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## Mobile Service Delivery Mechanism in Smart Education: Conceptual Framework

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### Abstract

Higher education institutions around the world have invested heavily in ICT development to enhance teaching and learning processes and also to meet the needs of students in improving knowledge. As mobile learning has been successful and wider use in developed countries such as Finland, Korea, Japan and so on, so many of higher education institutions in developing countries such as Malaysia have embarked on several mobile learning initiatives to support their traditional learning mods. The objective of this paper is to build a conceptual framework of m-learning involving the integration of current practices, benefits and challenges to know their effectiveness in ensuring the quality of teaching and learning. In addition, the proposed framework focuses on case studies for the service delivery mechanism in smart education at four of the nine branches of Kolej Universiti Poly-Tech MARA (KUPTM) / Kolej Poly-Tech MARA (KPTM) in the context of private higher education institutions in Malaysia. This framework will help students, lecturers and administrators in higher education to tailor educational resources from their mobile devices that can be used anytime and anywhere.

**Keywords:** M-Learning, Mobile Learning, Service Delivery Mechanism, Smart Education, Conceptual Framework.

### Introduction

Along with the evolving and evolution of information technology in today's digital world, the number of users using mobile devices such as smartphones, computer tablets, and personal digital assistants (PDAs) is on the rise. Ye Conghuan (2011) previously identified that managing and supplying educational resources to consumer applications was one of the key challenges for the higher education community. Traditional mode of education, where the transfer of knowledge is achieved through lectures, has some disadvantages, especially since students are not motivated enough to acquire knowledge actively and interactively. Hamdan et al., (2013) also agrees and considers that the lecture room concept should be translated into a new environment as the field of education has changed in tandem with the current technological change. Suhazimah (2016) said that towards a developed nation with the people, the MAMPU is a key player in implementing initiatives to enhance service delivery by prioritizing the public to transform the public service delivery system towards the

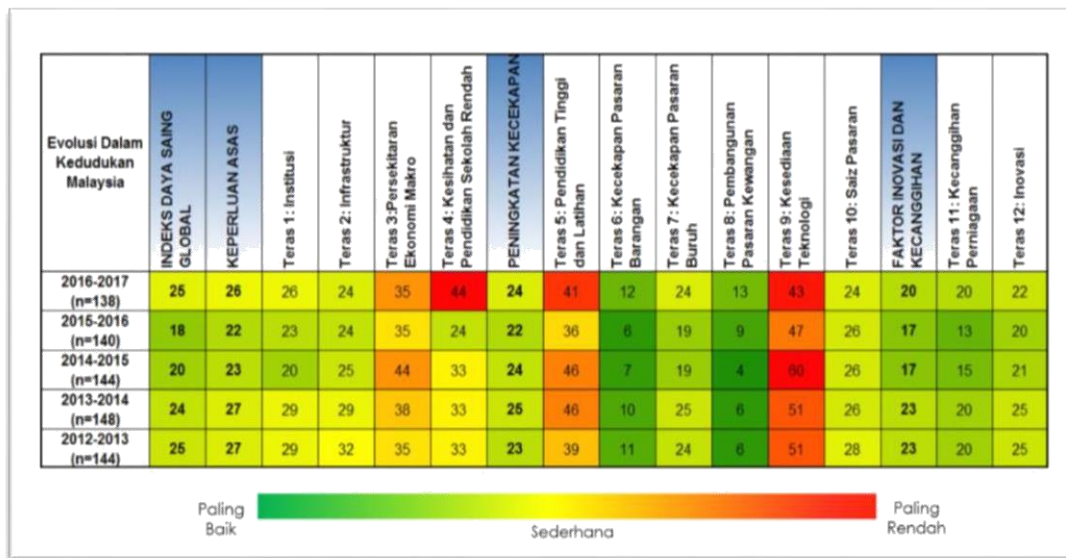
Digital Government. People, Government Agencies, Statutory Bodies and NGOs are the holders of this service delivery system.

