A Systematic Literature Review of Technology Acceptance Model and Theory of Planned Behaviour towards Online Learning Perspective

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ABSTRACT

In recent years, due to the rapid development of the Internet, it has changed the national, social, economic, and cultural levels, and has become more involved in everyone's daily life. We absorb information and knowledge through the Internet. The speed of knowledge innovation in modern society is extremely fast, and online learning has become increasingly popular. It can effectively cross the limits of time and space and provide people with new learning channels. Online learning has become the most important issue nowadays. This study is expected to collate and discuss the relevant research on the application of Technology Acceptance Model and Theory of Planned Behavior to online learning in the academic contribution. In terms of practical meaning, the period can give the government, educational institutions and universities and other institutions the development and promotion of specific recommendations for online learning, so that foreign language learners can learn online and enhance the competitiveness of employment and school. This study provides future research on the adoption and introduction of domestic online learning through the trend comparison of international journals, and calls on domestic researchers to focus on the scientific, institutional and historical context factors to enrich our online learning in the educational environment. In the future research direction, this study suggests that online learning requires multi-level, inter-connected analysis at different levels of individuals, organizations, and industries in future research.

1.   Introduction

The rise of the Internet has created a rich and convenient change in people's lives, shopping, work and study. Among them, online learning courses have sprung up. More and more people also

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choose online learning to conduct formal or informal learning. With the diversification of multimedia and the convenience of 3C products, online learning has rapidly expanded. Information technology not only changes people's living habits and business models, but also changes people's needs and expectations for education.

Rosenberg (2001) suggests that there are many benefits to using online learning:

(1)   Online learning reduces costs;
(2)   The content of learning is more timely and reliable;
(3)   Online learning is a punctual learning method;
(4)   Online learning to build a universal community;
(5)   Online learning provides learners with a valuable service.

Online learning breaks the time and space restrictions of traditional classroom learning, allowing local resources to be integrated and applied, so that learners can quickly obtain information and communicate more flexibly. Online learning platforms have mushroomed, however, not all learners are willing to use this type of online learning platform. This generation of children has grown up in an environment around the Internet, and 3C products are an extremely important part of life. Their learning style, entertainment and even social interaction are different from the past. Online learning will probably be the main learning mode for future students.

After Davis et al. (1989) proposed the technology acceptance model and Ajzen (1991) represented the theory of planned behavior, many scholars adopted, modified and extended this two models to explain and predict the users' behaviors towards innovative technologies. Although past studies discussed the relevant applications about online learning using technology acceptance model and theory of planned behavior (e.g. Al-Hawari, & Mouakket, 2010; Liu et al., 2010; Sánchez & Hueros, 2010; Cheon et al., 2012; Yoo et al., 2012; Cheung & Vogel, 2013; Mohammadi, 2015; Chu & Chen, 2016), we need to make a systematic review for this two important theories to share prior scholars' contribution.And whether it is easy to use through the mobile Internet learning, whether the learner can easily get started with the new platform or the APP for the first time. The influencing factors may include the design of the platform or APP interface and the experience and ability of the learners to face the new technology system technology. The causal relationship between them will cause the learners to use the action learning platform or the experience and results of the APP. different. The key to the successful use of an action learning platform or APP to be successfully accepted by learners is that learners appreciate the convenience of this learning style and the effectiveness of learning. In recent years, there has been a literature exploring the relationship between people and systems. This study hopes to study whether learners' experience with Online Learning can increase people's motivation for learning through action. Therefore, this study explores the willingness of learners to accept action learning apps from Online Learning. Therefore, our main research propose is mainly to demonstrate and introduce the linage about the classic technology acceptance relevant models (i.e. technology acceptance and theory of planned behavior) with online learning.

2.   Technology relevant acceptance framework

Before we need to understand how learners choose online learning apps, this section reviewed and discussed the relevant constructs and variables of this research through the relevant literature review and discussion of domestic and foreign scholars, and form the research structure and research hypothesis of this research. Therefore, this section introduced two important basic theories about technology relevant acceptance framework: Technology Acceptance Model from Davis (1989) and Theory of Planned Behavior from Ajzen (1991).

