



The use of mobile technologies for learning in higher education: Students' readiness

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ABSTRACT

A rapid evolution of technologies and their proliferation in the education system has created a new paradigm of learning with universities embarking on the integration of mobile technologies in higher education. As a result, mobile learning has emerged as a new way of learning. Mobile learning utilises mobile technologies such as smartphones, laptops, tablets and the Internet, allowing students to learn anywhere and access learning resources anytime. To ensure the successful implementation of mobile learning in higher education, it is imperative to understand students' readiness for using mobile technologies to learn. This paper examines whether undergraduate students of a private university are ready to adapt to the mobility of learning through the use of mobile technologies. A quantitative research approach was adopted. Data was collected from a sample of 234 students of a private university using questionnaires. The descriptive statistics analysis shows that students were fairly comfortable (61.1%, $M=3.17$) with the use of mobile technologies for learning purposes (98.3%), specifically for accessing and downloading online journals (82.5%) and searching for information (82.1%). Most students somehow agreed that products and services that use technologies were much more convenient to use ($M=3.75$) and they were open to learning new and different technologies ($M=3.71$); however, students were only moderately ready for mobile learning if it is were to be implemented by their university ($M=3.32$). This study concludes that students are ready to use technology as they are fairly comfortable with the use of mobile technologies, yet they are only moderately ready to adopt M-Learning. However, despite demonstrating an interest towards mobile technologies used for learning, the students are still not quite ready to adopt M-Learning in higher education. The present study contributes to a growing body of empirical research about the mobile technologies used for learning in Malaysian higher education and recommends that the Ministry of Education assesses the prospect of applying mobile technologies for learning in higher education institutions.

Keywords: *mobile technologies, mobile learning, students' readiness, private university, Malaysia.*

INTRODUCTION

A rapid evolution in technologies has created a new paradigm of learning with universities embarking on integrating mobile technologies in higher education. The integration of mobile technologies, such as mobile phone, smartphone, tablet and laptop, in education has allowed students to communicate with peers as well as with their lecturers. Students also use mobile technologies to access educational materials on the Internet because they perceive the Internet as the fastest way to gain information (Joorabchi, Hj Hassan, & Osman, 2013). Mobile technologies have been instrumental to the way teaching and learning are conducted (Klassen, Eibrink-Lunzenauer, & Glogglar, 2013) and the increasing proliferation of technology in smartphones has caused a new paradigm of learning – mobile learning – to emerge. This new way of learning which utilises mobile technologies allows students to learn and access learning resources anywhere and anytime.

Quinn (2000) expounded that mobile learning (M-Learning) takes place when students use mobile devices for educational purposes, and Kengwe and Bhargava (2014) defined M-Learning “as a dynamic learning environment through the use of mobile technologies especially in the field of education” (p. 58). In addition, Ozdamli and Cavus (2011) described mobile technologies as instant, portable, interactive, collaborative and ubiquitous while M-Learning is a learning method that allows learners to access learning resources anytime and anywhere.

Mobile technology has provided a new way of integrating M-Learning in the academia. While many universities are testing out the possibility of mobile technology implementation (Briz-Ponce, Pereira, Carvalho, Juanes-Mendez, & Garcia-Penalvo, 2016), in the Malaysian context however, research has only been conducted amongst public universities thus far (see Alzaza, & Yaakub, 2011; Abuhassna, & Amin, 2014; Said, 2015; Ismail, Azizan, & Gunasegaran, 2016). One of the major factors that allowed M-Learning to be implemented in the Malaysian higher education is the usage of mobile devices among the younger generation. A survey conducted by Malaysian Communication and Multimedia Commission (MCMC) in 2017 reported that the main users of mobile technologies are from the 20–24 age group (18.4%); and they are also make up the majority of Internet users (21.4%) compared to any other age groups.

Despite the numerous advantages of integrating mobile technologies for learning in higher education, as explicated in prior literature, its successful implementation cannot materialise without the full comprehension of student perspectives, especially factors that affect their adoption of M-Learning (Masrek, 2015; Sarrah, Al Shibli, & Badursha, 2016; Zainol, Yahaya, Mohamat Yahaya, & Md Zain, 2017) and their readiness in using mobile technologies for learning (Figaro-Henry, & James, 2015; Ismail et al., 2016). Therefore, this paper, aims to (1) determine students' usage of mobile technologies for learning, (2) gauge students' readiness in adopting M-Learning, as well as (3) measure the relationship between students' motivation for using mobile technologies to learn and students' readiness for M-Learning. The two research questions and one hypothesis guiding this paper are: RQ1: How are mobile technologies used by students to learn?; RQ2: What is the readiness level of students for M-Learning?; and H1: Students' motivation for using mobile technologies to learn is positively correlated with students' readiness for M-Learning. The findings of this paper are useful to researchers, educators and readers who seek to understand the perceptions of university students towards adopting mobile technologies for learning. Additionally, university administrators can assess students' interests towards using mobile technologies for learning, thus allowing them to better identify factors required to successfully implement M-Learning. Mobile learning application developers can also understand better students' perspectives and help them to further enhance and fine-tune their applications.

