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THE ROLE OF INTERNET SELF-EFFICACY IN THE ACCEPTANCE OF AN EDUCATIONAL PORTAL

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Abstract

The widely used of Internet and educational technologies have greatly changed junior high teachers' teaching methods and behaviors. Due to rapid changes in information and knowledge, many educational authorities have set up educational portals to support and improve junior high teachers' teaching efficiency and effectiveness. An educational portal can provide large numbers of teaching materials and online discussion services to facilitate teachers' teaching in class. However, many junior high teachers are still resistant to using the educational portals. Therefore, understanding which factors affect their acceptance of an educational portal are of primary concern. The current study builds a theo-

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retical model affecting junior high teachers' adoption of Easy Teaching Web of Taipei by combining self-efficacy theory and the technology acceptance model. Data were collected from 303 teachers at 16 junior high schools in Taipei, Taiwan. The partial least squares approach was used to test the measurement and structural model. The results support the proposed model, highlighting the important roles of Internet self-efficacy and perceived usefulness in predicting junior high teachers' adoption of an educational portal. The practical implications are discussed, and further studies are suggested.

Keywords: Internet Self-Efficacy, Perceived Usefulness, Perceived Ease Of Use, Technology Acceptance Model, Educational Portal

Introduction

The World Wide Web and new educational technology have numerous impacts on the global education industry. National and local education authorities around the world have now established varieties of educational portals to support and facilitate teachers' teaching (Pynoo, Tondeur, van Braak, Duyck, Sijnave, & Duyck, 2012). The educational portal is a teaching resource gateway that provides abundant teaching materials for teachers. Although junior high teachers can increase their teaching performance by using useful teaching materials from the educational portals, however, prior research has indicated that many factors can impede teachers' use of varieties of educational technologies (Afshari, Bakar, Luan, Samah, & Fooi, 2009). Therefore, understanding the factor that drives junior high teachers' acceptance of an educational portal by is a priority concern.

Past research has found that self-efficacy plays an important role in determining a person's behavior. In the age of Internet, Internet self-efficacy also has great influence on users' Internet usage.

Prior research has investigated the relationships between Internet self-efficacy and IT/IS usage. However, less research has investigated the influence of Internet self-efficacy on junior high teachers' perceptions toward an educational portal. Therefore, this study selects Internet self-efficacy as the critical factor to examine its effects on junior high teachers' adoption of an educational portal.

To improve our understanding of the cognitive processes that ultimately lead to junior high teachers' acceptance of an educational portal, the technology acceptance model (TAM) is used as a theoretical basis. This study intends to better understand the influence of the Internet self-efficacy on perceived usefulness and perceived ease of use. Then we investigate the effects of perceived usefulness and perceived ease of use on junior high teachers' behavioral intention to use an educational portal.

Theoretical Development

The theoretical model for this study (Figure 1) draws from the TAM and self-efficacy theory. According to the
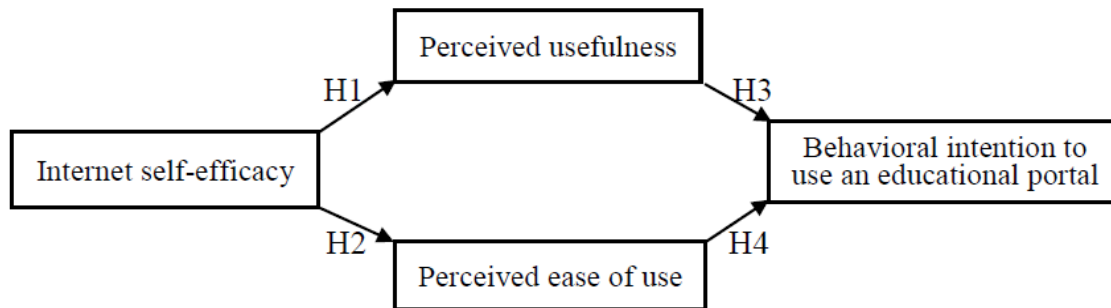
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Figure 1. The research model

model, it reveals the causal relationships among Internet self-efficacy, perceptions (perceived usefulness and perceived ease of use), and behavioral intention to use.

According to TAM, perceived usefulness and perceived ease of use are two core perceptions that affect user acceptance of IT systems (Davis, 1989). Davis (1989) defined perceived usefulness as the degree to which users believe that using a specific application system would enhance their job performance in an organizational context and perceived ease of use as the degree to which a person believes that using a particular system would be free of effort.

Internet self-efficacy

Self-efficacy could influence outcome expectation and behaviors and it has been widely used in predicting users' adoption of a variety of IT/IS application. Since the functions (e.g. download teaching materials and query teaching problems) of an educational portal need teachers to try and use, teachers' Internet self-efficacy could influence their perceptions towards the educational portal. Internet self-efficacy is defined as individuals' confidence in using the Internet to do specific tasks (Tsai, 2012). Individuals' Internet self-efficacy can influence their evaluation and adjustment of their abilities on Internet-related tasks (Venkatesh, 2000). Since junior high teachers with high Internet self-efficacy have higher confidence and expectations in using the Internet to search information, share information and solve teaching problems (Peng, Tsai, & Wu, 2006), they are more likely to perceive the functions of the educational portal is easy and perceive the teaching materials of the educational portal are useful. This study proposes the following hypotheses.

