Overcoming invisible obstacles in organizational learning

The moderating effect of employee resistance to change

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Abstract

Purpose – The purpose of this paper is to explore the key factors that could influence mobile learning outcome, and further explore the moderating effect of employee resistance to change (RTC) on mobile learning

Design/methodology/approach – Partial least squares analysis was utilized to examine the data. Totally, 261 employees with mobile English learning experience participated in this study.

Findings – The study findings have indicated that the perceived playfulness, flexibility advantages, and self-regulated learning (SRL) could have a positive impact on mobile learning satisfaction, which in turn could lead to better mobile learning continuance intention. In addition, it has been found that RTC could moderate the relationship between perceived flexibility advantages and mobile learning satisfaction, the link between SRL and mobile learning satisfaction, as well as the connection between mobile learning satisfaction and continuance intention.

Originality/value – Although a considerable amount of literature has been published on mobile and organizational learning, relatively little work has probed into the moderating role of employee RTC on mobile learning in organizations. As mobile learning has gradually been regarded as a key learning channel, in order to minimize learning barriers, and further improve learning effectiveness and efficiency in organizations, it is critical that more work should be done on the moderating role of RTC in mobile learning.

Keywords Resistance to change, Organizational learning, Mobile learning, Perceived flexibility advantages, Perceived playfulness, Self-regulated learning

Paper type Research paper

Introduction

Due probably to the convenience and flexibility of mobile technology, mobile learning has gradually become a critical learning channel in our lives (Cheon *et al.*, 2012; Sarica and Cavus, 2009; Sheng *et al.*, 2005). Although several studies have focussed on the applications of mobile technology in organizations (Hislop and Axtell, 2011; Ojo *et al.*, 2013; Sheng *et al.*, 2005), there is still a dearth of research examining the influence of mobile technology on the effectiveness and efficiency of organizational learning. In fact, the implementations and initiatives of mobile learning, similar to the process of organizational changes, could be more difficult than our imagination. A noteworthy point on mobile learning in the workplace could be tightly associated with employees' resistance to change (RTC) (Ball and Levy, 2008; Joshi, 1991; Lee *et al.*, 2011; Pieterse *et al.*, 2012). That is, employees' RTCs and subsequent obstacles related to changes are very likely to have negative influences on mobile learning outcomes. In terms of learning effectiveness and efficiency, mobile learning continuance intention, which refers to employees' continuance intention to adopt mobile technology to acquire new knowledge (Lin, 2011; Roca *et al.*, 2006), is one of the key indicators which could

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determine the success of organizational learning. Considering the key impacts of mobile technology on learning outcomes, although a considerable number of studies have been conducted on mobile learning, relatively little work has probed into the influences of employees' RTC on mobile learning outcome.

Recently, the consumers' continuance intention has received much attention in information technology (IT) studies, partly because it could be regarded as a key indicator to determine the success of IT products and services (Lin, 2012). Nevertheless, limited research has been conducted on examining the moderating variables of continuance intention (Lin, 2011). With particular respect to the moderating effect of RTC on mobile learning in the workplace, whether employees' mobile learning continuance intention is moderated by their RTC has not yet been fully investigated in present studies. Accordingly, the primary purpose of this study is to explore the key factors that could influence mobile learning outcome, and further explore the moderating effect of employee RTC on mobile learning.

Literature review and hypothesis development

Facilitating mobile learning in the workplace

Sheng *et al.* (2005) has revealed that the strategic applications of mobile technology in organizational learning could facilitate organizations not only to meliorate employees' work performance, but also to increase the long-term competitive advantages in the market place. With specific regard to the language learning and training in organizations, it has been suggested that language trainings in organizations should be closely connected with the long-term competitive advantages. For example, Lehtonen and Karjalainen (2008) have indicated that employees with multilingual abilities are more likely to have better communication skills and cultural sensitivity. Ghany and Latif (2012) added that especially in the tourism and hospitality industry, employees' English proficiency could play a key role in determining their career success. Although mobile learning and organizational learning have been regarded as critical issues in prior research, relatively little effort has been devoted to investigating the use of mobile technology in language learning and training in organizations. As mobile learning has gradually become one of the focal points in organizational learning, it is important that this study should further probe not only into the key factors that facilitate better mobile learning outcome, but also into the pivotal roles of mobile learning in organizations.

