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## The Impact of Mobile Learning Application Through Intention to Use on Employees Skill Usage

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### Abstract

The learning delivery mechanism has evolved. The two most prevalent delivery modalities are instructor-led and self-paced. Self-learning tools include e-learning, online learning, and even mobile learning. Mobile learning is the latest trend in many industries and areas. Mobile device technologies are constantly developing, leading to increased usage. Mobile devices as learning tools have become a new corporate training delivery method. A similar learning tool is used by Telekom Malaysia (TM) organization. This study examined the impact of mobile learning applications on Telekom Malaysia employees' skill usage. This study has four goals. Hypotheses based on TAM and Kirkpatrick Evaluation Model have been generated for testing. Data were collected via questionnaires. The questionnaire has four primary study variables: perceived ease of use (PEOU), perceived usefulness (PU), intention to use (ITU), and skills. The surveys were given to executives and non-executives at Telekom Malaysia in Klang Valley, Malaysia. The study employed 137 completed questionnaires. The analysis uses SmartPLS 3 and IBM SPSS Statistics 26. The findings demonstrated that perceived ease of use, usefulness, and intention to use influenced TM employee skill usage. Intention to Use (ITU) mediated the link between perceived ease of use and perceived usefulness with TM employee skill usage. This study has contributed to both theoretical and practice.

**Keywords:** Mobile Learning, Intention to Use, Technology Acceptance Model (TAM), Skill Usage.

### Introduction

Mobile learning has become the new learning delivery method in various industries and sectors. Telekom Malaysia (TM) has also adopted mobile learning tool for staff training. Telekom Malaysia Berhad (TM) is Malaysia's digital infrastructure and national connectivity provider, as well as the country's leading integrated telco, providing a comprehensive suite of communication services and solutions in fixed (telephony and broadband), mobile (content), WiFi, ICT, Cloud, and smart services. The company emphasizes providing a better customer experience through continuous customer service quality improvements and

innovations while also focusing on increased operational efficiency and productivity. While operating in a highly competitive environment, TM is motivated by the creation of shareholder value. In 2020, TM had more than 21,000 employees (Telekom Malaysia Corporate Profile).

There are challenges in getting the Telekom Malaysia employees to attend the conventional face-to-face training, especially for the front-liners such as the sales team, service installer, repairer, and other critical scopes of work due to their daily work commitment. The employees need to have a different way of learning to learn anytime and anywhere without interrupting their daily tasks. In view of this, the EduBite mobile learning apps have become one of TM's new learning delivery solutions. Therefore, the proposed study is vital to identify the factors that affected mobile learning implementation in the Telekom Malaysia organization. Employees would accept mobile learning if they perceived ease of use and perceived usefulness. Both factors affect the intention to use mobile learning, which leads to skill usage.

Though mobile learning has been widely discussed, the majority of previous studies have been carried out in countries such as Taiwan (Hwang et al., 2010), New Zealand (Lu & Viehland, 2008), Macedonia (Fetaji & Fetaji, 2008), China (Liu et al., 2010), and Thailand (Vate-U-Lan, 2008). Mobile learning studies from the perspective of a developing country such as Malaysia are still in their infancy. Those who have studied mobile learning have primarily looked at it from the perspectives of library services (Cummings et al., 2010; Hahn, 2008; Walsh, 2009), higher education (Cook et al., 2007; Fetaji & Fetaji, 2008), Museums (Hsu et al., 2006), and further education (Savill-Smith et al., 2006). Surprisingly, the elements that influence people's intentions to use mobile learning have remained largely unexplained.

Only through acquiring an understanding of why clients avoid adopting specific IT will we be assured of a worthwhile return on investment (Magni et al., 2010; Rogoski, 2005). The rapid proliferation of mobile technologies has provided students with a plethora of new learning opportunities. 66 percent of smartphone users and 20 percent of tablet users had smartphones and tablets in 2018. According to GSMA (2018), access to the internet is primarily accomplished through mobile devices (including tablets and smartphones). By 2025, around 71% of the world's population will have access to mobile internet. Since there are more and more people using mobile devices, it is critical to look into the factors that influence their decision to use mobile devices for educational or corporate learning purposes. Using mobile technologies in educational settings may provide instructors and students with opportunities to learn by using technology they are comfortable and confident in, as well as be motivated to use (Arpaci, 2019). Nonetheless, evaluating the intention to use mobile learning in an organization is still not widely considered. As a result, this research aims to examine the impact of mobile learning applications on skill usage through intention to use (ITU). Specifically, four research objectives were determined; (RO1) To examine the effect of perceived ease of use (PEOU) and perceived usefulness (PU) on the Intention to Use (ITU) of mobile learning. (RO2) To determine the effect of Intention to Use (ITU) of mobile learning on TM employee skill usage. (RO3) To examine the effect of perceived ease of use (PEOU) and perceived usefulness (PU) of mobile learning on TM employee skill usage. (RO4) To examine the mediating effect of Intention to Use (ITU) of mobile learning on the relationship between perceived ease of use (PEOU) and perceived usefulness (PU) with TM employee skill usage.

