to enhance students learning experiences.**

***Index Terms*—Open and distance learning (ODL), m-learning, attitude, MTUN students.**

I. Introduction

COVID-19, otherwise known as coronavirus disease 2019, is a new infectious disease caused by a previously unknown virus called SARS-CoV-2. According to World Health Organization (WHO), coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. This virus outbreak originated from Wuhan, China. In early 2020, the COVID-19 outbreak in Malaysia recorded virus infections that rise regularly which has forced the government to implement a movement control order (MCO). Thus, Malaysians are advised to stay at home to stop the virus from spreading rapidly.

Manuscript received August 14, 2021, revised October 5, 2021.

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In regards with Malaysia's MCO enforcement, all non-essential sectors or services are to be closed for a period of time until the graph of infection illustrates a decreasing pattern. As in education sector, all education institutions are also affected with disclosure period while teaching and learning activities need to be conducted from home. This situation has urged the needs on open and distance learning (ODL) to replace the traditional face-to-face teaching delivery method. The concept of open learning and distance education system focuses on open access to education and training to make the learners free from the constraints of time and place, as well as offering flexible learning opportunities to individuals and groups of learners [1]. Similar situation happened in Malaysian Technical University Network (MTUN) practices where all teaching and learning activities will proceed as usual based on ODL method. In line with guidelines for the implementation of teaching and learning during the MCO issued by the Ministry of Higher Education (MOHE) in 2020, the lecturers' plan, prepare and deliver learning using appropriate communication and application medium to university students in their respective homes. In this context, lecturers can implement teaching according to creativity by the concept of online distance learning (ODL). Students are expected to have a higher degree of online learning preparation and to be prepared for independent learning style.

During this pandemic outbreak, ODL education in Malaysian education level plays an important role in expanding educational opportunities to the various layers of student, ages especially semi-adult and adult population who are studying in the university. A good example of ODL teaching approaches being used in university is Mobile learning or commonly abbreviated as M-learning. M-learning is the current education style that offers flexible online teaching session. It involves the application on recent technology such as mobile devices and social media platform to support ODL session. The term flexibility in this learning approaches enable learners or students to learn wherever and whenever they want only by using their mobile devices such as mobile phone, laptop, and desktop. Past study shows that M-learning is able to ease student learning time with sufficient online information to students [2] and students preferred social platform such as Whatsapp as one of the mediums for interaction with lecturer during ODL session [3]. In developed countries such as Australia and Korea, the students have flexible time for learning, which is more convenient for them to access the teaching materials at any time.

Through this ODL method, it helps to promote flexible learning situation. There were past studies that showed some

doi: 10.18178/ijiet.2022.12.5.1634

students tend to detest online learning due to the challenges of personal and technological difficulty issues [4]. The university students showed a high dissatisfaction with the fact that they cannot interrupt the lecturers during the teaching session. There are some barriers in the interaction between lecturers and students throughout online teaching [5]. Online learning provides advantages for both students and universities but it also could turn into negative consequences if it is not being fully developed with effective preparation and planning. Hence, it requires a good strategy, full commitment and adequate preparedness among lecturer and students. This is to ensure the successful on ODL method through M-learning approaches can enrich the effectiveness ODL education in Malaysia specifically.

An attempt on the studies of student's attitude towards the use of M-learning has been previously conducted by past researchers. A research by Al-Emran and Shaalan [6] studied the student's attitudes towards the use of mobile learning as to examine the presence of a significant difference between the students' attitudes and the faculty members' attitudes towards the use of M-learning with regard to gender and country. The differences were found in regards with student's countries origin. Elsewhere, a local study by Azlan *et al*. [7] had investigated student's behavioral intention to use mobile learning with Mathematics and Statistics subject among university students. As a result, a significant relationship was highlighted by the researcher to promote effective formulation in developing comprehensive mobile learning setting. A recent study by Ahmad *et al*. [8] also highlights the readiness level of M-learning environment among selected vocational colleges in Malaysia and found that there are no differences in the level of readiness students in the aspect of student's gender. On the other hand, less study is conducted to cover the studies of m-learning in regards with MTUN students' attitudes in the aspect of Affective, Cognitive and Behavioral towards M-learning environment. Moreover, the research gap differs on the type of institution background to be studied, the nature of M-learning for a specific field of study, as well as less study on finding the differences among students across years of studies with a smaller number of samplings to be taken. It is worth noting that this study was limited to measuring MTUN students' attitudes (affective, behavior and cognitive) towards the M-learning environment and examining differences on students' attitudes across years of study. Perhaps, this study could embark additional information towards the needs on student's attitude during ODL session that is specifically involving M-learning approaches and at the same time strengthening the ODL practice for a better education for Malaysians, specifically, the practice in MTUN institution.