LITERATURE REVIEW

Mobile technologies

Mobile technologies include all technological devices which are handheld, portable, and lightweight and equipped with Internet connection and accessibility from anywhere with a wireless or mobile network (Wiebrands, 2012; Kengwe, & Bhargava, 2014). The devices range from mobile phones, smartphones, tablets, iPads, to laptops and personal digital assistants (PDAs) (Hussin, Manap, Amir, & Krish, 2012). These mobile devices are becoming “the new form of the handheld computer that has capabilities to be used in the learning processes” (Prensky, 2005, as cited in Alzaza, & Yaakub, 2011, p. 95). Thus, “mobile technologies if employed effectively, can support social constructivist approaches to learning” which allow students to collaborate and communicate with peers within the class or around the world, as well as expand discussions and learning beyond the classroom (Cobcroft, Towers, Smith, & Axel, 2006, p. 25) and perform well in their studies (Adegbiya, & Bola, 2015). However, it can be a distraction when these devices are used excessively for entertainment purposes (Montrieux, Vanderlinde, Schellens, & De Marez, 2015). According to Zhang (2015), “...although there are both pros and cons for the use of mobile technologies in education, the advantages far outweigh the disadvantages. Thus, mobile technologies play a significant role in the field of education with a new way of learning through M-Learning” (p. 506).

Some scholars highlighted that millennials are one of the first generations of being exposed to technology and the Internet since young (Djamasbi, Siegel, & Tullis, 2010) and millennial students own at least a handphone or other mobile devices because they are surrounded by technological gadgets which keep on changing rapidly (Rahamat, Shah, Din, & Abd Aziz, 2012; Wong, Lean, & Fernandex, 2011). Mobile technologies now offer a new generation of learning for people of all ages, especially millennial students, anywhere and anytime (Alzaza, & Yaakub, 2011). Due to their instantaneous, portable, interactive and collaborative nature (Ozdamli, & Cavus, 2011), the rapidly evolving mobile technologies have massively changed the way teaching is conducted in higher education. According to Abuhassna and Amin (2014), lecturer-student interactions have evolved due to the advancements of mobile technologies, which has enabled lecturers and students to interact remotely at any time and in any setting, instead of being confined to face-to-face communication in a traditional classroom setting.

Several studies have investigated students’ perceptions towards the use of mobile technologies in the context of Malaysian higher education. One study by Yeap, Ramayah and Soto-Acosta (2016), involving 900 students of a public university in Malaysia, found 92.3% of the respondents owned smartphones and 42.6% owned tablets.

“Students are more likely to adopt technology for learning when the use of that particular technology aligns with their learning approaches... using mobile devices for learning actually empowers the students to take control of their learning pace and help them in their academic development and productivity” (Yeap et al., 2016, p. 334).

Two other studies conducted by Said (2015) and Abuhassna and Amin (2014) also looked at the student population of a public university in Malaysia. In Said’s (2015) study, he found that all respondents (N=86) owned a laptop and 80.2% of them had access to smartphones, which revealed the extensive use of mobile devices by students in accessing a variety of learning services in the university. As for the comfort and confidence level of using mobile technologies, 40.7% of the respondents were very comfortable, 47.7% were fairly comfortable and 67.4% were confident in frequently using mobile technologies for learning

purposes (54.4%) due to significant advantages such as efficiency, easy to use, pleasing and comforting (Said, 2015). Similarly, Abuhassna and Amin's (2014, p. 76) study showed "a high level of comfort towards using mobile devices among the students of a public university (88%) (fairly to very comfortable)". The authors concluded that the respondents seem to be familiar with mobile technologies with a majority of them using email through laptops/notebooks (50%) and smartphones (32%) to communicate with their lecturers.

Mobile learning (M-Learning)

The evolution of mobile technologies and its proliferation in the education field have potentially created the next form of electronic learning (e-learning) which enables lecturers and students to conduct their learning anywhere and anytime (Alzaza, & Yaakub, 2011). This is known as mobile learning (M-Learning). M-Learning refers to the use of mobile and handheld devices such as PDAs, mobile phones, laptops, and tablets for teaching and learning (Nassuora, 2013). Such forms of learning allow users and/or students to learn anywhere as long as they have portable devices and wireless connection (Hoppe, Joiner, Milrad, & Sharples, 2003).

Scholars have given many definitions for M-Learning. Alexander (2004) expounded that M-Learning takes place using wireless technologies and emphasises on using personal mobile and portable devices which are held close to the body with access to Internet, for learning. Georgiev, Georgieva and Smrikarov (2004) stated that M-Learning is part of e-learning but affords the ability to learn everywhere, at any time without any permanent physical connection to cable networks through the use of mobile and portable devices. Naismith, Lonsdale, Vavoula, and Sharples (2004) described M-Learning as a rich, collaborative and conversational experience through the use of personal and portable technologies in which users can access educational materials whether in classrooms, homes or streets of a city, while Traxler (2007) opined that M-Learning is "essentially personal, contextual and situated" through the use of mobile, personal and wireless devices such as handheld computers and mobile telephones in the classroom and community to support student learning (p. 10).