## Literature Review

The Technology Acceptance Model (TAM), proposed by Davis (1989), is one of the most profound frameworks frequently used to explain computer-usage behavior and constructs associated with the acceptance of technology. Davis (1989) indicated a substantially larger association between perceived usefulness and adoption than there was between PEOU and adoption. He created and validated new measures for two distinct variables, PU and PEOU, both of which are predicted to be critical determinants of user acceptability. Scale items were developed using these two variables' definitions and then examined for content validity, reliability, and construct validity in two studies, including a total of 152 users and four application programmes. The measures were revised and condensed, resulting in two six-item scales with 0.98 reliability for utility and .094 reliability for simplicity of use. The scales were found to have a good degree of convergent, discriminant, and factorial validity. Perceived usefulness was found to be substantially associated to the current usage ( $r=0.63$ , Study 1) self-reported and self-predicted future usage ( $r=0.85$ , Study 2). Additionally, perceived ease of use was positively connected with the present ( $r=0.45$ , Study 1) and future ( $r=0.59$ , Study 2). Both studies found a substantially stronger link between usefulness and usage behaviour than did the simplicity of use. According to regression analysis, PEOU may be a causal antecedent of PU, rather than a parallel, direct driver of system usage. There are implications for future user acceptance studies. Moreover, according to Davis et al (1989), without their use, computer systems have no effect on organisational performance. Unfortunately, manager and professional resistance to end-user solutions is a widespread issue. To improve prediction, explanation, and user acceptability, we must first have a deeper understanding of why humans embrace or reject computers. The primary study goal is to discover the capacity of a measure of people's intentions to forecast their acceptance of computers and to explain their intentions in terms of their attitudes, subjective norms, perceived usefulness, perceived ease of use, as well as related factors. In research of one hundred seven individuals, intention to use a computer were measured throughout time in a certain system were connected with system utilisation 14 weeks later by 0.35 following a one-hour introduction to the system. At the conclusion of this time frame, the intention-usage correlation was 0.63. PU had a substantial influence on people's intentions, accounting for more than half of the difference in intentions after 14 weeks. Additionally, PEOU showed a tiny but substantial effect on intentions, albeit this effect waned over time. Attitudes mediated only a portion of the influence of these beliefs on intentions. Intentions were unaffected by subjective norms. These findings reveal the possibility of developing simple yet powerful models of the factors of user acceptability, which could be used to evaluate systems and guide managerial interventions aimed at resolving the problem of underutilised computer technology.

Meanwhile, García et al (2019) found that to predict whether users will have an intention to use mobile learning as a tool of human capital training in organisations, it is necessary to consider the following factors: the influence of their circle of reference (subjective norm), whether m-learning is important to their work (job relevance), whether the results are tangible (PU and PEOU). Subjective norm and job relevance are major factors in defining m-learning PU (after PEOU). PEOU of mobile learning appears to be strongly associated with how enjoyable the learning process is and whether the learner believes that they have control over it. In the results presented above, PEOU appears to be a very strong predictor of both PU and behavioral intention, with PU being the key driver of behavioral intention.

Although user acceptability has garnered a lot of attention in a past study, Ong et al. (2004) discovered that more work was needed to analyse or validate previous findings, particularly

in different technologies, user groups, and/or organisational contexts. They presented perceived credibility as a novel construct to investigate the applicability of the technology acceptance model (TAM) in understanding engineers' decisions to adopt e-learning and to address a practical technology management issue. The results, based on a sample of 140 engineers from six worldwide companies, clearly corroborate the extended TAM's ability to predict engineers' intention to adopt e-learning.

Venkatesh (2000), in his study on "Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model," found while the past study has demonstrated that simplicity of use is significant in affecting user acceptance and usage behaviour, recent studies show that it has been overlooked in prior research. Still, relatively little study has been done to examine how this view evolves and shifts over time. System-specific PEOU is adjusted and tested in the current research using the adjustment-based theoretical model. According to the model, three main sources of early impressions of system ease of use include control (internal and external—both conceptualised as computer self-efficacy, the former by virtue of the conditions used to facilitate ease of use, the latter through the intrinsic desire to use computers), and intrinsic motivation (conceptualised as computer playfulness) (conceptualised as computer anxiety). When more experience is gained, it is assumed that the objective usability of the system will alter to reflect the general views about computers and computer use while anchoring to external control and the current system environment. The concept was tested by implementing it in three separate firms and gathering data over three months from 246 people. According to the proposed research model, which was well supported at all sites of measurement, and which explained up to sixty percent of the variances in system-specific PEOU, our existing understanding accounts for only half of the system-specific perceived ease of use.

Wang et al (2006), in their research on predicting consumer ITU mobile service, stated that to help consumers understand which aspects influence their intent to utilise mobile services, there is a necessity for study. The research, based on TAM, Theory of Planned Behavior (TPB), and Luarn & Lin's (2005) mobile banking acceptance model, refines and validates an integrated model for predicting user intention to use m-service. To test the research model, an analysis of 258 individuals in Taiwan was completed utilising the structural equation modelling approach. Results significantly confirm the suggested model's claim that customers are more likely to use m-service after engaging with it. The paper explores several issues relevant to m-service adoption and acceptance studies.

Yoon and Kim (2007) found that, although PEOU and PU have been consistently valued in IT decisions over the past few decades, context, user type, and technological attributes will alter the adoption rate of a new IT. They introduced convenience as a new factor that reflects the characteristic of ubiquitous computing technology. In addition, they chose wireless Local Area Network ubiquitous computing is still in its nascent stages, and so uses TAM as a means to evaluate the Extended TAM in a ubiquitous computing context.

