ACCEPTANCE OF WEB 3.0 FOR LEARNING

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The thesis is submitted in partial fulfillment of the requirement for the award of
Bachelor of Technology Management (High Technology Marketing) With Honors

Faculty of Technology Management and Technopreneurship
(High Technology Marketing) With Honors
Universiti Teknikal Malaysia Melaka

JUNE 2018

DECLARATION

"I hereby declare that the work I am submitting for assessment contains no section copied in whole or in part from any other source unless explicitly identified in quotation marks and with detailed, complete and accurate referencing."

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DEDICATION

Special thanks to:

My beloved parents

Husband

Son

Siblings

Friends

My Supervisor: Madam Mariam Miri Binti Abdullah

My Panel: Dr. Amiruddin Bin Ahamat

For all the spirituals and moral support that had been given to me all the time.

ACKNOWLEDGEMENTS

In the name of Allah, The Most Gracious and The Most Merciful. Alhamdulillah, all praises to Allah for the strength and His blessing in completing this thesis. Special appreciation goes to my supervisor Madam Mariam Miri Binti Abdullah for her supervision and constant support. Her precious helps in giving constructive comments and suggestions throughout this thesis which have contribute to the achievement of this research.

A special gratitude to my beloved parents, Mohd Norhamizi Bin Mohd Shafiee and Hasanatul Mariah Binti Abd Manan, your prayers have been answered. My beloved husband, Saiful Ammar Bin Mohd Yusoff, who joined me patiently during my degree journey. My wonderful son, Ahmad Lutfi, whose smiles never stop strengthening me. My brothers and sisters, who never stopped caring about me and supporting me spiritually throughout my life.

I also dedicate this study to my friends especially my course mates and colleagues for their kindness and moral support during my study. We have been together through all ups and downs for the last four years, thanks for the friendship and memories. Thank you very much.

ABSTRACT

The continuous evolution of the Internet has opened unimaginable opportunities and challenges in web based education and learning. The traditional version of web which is Web 1.0 started as a read only medium and the next version Web 2.0 established itself as read and write medium. In a short time, Web 2.0 and now Web 3.0 have created new tools and technologies for facilitating web based education & learning. To begin with, this paper discusses some definitions of the Web 3.0, its evolution and characteristics. Therefore, for this research, the aim to conduct this study is to (1) determine the factors that can influence university's student adoption of Web 3.0 for learning, (2) to investigate is the most significant in influencing university's student adoption of Web 3.0 for learning, and (3) To analyses the moderation effect of gender and experience on university's student adoption of Web 3.0 for learning. Accordingly, this paper uses the unified theory of acceptance and use of technology (UTAUT) to investigate and explain UTeM students' acceptance of Web 3.0 in learning. This research is using convenience sampling method where is 256 of students from UTeM were selected on the respondents in this study. After analysis, the results demonstrate that performance expectations, effort expectancy, and social influence have positive effects on behavior intentions, while facilitating conditions and behavioral intentions also have positive effects on use behavior. Recommendation for the future research is to reach greater responses and improve the scope of research in acceptance of web 3.0 in learning not only in students in UTeM Melaka but advisable to the lectures, primary and secondary students.