There is a growing body of literature about the uses and impacts of using M-Learning to support teaching and learning. For example, Evans (2008) investigated the effectiveness of M-Learning in the form of podcasting with 196 undergraduate students of a UK university using an online survey. The findings showed that podcast is a more effective revision tool as it is efficient, effective, engaging and flexible because students can study when and where they want, as well as "fills an important needs gap by allowing learners to continue the learning activities when it might not normally be possible" (Evans, 2008, p. 495). Next, Kutluk, Donmez, Gulmez, and Terzioglu (2015) conducted a study with 247 accounting students of a university in Turkey to determine their perspectives about M-Learning. Using questionnaire surveys, their findings showed that students perceived M-Learning as easy and reliable, and they intended to continue adopting M-Learning because it enabled immediate access to information, helped them complete their homework more quickly, and anywhere (Kutluk et al., 2015). The authors concluded that M-Learning has a significant influence on student learning because M-Learning is "a combination of interactions between learners, their devices, and the social environment which requires new learning skills and the transformation of teachers' roles and identities... to provide high-quality education" (Kutluk et al., 2015, p. 65). Lastly, Al-Hunaiyyan, Alhajri and Al-Sharhan (2016) examined students' and instructors' perceptions towards the effectiveness of M-Learning to understand the challenges that affect its implementation. The findings were drawn from a survey conducted with 623 students and 132 instructors from various higher education institutions in Kuwait. Results revealed that both students and instructors perceived M-Learning positively as an attractive learning tool which allowed students the freedom to learn whenever and wherever they want as well as its mobility and potential of providing various ways of learning and following up on students' records and grades. However, the main

challenge that dodged its implementation was resistance to change because of the pervading belief that M-Learning increases instructors' work, due to the necessary additional preparations (Al-Hunaiyyan et al., 2016).

Students' readiness for mobile technologies and M-Learning

As discussed earlier, mobile technology is a technological advancement that has paved the way for a new paradigm of higher education; and M-Learning is increasingly adopted as an effective tool for student learning (Hussin et al., 2012; Ismail et al., 2016). It is a known fact that students are technology savvy because they have been exposed to advanced technologies such as mobile devices and Internet from a very young age (Djamasbi et al., 2010). However, while students do use mobile technologies more frequently, this does not necessarily mean that they are ready to utilise it for university learning (Ismail et al., 2016). In order to have a successful and effective implementation of M-Learning in the Malaysian higher education, it is essential to investigate students' readiness for mobile technologies as well as their readiness to adopt M-Learning.

Some scholars have long argued that it is imperative to investigate and understand students' behaviour towards the use of technology because "positive attitudes toward mobile technology lead to the behavioural intention to use m-learning" (Almutairy, Davies & Dimitriadis, 2015, p. 1506). Besides, another readiness issue that needs to be addressed is the awareness of students about the benefits of M-Learning (Ismail et al., 2016). The definition of readiness is the state or quality of being ready and willing to do something (Oxford Advanced Learner's Dictionary, n.d.). According to Schreurs, Ehler and Moreau (2008), readiness refers to a learner's ability to adapt to technological challenges, thus technology readiness indicates "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman, 2000, cited in Almutairy et al., 2015, p. 1506). Another definition of readiness is "the state or quality of being ready; preparation; promptness; aptitude; willingness. Prepared for what one is about to do or experience; equipped or supplied with what is needed for some act or event; prepared for immediate movement or action" (Turnbull et al., 2010, cited in Rahamat et al., 2012, p. 79).

In the Malaysian context, although M-Learning is still in its infancy, the rapid growth of mobile technologies and its proliferation in the education environment, has intensified the immense potential of M-Learning as an effective learning tool (Hussin et al., 2012). The authors conducted a preliminary study on M-Learning readiness among students of two public universities in Malaysia. The findings from 91 survey responses revealed that the students "were highly familiar with computing and communicating activities using their mobile phone. However, half of the study sample expressed that they were not ready for M-Learning at that point in time but would be ready to adopt M-Learning after two years" (Hussin et al., 2012, p. 282). The authors concluded that "the respondents welcomed the idea of integrating M-Learning into future courses as they were already familiar with computing and communication activities that M-Learning may require. However, they were quite reserved when it came to financial issues" (Hussin et al., 2012, p. 282).

Rahamat et al. (2012) investigated the perception and readiness of secondary school students for using mobile technologies to learn. Based on questionnaire responses from 235 students of 6 secondary schools in Seremban (a capital in Negeri Sembilan state, Peninsular Malaysia), findings showed that the students were technologically, economically and competently prepared for the use of mobile technologies in learning. The students were: (1) technologically ready with regard to the devices they owned and the way they were being used; (2) economically ready with their willingness to use the learning package designed for them involving the use of their mobile devices; and 3) competently ready with regard to their knowledge and skills in using their mobile devices (Rahamat et al., 2012).

Lastly, Ismail et al. (2016) explored Malaysian university students' readiness for M-Learning by investigating the following two issues: (1) Are students in Malaysian universities ready for M-Learning and technology in education? and (2) What are the factors that influence their readiness for M-Learning? A questionnaire survey was carried out with 551 respondents from 11 public universities in Malaysia. The findings were manifold: (1) the students were only moderately ready for M-Learning because many of them were not quite familiar with such new learning approach, (2) there was an interest among them to learn more about M-Learning, (3) only a moderate level of awareness among them on the educational benefits of mobile technologies because they did not really understand the benefits that they could gain through M-Learning, and (4) cost was a concern among them if M-Learning were to be implemented in their university (Ismail et al., 2016).