Tan et al (2014) previously published a paper titled "Predicting the drivers of behavioural intention to use mobile learning: A hybrid SEM-Neural Networks approach." The study employs a "hybrid Structural Equation Modeling–Artificial Neural Networks (SEM–ANN) technique" to empirically analyse the elements that impact a user's intention to adopt mobile learning (m-learning). SEM input units and the Root Mean Square of Errors (RMSE) produced a feed-forward-back-propagation multi-layer perceptron ANN that demonstrated a high level of prediction accuracy. In order to assess the normalised relevance of all relevant

determinants, all relevant variables were employed in a sensitivity analysis. Because of the popularity of this new technology, understanding why it was embraced can be explained using the Technology Acceptance Model (TAM). The study attempts to overcome the study's weaknesses by incorporating two new constructs: personal innovativeness in information technology (PIIT) and social influences (SI). Of the 400 surveys distributed to mobile users, 216 questionnaires were returned. The study finds that there is a strong link between the intention to use m-learning and overall student learning. In contrast, for PIIT, SI, and the control variables age, gender, and academic credentials, the findings are inconclusive. The findings are relevant to companies that make mobile devices, such as phone carriers and universities, as well as governments, who may want to plan their future adoption plans. In addition, the study further extended TAM from a market with a developing economy from the aspect of psychology.

Moreover, a book by Kim (2009) aimed at exploring the influential factors of customers in accepting biometrics and to moderate impacts of demographic factors on their intention to use biometrics in the hospitality industry. Meanwhile, Gibson et al. (2008) evaluated the extent to which the TAM could satisfactorily explain faculty acceptance of online education by conducting a survey. The data showed that PU is a strong pointer of faculty willingness to use online education technology; nevertheless, the effects of the additional power offered by PEOU are small when compared to those found in PU. In addition to that, claimed, "TAM postulates that PU is an important determinant of user attitude about acceptance of technologies that can lead to the ITU the technology and actual usage."

Mac Callum and Jeffrey (2013) also found the study indicated that ICT (information and communications technology) abilities directly correlate with intentions to utilize mobile learning. Izuagbe et al (2019) discovered a substantial correlation between PEOU and e-Skills. The researchers were able to discover that e-Skills and PEOU both display a strong link and that library users have a strong desire to accept new technologies. In addition, the participants found that mobile technology can be both engaging and beneficial in achieving success in adult literacy programs. Yusoff et al (2009) found that E-library usage was also found to be positively correlated with PU. Usage level will be higher if students feel that a system is useful. This discovery has come about as a consequence of an independent study that discovered a strong positive association between PU and actual usage (Adams et al., 1992; Davis, 1989; Igbaria et al., 1995; Igbaria et al., 1997; Mathieson, 1991; Ndubisi et al., 2001; Ramayah & Aafaqi, 2004; Ramayah et al., 2004; Ramayah et al., 2003; Segars & Grover, 1993).

Previous studies showed that PU and PEOU all indirectly influence knowledge and skill through their intention to use mobile learning, which is consistent with previous studies. (Chiou et al., 2009; Jahangir & Begum, 2008; Liu et al., 2010; Lu et al., 2005; Taylor & Todd, 1995; Venkatesh & Davis, 2000). The intention to use (ITU) has played a partial mediation role in the relationship. These findings confirm previous research that revealed that the more the potential user's intention to use, the more likely he or she will begin utilising such mobile learning technology. (Brown et al., 2003; Chiou et al., 2009; Davis et al., 1989; Karim et al., 2006; Liu et al., 2010; Lu et al., 2005; Luarn & Lin, 2005). In accordance with prior research findings by Cheng and Yuen (2018); Joo et al. (2016), the intention significantly impacts actual use. The empirical findings validate the significance of intention to use mobile learning.

### Research Model and Hypotheses Development

Technology Acceptance Model (Davis, 1989) in Figure 1 and Kirkpatrick's Evaluation model (Kirkpatrick & Kirkpatrick, 2006) in Figure 2 are two independent theoretical models integrated into this study to create a research model that may be applied to various situations. According to TAM, the intention to use mobile learning is determined by perceived usefulness (PU) and perceived ease of use (PEOU).

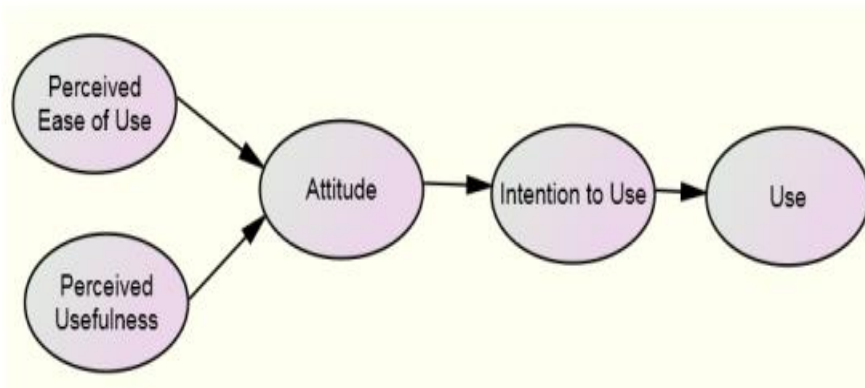


Figure 1 Technology Acceptance Model (TAM) (Davis, 1989)

In the original model, TAM is constructed from several indicators, including perceived ease of use (PEOU), perceived usefulness (PU), attitudes towards using (Attitude), behavioral intention (Intention to use), and actual usage (Use) as per Figure 1. PEOU and PU affect attitude towards using and influence the intention to use, which finally will reflect the actual usage. In this study, Attitude and Intention to use have been combined to become Intention to use. The indicator of Use in this study is known as Skill usage.