Keywords: Web 3.0, Learning, UTAUT

ABSTRAK

Evolusi internet yang berterusan telah membuka peluang dan cabaran yang tidak dapat dibayangkan dalam pendidikan dan pembelajaran berasaskan web. Versi web tradisional iaitu Web 1.0 bermula sebagai media bacaan sahaja dan versi Web 2.0 yang seterusnya menjadikan ia sebagai media baca dan menulis. Dalam masa yang singkat, Web 2.0 dan kini Web 3.0 telah mencipta alat dan teknologi baharu untuk memudahkan pendidika dan pembelajaran berasaskan web. Bagi permulaan, kertas ini membincangkan beberapa definisi Web 3.0, evolusi dan ciri-cirinya. Oleh itu, untuk kajian ini, tujuan untuk menjalankan kajian ini adalah untuk (1) menentukan faktor-faktor yang dapat mempengaruhi penerimaan pelajar universiti Web 3.0 untuk pembelajaran, (2) untuk menyelidiki faktor yang paling penting dalam mempengaruhi penerimaan universiti dari Web 3.0 untuk pembelajaran, dan (3) Untuk menganalisis kesan kesederhanaan jantina dan pengalaman pada penerimaan pelajar universiti Web 3.0 untuk pembelajaran. Oleh itu, kajian ini menggunakan teori penerimaan dan penggunaan teknologi (UTAUT) yang bersatu untuk menyiasat dan menerangkan penerimaan pelajar UTeM terhadap Web 3.0 dalam pembelajaran. Kajian ini menggunakan kaedah pensampelan mudah iaitu 256 pelajar adalah responden yang disasarkan secara rawak dalam kajian ini. Selepas menganalisis, keputusan menunjukkan bahawa jangkaan prestasi, jangkaan usaha, dan pengaruh sosial mempunyai kesan positif terhadap niat tingkah laku dan syarat-syarat memudahkan; niat tingkah laku juga mempunyai kesan positif terhadap kelakuan penggunaan. Cadangan untuk penyelidikan masa depan adalah untuk mencapai maklum balas yang lebih besar dan meningkatkan skop penyelidikan dalam penerimaan Web 3.0 dalam pembelajaran bukan sahaja kepada pelajar di UTeM Melaka tetapi juga disarankan kepada kuliah, pelajar sekolah rendah dan menengah.

Kata Kunci: Web 3.0, Pembelajaran, UTAUT

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ABBREVIATION	MEANING
ANOVA	Analysis of Variance
PE	Performance Expectancy
EE	Effort Expectancy
SI	Social Influence
FC	Facilitating Condition
BI	Behavioral Intention
UB	Use Behavior
H0	Null Hypothesis
H1	Alternative Hypothesis
UTeM	Universiti Teknikal Malaysia Melaka
SPSS	Statistical Package for the Social Sciences
UTAUT	Unified Theory of Acceptance and Use of Technology

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CHAPTER 1

INTRODUCTION

1.0   Background of Study

The World Wide Web known as the web is not identically alike to the internet but is the most consequential part of the internet that can be defined as a social-techno-system to interact with people predicated on technology networks (Aghaei, Nematbakhsh, and Farsani, 2012). According to Fuchs *et al.,* (2010), definition of social-techno-systems refers to systems that amend cognition, communication, and human cooperation; Cognition is an obligatory prerequisite for communicating and prerequisites for co-operation. In other words, cooperation requires communication and communication requires cognition. The World Wide Web is an interconnected hypertext system accessed through the Internet. Web technology was introduced to the public by Tim Berners-Lee in late 1989. He sees the World Wide Web potential expressed by three innovations, usually relate with three phases that is Web 1.0, Web 2.0 and Web 3.0 (Kujur and Chhetri, 2015).

1.1   Evolution of Web Technology

Web 1.0 is the first web implementation and it is being used from 1989 to 2005. It was representing as web of information connections. According to the innovator of World Wide Web, Tim Berners Lee considers the web as "read-only" web (Kujur and Chhetri, 2015). In other words, the early web allowed us to search for information and read it. There was very little in the way of user interaction or content contribution. It is also is a system of interlinked, hypertext documents accessed via the Internet (Shivalingaiah and Naik, 2008). Web 1.0 provides limited interaction where users can switch information together but cannot interact with the website (Kujur and Chhetri, 2015).

Web 2.0 is categorise as the second generation of web and it was describe by Doughetry in 2004 as a read-write web (Aghaei, Nematbakhsh, and Farsani, 2012). According to Ahmed (2015), Web 2.0 is about the bilateral communication between World Wide Web (WWW) and human through computer and the internet with allow user to communicate and work together with each other. It's allowed the utilizer of Web 2.0 to more interactivity but less control. The technologies of Web 2.0 let on assembling and managing gigantic global crowds with common interests in social interactions (Kujur and Chhetri, 2015). Web 2.0 applications are becoming more popular. So-called mashup websites where are the websites that combine data from different sites, social network websites such as Facebook or video internet depository such as YouTube. It is attempted to magnetize people to spend time online. It makes utilization of latest technologies and concepts in order to make the utilizer experience more interactive, practical and interconnecting. It has brought another approach to connect the world by methods for amassing data and enabling it to be shared effectively (Shivalingaiah and Naik, 2008).