1) Research Objective
   a) Identify MTUN student's attitude level in the aspect of affective, behavior and cognitive towards M-learning usage during COVID-19 pandemic.
   b) Differentiate student's attitude across years of study towards M-learning usage during COVID-19 pandemic.
2) Research Questions
   a) What is the attitude level of MTUN students towards M-learning usage during COVID-19 pandemic?
   b) Is there any significant differences in MTUN student's attitudes towards M-learning usage across year of study?
3) Research Hypothesis

H null: There is no statistically significant difference between the attitudes of student towards M-learning usage across years of studies.

H alternative: There is a statistically significant difference between the attitudes of student towards M-learning usage across years of studies.

II. Literature Review

A. An Insight on Open and Distance Learning (ODL)

The concept of Open and Distance Learning (ODL) focuses on open access to education and training to give the learners freedom to learn at their pace, place and time that are convenient to them, and provide flexible learning opportunities to individuals and groups of learners. The new norm of practices during the COVID-19 pandemic allow educators to enhance their knowledge, competency, abilities and skills in the application of mobile and technology as a medium of online learning. ODL promotes a complete online education eco-system where all classes can be delivered from home by using online platform such as Google Classroom, Google Meet, Zoom Cloud Meeting, YouTube and other platforms. It was believed that ODL is making a significant change on current learning situation [9] and be the potential option for learning strategy especially during Movement Control Order (MCO).

In the context of ODL system in Technical and Vocational Education (TVET) environment, ODL system responds effectively to the growing demand of working adults or any others who have difficulties in getting training in vocational education due to less flexibility in the timing and location as well [10]. Practically, ODL in TVET education shows the complex picture of learning situation. For example, ODL in MTUN during COVID-19 pandemic includes learning on experimental works and hands-on training as an integral element. Recorded practical video, demonstration, interactive module learning and presentation videos were among example of teaching and learning materials to be applied. It was believed that involving technologies in ODL opens new educational possibilities that move well beyond the provision of more sophisticated delivery tools [11]. Meanwhile, the online learning platform will be the place where two-way interaction between students and lecturer will take place in two modes of study which is, either in asynchronous mode or synchronous mode according to the suitability of the subject nature. The main objective is to make sure that all students are able to gather information and have an easy access to the learning material at any time and place. In conjunction to this situation, the empowerment of m-learning approaches seems possible to promote interactive learning environment where students can learn easily by using mobile gadget or laptop to access the subject's learning materials throughout the ODL session.

However, the tremendous changes towards the application of ODL in education give a great challenge to both educators and learners. According to Ahmad *et al*. [12], lecturers are incapable of resisting technological advances and at the same time, they cannot run away from this development. The

changing world as the effects of technological advancement should not be used as a threat but should be faced with a positive attitude. Lecturers need to master and adapt these new skills to always be relevant to every pattern of change in the current education system. Past investigations had been carried out in the form of numerous studies to determine students' perceptions and attitudes towards the total digital education during the coronavirus outbreak, and one of the popular topics discussed was the challenges faced. A study by Shahrin *et al*. [13] showed that some students tend to detest online learning due to the challenges of personal and technological difficulty issue. The study also revealed the existing research discovered that online learning could give psychological impacts in correlation with the challenging learning process. Therefore, the aim of this paper is to study the MTUN students' attitudes towards ODL implementation. This study is vital to study the challenges experienced by Malaysian university especially MTUN students during the pandemic situation and provides insight to the Malaysian government in assisting the online learning in Malaysian universities.

B. *The Adaptation of m-Learning in ODL*

M-learning or known as mobile learning can be defined as a new way to deliver learning content using wireless mobile devices [14]. The existence of advance mobile devices and gadgets such as mobile phone, laptop, and PDA has open up opportunities for students to learn from their own mobile devices. The application of mobile learning helps to support the needs of online learning and open up chances for students to retrieve learning information at any time and place. Mobile learning through laptop, tablet and mobile phones simplifies the way of learning and makes learning process to be easier [15]. As most university students own various mobile devices, the application of M-learning seems suitable to be implemented to the students and thus, strengthens the needs of ODL class sessions.