When mobile learning technology is accepted, the employees will use it. To further evaluate the skill usage of mobile learning, Kirkpatrick Evaluation Model is used. Kirkpatrick Evaluation Model has 4 levels (Refer to Figure 2). Level 1 is reaction/satisfaction towards the training. Level 2 is to measure the learning before and after the training. Level 3 measures the behaviour (application) at the workplace after the training, and Level 4 measures the impact of the training on the division performance. In the context of this study, Level 3 is applied to evaluate skill usage of mobile learning after completion of the training.

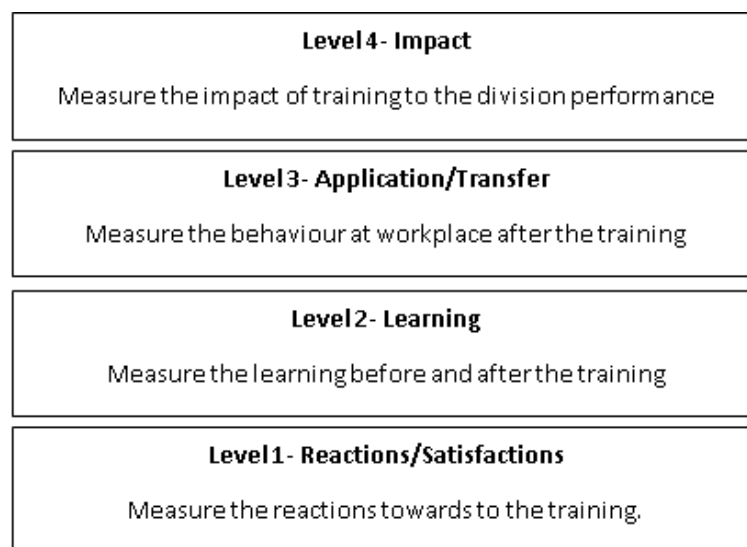


Figure 2 Kirkpatrick Evaluation Model (Kirkparick and Kirkpatrick, 2006)

Based on findings from previous studies related to the relationship between PEOU, PU, ITU with skill usage, TAM, and Kirkpatrick Evaluation Model, seven hypotheses have been developed as depicted in the research model (Refer to Figure 3).

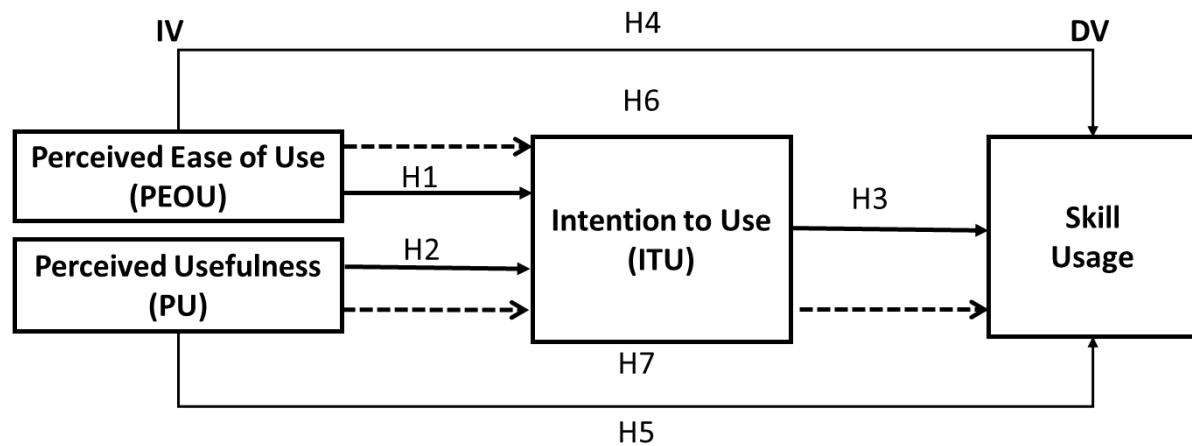


Figure 3 Research model

Therefore, the following hypotheses are suggested:

- H1 There is an effect of PEOU on ITU
- H2 There is an effect of PU on ITU
- H3 There is an effect of ITU on Skill usage
- H4 There is an effect of PEOU on Skill usage
- H5 There is an effect of PU on Skill usage
- H6 There is a mediating effect of Intention to Use (ITU) on the relationship between PEOU on Skill usage
- H7 There is a mediating effect of Intention to Use (ITU) on the relationship between PU on Skill usage

#### Perceived Ease of Use (PEOU)

"The degree to which a person believes that using a certain system would be devoid of effort, according to the definition of perceived ease of use (PEOU)" (Davis, 1989). Several studies have demonstrated that perceived ease of use has a statistically significant correlation with perceived usefulness (Mohammadi, 2015; Sabah, 2016; Yadegaridehkordi et al., 2013). A further benefit of PEOU is that a more significant impact on the continuous intention (CI) to use m-learning (Joo et al., 2016).

#### Perceived Usefulness (PU)

"Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). According to a previous study, PU has a statistically significant connection. (Ibrahim et al., 2017; Joo et al., 2016; Mohammadi, 2015; Oghuma et al., 2015). It has also been pointed out that PU has a considerable impact on the continuous intention's decision to employ mobile learning (Alzaza, 2013; Kim, 2010; Mac Callum & Jeffrey, 2014).