In short, drawing from the literature review of students' readiness towards mobile technologies and M-Learning in the Malaysian context: (i) most studies on student readiness towards M-Learning were based on student populations in public universities; and (ii) the assessment of students' experiences, perspectives and readiness of using mobile technologies for learning in higher education remain unexplored. These two research gaps will be addressed in this paper, specifically looking at students' usage of mobile technologies for university learning and their readiness in adopting M-Learning.

Uses and gratifications theory

The uses and gratifications (U&G) theory by Katz, Blumler, and Gurevitch (1974) is "one of the most successful theoretical frameworks" which examines the questions of "how" and "why" individuals use media to satisfy their particular needs (Quan-Haase, & Young, 2010, p. 351). With the prevalent use of social media and mobile technologies, more scholars now agree that the U&G theory is "an appropriate theoretical framework for examining the uses of new media by individuals" (Dermentzi, Papagiannidis, Osorio Toro, & Yannopoulou, 2016, p. 322) because it helps to expound on the how and why "individuals actively seek out and use specific media to satisfy specific needs" (Dolan, Conduit, Fahy, & Goodman, 2015, p. 262). The theory also posits that "individuals are capable of assessing value judgments of media content and have the initiative to link needs and gratifications to a specific choice of medium" (Ifinedo, 2016, p. 194). Although this theory has been around for about 50 years, it is still being applied in contemporary media research investigating users' motivations for using computers and information technology, social media, as well as mobile technologies (Sarapin, & Morris, 2015).

The focus of this theory is on what people do with media because people are characterised as active, discerning, and motivated in their media use (Quan-Haase, & Young, 2010). Individuals are motivated to select certain media or technology to fulfil their needs and wants, and the choices they make about the media use would fulfil their need gratification (Sarapin, & Morris, 2015). Individuals "receive gratifications through the media, which satisfy their informational, social, and leisure needs" (Phua, Jin, & Kim, 2017, p. 115).

METHODOLOGY

This study employed an online questionnaire survey, which is a quantitative research method that can be used to collect a large amount of data with relative ease and at a reasonable cost (Wimmer & Dominick, 2014) as well as allows respondents to respond anonymously. However, this method requires consistent follow-up due to low response rate and a longer time to collect sufficient responses (Sukamolson, 2010).

The questionnaire survey was set up using Qualtrics.com, a subscription software for collecting and analysing data. The survey consisted of 15 questions in three sections, that is, Section A: Mobile technology usage; Section B: Students' readiness for mobile learning; and Section C: Demographic profile. Section A comprised of seven questions: the types of mobile devices used, students' level of comfort in using mobile devices, the usage of mobile devices for learning purposes, frequency of usage, purpose of usage, average time spent on mobile devices daily and motivation for using mobile devices. Section B contained two 5-point Likert scale questions with 22 items on students' readiness towards technology and M-Learning in higher education. Lastly, Section C collected demographic information using 6 questions: age range, gender, ethnicity, programme, year of study and field of study. The questions for Section A were adapted from Said (2015) while Ismail et al.'s study (2016) was used for Section B. The survey was made up of multiple choice questions, dichotomous questions and 5-point Likert scale statements which responses ranging from Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree (refer to Appendix 2 for the questionnaire).

The study sample was students of a private university in the Klang Valley. The survey questionnaire link was distributed to the students through Facebook. Data collection took place from 23 April to 17 June 2018. Throughout the data collection period, three reminders were posted on Facebook. However, due to a low response rate through Qualtrics.com, the survey was then randomly administered to students in the compound of the university using smartphones and tablets. At the end of the data collection period, a total of 234 responses was garnered. The collected data were exported from Qualtrics.com to Statistical Packages for Social Sciences (SPSS) version 25 for screening and analysis. The Cronbach's alpha reliability test for the 22 Likert items of this questionnaire scored a value of 0.902, which is an acceptable value (ranging from 0.70 to 0.95) (Tavakol, & Dennick, 2011).

The respondents' demographic profile is shown in Table 4.1. A total of 126 male (53.8%) and 108 female respondents (46.2%) participated in the survey. Majority of the respondents were in the 20–30 age group (90.2%). There were 17 respondents below 20 years old (7.3%), 5 in the age range of 31–40 (2.1%) and only one in 41–50 age group (0.4%). In terms of ethnicity, majority of the respondents were Chinese (83.8%), followed by Malay (10.3%), Indian (5.1%), Bengali (0.4%) and Sinhalese (0.4%). Next, most of the respondents were undergraduate students pursuing their bachelor degree (N=194), followed by 31 pursuing their diploma, 4 undertaking foundation courses, 3 undertaking professional courses, and only 2 pursuing a master's degree. With regard to year of study, half of the respondents were in Year Three (50%), followed by 32.2% in Year Two, 15.8% in Year One, and 3% in Year Four. The field of study ranged from Arts (31.2%), Management (29.1%), Sciences (23%), Social Sciences (6.4%), Culinary (4.3%), Information Technology (3%), others (1.7%), to Engineering (1.3%).