With the digitalization, lecturers are forced to switch to a more student-centered teaching by using digital platform, since M-learning platforms favor this type of method [16]. Studies by Suresh, Priya & Gayathri [17] reveal that online learning platforms bring benefits for students when they are used as a digital platform for the traditional educational process. Furthermore, most of the studies mentioned show that students, generally, have positive attitudes towards open and distance learning [16], [18], [19], despite encountering some challenges and technical issues while conducting online learning, specifically through M-learning, considering that students process information better in the traditional courses [15]. In addition, other studies reveal multiple benefits of M-learning such as better results in assimilating information, adapting courses to students' learning objective [20], flexibility in time [21], student centeredness [16], and removing the barriers of space and time, which motivate students to join in conversations and exchange opinions among the lecturer and their classmate [22].

Naciri *et al*. [23] stated that m-learning made learning materials accessible any time and indirectly shows its success in replacing physical classroom especially during COVID-19 outbreaks. Moreover, m-learning provides flexibility learning environment as learning activities can be made at any time according to students preferred time [21]. M-learning also promotes a sustainable learning environment where anyone can access information from various platform of mobile learning such as YouTube or any public media platform and is not restricted to students or lecturers only [24]. As in MTUN learning environment, mobile learning opens up greater flexibility on online learning session where all related learning materials will be distributed across various media platform through official university Massive Open Online Courses (MOOC), Google Classroom or even uploaded on YouTube where students can access using their mobile devices whenever required.

III. Methodology

The methodology of this study was based on quantitative method that aims to identify the attitude's level of MTUN students towards M-learning during COVID-19 pandemic. This quantitative method applies survey as the main technique for data collection and involves participation among selected MTUN students in Malaysia. The advantages of surveys include having a large population and therefore, brings a greater statistical power, the ability to gather large amounts of information and having the availability of validated models [25]. A structured questionnaire was distributed to all respondents' sample taken from populations using online questionnaire form.

A. *Samples and Population*

The population of respondents to this quantitative method study consist of undergraduate students who enrolled engineering courses in MTUN across years of studies. As MTUN empowers technical studies, the main purpose in the selection of respondents from engineering courses is to observe the study's results in detail, in regard to ODL technical learning experience that were majorly delivered in MTUN learning environment.

A random sampling technique was used in this study. The number of samples to be selected in this study was based on [26], where it was proposed that only 50% sample to be taken from population numbers. Therefore, the number of sample size of this study is sufficient to represent the population. Moreover, random sampling was aimed to look at the three elements of the sample respondents, namely types of MTUN institution, the years of study and engineering students with M-learning experiences. The selection of these elements was based on the data requirements for this research. Typically, this type of sampling is biased. However, the findings of the research using sampling are not representative or descriptive of the population, but rather provide an initial image of the field of study [27]. The result of the sample information obtained in this study are as shown in Table I below.

TABLE I: Respondents' Sample

No.	MTUN Institution	Location	Number of samples
1	Universiti Tun Hussein Onn Malaysia (UTHM)	Johor	130
2	Universiti Teknikal Malaysia Melaka (UTeM)	Melaka	121
3	Universiti Malaysia Pahang (UMP)	Pahang	110
4	Universiti Malaysia Perlis (UniMAP)	Perlis	120

B. Research Instruments

Questionnaire instruments were used to collect information of respondents' background and items to measure the students' attitude towards m-learning. In details, the questionnaire that was developed comprises eleven items to assess students' attitude towards three aspects which are (i) Affective, (ii) Behavior and (iii) Cognitive during M-learning implementation. The data obtained were further analyzed using Statistical Package for the Social Sciences (SPSS) version 22.0.

C. Data Analysis

Data were analyzed using Statistical Package for Social Science (SPSS) software, which includes descriptive statistical methods such as mean, standard deviation, percentage and frequency. These were used to analyze the level of acceptance of M-learning among lecturers, especially instant messaging (IM) applications that are applied in teaching and learning method. The level of measurement in this study can be referred as per Table II where it was suggested by [28].

TABLE II: INTERPRETATION OF MEAN SCORES

Mean Score	Interpretation
3.34 – 5.00	High
1.67 – 3.33	Moderate
0.0 – 1.66	Low

IV. FINDINGS AND DISCUSSION

This section will briefly discuss the result and discussion achieved from this study. As mentioned in the objectives of this study, this section will be divided into two main findings which are, the level of attitudes of MTUN students towards M-learning in the aspect of Affective, Behavior and Cognitive and the differences in student's attitude across years of study.