#### Intention to Use (ITU)

Intention to use is defined by Davis and Cosenza (1993), Fishbein and Ajzen (1975); Fishbein and Ajzen (1979), and Malhotra and Galletta (1999) as a function of beliefs, it's more likely for



individuals to have favourable or unfavourable attitudes towards the action. Behavioral intention (BI) or ITU is defined by Davis and Cosenza (1993), Fishbein and Ajzen (1975); Fishbein and Ajzen (1979) as behavioural intents are the aims, aspirations, and expected responses to the attitude object. They are referred to as behavioural intentions.

### Skill Usage

The use in this study is referred to as skill usage. The ability to accomplish a task is described as skill, but the term also refers to a dimension of improving ability in the performance of that task. When the word "skill" is used in conjunction with the word "competence," it awakens images of expertise, mastery, and quality, which are all associated with the concept of competence. According to The European Qualifications Framework (EQF) (2008), skills are the effective application of information and know-how to fulfill tasks and solve problems. This approach categorises skills as either cognitive (including the use of logical, intuitive, and creative thinking) or practical (involving the use of hands-on experience). This research looks into the skill usage that has emerged due to mobile learning as a learning tool.

## Method

### Data Collection

According to Al-Emran et al (2018), in a technology adoption study, the quantitative approach has been the most used method. A questionnaire survey was distributed to TM employees in Klang Valley, Malaysia, for this study. The information was gathered from TM employees in various scopes of work. The G\*Power tool and Cohen (1992) were used to determine the minimum sample size that was necessary (Faul et al., 2009). The effect size is 0.15, the error type is 0.05, the power is 0.99, and the number of predictors is 4. These are the G\*Power parameters. The minimal sample size necessary was determined to be 107. As a result, 150 employees took part in the research and completed the survey. Only 137 valid responses were kept and could thus be analysed.

### Instrument

There are four research instruments in this study. (1) Perceived ease of use (PEOU) (2) Perceived usefulness (PU) (3) Intention to use (ITU), and (4) Skill usage. Instruments (1), (2), and (3) have been adopted from the previous researcher (Davis, 1989; Islam, 2011a; Islam, 2011b). Instruments (1) and (2) have 7 items each. Instrument (3) has 5 items. At the same time, instrument (4) has 30 items. Instrument (4) Skill usage had been adopted from Telekom Malaysia organization in 2018 and has been validated by the subject matter expert from the industry. All research instruments utilized a " 5-point Likert scale". All items had been validated by University academia and also the industry subject matter expert.

## Results

### Data analysis/Findings

Partial least squares structural equation modelling with the SmartPLS V.3.2.8 software was used in this study to analyse the data (Ringle et al., 2015). Measurement model and structural model were both used as part of an evaluation approach to examine collected data (Hair et al., 2017). This study's decision to use PLS-SEM is the result of numerous factors. First and foremost, if a study's goal is to advance an existing hypothesis, PLS-SEM is the best approach (Urbach & Ahlemann, 2010). PLS-SEM, on the other hand, is the best technique for delving into complex models (Hair et al., 2016). Third, a PLS-SEM approach views the entire model as

a single entity rather than as a collection of separate entities (Goodhue et al., 2012). According to Barclay et al. (1995), a fourth benefit of using PLS-SEM is that it combines structural modelling with measurement to produce more accurate results.

#### Demographic Analysis

There have been 137 totally completed valid questionnaires. Demographic analysis shows that female respondents represented a higher percentage of the total sample (63.5%) as compared to the male respondents (36.5%). This result signifies that most of TM's Klang Valley employees who attended the mobile learning were female. 67 respondents (48.9%) were from 36 until 45 years old, which represents the highest percentage. There were 38 respondents (27.7%) from 26 to 35 years old, 27 respondents (19.7%) from 46 to 55 years old, 4 respondents (2.9%) from 56 to 60 years old, and only 1 respondent (0.7%) from less than 26 years old. According to the respondents' position in the TM's Klang Valley. 53 employees were Exec Band 1 (38.7%), 49 employees were Non-Exec (35.8%), 27 employees (19.7%) were Exec Band 2, and 8 employees or (5.8%) were Exec Band 3. 73 respondents (53.3%) were educated at the Degree level. It represents more than half of the total respondents. The number of respondents with a Diploma was 38 or (27.7%), 12 respondents or (8.8%) were Master holders, 12 respondents or (8.8%) were SPM/Sijil holders, and only 1 or (0.7%) respondent was a Ph.D./Professional. Last but not least is regarding the respondents working experience in Telekom Malaysia (TM). 56 respondents or (40.9%) had worked for more than 15 years in TM. Then, followed by 52 respondents or (38.0%) with 11 to 15 years working experience, 22 respondents or (16.1%) had between 6 to 10 years working experience, and only 7 respondents (5.1%) had worked from 1 to 5 years in TM.

#### Reflective Measurement model assessment

Hair et al. (2017) proposed employing a standard measurement approach to calculate construct reliability (Cronbach's alpha and composite reliability) as well as validity (convergent and discriminant validity).