In addition, previous studies have indicated that consumer continuance intention to adopt new IT and service could be tightly related to consumer satisfaction (Lin, 2012; Zhao and Lu, 2012). In research on the use of mobile technology in life, several studies have revealed that customer satisfaction toward mobile technology and service could have a positive impact on their continuance intention (Lin, 2012; Zhao and Lu, 2012; Zhao *et al.*, 2012). Similarly, in mobile learning environments, it is likely that employees with better mobile learning satisfaction could have more positive mobile learning continuance intention, which refers to their continuance intention to adopt mobile learning. Based on previous suggestions, consequently, this study proposes the following hypothesis:

H1. Mobile learning satisfaction could have a positive influence on mobile learning continuance intention.

Perceived flexibility advantages (PFA)

It has been suggested that one of the key factors which motivate people to adopt mobile learning should be the flexibility advantages of mobile learning (Cheon *et al.*, 2012;

Gedik *et al.*, 2012; Martin *et al.*, 2011). With particular respect to learners in the workplace, the time and place flexibility of online learning are very desirable and alluring, in part because flexibility advantages could let them have more freedom and scope to manage their learning, family, and working activities (Arbaugh, 2000, Chiu and Wang, 2008; Githens, 2007; Marks *et al.*, 2005). In addition, previous online learning studies have indicated that there could be a close connection between PFAs and online learning satisfaction. For example, in an online learning study, Arbaugh (2000) has revealed that learner satisfaction could be under the sway of flexibility of online courses. In another report, Yukselturk and Yildirim (2008) have indicated that PFA is one of the key factors that could contribute to student satisfaction. In mobile learning environments, it is possible that the flexibility advantages of mobile learning, which are described as employees' perceived advantages of time and place flexibility of mobile learning, could be closely associated with mobile learning satisfaction. Accordingly, this study proposes the following hypothesis:

H2. PFAs could have a positive influence on mobile learning satisfaction.

Perceived playfulness (PP)

The PP, which refers to users' enjoyment and joyfulness in using IT, is regarded as an intrinsic motivation in previous studies (Moon and Kim, 2001; Wang *et al.*, 2009). Due mainly to the close link between PP and the use of IT (Lin *et al.*, 2005; Zhao and Lu, 2012), several researchers have highly focussed on the critical impacts of PP on consumer satisfaction (Hsu and Chiu, 2004; Kang and Lee, 2010). Nevertheless, the definition of playfulness is complicated and associated with different concepts (Mitchell *et al.*, 2005). For example, Moon and Kim (2001) defined the PP of World Wide Web (WWW) as "the extent to which the individual (a) perceives that his or her attention is focused on the interaction with the WWW; (b) is curious during the interaction; and (c) finds the interaction intrinsically enjoyable or interesting" (p. 219). Additionally, Woszczynski *et al.* (2002) added that computer playfulness referred to "an individual's tendency to interact spontaneously, inventively, and imaginatively with computers" (p. 370).

Probably because the use of learning technology in classrooms could facilitate more positive learning outcome (Kopcha, 2010), the PP, which refers to users' enjoyment and joyfulness in using mobile technology to acquire new knowledge (Moon and Kim, 2001; Wang *et al.*, 2009), has gradually received more attention in recent studies. Nonetheless, few studies have been conducted on the relationship between PP and mobile learning in organizations. Based on previous suggestions, it is likely that employees with higher PP of mobile learning could have better mobile learning satisfaction. Hence, this study proposes the following hypothesis:

H3. PP could have a positive influence on mobile learning satisfaction.

Self-regulated learning (SRL)

The concept of self-regulation, which refers to "self-generated thoughts, feelings, and behaviors that are oriented to attaining goals" (Zimmerman, 2002, p. 65), has received much attention in educational research. More specifically, the SRL is described as learners' self-capability to facilitate, manage, and control their own learning activities with particular respect to the achievement of learning goals (Roscoe *et al.*, 2013; Wang *et al.*, 2009; Zou and Zhang, 2013), and the terms similar to "SRL" could contain autonomous learning, self-directed learning, and self-managed learning (Regan, 2003). Prior studies have revealed that SRL could be one of the most influential components in

adult and continuing education, not only because of the close connection between SRL and learning performance (Roscoe *et al.*, 2013; Wang *et al.*, 2009; Zou and Zhang, 2013), but also because of the key impacts of SRL on career development and life-long learning (Zimmerman, 2002).