Table 1. Respondents' demographic profile

Demographic		N (respondents)	Percentage (%)
Gender	Male	126	53.8
	Female	108	46.2
Age range	20–30	211	90.2
	Below 20 years	17	7.3
	31–40	5	2.1
	41–50	1	0.4
Ethnicity	Chinese	196	83.8
	Malay	24	10.3
	Indian	12	5.1
	Bengali	1	0.4
	Sinhalese	1	0.4
Programme	Degree (undergraduate)	194	82.9
	Diploma	31	13.2
	Foundation	4	1.7
	Professional	3	1.3
	Master	2	0.9
Year of study	Year 3	117	50
	Year 2	73	32.2
	Year 1	37	15.8
	Year 4	7	3.0
Field of study	Art	73	31.2
	Management	68	29.1
	Sciences	54	23.0
	Social Sciences	15	6.4
	Culinary	10	4.3
	Information Technology	7	3.0
	Others	4	1.7
	Engineering	3	1.3

FINDINGS

To answer RQ1, a descriptive analysis was carried out to derive the frequency, mean, standard deviation and percentage for the data collected on mobile technology usage. Table 2 shows the usage frequencies for different types of mobile devices. Firstly, smartphones and laptops were the two mobile devices most heavily used; 231 respondents used smartphones (98.7%) and 220 students used laptops (94.0%). This is followed by 113 respondents who used tablets (48.3%) and 76 who used MP3 players (32.5%). PDAs and E-book readers were the least used, with only 11 using PDA (4.7%) and 3 using E-book reader (3.3%).

Table 2. Types of mobile devices and their usage frequency

Mobile devices	N (respondents)	Percentage (%)
Smartphone	231	98.7
Laptop	220	94.0
iPad/Tablet	113	48.3
iTouch/MP3 player	76	32.5
Personal digital assistant (PDA)	11	4.7
E-book reader	3	1.3

The next question assessed whether mobile devices were used for learning purposes. Table 3 shows that the majority of the respondents used mobile devices for learning purposes (N=230, 98.3%) while only 4 did not (1.7%). Although almost all of the respondents used mobile technologies for learning purposes, the time spent for this purpose varied. As shown in Table 4, slightly more than half of the respondents only used mobile technologies for learning *sometimes*, which is equivalent to spending 1 to 3 hours per week (N=135, 57.7%). While, 82 respondents used mobile technologies for learning about 1 to 3 hours daily (35%) (*always*), only 13 *seldom* used mobile technologies for learning (5.6%).

Table 3. Purpose of using mobile technologies

Items	N (respondents)	Percentage (%)
Sometimes (1–3 hours a week)	135	57.7
Always (1–3 hours a day)	82	35.0
Seldom (1–3 hours a month)	13	5.6
Never	4	1.7

Table 4. Time spent on mobile technologies for learning

Items	N (respondents)	Percentage (%)
Yes, for learning purposes	230	98.3
No, not for learning purposes	4	1.7

With regard to how the mobile technologies were used for learning purposes, Table 5 shows that 193 respondents used them to access online journals (82.5%), 192 to search for information (82.1%), 177 to write assignments (75.6%), 175 to access learning management system (74.8%) and for sharing knowledge with other students (N=167, 71.4%). Not many used mobile devices to participate in online educational discussion forums (N=72, 30.8%), or to communicate and network through social network sites (N=103, 44%). This finding shows that mobile technologies were mainly used by the respondents for purposes of academic activities.

Table 5. Purpose of mobile technology usage

Items	N (respondents)	Percentage (%)
Accessing and downloading online journals	193	82.5
Searching for information	192	82.1
Writing assignments	177	75.6
Accessing learning management system (Blackboard, Moodle)	175	74.8
Sharing knowledge with other students	167	71.4
Accessing related sites and online sources	155	66.2
Discussing about assignments	149	63.7
Communicating through email	139	59.4
Taking notes	137	58.5
Downloading reading materials	129	55.1
Networking and communicating through social networks	103	44.0
Participating in online educational discussion forums	72	30.8

To measure the average time spent using mobile technologies on a daily basis for six selected activities, a 5-point Likert scale was used where the responses included 1: None, 2: less than 1 hour, 3: 1–3 hours, 4: 4–6 hours and 5: more than 6 hours (refer to the questionnaire in Appendix 2). Table 6 shows that respondents spent on average 1–3 hours daily for all the six

activities: browsing the Internet (M=3.79), messaging (M=3.56), engaging in conversation (M=3.43), playing games (M=3.38), learning or educational purposes (M=3.34) and the least, listening to music with a mean score of 3.18.

Table 6. Average time spent daily using mobile technologies for selected activities

Items	Mean	Std Dev
Internet (Web/Mail)	3.79	0.813
Messaging	3.56	0.883
Conversation	3.43	0.911
Games	3.38	1.144
Learning/Educational	3.34	0.914
Music	3.18	1.056

The last question in Section A measured the respondents' level of agreement on statements regarding motivations for using mobile devices using a 5-point Likert scale. The responses included 1 representing *Strongly Disagree*, 2 representing *Disagree*, 3 representing *Neutral*, 4 representing *Agree*, 5 representing *Strongly Agree* and N/A representing *Not Applicable* (refer to Appendix 2).