In 2016, Jhon Markoff was the person in establishing and developing Web 3.0 the new technology in the world of web. (Aghaei, Nematbakhsh, and Farsani, 2012). It is one of those topics and evolution linked to the following initiatives of Web 2.0 (Kujur and Chhetri, 2015). The basic idea of Web 3.0 is to define structure data and

link them in order to more sufficient discovery, automation, integration, and reuse across sundry applications. According to Rudma and Bruwer (2016), Web 3.0 is a new concept in the region of web evolution.

1.2   Problem Statement

Some studies have found that many students less of necessary skills to use Web 3.0 tools efficiently (Bawden *et al.,* 2007 and Al-Daihani, 2010). Anderson (2007) notes that there is a requirement for critical understanding of students' conceptions and experiences with Web 3.0 in order to implement these prosperously into learning in higher education sector. He also warns that lack of understanding of students' expectations of Web 3.0 tools might cause serious consequences.

Base on existing problems, researcher wants to conduct research on the extent of application and acceptance of Web 3.0 application among student. In the fulfilment of learning with e-learning which is known as U-learn. According to Urdan and Weggen (2000), despite the full effort in the development of e-learning, but only a partial evidence supporting that e-learning is effective. The concept of e-learning 3.0 emerged from the incrementing popularity of the Web 3.0 technologies as an educational asset (Rubens *et al*., 2011). E-learning 3.0 promises personalization, intelligent agents, sematic, explanation, computer- intelligible data and knowledge management (Oakes, 2011). Therefore the researcher wanted to study the level acceptance to the student at the institution of High Education in Melaka which is Universiti Teknikal Malaysia Melaka.

1.3   Research Question

Research questions refer to a statement about an area of concern, a difficulty to be eliminated, a condition to be improved upon, or a troubling question that exists in scholarly literature, in theory, or in practice that points to the need for meaningful understanding literature, understanding and deliberate investigation. The research questions of these projects are:

a) What are the factors that can influence university's student adoption of Web 3.0 for learning?

b) Which factors is the most significant in influencing university's student adoption of Web 3.0 for learning?

c) What is the moderation effect of gender and experience on university's student adoption of Web 3.0 for learning?

1.4   Research Objective

The end result and outcome of this research will be the main purpose in the research objectives. It refers to narrow and focus on the study. It also help to guide the information to be collected and the most important, it facilities the development of methodology. The objectives of this project are:

a) To determine the factors influencing university's student adoption of Web 3.0 for learning.

b) To investigate is the most significant factor influencing university's student adoption of Web 3.0 for learning.

c) To analyse the moderation effect of gender and experience on university's student adoption of Web 3.0 for learning.

1.5 Scope of Research

The aim of this study is to analyse acceptance of Web 3.0 for learning where focused on e-learning which is known as U-Learn. In this study, researcher adopted four main concepts from Unified Theory of Acceptance and Use of Technology (UTAUT) that related with the student's acceptance of Web 3.0 for learning. Those concepts are Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). Researcher believed that these concepts have strong relationship regarding the acceptance of Web 3.0 for learning.

1.6 Limitation

While conducted these study, several limitations had been found by the researcher. Time limitations and geographical factor is one of the limitations for conducting this research. Researcher only has 24 weeks to conduct this research and because of the time limit, this research was conducted only on small population that is going to conduct in Universiti Teknikal Malaysia Melaka (UTeM).

Besides that, when conducting this study, researcher had faced difficulty in accessing secondary information. Researcher had to pay in advance in order to read or access some journals, statistics and online reports. Next, researcher also struggle to search for journal because lack of previous researches regarding this study.