In previous mobile and online learning reports, it has been suggested that the SRL could be related to learning achievements (Abar and Loken, 2010; Kauffman *et al.*, 2011), and satisfaction (Kuo *et al.*, 2014). Nevertheless, limited studies have concentrated on examining the association between SRL and mobile learning satisfaction. In view of the critical role of mobile learning in organizational learning and performance improvement (Choe, 2004), the relationship between the two factors should merit further investigations in this study. Consequently, this study proposes the following hypothesis:

H4. SRL could have a positive influence on mobile learning satisfaction.

Moderating effect of RTC

The RTC has been one of the pivotal issues in organizational research, maybe because it could be closely linked to the long-term competitive advantages of organizations (Kwahk and Lee, 2008; Murtagh *et al.*, 2012; Oreg, 2006; Triventi and Trivellato, 2009). Although some researchers have suggested that RTC, harmless to organizations, could be seen not only as the essential nature of change process, but also as potential triggers for better changes, mainstream assumptions, and perspectives have revealed that RTC is viewed as one of the detrimental factors which could impair organizational effectiveness and efficiency (Murtagh *et al.*, 2012; Thomas and Hardy, 2011). Murtagh *et al.* (2012) has suggested that "resistance to change has been seen as an almost inevitable response to required change, a universal tendency, and a personality trait" (p. 318). Moreover, a prior report by Ahmed *et al.* (2007) has indicated that RTC is one of the key elements which could impede the implementations of new IT in organizations. Another IT review by Nov and Ye (2008) has shown that the personality trait such as "openness to experience" could be closely connected with new IT acceptance (p. 846), and extravert personality could have a moderating effect on "computer-assisted communication on decision-making performance of teams" (p. 846).

With regard to the adoption of new technology in life, numerous studies have revealed that there is a close association between peoples' RTC and behavioral intention to utilize new IT products and services (Al-Somali *et al.*, 2009; Kim and Kankanhalli, 2009; Nov and Ye, 2008). Nonetheless, relatively little attention has been paid to exploring the moderating effect of RTC on mobile learning satisfaction and continuance intention in the workplace. More precisely, in the workplace, it is likely that the relationship between PFAs, SRL, mobile learning satisfaction, and continuance intention could be moderated by employees' RTC. In order to further clarify the moderating role of RTC in mobile learning, accordingly, this study proposes the following hypotheses:

H5. RTC could moderate the relationship between PFAs and mobile learning satisfaction.

H6. RTC could moderate the relationship between SRL and mobile learning satisfaction.

H7. RTC could moderate the relationship between mobile learning satisfaction and continuance intention.

Based on previous suggestions, accordingly, the theoretical framework is proposed in Figure 1.