Ismail et al., (2017) identifying teaching and learning resources is one of several important factors to consider for effective learning. Therefore, (Ramírez-Donoso et al. (2017) stated that although the e-learning system has a strong platform and supports and stores high data capacity but is limited in the development of certain class activities only. In particular, existing platforms lack equipment to facilitate group work. According to (Lamsah & Chear, (2017), education today is global and is often linked to the achievement of learning outcomes and marketability of graduates. The advancement of communication and information technology (ICT) has made the world community and an organization more connected with each other in a borderless world community. However, the mechanism of service delivery for the education sector is still low compared to the transportation, fisheries, agriculture, and safety or smart city Z.Ibrahim (n.d.).

### **Literature Review**

Several domestic and foreign studies have been cited to share discovery of service provision and education, smart learning systems, e-learning and m-learning, mobile applications that can be used as reference material to enhance this research.

Referring to the Communications and Media Resources 2015, the Malaysian Communications and Multimedia Commission showed a high mobile penetration rate of 143.8%, while Internet penetration reached 77% from 30.68 million Malaysians and 30.8 million broadband subscribers. Most Malaysians also spend more than 6.5 hours a day browsing the internet compared to 78 minutes a day to watch television, 36 minutes a day to listen to radio and 20 minutes a day to read newspapers / magazines. On average, 64% access the internet via mobile devices compared to desktop computers by 36%. This shows Malaysians are now more comfortable using mobile devices to access information that can be obtained at the fingertips.



**Figure 1. Evolution of Malaysia's Competitiveness Performance**

Figure 1 shows the evolution of Malaysia's competitiveness performance, a source from Malaysia in the Global Competitiveness Report 2016-2017, which comprises 12 thrusts from the Good Practice (GCR) 2012-2013 to the GCR 2016-2017. To enhance the country's competitiveness and enhance Malaysia's innovation development stages, more emphasis is required for Technology Readiness (core 9), Higher Education and Training (core 5), Primary School Health and Education (core 4) and Macroeconomic Environment (core 3). Among the indicators showing the fall of the ranking are Higher Education and the 41st Training (GCR 2015-2016: 36) and 44th Health and Primary Education (GCR 2015-2016: 24). This shows that although Malaysia ranked 25th out of 138 countries, leading the region in East Asia and Asia Pacific among new emerging countries but still lagging behind for education and technological readiness.

Table 1. Previous Study by Theme and Year

No	Researcher	M-learning	Current Practice	Benefits	Challenges
1	(Flavius & Ferdi 2011) (Osman et al. 2014) (Nascimento 2017)				
2	(Yavari 2016)				
3	(Rahman 2016) (Bhamare et al. 2017)				
4	(Ye Conghuan 2011a) (Krish et al. 2012) (Badusah & Amin 2013) (J. A. Lee et al. 2013) (M. Lee & Son 2013) (Salah et al. 2014) (Sung et al. 2016) (Kiat et al. 2016) (Giuliani et al. 2016) (Syazwani Ismail et al. n.d.) (Ramírez-Donoso et al. n.d.) (Jiugen et al. n.d.) (Zanaton 2017) (Lamsah & Chear 2017) (Noriyani 2017) (Shen et al. 2017)				
5	Norliza (2013) (Analisa Hamdan et al. 2013) (Khalid & Yusoff 2016) (Cheng et al. 2016) (Fuad & Deb n.d.) (Mohd Zainudin n.d.) (Normah Husin, Nor Azhan Norul 'Azmi 2017)				
6	(Al-Hunaiyyan et al. 2016)				
7	(Asabere 2013) (Mehdipour & Zerehkafi 2013)				
8	(Pholotho & Mtsweni 2016) (Zbick n.d.) (Elaish et al. 2017)				
<b>Research</b>					
	<b>Mobile Service Delivery Mechanism in Smart Education</b>				

Table 1 shows the previous study with four main themes namely m-learning, current practice, benefits and challenges. According to (Ye Conghuan, 2011b) Managing and supplying educational resources to consumer applications is a major challenge. Meanwhile Analisa Hamdan et al. (2013) identified the concept of the lecture room should be translated into a new environment. Therefore Suhazimah (2016) stated that the MAMPU is implementing initiatives to enhance service delivery by prioritizing the civilians. MAMPU also try transform of the public service delivery system towards the Digital Government. Syazwani Ismail et al. (n.d.) said Teaching and learning resources are an important factor for the effectiveness of active learning. However (Ramírez-Donoso et al., (2017) stated that although the e-learning system has a strong platform and supports and stores high data capacity but is limited in the development of certain class activities only. In particular, existing platforms lack equipment to facilitate group work. In addition (Lamsah & Chear, (2017) from Universiti Selangor stated education is global and related to the availability of graduates. ICT makes the world borderless and Z.Ibrahim (n.d.) from MAMPU said that Service delivery mechanisms for the education sector are still lower than transport, fishery, agriculture, security or smart city sector.

