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EDITORIAL

It is my proud privilege to welcome you all to the TheIRES International Conference at Zurich, Switzerland. I am happy to see the papers from all part of the world and some of the best paper published in this proceedings. This proceeding brings out the various Research papers from diverse areas of Science, Engineering, Technology and Management. This platform is intended to provide a platform for researchers, educators and professionals to present their discoveries and innovative practice and to explore future trends and applications in the field Science and Engineering. However, this conference will also provide a forum for dissemination of knowledge on both theoretical and applied research on the above said area with an ultimate aim to bridge the gap between these coherent disciplines of knowledge. Thus the forum accelerates the trend of development of technology for next generation. Our goal is to make the Conference proceedings useful and interesting to audiences involved in research in these areas, as well as to those involved in design, implementation and operation, to achieve the goal.

I once again give thanks to the Institute of Research and Journals, TheIIR, TheIRES for organizing this event in Zurich, Switzerland. I am sure the contributions by the authors shall add value to the research community. I also thank all the International Advisory members and Reviewers for making this event a Successful one.

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THE EMPIRICAL STUDY ON INSTRUCTORS' ACCEPTANCE AND USE INTERACTIVE BOOK IN DIGITAL LEARNING ENVIRONMENT

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Abstract - Previous studies explored the adoption of various learning technology such as e-Learning, m-Learning or Massive Open Online Courses (MOOCs). However, there is little empirical research on instructors' acceptance and use interactive book in digital learning environment (DLE), particularly at an individual level. The study's purpose was to investigate and develop causal relationship model on instructors' acceptance and use interactive book in digital learning environment. This study investigates the research from various academic database such as SciDirect, IEEE, Eric, etc. and develops theoretical model based on the Modified Unified Theory of Acceptance and Use of Technology (UTAUT2). The model's determinants include 6 influence factors: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation and habit. The result of this study can be applied for decision making to use the interactive book in digital learning environment for academic institute or university.

Index Terms - Causal Relationship Model, UTAUT2, Interactive Book, Digital Learning Environment

I. INTRODUCTION

From the book "21st Century Skills: Learning for Life in Our Times" identifies 21st century learners' characteristics as a way for educators around the world to understand the nature of learners' learning appropriately and in context. 21st century skills are the result of learning innovation, information and communication technology revolution, economic, social, political and cultural change [1]. Thus, learners need to develop themselves in all skills such as learning and innovation skills; information, media, and technology skills; life and career skills. The education of graduates in 21st century skills is very important. Therefore, educators are exploring and developing appropriate teaching methods and creating a digital learning environment (DLE).

Digital learning environments is a term that refers to the total of digital resources (computers, software, storage and systems) used to manage an academic enterprise and support, enable or manage learning. Their emergence and adoption has more to do with learning than technology, although technology developments have been essential in their evolution [2].

Nowadays, the Internet is one of the predominant information sources in students' academic life [3]. Therefore, the digital learning environment is suitable for teaching and learning in the higher education. Interactive book designed to include active reader participation via links or embedded reader-enacted functions. Increased use of seductive details in the interactive book was also related to emergent literacy outcomes [4]. However, there is little empirical research on instructors' acceptance and use interactive book in digital learning environment (DLE), particularly at an individual level. Therefore, the researcher decided to investigate the research from

various academic databases such as SciDirect, IEEE, Eric, etc. and develops theoretical model based on the Modified Unified Theory of Acceptance and Use of Technology (UTAUT2) [5]. The result of this study can be applied for decision making to use the interactive book in digital learning environment for academic institute or university.

II. THE PURPOSE OF THE STUDY

The main purpose of this study was to investigate and develop causal relationship model on instructors' acceptance and use interactive book in digital learning environment. This study investigates the research from various database such as SciDirect, IEEE, Eric, etc. and develops theoretical model based on the Modified Unified Theory of Acceptance and Use of Technology (UTAUT2).

III. RESEARCH QUESTION

What is causal relationship model on instructors' acceptance and use interactive book in digital learning environment?

IV. TECHNOLOGY ACCEPTANCE MODEL

The basic principles used to study human behavior in adopting technology are as follows.

A. *The theory of reasoned action: TRA*

The Theory of Reasoned Action (TRA) was introduced by Fishbein and Ajzen in 1975 to predict human behaviors under complete volitional control [6]. In this theory, intention, which is the immediate antecedent of behavior, indicates an individual's readiness to engage in a particular behavior [7]. The TRA involves two major constructs for predicting intention, namely attitude towards the behavior and subjective norms [8].

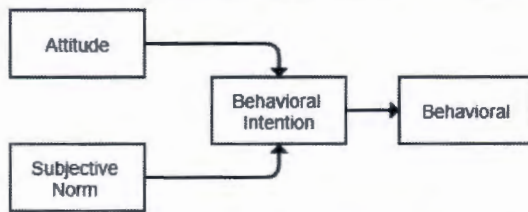


Fig. 1. The Theory of Reasoned Action [8]

However, TRA remains constrained by the fact that individual behavior cannot be actualized if the behavior is more complex than the capacity of the individual to control [9] so the theory of TRA has been developed and became theory of planned behavior (TPB).