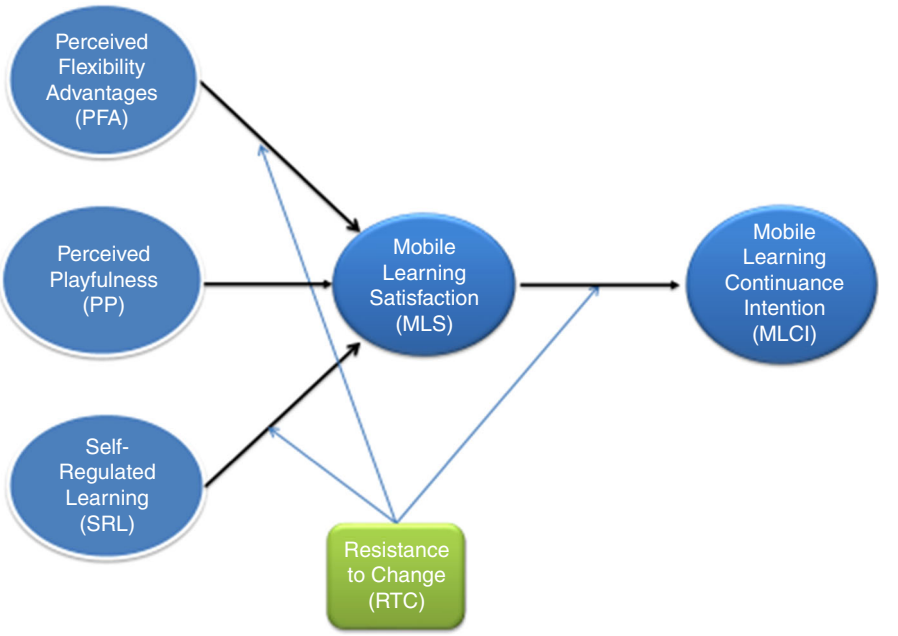


Figure 1.
The research framework

Note: ***$p < 0.001$

Research methodology

Demographic data for respondents

Totally, 261 employees took part in this study. Excluding one missing data, male and female participants were 116, and 144, respectively. As shown in Table I, the majority of participants had already earned a bachelor's degree. The average age of participants was 34.87, and the age ranged from 20 to 59.

Data collection

The data were collected from several companies and organizations in Taiwan. Totally, 261 employees with mobile English learning experience participated in this study. More specifically, the participants of this study should adopt the mobile technology to learn English before.

Demographics	Items	Number	Percentage of respondents
Gender	Male	116	44
	Female	144	55
	Missing data	1	
Education	High school	49	19
	Bachelor	162	61
	Graduate	49	19
	Missing data	1	
Age	Valid participants	251	96
	Missing data	10	
	Mean age	34.87	

Table I.
Demographic data for respondents

Control variables

The mobile English learning experience and company size were two key control variables in this study. That is, the medium size company, which referred to the company with less than 500 employees, was chosen for this study, and the participants from medium size companies should have mobile English learning experience before.

Instrumentation

This study adopted seven-point Likert scales that ranged from "strongly disagree" to "strongly agree" to measure the level of agreement of each variable. Items which evaluated mobile learning satisfaction and continuance intention were developed from Roca *et al.* (2006). Items which measured PFAs were taken from Arbaugh (2000) and Marks *et al.* (2005). In addition, items which measured PP were adopted from Ahn *et al.* (2007), and items which evaluated SRL were selected from Wang *et al.* (2009). Finally, this study adopted items which were selected from Al-Somali *et al.* (2009) to evaluate the construct of RTC.

Data analysis and results

The partial least squares (PLS) analysis was adopted not only to probe into the association between key mobile learning factors and outcome, but also to examine the moderating role of employee RTC in mobile learning. In order to evaluate whether the measurement model is appropriate in this study, this study, first, examined the composite reliability (CR) and factor loadings of each construct. Table II reveales that the CR of each factor all exceeded 0.80, and factor loadings of each construct were all above 0.70. Accordingly, the reliability and internal consistency of survey instrument were acceptable (Fornell and Larcker, 1981).

Moreover, this study examined the average variance extracted (AVE) and square root of AVE for each construct to determine whether the convergent and discriminant validity were adequate. In Tables II and III, it was shown the measurement model was acceptable, mainly because the AVE of each variable exceeded the minimum acceptable criteria (0.50), and the square root of AVE on the diagonal of each model was larger than correlation values between latent variables (Fornell and Larcker, 1981). Third, as shown in Figure 2, PP, flexibility advantages, and SRL explained a total of 40.1 percent of variance in mobile learning satisfaction. Additionally, mobile learning satisfaction accounted for a total of 54.8 percent of variance in continuance intention. The study results, which supported *H1-H4*, indicated that key mobile learning elements could have a positive influence on mobile learning satisfaction, which in turn could lead to better mobile learning continuance intention.

Finally, based on the median score of RTC = 3, the 261 participants were divided into two groups: low RTC group ($n = 140$), and high RTC group ($n = 121$). This study conducted PLS analysis of different groups to examine the path coefficient of different models (see Figure 3). In order to examine the moderating role of RTC, the analysis of path coefficient comparison, which was suggested by Keil *et al.* (2000), was adopted to determine whether RTC could moderate the relationship between mobile learning factors and outcome. As shown in Table IV, it was found that *H5-H7* were all supported by the study results. That is, RTC could moderate the relationship between PFAs and mobile learning satisfaction, the link between SRL and mobile learning satisfaction, as well as the connection between mobile learning satisfaction and continuance intention.