2.1   Concept model of technology acceptance model

The technical acceptance model proposed by Davis et al. (1989) aims to: "provide a general model that explains the determinants of accepting new technologies, and hopes to apply it to various terminals to enable computing technology and user communities to explain the use." Technology Acceptance Model argues that users within the organization are tasked with tasks, and in order to achieve tasks and demonstrate job performance, they tend to use systems that can help them with their tasks; therefore, their cognitive information system usefulness and ease of use will affect whether he can accept and use the technology (as shown in Figure 1).

According to Davis (1989), the definitions of perceived usefulness and perceived ease of use are as follows:

a) Perceived usefulness: Refers to the individual's subjective belief that the use of this system can improve the performance of their work and the future help. For example, when we use a system or website, if we can improve work efficiency or performance, we will make this system or website useful, so as to enhance our perception of the system or website, and will Positive attitude towards this technology or website. Cognitive usefulness is also influenced by cognitive ease of use and external variables.

b) Perceived ease-of-use: Refers to the extent to which an individual can easily use the system. When the user realizes that the system is easier to use, the attitude of using the system will be more positive. For example, when we use the system or website, if we don't have to spend more time or effort, it will make us feel easy to use and easy to operate on this system or website, so we will improve our system. The perceived ease of use of the website also has a positive attitude towards the technology or website. However, if we only discuss the behavioral intentions of science and technology from the cognitive level, we will ignore the influence of other important external factors.
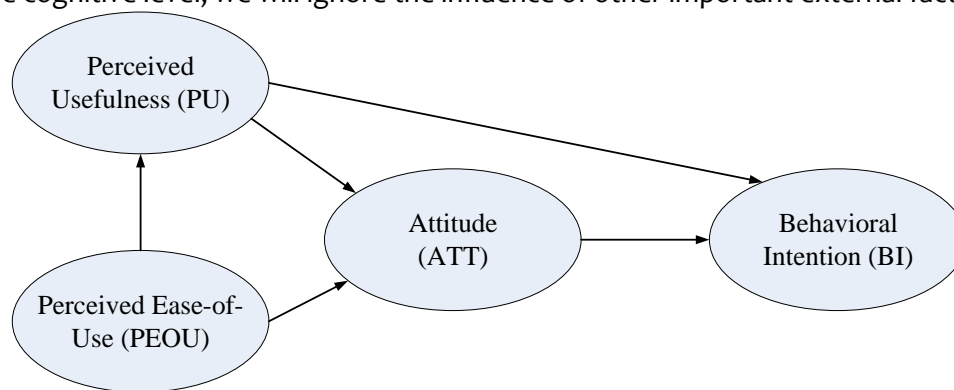
Figure 1. Technology acceptance model (Davis, 1989)

2.2   The concept of theory of planned behavior

The original rational behavior theory assumes that "whether an individual adopts a particular behavior" is entirely from voluntary control, ignoring the degree to which many external factors affect the control of individual will. In fact, personal behavior is usually not entirely self-willing. Ajzen (1991) proposed the Theory of Planned Behavior based on the Theory of Rational Behavior. Rational Behavior Theory mentioned that behavioral attitudes and subjective norms affect individual's behavioral intentions, while planning behavioral theory increases the control of perceptual behavior as a determinant of predicting behavioral intentions.
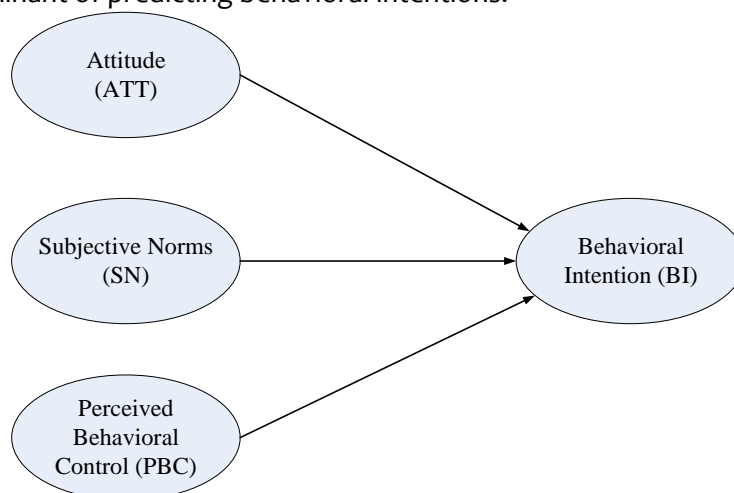
Figure 2. Theory of Planned Behavior (Ajzen, 1991)

Theory of Planned Behavior is mainly used to predict or explain the behavior patterns of human beings under certain circumstances. This theory holds that behavioral intentions are influenced by attitude, subjective norm and perceived behavioral control, while perceived behavioral control and

behavioral intention directly affect actual behavior (Ajzen, 1991). The theoretical model of Theory of Planned Behavior is shown in Figure 2.