B. Theory of planned behavior: TPB

Theory of planned behavior emerged in the 1980s, pioneered by Fishbein and Ajzen (1986) [9]. This theory is an extension of the theory of reasoned action that the concept of perceived behavioral control will appear as an additional predictor of intention and the actual behavior of the individual [10].

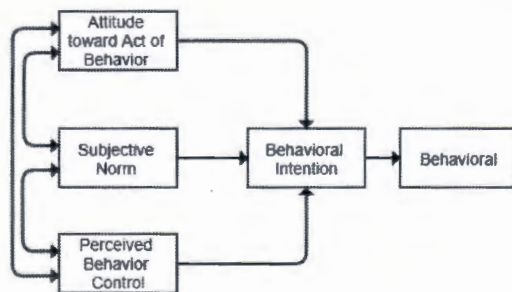


Fig. 2. The Theory of planned behavior [9]

TPB has a limitation when using TPB to describe attitude and behaviors may be inaccurate such as limitations caused by the inconsistency between the intentions of individual behaviour and the actual behaviour occurrence over time. TPB has been developed and became theory of technology acceptance model (TAM) for solving limitation of TPB.

C. The technology acceptance model: TAM

The technology acceptance model (TAM) was developed by Davis (1989) [11] and Davis et al. (1989) [12] as a tool to expect the probability of an innovative technology being implemented within a group of firms. TAM is established upon the assumption that technology acceptance can be elucidated by; individual's beliefs, attitudes and intentions [13][37]. The TAM proposes that an individual's intention to use or acceptance of an information system and technology in question is determined by two prominent beliefs: perceived usefulness (PU) and perceived ease of use (PEOU) [14][37].

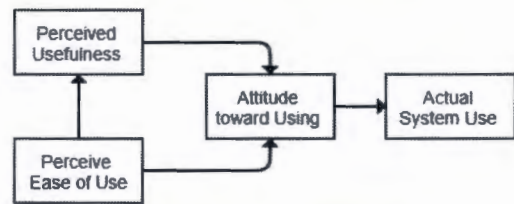


Fig. 3. The General Technology Acceptance Model [15]

D. The extended technology acceptance model: ETAM

Although, Perceived Ease of Use and Perceived Usefulness are the most important factors in the technology acceptance model. Venkatesh and Davis (1996) argued that "in order to be able to explain user acceptance and use, it is important to understand the antecedents of the key TAM constructs, perceived ease of use and usefulness" [16]. Furthermore, Mathieson (1991) argues that TAM without external factors, provides only broad information on user's opinions about a system but does not offer "specific information that can better guide system development" [17]. In addition, Malhotra and Galletta (1999) argue that the factors influence the actual use are only intentional behavioral uses, thus leading to the development of the extended technology acceptance model (ETAM) [18]. ETAM consists of external variables, perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using, behavioral intention to use and actual system use.

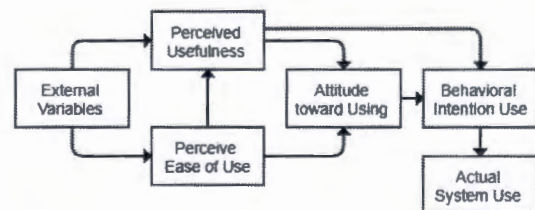


Fig. 4. The Extended Technology Acceptance Model [12]

E. Unified theory of acceptance and use of technology: UTAUT

Previous models, when used as a fundamental theory in research, may require the selection of only reputable models, or most research neglecting alternative models. Therefore, Venkatesh, Morris, Davis, and Davis (2003) synthesized these models into the unified theory of acceptance and use of technology (UTAUT) [19]. The unified theory of acceptance and use of technology (UTAUT) is a little over a decade old and has been used extensively in information systems (IS) and other fields [20] such as business, marketing and social science. UTAUT identifies four key factors (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) and four moderators (i.e., age, gender, experience, and voluntariness) related to predicting behavioral intention to use a technology

and actual technology used primarily in organizational contexts [20].