Further, the respondents somewhat agreed (mean score of 3.39 to 4.06) on the 29 statements about motivations for using mobile devices (Table 7 in Appendix 1). The motivations included using mobile devices to communicate with distant friends (M=4.06); something to do to occupy their time (M=4.06); to keep in touch with their friends and family members (M=3.98); it is entertaining (M=3.97); when they have nothing better to do (M=3.96); when they are bored (M=3.96); it allows them to unwind (M=3.94); it is a pleasant rest (M=3.94); to provide information (M=3.92); it is enjoyable (M=3.91); and it relaxes them (3.90). The respondents somewhat agreed that the motivation was to play around on mobile devices (M=3.86), when there is no one else to talk or be with (M=3.85), to present information about their special interest (M=3.82), it makes them feel less lonely (M=3.79), it is a habit that they do (M=3.79), they do not have to be alone (M=3.75), and to share information that may be of use or interest to others (M=3.71). In summary, the motivations for using mobile devices reflect a mix of functional (i.e. for communication, share information) and hedonistic (i.e. occupy time, entertaining, pleasant rest, playing, avoid loneliness) purposes.

In answering RQ2, three questions (one question in Section A and two questions in Section B) were analysed and findings are shown in Tables 8, 9 and 10. Firstly, respondents were asked to provide their perceived level of comfort in using mobile technologies for learning purposes. As shown in Table 8, 61.1% of the respondents claimed that they were fairly comfortable, 27.8% of them were very comfortable and 11.1% were a little comfortable. The mean value of respondents' level of comfort is M=3.17. This result suggests that students of this private university are considered technology savvy as none have off them indicated that they were not comfortable in using mobile technologies.

Table 8. Respondents' level of comfort when using mobile technologies

Items	N (respondents)	Percentage (%)
Fairly comfortable	143	61.1
Very comfortable	65	27.8
A little comfortable	26	11.1

Next, respondents were asked to state their level of agreement on statements about their readiness for technology (Question 8, Section B, see Appendix 2). Table 9 shows that the respondents agreed to a certain degree on all 12 statements about their readiness for using technology with a mean score of 3.26 to 3.80. The respondents preferred mobile phone programmes that allow them to tailor things to fit their needs ($M=3.80$). They also favoured the idea of using the most advanced learning technologies available ($M=3.76$), preferred products and services that use technologies ($M=3.75$), were open to the idea of learning new and different technologies ($M=3.71$), as well as agreed that technology gives people more control over their daily lives ($M=3.70$). However, it is interesting to note that not many agreed that technology was designed to make life easier and usually has disappointing results ($M=3.26$) and they were not the first to acquire new technologies among their circle of friends ($M=3.28$).

Table 9. Respondents' level of agreement on readiness for technology

Statements	Mean	Std Dev
You like mobile phone programmes that allow you to tailor things to fit your own needs.	3.80	0.702
You prefer to use the most advanced learning technology available.	3.76	0.701
Products and services that use the technologies are much more convenient to use.	3.75	0.728
You are always open to learning about new and different technologies.	3.71	0.809
Technology gives people more control over their daily lives.	3.70	0.768
You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.	3.57	0.721
Society should not depend heavily on technology to solve its problems.	3.53	0.860
You keep up with the latest technological developments in your areas of interest.	3.44	0.878
In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.41	0.905
You enjoy the challenge of figuring out high-tech gadgets.	3.33	0.912
In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.28	0.974
You find that technology designed to make life easier usually has disappointing results.	3.26	0.977

Lastly, the respondents expressed their level of agreement on statements that gauged their readiness for M-Learning in higher education as shown in Table 10. The results show that the respondents were keen to find out more about M-Learning ($M=3.75$) and they thought M-Learning was good for them ($M=3.72$). Besides, they also would like their lecturer to integrate M-Learning into their courses ($M=3.72$), and into the classes in addition to the face-to-face meetings ($M=3.58$). However, some preferred the conventional learning rather than M-Learning ($M=3.51$) and they were afraid that they will spend more money on mobile phone bills because of M-Learning ($M=3.50$). Other results show that some students were unsure of what M-Learning is about ($M=3.42$) and they were moderately ready for M-Learning if it were to be implemented by their university ($M=3.32$). Finally, some respondents were unsure whether they would be willing to spend extra money for M-Learning ($M=3.19$) and whether M-Learning will make their life difficult ($M=3.00$).

Table 10. Respondents' readiness for M-Learning in higher education

Statements	Mean	Std. Dev.
I want to know more about mobile learning.	3.75	0.770
I think mobile learning is good for me.	3.72	0.696
I would like my lecturer to integrate mobile learning in my course.	3.72	0.795
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class	3.58	0.738
I prefer conventional learning than mobile learning.	3.51	0.748
I am afraid I will spend more money on my handphone bill because of mobile learning.	3.50	0.771
I know what mobile learning is all about.	3.41	0.969
I am not ready for mobile learning if the university implements it now.	3.32	0.919
I don't mind paying extra money for mobile learning.	3.19	1.035
Mobile learning will make my life difficult.	3.00	0.974

In testing the hypothesis, the Pearson correlation test result (Table 11) shows that there is a weak but significant positive relationship between students' motivation for using mobile technologies for learning and students' readiness for M-Learning ($r=.36$, $p<.01$).

