

The Moderating Effect of Teachers' Professional Development Courses on the Relationship between their Perceptions toward Continuance Intention to Integrate ICT

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Abstract: Since the emergence of Information and Communication Technology (ICT), there have been numerous endeavors initiated by the Malaysian Ministry of Education. All these efforts were commence in ensuring teachers will have firm perceptions to continue integrating ICT into their classroom instruction. Considering the important of this issue, the present study is aimed to determine the relationship between 290 secondary school teachers' perceived usefulness, and perceived ease of use toward their continuance intention to integrate ICT. The moderating effect of teachers' professional development on their perceptions toward intention to continue integrating ICT is also tested. Findings of the study suggest that teachers' perceptions significantly influence their continuance intention to integrate ICT. The results from the present study also suggest that teachers must be involved in continuous and different types of professional development in ensuring continual integration of ICT. Given that limited published research that focus on the same context, it is envisaged that findings derived from this study will contribute to understanding on how to ensure successful integration of ICT happen. Further, it is hoped that this study will act as a guide to the Ministry of Education, school administrators, and teachers' training institutions toward establishing professional development standard for Malaysian teachers.

Keywords: Information and Communication Technology (ICT), teacher's perceptions, continuance intention, professional development

1. Introduction

The aim of becoming a world-developed nation by the year 2020 has called the Malaysian government to produce a technologically literate and critical workforce that is prepared to participate fully in the global economy of the 21st century. In order to achieve this goal, the Malaysian Ministry of Education has identified integrating ICT into the national education system as an important priority. Hence, teachers' uptake, perception, and readiness to integrate ICT have been identified as factors that impacting its effective adoption in schools.

In demonstrating the Malaysian government's commitment, numbers of initiatives have been initiated, while significant funds have been allocated. Those efforts were designed to equip teachers with a pool of ICT skills, knowledge and attitudes, in ensuring successful integration of ICT. However, evidences from previous local studies have reported that teacher's professional development courses do not manage to influence their attention to continue integrating ICT into their classroom instruction (Mohd Khairezan & Au, 2012). Further, a meta-survey report on the use of ICT in Malaysia revealed that its had not been fully utilized by the Malaysian teachers, even after undergone numerous types of ICT related professional development courses (Belawati, 2004). Similarly, Mahani's (2006) study has indicates that 80 percent of the Malaysian 'Smart School' teachers could be considered as incompetent computer users despite having been trained in various aspect of computer literacy.

Undoubtedly, there are many factors that might influence teachers' decision to integrate ICT. One of the most frequently mentioned factors is related to the provision of professional development courses for teachers. As reported by BECTA (2007), the main issue pertaining to successful conduct of effective professional development courses is that it be continuous and relevant to the needs of teachers. In accordance to that statement, Hajar (2005) argues that the delivery of professional development courses which are based merely on knowledge and skills transmission have jeopardized the teaching and learning context. Instead of the acquisition of basic ICT and technological skills, such professional development courses need to include relevant and comprehensive pedagogical content (Mishra & Koehler, 2006). Considering the important of these issues, the present study has set to determine the influential impact of professional development on teacher's perception to continue integrating ICT.

2. Teachers' ICT Professional Development

Over the past three decades, numerous theories and models have been put forward to determine individual's successful integration of a proposed technology. Each of these theories and models have proposed various variables, which also known as determinant constructs. Among a plethora of these constructs, individuals' perceived usefulness (PU) and perceived ease of use (PEoU) are two specific beliefs that determine their intention to use a technology. PU is defined as an individual's degree of belief that using particular technology will enhance job performance; while PEoU is defined as an individual's degree of belief that using a particular technology will be free from effort (Davis, 1989). Both PU and PEoU were seen to be the most consistent antecedent of individual's intention to use technology (Venkatesh et al., 2003). Other studies have also verified that user PU and PEoU as driving factors in the acceptance and usage of a proposed technology (Brown & Venkatesh, 2012; Ramayah, 2010).

Although numbers of technology adoption studies have placed much emphasis on user's initial acceptance, successful acceptance of technology is largely dependent on its long-term viability and users' intention to continue using it (Roca et al., 2006). Adopted from the Expectation-Confirmation Model (ECM) (Bhattacharjee, 2001), continuance intention (CI) is used to identify the changes in users' perception toward the proposed technology after using it. The effect of PU and PEoU as a predictor of users' intention to continue integrating a proposed technology has consistently shown up in a number of studies (Stone & Baker-Eveleth, 2013). For instance, a study by Hong et al (2006) has found that the explanatory power of its study framework was increased by 17 percent through the addition of PU and PEoU toward user's CI.