This table demonstrates that the values for Cronbach's alpha from the results in Table 1 range between 0.875 and 0.983, all above the 0.7 threshold value (Nunnally & Bernstein, 1994). Included in the findings shown in Table 1 were the results from the composite reliability (CR) analyses, which showed values ranging from 0.923 to 0.984, all above the recommended value of 0.7 (Kline, 2015). Following these findings, the reliability of the construction was affirmed, and were found to be free from error. Convergent validity is measured using the factor loading and average variance extracted (AVE). (Hair et al., 2017). Factor loadings yielded results greater than the value of 0.7 suggested. Further, in Table 1, it can be seen that AVE's values (0.667-0.843) are greater than the threshold value of 0.5. Since these findings are in hand, it has been proven that all constructs have converged in their levels of validity. Fornell-Larker criterion, cross-loadings, and the Heterotrait-Monotrait ratio (HTMT) are three potential measurement methods to use in the measurement of discriminant validity (Hair et al., 2017). AVEs have square roots greater than their correlation with other constructs, as shown in Table 2, and this criterion confirms the requirement (Fornell & Larcker, 1981). A look at Table 3 shows the cross-loadings criteria have been met because each construct has a higher indicator loading than its corresponding variable.

Table 4 shows the Heterotrait-Monotrait (HTMT) ratio generated results. After the bootstrapping procedure, there is no HTMT rate straddle at a value of 1. Therefore, from the

three assessments, it is concluded that each latent measurement was discriminating against the other. Last but not least, three essential steps to assess the reflective measurement model had been completed through internal consistency, convergent validity, and discriminant validity. The value from composite reliability, Cronbach alpha, factor loadings, Average Variance Extracted, Fornell & Lacker criterion, cross-loading criterion, and HTMT inference for the reflective measurement model fulfilled the recommended guidelines or the minimum threshold value. Based on all results obtained, the reflective measurement model has a good level of internal consistency, convergent validity, and discriminant validity. The indicators for each latent construct were valid and fit. Thus, the data gathered can be further evaluated in the structural model.

*Table 1 Summary of Convergent validity results*

Constructs	Cronbach's Alpha	Composite Reliability	AVE
ITU	0.947	0.959	0.826
PEOU	0.907	0.941	0.843
PU	0.875	0.923	0.800
Skill usage	0.983	0.984	0.667

*Table 2 Summary of Fornell-Larcker scale results*

	ITU	PEOU	PU	Skill usage
ITU	<b>0.909</b>			
PEOU	0.816	<b>0.918</b>		
PU	0.862	0.838	<b>0.895</b>	
Skill usage	0.606	0.596	0.599	<b>0.817</b>

*Table 3 Cross-loading results*

	ITU	PEOU	PU	Skill usage
PEOU1	0.773	<b>0.916</b>	0.763	0.559
PEOU2	0.732	<b>0.930</b>	0.749	0.525
PEOU3	0.741	<b>0.908</b>	0.796	0.557
PU1	0.763	0.781	<b>0.879</b>	0.590
PU2	0.801	0.756	<b>0.920</b>	0.532
PU3	0.749	0.712	<b>0.884</b>	0.485
ITU1	<b>0.908</b>	0.679	0.745	0.515
ITU2	<b>0.928</b>	0.768	0.797	0.604
ITU3	<b>0.931</b>	0.795	0.793	0.542
ITU4	<b>0.913</b>	0.772	0.833	0.557
ITU5	<b>0.861</b>	0.685	0.744	0.530
CF1	0.551	0.476	0.512	<b>0.797</b>
CF2	0.529	0.449	0.463	<b>0.770</b>
CF3	0.519	0.464	0.527	<b>0.718</b>
CF4	0.522	0.542	0.539	<b>0.749</b>

CF5	0.449	0.437	0.418	<b>0.710</b>
CO1	0.465	0.419	0.451	<b>0.820</b>
CO2	0.477	0.475	0.473	<b>0.818</b>
CO3	0.432	0.443	0.444	<b>0.800</b>
CO4	0.427	0.374	0.426	<b>0.729</b>
CO5	0.402	0.330	0.405	<b>0.764</b>
DL1	0.483	0.513	0.482	<b>0.863</b>
DL2	0.476	0.507	0.497	<b>0.857</b>
DL3	0.387	0.363	0.408	<b>0.735</b>
DL4	0.530	0.516	0.495	<b>0.834</b>
DL5	0.541	0.544	0.514	<b>0.866</b>
IDT1	0.451	0.386	0.432	<b>0.794</b>
IDT2	0.525	0.500	0.536	<b>0.875</b>
IDT3	0.473	0.463	0.492	<b>0.857</b>
IDT4	0.470	0.483	0.478	<b>0.882</b>
IDT5	0.524	0.476	0.500	<b>0.853</b>
LA1	0.540	0.556	0.578	<b>0.830</b>
LA2	0.538	0.607	0.546	<b>0.862</b>
LA3	0.490	0.511	0.481	<b>0.838</b>
LA4	0.547	0.548	0.522	<b>0.829</b>
LA5	0.581	0.563	0.548	<b>0.846</b>
TL1	0.446	0.487	0.465	<b>0.826</b>
TL2	0.499	0.527	0.477	<b>0.821</b>
TL3	0.476	0.513	0.464	<b>0.844</b>
TL4	0.468	0.501	0.484	<b>0.859</b>
TL5	0.493	0.496	0.507	<b>0.846</b>

Table 4 Summary of Heterotrait-Monotrait ratio (HTMT) results

	ITU	PEOU	PU	Skill usage
ITU				
PEOU	0.879 CI.90 (0.814,0.935)			
PU	0.946 CI.90 (0.892,0.983)	0.941 CI.90 (0.891,0.991)		
Skill usage	0.623 CI.90 (0.496,0.738)	0.627 CI.90 (0.509,0.736)	0.642 CI.90 (0.502,0.771)	

#### Assessment of Structural Model

After verifying the measurement model, the next step is constructing a structural model. The researcher needs to use a bootstrapping method of 5000 re-samples to accurately estimate both the coefficient of determination ( $R^2$ ) and the path coefficients. (Hair et al.,

2017). Path coefficients, t-values, and p values are provided in Table 5 for each hypothesis. All the hypotheses are supported.