A. The Demographic of Respondents

In terms of gender, the majority of respondents are male students which totals up to 347 people (72.1%) and the rest are female students which totals up to 134 people (27.9%) as shown in Table III. In terms of MTUN institutions participation, the majority of respondents are from Universiti Tun Hussein Onn Malaysia (UTHM) with 130 students (27.0%), followed by Universiti Teknikal Malaysia Melaka (UTeM) with 121 students (25.2%), Universiti Malaysia Pahang (UMP) with 120 students (24.9%) and Universiti Malaysia Perlis (UniMAP) with 110 students (22.8%). Year 1 students dominate the number of respondents with 153 students (31.8%), followed by year 2 students with 146 students (30.4%), year 3 students with 101 students (21%) and year 4 students with 81 students (16.8%).

TABLE III: RESPONDENTS' SAMPLE

Categories	Item	Frequency	Percentage (%)
Gender	Male	347	72.1
	Female	134	27.9
Year of Study	Year 1	153	31.8
	Year 2	146	30.4
	Year 3	101	21
	Year 4	81	16.8
Institution	Universiti Tun Hussein Onn Malaysia (UTHM)	130	27
	Universiti Teknikal Malaysia Melaka (UTeM)	121	25.2
	Universiti Malaysia Perlis (UniMAP)	110	22.8
	Universiti Malaysia Pahang (UMP)	120	24.9

The attitudes level of MTUN students towards ODL session in the aspect of Affective, Behavior and Cognitive.

In Table IV, the overall affective level of the students in M-learning was moderate (Mean= 3.15, SD = 0.877). Based on the result, the highest mean score value is the 4th item (Mean = 3.58, SD = 1.028) that stated "I'm not good at using mobile devices." with 71 students answered strongly agree (14.8%), 147 students answered agree (30.6%), 108 students answered disagree (22.5%) and 106 students answered strongly disagree (22.0%). The results show most of the students are proficient in using mobile devices to implement M-learning. Mobile technology offers a variety of opportunities to deliver learning through innovative and engaging methods both inside and outside of the classroom [15] because of its unique features such as mobility, presence, accessibility and privacy [29]. Level of student acceptance also varies according to student's ability to accept the input from the lecture [12]. This is because the implementation of any digital pedagogy in the classroom will not be successful if there is no openness from both lecturer and students to accept using these mobile learning and thus it will only drain the resources [30].

TABLE IV: ASPECT OF AFFECTIVE

No.	Question	Mean	Std. Deviation	Interpretation
1.	Mobile learning can increase my enjoyment of learning.	3.20	0.832	Moderate
2.	Mobile learning makes me feel uncomfortable to study.	3.05	0.916	Moderate
3.	I feel tired of using mobile learning environment to study	3.24	0.964	Moderate
4.	I'm not good at using mobile devices.	3.58	1.028	High
5.	I was worried about not having a regular time to adapt in mobile learning.	2.86	0.779	Moderate
6.	I love using mobile learning because it offers teamwork opportunities.	2.97	0.745	Moderate
Total		**3.15**	**0.877**	**Moderate**

Meanwhile, the lowest mean score value was on the 5th item (Mean = 2.86, SD = 0.779) which stated "I was worried about not having a regular time to adapt in mobile learning" with 169 students answered strongly agree (35.1%), 228 students answered agree (47.4%), 68 students answered disagree (14.1%) and 16 students answered strongly disagree (3.3%). This can create problems to individual or groups of users who are not familiar with mobile technology and therefore, causing them to have limitations on their interaction and understanding of learning applications. Moreover, the screen size of mobile devices limits the

amount of information that can be shown at a time [31].

Based on the Table V, the overall level of student behaviour in M-learning is high (Mean = 3.42, SD = 0.466). The highest mean score value is the 4th item (Mean = 3.63, SD = 0.502) which stated "I'm using mobile technology to find reference material" with 277 students answered strongly agree (57.6%), 151 students answered agree (31.4%) and 4 students answered disagree (0.8%). The findings of this study are consistent with the study conducted by [32] which stated that by exposing students with technological facility in M-learning could provide many advantages for teaching and learning process improvement. This behavior opens up opportunities for students to enrich their way of retrieving online information to solve the given task. M-learning is seen as an essential factor in carrying out the activity of TVET education mainly because of its flexibility in delivering education and accessibility of content and resources [16]. Thus, M-learning has a great importance in the education process nowadays as it has the ability to improve its quality and able to enhance the educational process. Moreover, M-learning improves collaboration and communication with students, and it offers flexibility and helps students to better understand the lectures [22]. Due to its flexibility, M-learning eliminates barriers of space and time where the students can have access to a wide range of information, using computer technologies and systems to build and design their own rhythm and pace of learning experiences. M-learning also facilitates collaboration as it enhances students to interact with their peers, discuss and exchange points of view and ideas between lecturers and students [16].