### **Issues**

After conducting a past study, several issues have been identified which contribute to the problem of m-learning in Malaysia. According to (Zanaton, 2017), the shortcoming of the traditional learning system that makes students bored is one of the big problems in the classroom.

Meanwhile (Supyan 2016) recognizes that classroom learning giving a lot of impact especially in space usage problems, electrical consumption for printing, high energy consumption and high cost paper usage.

Therefore (Norliza 2013) identified the weaknesses of E-Learning governance and the use of the latest teaching aids as well as lack of e-learning usage guidelines is one of the problems facing education.

However Radzi (2017) states that through a case study in Malaysia, OUM is a pioneering university that conducts large-scale m-Learning in 2004 and was attended by USM in 2010. OUM has been using SMS to deliver notices, reminders and motivational messages to his students. Apart from OUM and USM, it is not well known about any other projects or studies involving other institutions of higher learning that implement such m-Learning scales.

### **Problem**

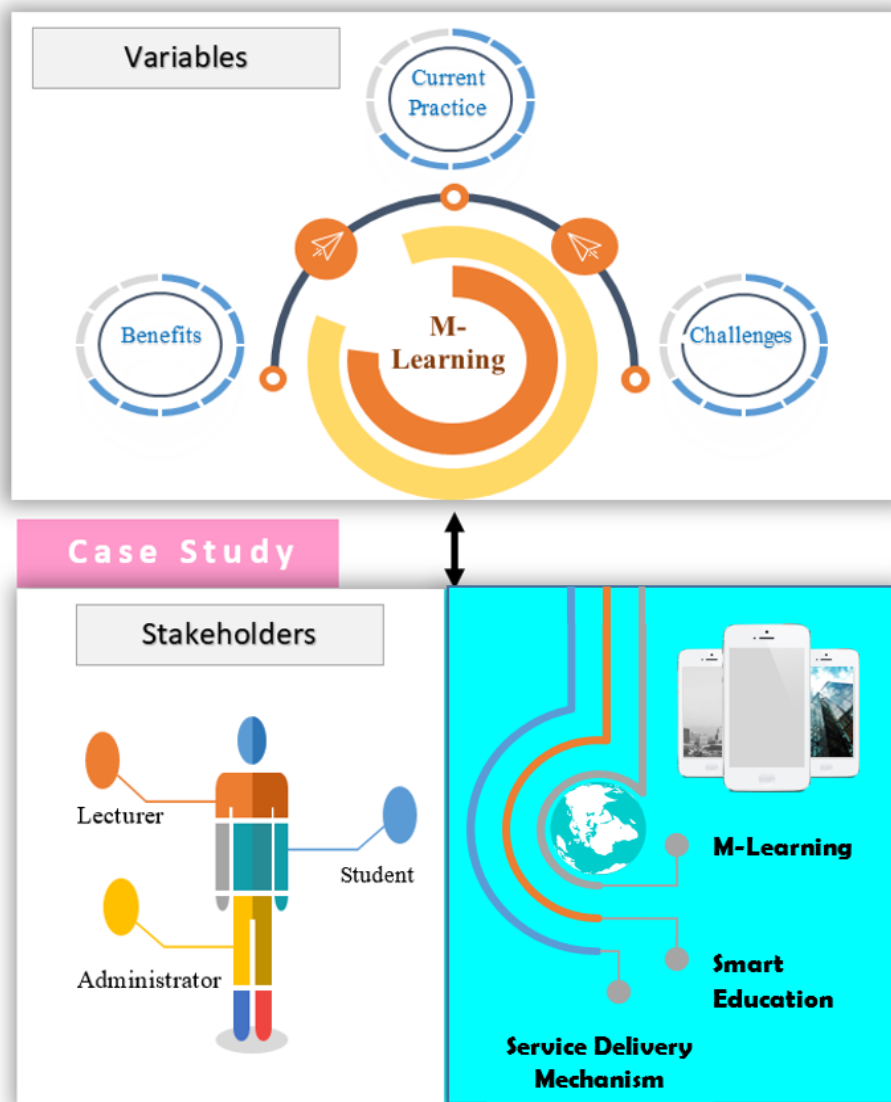
There are some problem identified from the previous study which is Service delivery mechanisms for the education sector are still low and lag behind compared to other sectors. (RMK11 2016-2020).