H1 ( $\beta = 0.315$ ,  $t = 2.823$ ) proved that PEOU has a significant relationship with ITU mobile learning. H2 ( $\beta = 0.598$ ,  $t = 5.740$ ) shows the significant relationship between the PU and ITU mobile learning. H3 ( $\beta = 0.606$ ,  $t = 8.799$ ) shows the significant relationship between ITU and skill usage. Revealing that the ITU mobile learning positively affects skill usage. H4 ( $\beta = 0.191$ ,  $t = 2.534$ ) shows the significant relationship between PEOU and skill usage. Indicating that the PEOU mobile learning significantly affects the skill usage. H5 ( $\beta = 0.362$ ,  $t = 4.587$ ) shows the significant relationship between PU and skill usage. Indicating that the PU of using mobile learning enhances the skill usage. H6 ( $\beta = 0.191$ ,  $t = 2.534$ ) proves the significant path between PEOU, ITU, and skill usage; triggering out that there is a mediating effect of ITU mobile learning on the relationship between PEOU on Skill usage. According to the Variance Accounted For (VAF) calculation, PEOU  $\rightarrow$  ITU  $\rightarrow$  Skill usage has been found to have a VAF percentage at 49.98%, which is partial mediation (Hair et al., 2017). H7 ( $\beta = 0.362$ ,  $t = 4.587$ ) demonstrates the significant path between PU, ITU, and Skill usage, revealing that there is a mediating effect of ITU on the relationship between PU on Skill actual usage. According to the Variance Accounted For (VAF) calculation, PU  $\rightarrow$  ITU  $\rightarrow$  Skill usage has been found to have a VAF percentage at 50.03%, which is also partial mediation (Hair et al., 2017).

Based on the ( $R^2$ ) results in Table 6, it indicates that the PEOU and PU explain 77.3% of the variance in ITU. It is also revealed that, PEOU and PU explain 36.7% of the variance in the actual Skill usage of mobile learning. Conforming to the recommended values of ( $R^2$ ) (Chin, 1998), the obtained ( $R^2$ ) values are acceptable, with a substantial or large effect on ITU and Skill usage.

*Table 5 Summary of Hypotheses testing results*

Hypotheses	Relationship	Beta Value	T Statistics Value	P Value	Remarks
H1	PEOU $\rightarrow$ ITU	0.315	2.823	0.005	Supported
H2	PU $\rightarrow$ ITU	0.598	5.740	0.000	Supported
H3	ITU $\rightarrow$ Skill usage	0.606	8.799	0.000	Supported
H4	PEOU $\rightarrow$ Skill usage	0.191	2.534	0.012	Supported
H5	PU $\rightarrow$ Skill usage	0.362	4.587	0.000	Supported
H6	PEOU $\rightarrow$ ITU $\rightarrow$ Skill usage	0.191	2.534	0.012	Supported
H7	PU $\rightarrow$ ITU $\rightarrow$ Skill usage	0.362	4.587	0.000	Supported

*Table 6 Summary coefficient of determination,  $R^2$*

	R Square	R Square Adjusted	Remark, $R^2$
<b>ITU</b>	0.773	0.769	Substantial
<b>Skill usage</b>	0.367	0.362	Substantial

## Discussion

The main purpose of this study was to determine the mediating effect of intention to use on the relationship between mobile learning applications and skill usage. This has been

accomplished through the theoretical model of the Technology Acceptance Model (TAM) and Kirkpatrick Evaluation model.

The results from Smartpls analysis indicated that the perceived ease of use (PEOU) and perceived usefulness (PU) have a significant positive effect on the intention to use (ITU) mobile learning (RO1-H1,H2). The significant relationship between PEOU, PU, and ITU were also supported in previous research (Davis, 1989; Davis et al., 1989; García et al., 2019). Several studies have demonstrated a significant effect of PEOU on ITU (Ong et al., 2004; Venkatesh, 2000; Wang et al., 2006; Yoon & Kim, 2007). Moreover, Nikou and Economides (2017) found that PEOU significantly influences behavioral ITU mobile-based assessment via mobile devices in their study. Meanwhile, Tan et al. (2014), in their research on “predicting the drivers of behavioral intention to use mobile learning” revealed that PEOU is positively related to ITU mobile learning. Moreover, a study by Kim (2009) aimed at exploring the influential factors of customers in accepting biometrics and to moderate impacts of demographic factors on their intention to use biometrics. Meanwhile, Gibson et al. (2008) conducted a survey to determine the extent to which the TAM was capable of elucidating faculty acceptance of online education. Faculty acceptance of online education technology is strongly predicted by PU, according to the findings. However, PEOU provides little additional projecting power over and above that provided by PU. In addition to that, claimed, “TAM postulates that perceived usefulness is an important determinant of user attitude about acceptance of technologies that can lead to the intention to use the technology and actual usage.”

This study has also found that there is an effect of ITU on Skill usage (RO2-H3). This finding was also reported by Mac Callum and Jeffrey (2013), who also found that a direct relationship was found between basic ICT skills and the ITU mobile learning in the study.