TABLE V: ASPECT OF BEHAVIOR

No.	Question	Mean	Std. Deviation	Interpretation
1.	Mobile devices allow me to do work more effectively	3.36	0.589	High
2.	I'm using mobile devices in various activities in M-learning	3.37	0.587	High
3.	I can use mobile devices independently without the need of help from others	3.24	0.728	Moderate
4.	I'm using mobile technology to find reference material	3.63	0.502	High
5.	I access course materials anytime and anywhere.	3.53	0.624	High
6.	I find it easy to exchange course materials with my friends	3.38	0.554	High
Total		**3.42**	**0.466**	**High**

Meanwhile, the lowest mean score value is the 3rd item (Mean = 3.24, SD = 0.728) which stated "I can use mobile devices independently without the need of help from others" with 154 students answered strongly agree (32.0%), 251 students answered agree (52.2%), 3 students answered disagree (0.6%), and 24 students answered disagree (5.0%). As nowadays most students owned mobile devices, they can easily explore the M-learning environment and improve the quality of learning at their own pace. M-learning allows students to build knowledge in different contexts, build their understanding, change learning activities and patterns as well as learn without limits of space and time [33]. The relevance of this result is aligned with a study conducted by [20] which found that M-learning was beneficial as it is easy to learn, easy to use and students are able to voice their ideas and contribute ideas electronically, it saves time and money because it does not involve traveling since students are using their own mobile device. Furthermore, the uploaded learning material is consistent, updated and can be accessed easily.

In Table VI, the overall cognitive level of students in M-learning is moderate (Mean = 3.26, SD = 0.549). Based on the results, the highest mean score value is the first item (Mean = 3.46, SD = 0.723) that stated "Gaining more ideas in the learning process" with 155 students answered strongly agree (32.2%), 188 students answered agree (39.1%) and 89 students answered disagree (18.5%). M-learning usage in education provides the ability to provide structured solutions that can help students to solve the problem given. A study conducted by Demir & Akpinar [34] showed that M-learning contain attractive designs can help students to understand the concept of learning in a systematic and orderly manner. In addition, students are able to generate more responses in learning because students are able to communicate effectively and has the ability to convey information to students. M-learning offers many benefits for students because this type of learning involves student-centeredness, flexible learning environment that facilitates collaboration between users, and it can contribute a better interaction with students by providing asynchronous and synchronous tools by using digital platform. Furthermore, it facilitates the distribution of content at the same time to a large number of users and can be adapted according to the students' needs and objectives of learning [16]. This also contributes to a better communication with the students and educational process still can takes place exclusively online even though there will be unpredictable inherent challenges faced through this time of pandemic.

TABLE VI: ASPECT OF COGNITIVE

No.	Question	Mean	Std. Deviation	Interpretation
1.	Gaining more ideas in the learning process	3.46	0.723	High
2.	Able to develop my study skills.	3.15	0.737	Moderate
3.	An effective learning method because it can provide immediate support.	3.15	0.660	Moderate
4.	A flexible learning method because it can be done anytime anywhere.	3.32	0.621	Moderate
5.	Improve communication between students and lecturers.	3.01	0.982	Moderate
6.	Brings new opportunities to learn	3.42	0.535	High
Total		**3.26**	**0.549**	**Moderate**

Meanwhile, the lowest mean score value was on the 5th item (Mean = 3.01, SD = 0.982) that stated "Improve communication between students and lecturers" with 120

students answered strongly agree (24.9%), 147 students answered agree (28.9%), 33 students answered disagree (6.9%) and 42 people answered strongly disagree (8.7%). Students think that unmotivated lecturers are lecturers who bring personal problems during teaching sessions. Lack of careful and distracted focus while using M-learning in certain extent affect communication between lecturers and students. This will cause students to be less focused during the online class sessions [15]. However, when using digital platforms, there are also some elements that might be considered as obstacles in students' process of learning, such as lack of appropriate devices, social issues represented by the lack of communication and interaction with teachers and peers, delayed feedback or help from lecturers, or feelings of isolation due to lack of physical interaction and presence of colleagues has decreased motivation in students [35]. Nonetheless, these obstacles can be overcome with the help of lecturers who should adapt and meet the new challenges, change their teaching strategies to the needs of students [36]. In order to do so, experience and knowledge about teaching in the online environment are necessary for lecturers to quickly provide responsive feedback to students. Thus, lecturers can offer support to students, diversify the tasks offered to students, use various teaching tools in providing information in multiple ways (audio, video, text), and find strategies to spark student interest and keep them focused during M-learning process [37].