Items	Full model	Low RTC	High RTC
PP1	0.89	0.89	0.87
PP2	0.91	0.93	0.90
PP3	0.89	0.89	0.89
CR	0.92	0.93	0.91
AVE	0.81	0.81	0.78
α	0.88	0.88	0.85
PFA1	0.91	0.87	0.93
PFA2	0.93	0.93	0.94
PFA3	0.86	0.86	0.85
CR	0.93	0.91	0.93
AVE	0.82	0.78	0.81
α	0.89	0.85	0.88
SRL1	0.84	0.83	0.86
SRL2	0.89	0.93	0.86
SRL3	0.93	0.91	0.92
SRL4	0.90	0.88	0.92
CR	0.94	0.94	0.93
AVE	0.80	0.80	0.79
α	0.92	0.92	0.91
MLS1	0.78	0.79	0.72
MLS2	0.91	0.92	0.91
MLS3	0.88	0.88	0.87
CR	0.89	0.89	0.86
AVE	0.74	0.74	0.69
α	0.83	0.82	0.78
MLCI1	0.92	0.91	0.90
MLCI2	0.94	0.92	0.93
MLCI3	0.90	0.86	0.91
CR	0.94	0.92	0.93
AVE	0.84	0.80	0.83
α	0.90	0.87	0.89

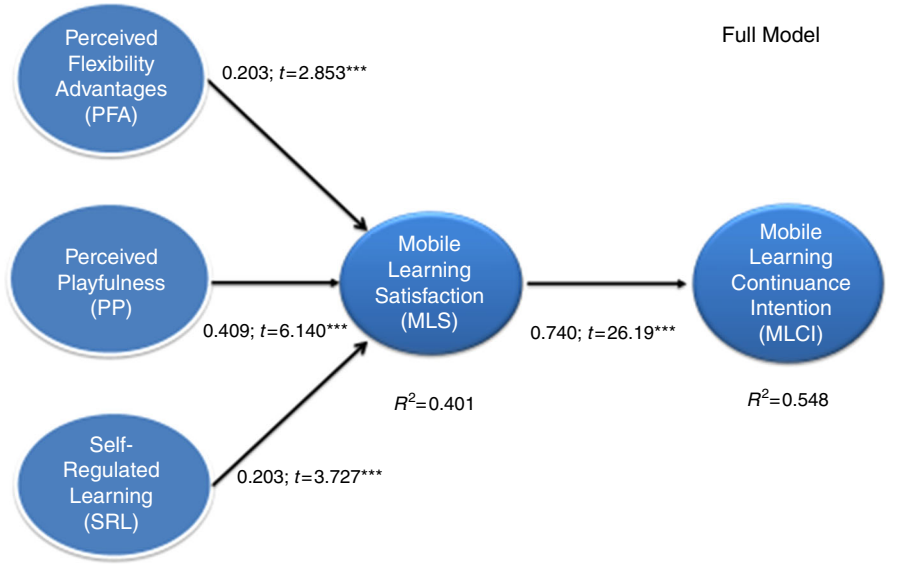
Table II.
Confirmatory factor analysis of each model

Notes: Low RTC, low resistance to change group; High RTC, high resistance to change group; PP, perceived playfulness; PFA, perceived flexibility advantages; SRL, self-regulated learning; MLS, mobile learning satisfaction; MLCI, mobile learning continuance intention; CR, composite reliability; AVE, average variance extracted; α, Cronbach's α

	Full model					Low RTC					High RTC				
Construct	PP	PFA	SRL	MLS	MLCI	PP	PFA	SRL	MLS	MLCI	PP	PFA	SRL	MLS	MLCI
PP	0.90					0.90					0.88				
PFA	0.53	0.90				0.40	0.88				0.55	0.90			
SRL	0.26	0.23	0.89			0.27	0.23	0.89			0.24	0.23	0.88		
MLS	0.57	0.46	0.35	0.86		0.52	0.37	0.33	0.86		0.54	0.41	0.41	0.83	
MLCI	0.59	0.59	0.33	0.74	0.92	0.50	0.45	0.34	0.74	0.89	0.60	0.58	0.32	0.65	0.91