In addition, Malaysia is still lagging and going down to the lowest for education and technological readiness. (Malaysia Competitiveness Evolution 2016/2017)

### **Proposed Conceptual Framework**

Through the issues and problems of this study, then the conceptual framework proposal has been designed to help solve it





**Figure 2. Conceptual Framework**

Figure 2 shows the conceptual framework for this study which consists of variables and case study.

**Conceptual Framework Elements**

There are some key elements in the study such as current practices, benefits and challenges as indirect variables while direct variables are m-Learning. Current practice variables are mediators between benefit variables and challenges. A case study will be conducted at the Kolej Universiti Poly-Tech MARA (KUPTM) and Kolej Poly-Tech MARA (KPTM) which involves lecturers, students and administrators as stakeholders who relate to each other in the context of service delivery mechanisms, smart education and m-Learning.

- **Current Practices**  
To examine current practices on acceptance of m-Learning based on mobile apps and conduct self-study.
- **Benefits**  
To explore the benefits of m-learning to improve the learning process in a smart education.
- **Challenges**  
Reviewing challenges that affect users when implementing m-Learning.
- **M-Learning**  
Mobile learning is a form of distance education that "learns through various contexts through social interaction and its content using personal electronic devices". As a distance education form, students use mobile learning technology at the right time and everywhere (Mehdipour & Zerehkafi, 2013).
- **Lecturer**  
Helps to transform traditional learning into local communities into blended learning that enables lecturers and supervisors to provide effective education, and help them access the mobile teaching world and evaluate their student performance continuously. In addition, lecturers can also disseminate important information to students by using their mobile devices anytime and anywhere quickly and easily.
- **Student**  
Encourage students to activate their mobile devices; download mobile apps to support the m-Learning process, and utilize them anytime and anywhere and have wireless networks available (Wi-Fi, 3G, 4G). In addition, it can help students to get the information they need especially in learning as in developed countries.
- **Administrator**  
Spell the name of the institution by helping, managing and implementing m-Learning.
- **Service Delivery System**  
The service delivery system is a set of principles, standards, policies and constraints that will be used to guide the design, development, use, operation and retirement of services provided by the service provider in order to offer a consistent service of a particular user community within the context of a particular business. The mechanism of delivery mechanisms is the context in which the capabilities of service providers are organized into service (W.M. Zawawi, 2015).



- **Smart Education**

The next generation of learning concepts, smart learning environment, and smart classroom concepts appear. Learning space is a new field of research aimed at promoting free, flexible learning and dealing with providing learning skills and appropriate learning methods (Zhuang et al., 2017).

### **Conclusion**

M-learning is an alternative education of various educational patterns in the Malaysia. The suitability is significant for students at higher education level particularly for courses requiring a lot of campus studies. For those with disabilities or those who unable to attend school, this approach is very useful. Mobile Learning is a more engaging and effective learning pattern for teens who love challenges in life, and those who want to learn while working as vocational and technical course participants. Mobile learning if implemented will help people from all levels improve the quality of life in the era of modern technology.

### **Future Work**

This framework is also proposed to be tested in higher education institutions in developed and developing countries. By using this framework at the same higher educational institution, we can measure the increase in the learning process in higher education. Furthermore, many studies have to be conducted to determine the challenges faced and the use of m-learning in higher education. In addition, the proposed m-learning framework for higher education institutions can be expanded to support and adapt to new mobility tools and technologies.

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