3. Relevant research of technology relevant acceptance model

The reason for the need for systematic literature review is that many scholars have made many extensions to technology acceptance model and theory of planned behavior in terms of problems, theoretical aspects, research methods, and backgrounds, but there is no consistent consensus. Therefore, in the subsequent development of technology acceptance model and theory of planned behavior, a number of difficult For example, Legris et al. (2003) collated that the current technology acceptance model could only explain 40% of the use of information systems, and must include important variables such as the history of human and social change and innovative adoption models when applying. Mahmood et al. (2001) summarized the relationship between users and the characteristics of information systems at the level of information technology usage in the organization. However, the main focus of these studies is still expanding the technology acceptance model in order to more effectively explain the acceptance of science and technology, and there is still no adequate conclusion on the differences between existing facets in different studies. In this research, the relationship between the various facets of technology acceptance model and theory of planned behavior are confirmed by systematic literature reivew, so as to more clearly support the relationship between various facets. Therefore, this study chooses several high-quality journals to share their research findings.

3.1 Relevant research of technology acceptance model

Table 1 showed the collection for relevant research on Technology Acceptance Model in recent years. This research hoped that researchers in this field will have a better understanding of innovative models and applications for online learning and action learning.

Table 1.

Relevant research of technology acceptance model towards online

Author	Research Topics	Source
Al-Hawari, M. A., & Mouakket, S. (2010)	The influence of technology acceptance model factors on students' e-satisfaction and e-retention within the context of UAE e-learning.	Education, Business and Society: Contemporary Middle Eastern Issues, 3 (4), 299-314.
Liu, I. F., Chen, M. C., Sun, Y. S., Wible, D., & Kuo, C. H. (2010)	Extending the TAM model to explore the factors that affect Intention to Use an Online Learning Community.	Computers & Education, 54 (2), 600-610.
Sánchez, R. A., & Hueros, A. D. (2010)	Motivational factors that influence the acceptance of Moodle using TAM.	Computers in Human Behavior, 26 (6), 1632-1640.
Lee, Y. H., Hsieh, Y. C., & Hsu, C. N. (2011)	Adding innovation diffusion theory to the technology acceptance model: Supporting employees' intentions to use e-learning systems.	Journal of Educational Technology & Society, 14 (4), 124-137.
ŠUmak, B., HeričKo, M., & PušNik, M. (2011)	A meta-analysis of e-learning technology acceptance: The role of user types and e-learning technology types.	Computers in human behavior, 27 (6), 2067-2077.
Šumak, B., Heričko, M., Pušnik, M., & Polančič, G. (2011)	Factors affecting acceptance and use of Moodle: An empirical study based on TAM.	Informatica, 35 (1), 91-100.
Zanjani, M., Vali, F., & Ramazani, M. (2012)	Investigation of e-learning acceptance in teaching English language based on TAM Model.	ARPN Journal of Systems and Software, 2 (11), 289-293.

Cheung, R., & Vogel, D. (2013)	Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning.	Computers & education, 63, 160-175.
Fathema, N., Shannon, D., & Ross, M. (2015)	Expanding the Technology Acceptance Model (TAM) to examine faculty use of Learning Management Systems (LMSs) in higher education institutions.	Journal of Online Learning & Teaching, 11 (2), 210-232
Mohammadi, H. (2015)	Investigating users' perspectives on e-learning: An integration of TAM and IS success model.	Computers in Human Behavior, 45, 359-374.

3.2   Relevant research of theory of planned behavior

Table 2 showed the collection for relevant research on Theory of Planned Behavior in recent years. This research hoped that researchers in this field will have a better understanding of innovative models and applications for online learning and action learning towards Theory of Planned Behavior.
Table 2.