From the results, there is also a significant effect of PEOU on Skill usage (RO3-H4). The finding has been supported by Izuagbe et al. (2019). Izuagbe et al. (2019) discovered that there is a significant correlation between PEOU and e-Skills. They came to the conclusion that there is a strong correlation between PEOU and e-Skills, as well as between librarians' intention to accept technology and their ability to learn new technologies. This finding verified Mac Callum and Jeffrey (2014) findings that the ease with which educational technologies can be used, as well as digital skills, are important factors in determining whether or not lecturers will use educational technologies.

The study results also pointed out that there is an effect of PU on Skill usage (RO3-H5). In other words, this finding revealed that when the actual usage has been applied, it will develop the skill. When the employees perceived that mobile learning is useful, they will apply the knowledge learned and develop the skill. This result reflects those of Yusoff et al. (2009), who also found that the amount of time spent at the e-library was also found to be positively related to the amount of PU. Therefore, students who believe that a system is beneficial are more likely to use it. Previous research has discovered a direct positive relationship between PU and actual usage, which has discovered a positive relationship between PU and actual usage. (Adams et al., 1992; Davis, 1989; Igbaria et al., 1995; Igbaria et al., 1997; Mathieson, 1991; Ndubisi et al., 2001; Ramayah & Aafaqi, 2004; Ramayah et al., 2004; Ramayah et al., 2003; Segars & Grover, 1993).

Furthermore, the research results showed that there is a mediating effect of ITU mobile learning on the relationship between PEOU and PU on Skill usage (RO4-H6 & H7). This study's findings indicate that the intention to use mobile learning has an indirect impact on skill usage, which is consistent with previous research. PU and PEOU all have an indirect impact

on knowledge and skill through their ITU mobile learning. (Chiou et al., 2009; Jahangir & Begum, 2008; Liu et al., 2010; Lu et al., 2005; Taylor & Todd, 1995; Venkatesh & Davis, 2000). The intention to use (ITU) has played a partial mediation role for the relationships. These findings corroborate previous research, which discovered that the greater the potential user's desire to use mobile learning technology, the more likely it is that he or she will begin using it. (Brown et al., 2003; Chiou et al., 2009; Davis et al., 1989; Karim et al., 2006; Liu et al., 2010; Lu et al., 2005; Luarn & Lin, 2005). In accordance with the conclusions reached in previous studies (Cheng & Yuen, 2018; Joo et al., 2016), in cases where ITU has a significant impact on actual use, the empirical findings in this study provided compelling evidence that intention to use mobile learning has a strong impact on the actual usage. The reason for this finding is that TM employees had a positive experience with mobile learning when it was used in corporate learning activities. They will continue to use it for their capability development as this type of learning gives them easy access and useful knowledge for their work-related needs. Thus, it will also develop their required skills.

### **Contribution to the Theory and Practice**

There is a noteworthy theoretical contribution made in this research. This research is valuable, particularly in reflecting the contribution to the body of knowledge. In particular, The present study adding and advancing existing knowledge, specifically on employee's acceptance on mobile learning technology as compared to the previously TAM model study related to acceptance of IT/IS technology (Davis et al., 1989; Muchran & Ahmar, 2019). The findings from this study have several contributions to organizations' practices, namely in training delivery methods and training policy. Adherence with the findings, mobile learning shall be considered a new learning methodology to deliver training to employees on top of the existing training delivery method such as face-to-face physical classroom and online learning. This research also helps policymakers in enhancing their existing training policy at the organization to accept mobile learning training hours as official calculated training hours, although the training is conducted outside the classroom. Therefore, the annual training budget shall be allocated to enhance the mobile learning modules, user experience, platform, and networking. To conclude, based on the research finding which revealed that ITU mediates the relationship between perceived ease of use (PEOU) and perceived usefulness (PU) with skill usage, it implies that the training and development division is able to accelerate individual capability development by using mobile learning as a training tool.

### **Future Research**

There are some shortcomings in this study despite the statistically significant results, which should be considered in future research. First and foremost, the scope of this research was constrained by the use of data from a single source: Telekom Malaysia. The present study urges future researchers to replicate this study in a different context, such as changes in different sectors such as education, healthcare, factories, or the public. Secondly, this study examines only three predictors to see the impact on skill usage. Therefore, the researcher suggested that more predictors or exogenous variables be introduced in future research, such as Social Influence and Self-Efficacy. Thirdly, future research should consider qualitative research techniques.

## Conclusion

Research finding has revealed that mobile learning intention to use (ITU) mediates the relationship between perceived ease of use (PEOU) and perceived usefulness (PU) with skill usage. Skill usage will be more applied when there is a strong intention to use. It implies that the training and development division can develop individual capability by using mobile learning as a training tool. The main reason for deploying mobile learning in this study is to cater to the challenges of employees to attend the official face-to-face physical training in the organization due to their daily work commitment. According to the statistical analysis conducted, employees have accepted mobile learning as a new way of learning. The employees had increased their skills after using mobile learning. Mobile learning has become one of the popular training delivery methods in organizations. Mobile Learning can be an essential learning tool for staff development and organization excellent performance. In order to implement mobile learning as an alternative learning method for employees development, it is proposed that the organization introduce the learning rewards for those who have completed the mobile learning for particular modules or hours with something beneficial to the employees. It will encourage more employees to use mobile learning. Mobile learning can become a successful tool for training delivery provided that the infrastructure and the infostructure are readily available with a good level of service. In conclusion, mobile learning will become an essential tool to deliver training for large-scale employees anytime and anywhere without the need to attend face-to-face physical training as a new normal even after the Covid-19 pandemic ends. It will accelerate the training delivery to all employees in the organization.

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