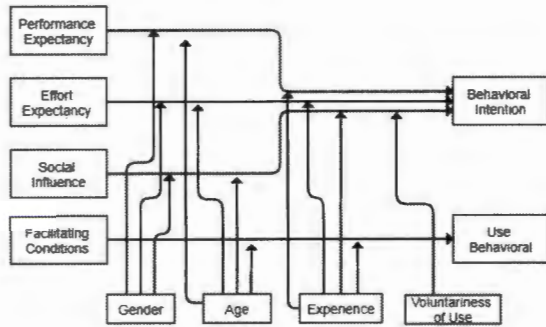


Fig. 5. the unified theory of acceptance and use of technology [19]

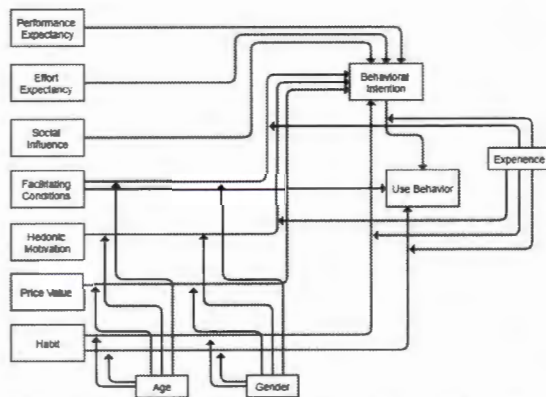


Fig. 6. the unified theory of acceptance and use of technology2: UTAUT2[22]

F. Unified theory of acceptance and use of technology2: UTAUT2

However, although the UTAUT model can predict the adoption of technology effectively but recent research shows that only minor factors are used. Therefore, it is necessary to expand the scope of the theory to find the important factors. The UTAUT2 can effectively explain and analyze people's technology acceptance behaviors for novel information technology (IT) products [21]. Principles of UTAUT2 to study behavioral use driven by behavioral intention by factors influencing behavioral intent. There are seven main factors: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value and Habit. There are three variants: age, gender and experience.

V. DIGITAL LEARNING ENVIRONMENT

Nowadays, the Internet is one of the predominant information sources in students' academic life [23]. Students have access to countless sites constructed to convey information on a specific topic that not only include multiple pages of text, but also such non-textual resources as pictures, charts, or videos. When such diverse digital resources are orchestrated to support student learning of a particular

topic or subject matter (e.g., how tornadoes develop), it can be described as a digital learning environment or DLE [24]. DLE offers services for creating, searching, and displaying learning materials such as lectures and laboratory exercises from knowledge databases and personal digital library collections in classroom, laboratory and self-guided environments [25].

VI. INTERACTIVE BOOK

Interactive book was developed by interactive paper. Interactive paper is the opposite of electronic paper because instead of making existing devices simulate the properties of paper, it "focuses on augmenting regular paper by linking it to supplementary digital information and services" [26]. A number of different technologies exist for linking paper and digital information together, including 1D and 2D barcodes, RFID and NFC tags, QR Code, optical page recognition and finger tracking, digitizing tablets, ultrasonic, optical and inductive pens, and capacitive touch regions [27][28]. Interactive book has many characteristics, such as the use of electronic circuits within the physical book, virtual book using QR Code inside a physical book, using physical books with VR and AR technology, etc.

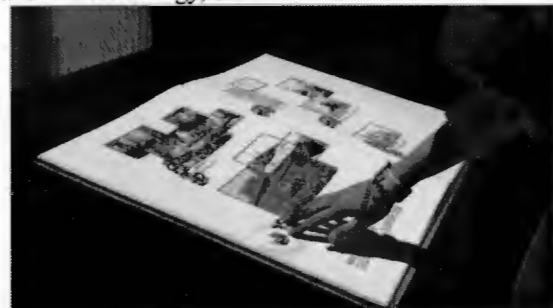


Fig. 7. Virtual Interactive Book[29]

RESULT

The result shown that the causal relationship model on instructors' acceptance and use interactive book in digital learning environment. In order to investigate the research and develop the causal relationship model, seven related topic in many resources, including official public research and journal articles, were used to scope out the content of the concept framework as follows. [30], [31], [32], [33], [34], [35], [36] (see fig. 8.)

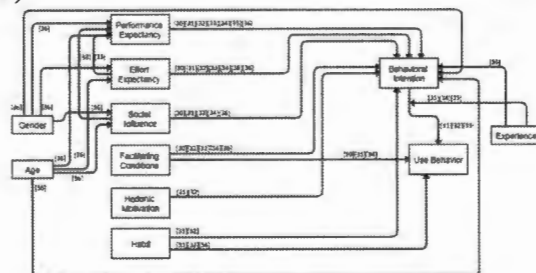


Fig. 8. The research model[29]

CONCLUSION

The study's purpose was to investigate and develop causal relationship model on instructors' acceptance and use interactive book in digital learning environment. This study investigates the research from various academic database such as SciDirect, IEEE, Eric, etc. and develops theoretical model based on the Modified Unified Theory of Acceptance and Use of Technology (UTAUT2). The model's determinants include 6 influence factors: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation and habit. The result of this study can be applied for decision making to use the interactive book in digital learning environment for academic institute or university.

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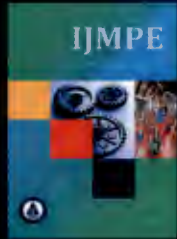
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