H1: Internet self-efficacy has a positive effect on perceived usefulness.

H2: Internet self-efficacy has a positive effect on perceived ease of use.

Perceived usefulness

Since junior high teachers are expected to prepare teaching materials to meet the needs of their students and to improve their students' learning motivation, teachers are highly motivated to search and prepare useful teaching materials for their class. Thus, if junior high teachers perceive that the teaching materials retrieved from an educational portal are useful, then they have higher intention to use it. Therefore, the following hypothesis is proposed.

H3: Perceived usefulness has a positive effect on behavioral intention to use.

Perceived ease of use

Constant time pressure to complete various teaching activities for junior high teachers might cause a low intention to use an unfriendly system. That is, when junior high teachers perceive that an educational portal is easy to use, their behavioral intention to use increases. Accordingly, the following hypothesis is proposed.

H4: Perceived ease of use has a positive effect on behavioral intention to use.

Materials and Methods

The educational portal: Easy Teaching Web (ET Web)

The educational portal analyzed in this study was the ET Web

(http://etweb.tp.edu.tw/index/) (Figure 2), which was created with the support of the Department of Education, Taipei City Government. The ET Web was established since 2006. The main purpose of the ET Web is to improve junior high teachers' teaching efficacy. The teaching materials section provides all subjects of teaching resources for junior high school, including Mandarin, English, math, society, nature and life technology, health and physical education, arts and humanities, integrated activity areas, special education, library, etc. All teaching materials are shared and created by junior high teachers, included approximately 4,200 teaching materials by August 2018.

Measures

The 5 items of Internet self-efficacy scale employed in this study was adapted from previous study (Liang, Wu, & Tsai, 2011). Items measuring perceived usefulness, perceived ease of use, and behavioral intention to use were taken from previous studies and modified the wording to fit the context of the educational portal (Davis, 1989). All above items were scored on a Likert scale from 1 to 5, with a 1 rating indicating strong disagreement and a 5 rating indicating strong agreement.

Subjects

The survey was conducted from January to April 2018. The data for this study were gathered through questionnaire survey. A questionnaire was designed and sent to 16 junior high schools

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in Taipei, Taiwan. The junior high teachers completed self-reported questionnaires. A total of 382 surveys were distributed and a total of 317 responses (83.0%) were received. Due to missing data and outliers, this study obtained an

Figure 2. The screenshot of the educational portal (ET Web)

effective response rate of n=303 (79.3%).

The subject pool consisted of 209 (69.0%) female and 94 (31.0%) male respondents. About half of the participations (157 out of 303, 51.8%) were between 30 and 45 years old. The subjects averaged 12 years of teaching experience and 289 subjects (95.4%) had used the Internet more than 10 years. All teachers had completed one college or university degree.

Data analysis

The partial least squares (PLS) approach was conducted to test the research model. PLS is a structural equation modeling (SEM) technique and can simultaneously examine the measurement model and the structural model in one model. It can produce loadings between items and constructs and estimate standardized regression coefficients between constructs.

Assessment of the measurement model

PLS was used to assess the psychometric properties of the scale. Psy-

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chometric properties of the scales were assessed in terms of internal consistency, convergent validity, and discriminant validity. The study used composite reliability values (CR) and Cronbach's alpha coefficients to assess reliability and internal consistency of constructs. The results in Table 1 show that all CR and Cronbach's alpha coefficients exceeded the 0.70.

The results showed that all constructs exhibited adequate internal consistency and reliability. Then, this study used two methods to evaluate discrimi-

nant and convergent validity. First, since average variance extracted (AVE) for all constructs exceeded 0.50 in Table 1, the results demonstrated satisfactory convergent validity. Second, Cross-loadings of all items loaded greater than 0.7 on their respective construct in Table 2, which indicated a clear discriminant and convergent validity for all constructs. According to above analyses all exhibited adequate internal consistency, convergent validity, and discriminant validity, hence, the results indicated acceptable psychometric properties.

Table 1. Assessment of the measurement model

Variables	The composite reliability values	Cronbach' alpha	AVE
Internet self-efficacy (ISE)	0.90	0.86	0.64
Perceived ease of use (PEOU)	0.92	0.89	0.75
Perceived usefulness (PU)	0.91	0.87	0.72
Behavioral intention to use (BI)	0.90	0.89	0.90