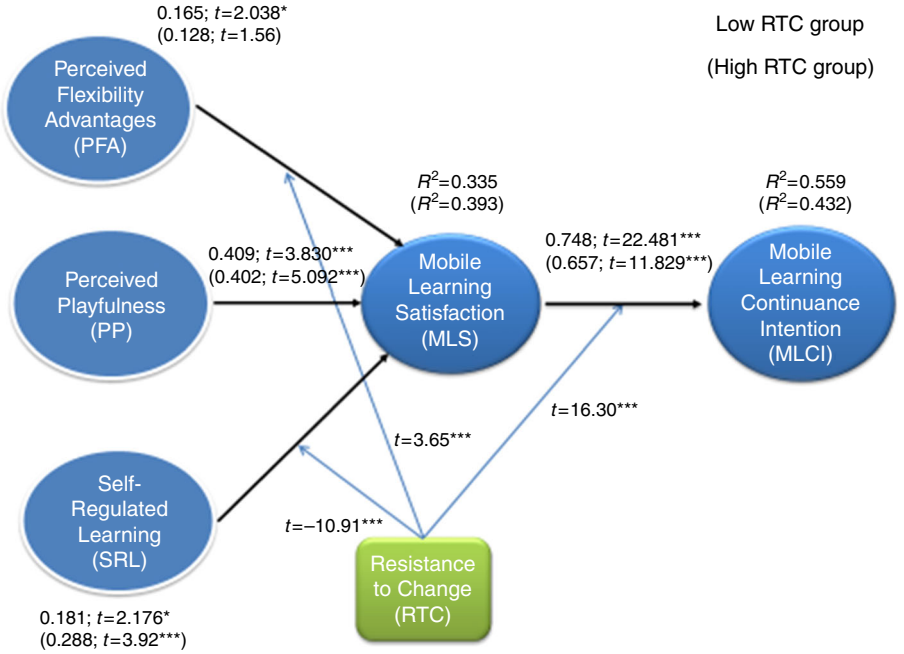
Table III.
The correlations of each construct among different models

Notes: Low RTC, low resistance to change group; High RTC, high resistance to change group; PP, perceived playfulness; PFA, perceived flexibility advantages; SRL, self-regulated learning; MLS, mobile learning satisfaction; MLCI, mobile learning continuance intention; diagonal elements are the square root of average variance extracted



Note: ***$p<0.001$

Figure 2.
PLS solution for full data set



Notes: *$p<0.05$; ***$p<0.001$

Figure 3.
PLS solution for low and high RTC groups

Discussions and implications

The primary purpose of this study was to examine the key factors that could influence mobile learning outcome, and further explore the moderating effect of employee RTC on mobile learning. Congruent with previous research (Abar and Loken, 2010; Kauffman *et al.*, 2011; Marks *et al.*, 2005; Moon and Kim, 2001; Wang *et al.*, 2009), the study findings have indicated that the PP, flexibility advantages, and SRL could have a positive impact on mobile learning satisfaction, which in turn could lead to better mobile learning continuance intention. In other words, the playfulness and flexibility advantages of mobile devices, and employees' SRL could be closely connected with mobile learning outcome. It is suggested that institutions and organizations should provide learning supports and facilitate employees to choose mobile devices that could not only satisfy their learning needs, but also increase learning flexibility and enrich learning process. For example, institutions and organizations could provide employees with mobile devices in order to support mobile learning activities.

In addition, consistent with previous reports (Al-Somali *et al.*, 2009; Kim and Kankanhalli, 2009; Nov and Ye, 2008), the study results have indicated that RTC could moderate the relationship between PFAs and mobile learning satisfaction, as well as the connection between mobile learning satisfaction and continuance intention. More specifically, it is likely that employees with lower RTC could have a stronger relationship between PFAs and mobile learning satisfaction, as well as a better association between mobile learning satisfaction and continuance intention than those with higher RTC. With regard to employees with lower RTC, it is implied that managers and supervisors should suggest them to take mobile learning, principally because the PFAs, attractive, and favorable to them, could have a stronger influence on their mobile learning performance (Abar and Loken, 2010; Kauffman *et al.*, 2011; Kuo *et al.*, 2014).