B. Differences on Student's Attitude across Year of Study

One-way ANOVA was used to measure differences among groups according to years of study and tested at 5% significance level. This type of analysis has been successfully used by past researchers to make comparative analysis for two or more independent groups of samples as studied by [38]. As for this study purpose, one-way ANOVA was used to examine if there are any differences on the MTUN university student's attitudes towards the implementation of M-learning in ODL session during pandemic COVID-19. A comparison on p-value towards 5% significance level indicates that when $p < 0.05$ is significant, we reject H null.

Table VII displays the overall students' attitude towards M-learning across different years of study. Based on the ANOVA test, the result showed that p value > 0.05, where 0.413 > 0.05 thus, we failed to reject null hypothesis which indicates that there is no statistically significant difference between the attitudes of student towards mobile learning across years of study.

TABLE VII: THE DIFFERENCES ON OVERALL STUDENT'S ATTITUDE TOWARDS M-LEARNING ACROSS YEARS OF STUDY

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	0.251	3	0.084	0.514	0.673
Within Groups	77.758	477	0.163		
Total	78.009	480			

In details, our findings demonstrated that years of study in the university do not have influence on the student's attitude towards M-learning environment. This study has similar findings as [39] where their study found that there is no significantly different among university students at different levels of online learning and face-to-face learning for freshman, sophomore, junior, and senior. Apart from that, other past studies also revealed that the differences in terms of gender displayed same result as there is no significant difference between male and female students' attitudes towards mobile learning [40]. In contrary, a study by [41] found that students of different years of study have different levels of readiness to undergo online learning particularly in using technology and self-confidence. In terms of academic year, [42] found that freshmen and sophomores tended to use mobile devices in their courses more often than juniors and seniors. This is likely to happen because senior students are more likely to have higher confidence level as they have experienced more online learning compared to the junior students. Even though online learning environment impacted education on various of challenges there should be a strong emphasis on a comprehensive approach to support students and academic staff in online learning environment [43].

V. CONCLUSION

COVID-19 pandemic has urged changes in the teaching-learning process in higher education institutions, thus M-learning systems are seen as essential factors in carrying out the activity of universities [44]. Based on this study, it can be found that in average MTUN student's attitude towards M-learning session was at moderate level. In details, attitudes toward the aspect of affective and cognitive were majorly ranked at moderate level whereby attitude towards aspect of behavior was ranked at high level. This study also revealed that there is no statistically significant difference between the attitudes of student towards M-learning across years of study. The main findings in this study remarks that there were positive attitudes among MTUN students towards M-learning environment in ODL session during COVID-19 pandemic. This result is consistent with previous research where higher education students shows positive attitudes towards mobile learning in ODL [18].

Apart from enrich study on student's attitude towards M-learning, this study also promotes the application of M-learning method to be used by lecturers or educators during ODL session for engineering classroom. It was believed that M-learning provides various effects and impacts to the students especially in facing the current COVID-19 pandemic. The creative and user -friendly methods are able to provide the best results in attitude changes in terms of affective, behavioral and cognitive students. Lecturers need to play a major role so that students will be excellent in learning and more enthusiastic and disciplined in seeking knowledge physically or through online courses. The use of M-learning needs to be expanded and be formulated with the features of 21st century learning. It can be used as an alternative for lecturers to apply technology-based teaching methods that are expected will impact the quality of teaching and learning by using and creating an active and creative learning environment. Thus, it will help to build a different learning environment from the conventional teaching environment methods to a more digital pedagogy, specifically, by using mobile learning methods.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Each author provides specific contribution upon completing this work. Reyanhealme Rohanai wrote the paper, Muhammad Fazrulhelmi Ahmad analyzed data, Mohd Rustam Mohd Rameli designed research instrument, Wan Azrul Shafuan Wan Hassan conducted the research, and Norathirah Nabila Abd Mutalib managed research documentation. All authors had approved the final version.

ACKNOWLEDGMENT

Communication of this research is made possible through monetary assistance by Universiti Tun Hussein Onn Malaysia and the UTHM Publisher's Office via Publication Fund E15216.

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