Table 11. Respondents' readiness for M-Learning in higher education

Correlations		Readiness_New	Motivation_New
Readiness_New	Pearson Correlation	1	.355**
	Sig. (2-tailed)		.000
	N	234	234
Motivation_New	Pearson Correlation	.355**	1
	Sig. (2-tailed)	.000	
	N	234	234

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION AND CONCLUSION

This paper investigated students' usage of mobile technologies for learning and their readiness for technology and M-Learning in a private university. Firstly, findings show that smartphone and laptop are the two top mobile devices most heavily used by the students for learning. This finding is consistent with Djamasbi et al. (2010), Alzaza and Yaakub (2011), Rahamat et al. (2012) and Said (2015) who highlighted that students are surrounded by technological gadgets and have been exposed to technology and Internet since young. Thus, mobile technology is common among students to write assignments (Said, 2015) and access learning resources anywhere, anytime (Alzaza, & Yaakub, 2011). However, in contrast to Said's (2015) study whose findings revealed that students tended to use mobile technologies to network and communicate through social networks, the students in this study mainly used mobile technologies for learning purposes as they spent at least one to three hours per week on mobile devices to access online journals, search for information, write assignments and access to the university's learning management system.

Secondly, with regard to students' readiness for technology and M-Learning, findings show that the majority of students are comfortable with using mobile devices for learning, and they are keen to know more about M-Learning. This finding concurs with Said's (2015) study, in which the students are comfortable using mobile devices for learning although there are some who are unsure about whether they are ready for the integration of M-Learning into

university courses. Findings from this present study reveal that students prefer to use the most advanced technologies that can be tailored to meet their own needs, and this corroborates with Ismail et al.'s findings (2016) which revealed that students welcomed new types of learning technologies. Additionally, both studies concur that students are eager to find out more about M-Learning because they perceive that M-Learning will be beneficial to them but at the same time, are concerned about the entailing extra costs.

In conclusion, this study shows that students of a private university in the Klang Valley Malaysia are ready to move towards technology as they are fairly and very comfortable with the use of mobile technologies. Furthermore, they have access to personal mobile devices for learning. However, the students are only moderately ready to adopt M-Learning although they are open to the idea of learning new technologies and perceive M-Learning to be simple and beneficial.

Drawing from this conclusion, two implications are evident. Firstly, educators could provide diverse learning experiences to attract students' attention for mobile technologies' usage in higher education, and secondly, university administrators and policy makers from the Ministry of Education should assess the prospect of applying mobile technologies in higher education institutions. Ultimately, the present study contributes to a growing body of empirical research about mobile technology usage for learning in the Malaysian higher education.

As the study is based on a single university, the findings are not able to represent the overall student population of private universities. Another limitation is the use of a single methodology approach – quantitative research – thus the lack of in-depth insights about respondents' perceptions. It is recommended that future studies should expand the sample to include a larger sample of students and/or lecturers and a more even distribution from across Malaysian universities. In addition, employing a combination of both qualitative and quantitative research methods can be expected to produce richer and more comprehensive insights. These suggestions could enable further the generalisation of the findings to the overall population of students and/or lecturers in Malaysian higher education institutions.

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Appendix 1

Table 7. Respondents' level of agreement on motivations for using mobile devices

Statements	Mean	Std Dev
1. I use mobile device to communicate with distant friends.	4.06	0.770
2. I use mobile device because it gives me something to do to occupy my time.	4.06	0.773
3. I use mobile device to keep in touch with friends and family.	3.98	0.769
4. I use mobile device because it's entertaining.	3.97	0.661
5. I use mobile device when I have nothing better to do.	3.96	0.799
6. I use mobile device because it passes the time away, particularly when I'm bored.	3.96	0.751
7. I use mobile device because it allows me to unwind.	3.94	0.767
8. I use mobile device because it is a pleasant rest.	3.94	0.767
9. I use mobile device to provide information.	3.92	0.757
10. I use mobile device because it's enjoyable.	3.91	0.770
11. I use mobile device because it relaxes me.	3.90	0.755
12. I use mobile device because I just like to play around on mobile devices.	3.86	0.850
13. I use mobile device when there's no one else to talk or be with.	3.85	0.921
14. I use mobile device to present information about a special interest of mine.	3.82	0.869
15. I use mobile device because it makes me feel less lonely.	3.79	0.871
16. I use mobile device because it is a habit, just something I do.	3.79	0.745
17. I use mobile device so I won't have to be alone.	3.75	0.854
18. I use mobile device to share information that may be of use or interest to others.	3.71	0.833
19. I use mobile device to post my resume and/or other work online.	3.57	0.901
20. I use mobile device to help me network with professional contacts.	3.57	0.887
21. I use mobile device so I can get away from what I'm doing.	3.56	0.962
22. I use mobile device because it is helpful for my professional future.	3.56	0.873
23. I use mobile device to provide personal information about myself.	3.54	0.927
24. I use mobile device so I can forget about school, work, or other things.	3.50	1.024
25. I use mobile device because it is the thing to do.	3.50	0.950
26. I use mobile device to tell others a little bit about myself.	3.47	0.959
27. I use mobile device because everyone is doing it.	3.43	1.013
28. I use mobile device so I can get away from the rest of my family or others.	3.39	1.149
29. I use mobile device because it is cool.	3.39	1.035