Third, in line with previous suggestions (Al-Somali *et al.*, 2009; Kim and Kankanhalli, 2009; Nov and Ye, 2008), the study findings have shown that RTC could moderate the link between SRL and mobile learning satisfaction. That is, it is possible that employees with higher RTC could have a better link between SRL and mobile learning satisfaction, maybe because they could not get used to mobile learning. It is hinted that managers and supervisors should facilitate employees with higher RTC to adopt SRL, mainly because those with higher RTC are more likely to prefer SRL, which in turn could lead to better mobile learning outcome (Abar and Loken, 2010; Kauffman *et al.*, 2011; Kuo *et al.*, 2014).

Last but not least, with particular respect to those employees with higher RTC, it is important that institutions and organizations should provide them with training supports in order to minimize their resistance to mobile learning and further promote

Table IV. Statistical comparison of moderating effect

Hypothesis	Path	Low RTC ($n = 140$) Path coefficient	SE	High RTC ($n = 121$) Path coefficient	SE	Comparison
H5	PFA → MLS	0.165	0.0810	0.128	0.0823	3.65***
H6	SRL → MLS	0.181	0.0832	0.288	0.0738	−10.91***
H7	MLS → MLCI	0.748	0.0333	0.657	0.0555	16.30***

Notes: PFA, perceived flexibility advantages; SRL, self-regulated learning; MLS, mobile learning satisfaction; MLCI, mobile learning continuance intention. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

better organizational learning (Kim and Kankanhalli, 2009; Nov and Ye, 2008). For example, the training supports could contain courses related to the use of mobile learning platform and software.

Limitations and conclusions

Several limitations could be found in this study. First, because this study did not investigate the effects of age, education, gender, and tenure on mobile learning, it is suggested that future studies should concentrate more on demographic characteristics that are closely associated with the organizational learning outcome. Additionally, the roles of training and management supports were ignored in this study. Due mainly to the key impacts of training and management supports on employees' RTC (Kim and Kankanhalli, 2009; Nov and Ye, 2008), it is important that future research should probe into whether key supports in organizations could influence mobile learning effectiveness and efficiency.

To summarize, the study findings, which have contributed to the body of knowledge in the organizational learning field, have indicated that the PP, flexibility advantages, and SRL could be closely linked to mobile learning performance in organizations. Moreover, employee RTC could play a key role in moderating the relationship between key mobile learning factors and outcomes. As mobile learning has gradually been regarded as a key learning channel, in order to minimize learning barriers, and further improve learning effectiveness and efficiency in organizations, it is critical that more work should be done on the moderating role of RTC in mobile learning.

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Appendix

Table AI.
Mobile learning continuance Intention questionnaire

Construct	Item
Perceived flexibility advantages	PFA1. Using mobile technology could enable me to arrange English learning schedule more flexibly
	PFA2. Using mobile technology could let me use time to learn English more efficiently
	PFA3. Using mobile technology could enable me to learn English anytime and anywhere
Perceived playfulness	PP1. Using mobile technology to learn English is one of my enjoyments
	PP2. Using mobile technology to learn English gives learning fun to me
	PP3.Using mobile technology to learn English is pleasurable to me
Resistance to change	RTC1. I am not interested in new mobile learning technological developments
	RTC2. I feel uncomfortable in changing my current learning methods and using mobile technology to learn English
	RTC3. I am not interested to use mobile technology to learn English
	RTC4. I am not used to using mobile technology to learn English.
Self-regulated learning	SRL1. When it comes to learning and studying, I am a self-directed person
	SRL2. In my studies, I am self-disciplined and find it easy to set aside reading and homework time
	SRL3. I am able to manage my study time effectively and easily complete assignments on time
	SRL4. In my studies, I set goals and have a high degree of initiative
Mobile learning satisfaction	MLS1. I am satisfied with my mobile technology
	MLS2. I feel that using mobile technology serves my need for learning English very well
	MLS3. My decision to use mobile technology to learn English is a wise one
Mobile learning continuance intention	MLCI1. I will continue to use mobile technology to learn English in the future
	MLCI2. I intend to regularly use mobile technology to learn English
	MLCI3. I would recommend to other students to use mobile technology to learn English

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