Recognizing this those findings, the present study is aimed to examine the moderation effect of individual's prior professional development (PD) on the relationship between PU and PEoU toward CI. Although some studies have shown a significant effect of individual's PD as moderator toward relationship between PU and PEoU on CI (Fisher & Kim, 2013; Fishman et al., 2013), few other studies have also reported different findings (Brinkerhoff, 2006). For instance, a study by Harris and Hofer (2011) has suggested that teachers who took part in a professional development program demonstrated more conscious, strategic and varied strategies in their teaching process. Their study also found that the PD course has increased teachers' confidence and competence in continually integrating technology. Conversely, a study by Glazer et al. (2009) has found that although majority of teachers who attended PD have expended their ideas, knowledge and skills; only one-third were considered as proficient at the end of the professional development course.

Given these mixed findings from the literature, the present study has called to examine the impact of Malaysian teachers' PU and PEoU on their CI to integrate ICT. The study also aimed to determine the moderating effect of teachers' PD on the relationship between their PU and PEoU towards their CI to integrate ICT. In the context of Malaysia, in service teacher's professional development course can be categorized into three different groups, namely basic ICT literacy training, computer applications training, and ICT integration training. Currently, there is no published local research that has addressed such objective, thus reflect the important of this study.

3. Research Objectives

The aim of this study is twofold. First is to investigate the relationship between teachers' PU and PEoU toward their continuance intention (CI) to integrate ICT into classroom instruction. Secondly is to determine the moderation effect of teachers' professional development (PD) courses on the relationship between their PU and PEoU toward CI to integrate ICT into classroom instruction. In light of published study that highlights the same research interest, findings of the study are hoped to serve as a guide and reference for the Malaysian Ministry of Education, teachers' training institutions, and school leaders to determine appropriate professional development courses in facilitate teachers' CI to integrate ICT into classroom instruction. Even more importantly, the study will make invaluable significant contribution to the existing body of knowledge and literature on the effect of Malaysian teachers PD toward their CI to integrate ICT.

4. Research Methodology

This study employed a quantitative research method through a self-administrated questionnaire survey. All items in the questionnaire were grouped and organized into sections in ensuring all responses obtained reflect the research objectives. As a result of these deliberations, the questionnaires had been structured into four sections, which are labeled as Section A, B, C, and D. In ensuring all items in each category are measuring the same things, a reliability of every category were also tested as shown in Table 1. A five point Likert-type scale was used in Section B, Cognitive Theory of Multimedia Learning, and D, to seek responses to question items wherein, SD = strongly disagree, D = disagree, U = undecided, A = agree, and SA = strongly agree. Conversely, teacher's prior professional development was determined based on the highest level of training that they attended.

Table 1: Reliability of the research instrument.

Section	Adopted	No. of Items	Cronbach's Alpha
Section A – Demographic	-	3	-
Section B - Perceived Usefulness (PU)	The Technology Acceptance Model (TAM) questionnaires (Davis, 1989)	6	0.88
Section C - Perceived Ease of Use (PEoU)	The Technology Acceptance Model (TAM) questionnaires (Davis, 1989)	6	0.78
Section D – Continuance Intention (CI)	The Expectation-Confirmation Model (ECM) questionnaire (Bhattacharjee, 2001)	10	0.87
Section E – Prior Professional Development	Types of ICT Training by the Malaysia Ministry of Education	1	-

The survey was conducted on-line. Potential respondents were approached through an invitation later that was sent to 222 public secondary schools in a state of Selangor, Malaysia. Based on data obtained from the Information Management and ICT Sector, Selangor State Education Department (2010), a total of 878 teachers are serving in Selangor public government schools. However, out of that numbers, only 290 teachers were responded, thus become the respondent of this study. The respond rates (33%) obtained are sufficient for the Structural Equation Modeling (SEM) approach of data analysis (Hair, et al., 2006).

5. Research Findings

5.1 Teacher's Demographic Background

This section portrays information pertaining to teachers' demographic background. These include teachers' gender, age, teaching experience, and prior professional development, as shown in Table 2.

Table 2: Teacher's demographic background.

Characteristics	Group	Frequency (n)	Percentage (%)
Gender	Male	50	17.2
	Female	240	82.8
Age	24 – 33 years old	200	68.9
	34 – 43 years old	68	23.4
	44 years old and above	22	7.7
Prior professional development	Basic ICT literacy training	95	32.7
	Computer application training	127	43.8
	ICT integration training	68	23.5

Note. $n = 290$

On the 290 respondents, 240 (82.8%) were female teachers. This reflects the unbalance among teacher's gender employed by the Malaysian Ministry of Education. In term of teachers' prior types of ICT professional development in the last five years, the result indicates that majority of teachers have undertaken at least computer application training. The result also informs that 23.5 percent of the respondents have undergone ICT integration training, the highest level of ICT training among Malaysian teacher.

5.2 The Effect of Teacher's Perceived Usefulness (PU), Perceived Ease of Use (PEoU) on their Continuance Intention (CI) to Integrate ICT more in Classroom

The Partial least square (PLS) of SEM analysis was employed in determining the relationship between teachers' PU, and PEoU toward their CI to integrate ICT more in classroom. Table 3 shows that there is a significant correlation between both teachers' PU towards CI ($t = 2.32$, $p < 0.05$), and PEoU towards CI ($t = 3.28$, $p < 0.01$). Further, the standardized coefficient beta value was recorded as 0.17 and 0.22 respectively. With the R^2 value of 0.317, this result indicates that teachers' PU and PEoU jointly contribute 32 percent of the variance associated the current measure of CI in classroom.