Relevant research of theory of planned behavior towards online

Author	Research Topics	Source
Lee, M. C. (2010)	Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation–confirmation model.	Computers & Education, 54 (2), 506-516.
Teo, T., & Beng Lee, C. (2010)	Explaining the intention to use technology among student teachers: An application of the Theory of Planned Behavior (TPB).	Campus-Wide Information Systems, 27 (2), 60-67.
Yao, S. Y. (2010)	Utility of the TRA and TPB for predicting the e-learning behavioral intention and actual behavior of students'.	In Proceedings of 2010 Third International Conference on Education Technology and Training.
Al-Harbi, K. A. S. (2011)	E-Learning in the Saudi tertiary education: Potential and challenges.	Applied Computing and Informatics, 9 (1), 31-46.
Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012)	An investigation of mobile learning readiness in higher education based on the theory of planned behavior.	Computers & education, 59 (3), 1054-1064.
Nassuora, A. B. (2012)	Students acceptance of mobile learning for higher education in Saudi Arabia.	American Academic & Scholarly Research Journal, 4 (2), 24-30.
Yoo, S. J., Han, S. H., & Huang, W. (2012).	The roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace: A case from South Korea.	Computers in Human Behavior, 28(3), 942-950.
Chu, T. H., & Chen, Y. Y. (2016)	With good we become good: Understanding e-learning adoption by theory of planned behavior and group influences.	Computers & Education, 92, 37-52.
Hadadgar, A., Changiz, T., Masiello, I., Dehghani, Z., Mirshahzadeh, N., & Zary, N. (2016)	Applicability of the theory of planned behavior in explaining the general practitioners eLearning use in continuing medical education.	BMC medical education, 16 (1), 215.
Yeap, J. A., Ramayah, T., & Soto-Acosta, P. (2016)	Factors propelling the adoption of m-learning among students in higher education.	Electronic Markets, 26 (4), 323-338.

4.   Discussion and conclusion

Based on the Technology Acceptance Model proposed by Davis (1989), this study adds the relationship quality as a mediator variable to explore the influence of learners on the continued use of Online Learning. A loyal customer will have repeated purchases, purchase other products from the company and be immune to their competitors' marketing activities (Stum & Thirty, 1991). When learners have a positive evaluation of Online Learning and a positive relationship quality, Online Learning will be preferred in the future when choosing an action learning service. This is a successful marketing. This study explores the hypothetical model adopted by Online Learning through literature and related research, and confirms the interpretation and prediction ability of the research model through analysis. According to the analysis results, companies can refer to the promotion of Online Learning services.

With the rapid development of the Internet, various methods of spreading through the Internet, such as blog descriptions, audio and video, and live broadcast, have quickly solved the space limitations and acquisition costs of knowledge transfer. To break through early human transmission, face-to-face dictation and paper Limitations of this.

The publishing industry, which was originally responsible for producing knowledge transfer tools, has also begun to make digital transformations in response to market demand. In addition, online education platforms and quiz platforms have sprung up and expanded rapidly in recent years. A large amount of video and audio content has made self-learning a trend, and it has also rapidly impacted the education industry's pedagogy. It seems that as long as you have a connected device, all questions can be quickly found in batches through search engines.

However, the wave of online teaching caused by the Internet did not cause the collapse of the physical curriculum education market as originally feared, but accelerated the process of "flipping education". Although Internet users can find a lot of data, outdated knowledge and suggested content will still affect the visibility of the latest knowledge being searched and become a major issue for online education platforms.

This study is expected to collate and discuss the relevant research on the application of technology acceptance model and theory of planned behavior to online learning in the academic contribution. In terms of practical meaning, the period can give the government, educational institutions and universities and other institutions the development and promotion of specific recommendations for online learning, so that foreign language learners can learn online and enhance the competitiveness of employment and school. This study provides future research on the adoption and introduction of domestic online learning through the trend comparison of international journals, and calls on domestic researchers to focus on the scientific, institutional and historical context factors to enrich our online learning in the educational environment. In the future research direction, this study suggests that online learning requires multi-level, inter-connected analysis at different levels of individuals, organizations, and industries in future research.

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