Table 2. Items and PLS cross-loadings

Items	BI	ISE	PEOU	PU
(BI1) I intend to use the ET Web as often as possible.	**0.86**	0.27	0.33	0.49
(BI2) Assuming that I had access to the ET Web, I intend to use it.	**0.91**	0.31	0.44	0.58
(ISE1) I feel confident in using the Internet to find needed information.	0.23	**0.84**	0.38	0.35
(ISE2) I feel confident in using the Internet to solve practical problems.	0.29	**0.87**	0.32	0.35
(ISE3) I feel confident in using the Internet to do what I want it to do.	0.25	**0.83**	0.29	0.30
(ISE4) I feel confident in using the Internet to network equipment.	0.25	**0.75**	0.23	0.25
(ISE5) I feel confident browsing the World Wide Web (WWW).	0.30	**0.70**	0.24	0.27
(PEOU1) Usage of the ET Web is clear and understandable.	0.45	0.37	**0.87**	0.47
(PEOU2) It is easy for me to become skillful in using the ET Web.	0.30	0.29	**0.86**	0.35
(PEOU3) Learning to use the ET Web is easy for me.	0.34	0.33	**0.89**	0.39
(PEOU4) Interacting with the ET Web does not require a lot of mental effort.	0.47	0.31	**0.89**	0.44
(PU1) Using the ET Web can improve my teaching efficiency.	0.55	0.33	0.40	**0.86**
(PU2) Using the ET Web can improve my teaching effectiveness.	0.50	0.29	0.33	**0.83**
(PU3) Using the ET Web enhances my teaching outcome.	0.52	0.29	0.45	**0.87**
(PU4) I find the ET Web useful in my job.	0.56	0.38	0.47	**0.87**

Assessment of the structural model

The PLS estimation results for the structural model are shown in Figure 3.The estimated path effects (β value), levels of significance (P value), and explained variance (R^2 value) using a bootstrapping procedure. To evaluate the full model, the resulting structural model shows R^2 of 0.37 for behavioral intention to use.

As can be seen, the results showed that Internet self-efficacy had a significant effect on perceived usefulness (β=0.39, P<0.001) and perceived ease of use (β=0.43, P<0.001). Thus, H1 and H2 were both supported. Perceived usefulness (β=0.46, P<0.001) and perceived ease of use (β=0.22, P<0.001) both significantly influenced behavioral intention to use. H3 and H4 were supported.
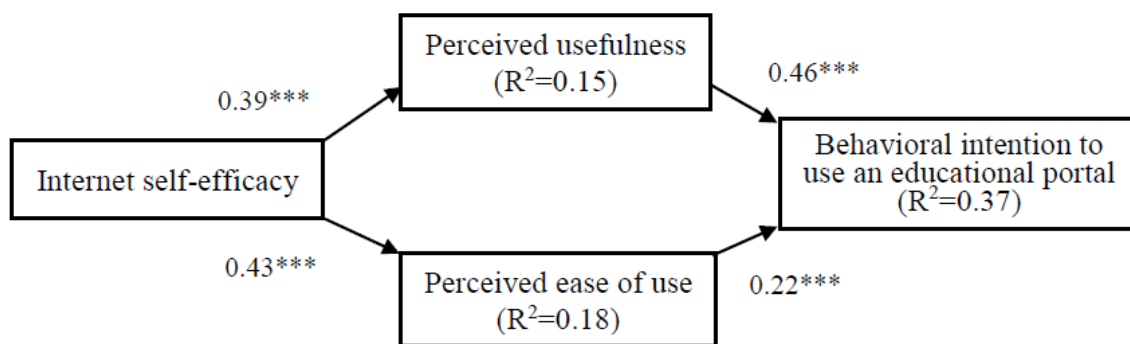

Figure 3. Model parameters for the research model: ***P<0.001

Discussion and Implications

The practical implications for policymakers, school administrators and system designers when implementing educational portals are outlined below.

First, the study showed that, for junior high teachers, Internet self-efficacy can affect their perceptions toward an educational portal. We suggest policymakers should consider providing differentiated materials that can meet the differentiated needs of junior high teachers based on their degree of Internet self-efficacy. For instance, the education portal can provide comprehensive and in-depth teaching materials for junior high teachers with high Internet self-efficacy.

Second, the results have shown that junior high teachers' Internet self-efficacy can influence their perceptions toward an educational portal. Therefore, schools can foster junior high teachers' Internet self-efficacy by selecting an experienced Internet trainer, increasing Internet usage training, and building learning confidence in using Internet etc.

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Finally, analytical results indicate that perceived ease of use can influence junior high teachers' behavioral intention to use an educational portal. Therefore, developing user-friendly web interface can increase junior high teachers' acceptance of an educational portal.

Conclusions

The analytical results described above have three main contributions to education authorities and research. First, since less research has investigated how junior high teachers' Internet self-efficacy can affect their acceptance of an educational portal. This study improves understanding of the important role of Internet self-efficacy in junior high teachers' adoption of an educational portal. Second, this study integrates Internet self-efficacy (self-efficacy in specific domain) and TAM's constructs (perceived ease of use and perceived usefulness) into one model. Finally, the results found that perceived usefulness and perceived ease of use have more explanatory power than any one of these factors alone. Therefore, the model could add more value on the research of acceptance of and educational portal.

Limitations and Future Studies

The findings of this research must be considered in light of their limitations. First, as this study used a snapshot approach, a longitudinal approach should be considered in future research. Second, this study mainly explores the effects of Internet self-efficacy on junior high teachers' adoption of an educational portal. Future studies could explore the effects of many other personality factors (e.g., extraversion, conscientiousness, computer anxiety) on junior high teachers' acceptance of an educational portal.

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