Appendix 2

Section A:

1. What are the types of mobile devices that you use? (You can tick more than one)
 - Laptop computer / Notebook
 - Smartphone (iOS, Android)
 - iPad / Tablet (Android)
 - iTouch / MP3 player / iPod touch
 - Personal digital assistant (PDA)
 - E-book reader
 - Others: _____
2. How comfortable are you in using mobile devices?
 - Not comfortable
 - A little comfortable
 - Fairly comfortable
 - Very comfortable
3. Do you use mobile devices for learning and/or for educational purposes?
 - Yes
 - No
4. What is the frequency of using mobile devices for learning purposes?
 - Always (1–3 hours a day)
 - Sometimes (1–3 hours a week)
 - Seldom (1–3 hours a month)
 - Never
5. How do you use mobile devices (mobile technologies) for learning (M-learning)?
(You can tick more than one)
 - Accessing and downloading online journals
 - Sharing knowledge with other students
 - Communicating through email
 - Accessing related sites and online sources
 - Accessing learning management system (Blackboard, Moodle)
 - Downloading reading materials
 - Taking notes
 - Writing assignments
 - Networking and communicating through social networks
 - Participating in online educational discussion forums
 - Discussing about assignments
 - Searching for information
 - Others: _____
6. What is the average time spent on mobile devices on a daily basis for the following activities?
 1. None
 2. Less than 1 hour
 3. 1 – 3 hours
 4. 4 –6 hours
 5. More than 6 hours

Activities	1	2	3	4	5
Conversation					
Messaging					
Internet (Web/Mail)					
Games					
Music					
Learning / Educational					

7. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree and N/A=not applicable, what is your level of agreement for the following statements on the motivations for using mobile device?

Statements	1	2	3	4	5	N
I use mobile device because it's enjoyable.						
I use mobile device because it's entertaining.						
I use mobile device because it relaxes me.						
I use mobile device because it allows me to unwind.						
I use mobile device because it is a pleasant rest.						
I use mobile device to provide information.						
I use mobile device to present information about a special interest of mine.						
I use mobile device to share information that may be of use or interest to others.						
I use mobile device to provide personal information about myself.						
I use mobile device to tell others a little bit about myself.						
I use mobile device so I can forget about school, work, or other things.						
I use mobile device so I can get away from the rest of my family or others.						
I use mobile device so I can get away from what I'm doing.						
I use mobile device because everyone is doing it.						
I use mobile device because it is the thing to do.						
I use mobile device because it is cool.						
I use mobile device so I won't have to be alone.						
I use mobile device when there's no one else to talk or be with.						
I use mobile device because it makes me feel less lonely.						
I use mobile device because it is helpful for my professional future.						
I use mobile device to post my resume and/or other work online.						
I use mobile device to help me network with professional contacts.						
I use mobile device to keep in touch with friends and family.						
I use mobile device to communicate with distant friends.						
I use mobile device because I just like to play around on mobile devices.						
I use mobile device because it is a habit, just something I do.						
I use mobile device when I have nothing better to do.						
I use mobile device because it passes the time away, particularly when I'm bored.						
I use mobile device because it gives me something to do to occupy my time.						

Section B:

8. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for technology?

Statements	1	2	3	4	5
Technology gives people more control over their daily lives.					
Products and services that use the technologies are much more convenient to use.					
You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.					
You prefer to use the most advanced learning technology available.					
You like mobile phone programmes that allow you to tailor things to fit your own needs.					
Society should not depend heavily on technology to solve its problems.					
You find that technology designed to make life easier usually has disappointing results.					
In general, you are among the first in your circle of friends to acquire new technology when it appears.					
You can usually figure out new high-tech products and services without help from others.					
You keep up with the latest technological developments in your areas of interest.					
You enjoy the challenge of figuring out high-tech gadgets.					
You are always open to learning about new and different technologies.					

9. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for mobile learning in higher education?

Statements	1	2	3	4	5
I know what mobile learning is all about.					
I want to know more about mobile learning.					
I prefer conventional learning than mobile learning.					
I think mobile learning is good for me.					
I don't mind paying extra money for mobile learning.					
Mobile learning will make my life difficult.					
I am not ready for mobile learning if the university implements it now.					
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class.					
I am afraid I will spend more money on my handphone bill because of mobile learning.					
I would like my lecturer to integrate mobile learning in my course.					

Section C:

10. Age range:

- Below 20 years
- 20 – 30
- 31 – 40
- 41 – 50
- Above 51 years

11. Gender:

- Male
- Female

12. Ethnicity:

- Malay
- Chinese
- Indian
- Others: _____

13. Programme:

- Professional
- PhD
- Master
- Degree (undergraduate)
- Diploma
- Certificate
- Others: _____

14. Year of study:

- Year 1
- Year 2
- Year 3
- Year 4

15. Field of study:

- Sciences
- Social sciences
- Art
- Management
- Engineering
- Others: _____

Thank you for your participation!

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