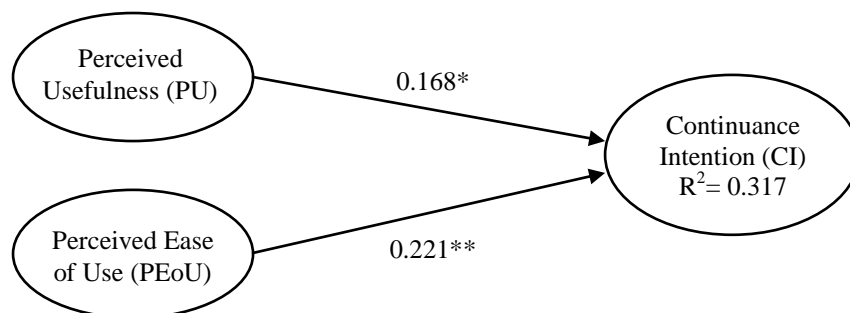


Figure 1. The Structural Model.

Note. * $p < 0.01$ level, ** $p < 0.001$ level

Table 3: Teacher's demographic background.

Independent to Dependent Variables	<i>t</i> -statistic	Path Coefficient
Perceived Usefulness (PU) to Continuance Intention (CI)	2.32*	0.17
Perceived Ease of Use (PEoU) to Continuance Intention (CI)	3.28**	0.22

Note. * $p < 0.01$ level, ** $p < 0.001$ level

5.3 The Moderation Effect of Teachers' Prior Professional Development (PD) on the Relationship between PU and PEoU towards their CI to Integrate ICT in Classroom

The relationships between teachers' PU and PEoU towards CI were also tested using their prior professional development as a moderator. It was found that the pathway coefficient representing the interaction between PEoU and PD achieved significance ($t = 4.06$, $p < 0.01$). It can also be noted that professional development was responsible for a strong impact on teachers' CI, with a pathway of 0.393 in the model. The significant moderation effect was further investigated using correlations, and is shown in Table 4. The result can be interpreted that the association between teacher's PEoU and PD was strong in the correlation of only the two groups, namely computer applications, and ICT integration.

Table 4: Correlation of teacher's PEoU with PD.

Group	<i>n</i>	Correlation of PEoU with PD	Mean CI
Entire group	290	$r = 0.612$	12.6
Basic ICT	95	$r = 0.136$	8.9
Computer applications	127	$r = 0.468$	12.4
CI to integrate ICT	68	$r = 0.699$	16.0

6. Research Discussion

The first research objective of the study was to determine the influential effect of teachers' PU and PEoU towards their CI to integrate ICT more in classroom. Result from the present study indicates that both teachers' PU and PEoU have showed a significant direct effect towards their CI, is parallel with previous studies (e.g., Chen, 2011; Terzis & Economides, 2011). This result may be explained by the fact that individuals may continue to integrate a proposed technology if they believe that using it does not require a lot of effort, and will help them to gain more desired benefits. Further, through useful, enjoyable and constant training, teachers' perceived value of ICT is likely to improve, thus ensuring its continued usage.

Results of the PLS analysis also have showed that teachers' prior types PD moderated the relationship between PU and PEoU towards their CI to integrate ICT more in classroom. This finding is in accordance to result from other studies (e.g. Liu, 2012; Agyei & Voogt, 2011) where they found that teachers' prior training was vital in determining the success of their CI to integrate ICT. It can be explained that teachers who underwent a number of training programs are more eager to continue integrating their new ICT knowledge and skills into classroom instruction. Exposure and experience that teachers obtained during the PD courses is also believed to impose more confident about implementing new ideas into their teaching approach. This decision is undoubtedly influence teachers' continuance intention to integrate ICT more into their classroom instruction.

7. Conclusion

As an agent to any educational change, teachers successful of ICT integration will be depending on their engagement. In ensuring the expansion of ICT continual use in classrooms, teachers are also required to

makes complex adjustments, and to substantially rethink new possibilities for teaching. Further, teachers need to become familiar with the paradigm shift of teaching and learning with ICT. Those statements are in line with findings of the present study that suggest that the more teachers perceive ICT to be useful (PU) and easy to use (PEoU), the more likely they will tend to continue integrating (CI) it in the future.

The present study also suggests that teachers' prior professional development (PD) was found to be an important moderating influence on the relationship between their PU and PEoU toward decision to continue integrating ICT. This study thus suggests three institutional factors that impact on the success of training programs, which includes (1) the need to tailor training to teachers' specific needs, (2) the fit of pedagogical approaches and institutional set-up, and (3) the need to regulate and monitor teachers' workload. Therefore, it is hoped that the Ministry of Education will play an important role in promoting more comprehensive trainings for teachers, thus ensuring successful ICT integration happen.

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