Lastly, the problem in getting mutual support and cooperation from the respondents has become the limitation in this study, due to variance in term of background and social activities. Respondents consist of students from several

faculties in Universiti Teknikal Malaysia Melaka (UTeM). So not all the students will give the cooperation for the questionnaires because of tight schedule and just fill in the form or they not interested to do survey. Hence, the respondents might do not give the accurate answer to the questionnaires and It can influence the accuracy and consistency of the study's outcomes.

1.7   Key Assumption

All the answers by respondents will be assumed as accurate and verifiable by researcher. This shows that respondents are qualified enough to participate in questionnaire. Furthermore, researcher assumes that those respondents have better understanding and familiar to this topic according to the validity of answer given by respondents.

1.8   Significance of Study

This study can offer benefits and convenience for any kind of industry or firm who have created Web 3.0's application for learning to improve their customer service and give uniqueness to attract the users. This study can also alter the way owners and employees do their job by taking reasonable steps in how to handle the user. In order to attract the users, they must have the knowledge or do the observation of what drive to student and teachers and know what factors that most reasonable. Thus, the management can save the company from losing consumers by taking this early prevention step.

The industry of e-commerce will also gain the advantages from this study. This study will create awareness on the consumerism of millennial as well as learning on the internet.

1.9 Summary

In this chapter 1, researcher had discusses about background of study and problem statements. Research questions and research objective are constructed based on problem statements. Besides that, scope of study, limitations of study, key assumption and significant of study of this research also discuss in this chapter.

CHAPTER 2

LITERITURE REVIEW

2.0   Introduction

A literature review is the assessment of a body of researcher question. The aim is to identify what is already known about the field of study and also identify question a body of researcher does not answer. The relevant literature will be reviewed under the following outline: Web 3.0, teaching and learning, and e-learning. Thus, what factors of e-learning that can be accept by students is measured by performance expectations, effort expectancy, social influence, and facilitating conditions. This section brings to light what can be done in order to understand about acceptance of Web 3.0 in learning.

2.1   Definition of Web 3.0

Web 3.0 is the latest evolutions in Internet communications and will not only restructure Internet communications but withal have paramount impact on consequential business drivers. According to Kujur and Chhetri (2015) Web 3.0 is also known as semantic web. Semantic web was thought up by Tim Berners-Lee, inventor of the World Wide Web. Web 3.0 supports world databases and web-oriented architecture that are initially described as web documents. According to Rudma and Bruwer (2016), Web 3.0 is a new concept in the region of Web evolution. Defining it will help in allocate new and developing Web technologies into the correct evolutionary classification, being Web 1.0, Web 2.0 and Web 3.0.

The new Web 3.0 is known as the web of data and as the Semantic Web. In the context of education, sematic web is practical for online teachers and students, as it affects the development of knowledge, maintenance of personal learning networks and personal education administration (Sofiadin, 2014). Consequently, when the web changes, incipient features obtained from the web will lead to evolution of e-learning.

2.1.1   Characteristics of Web 3.0

i.   **Semantic Web**

Semantic web is a web where the machine reads web pages in a way closed to humans, and searches information predicated on utilizer defined criteria to find optimum results. According to Castellanos-Nieves *et al.,* (2011), on the technology side, Semantic Web aims to integrate semantic information to web content to produce an environment where software agents can perform tasks efficiently. Internet

industries are rapidly exploring the benefits of Semantic Web technology. Semantic Web has been generally adopted by a huge number of domains including e-learning (Asghar, Anwar, and Latif, 2016).

ii. Personalized Web

Personalize web is the characteristics of Web 3.0 which are precisely integrate into our daily lives and become more personalized to personal preferences and are easier to use. Web 3.0 will be able aid us make moment-to-moment decisions (Winkel and StachowiczStanusch, 2016). According to Narasimhamurthy and Al-Shawkani (2010), there are seven aspects of personalized web and each aspect represents a highly personalized capability for learner to prefer their option of tools or type of learning activity. The seven aspect of personalized web includes mobility, device consideration, granularity, collaborative learning, simplicity, personalization, and learning style.

iii. Visual Web

Visual web is web technologies that highlight the convergence of the physical and virtual world. Visual aids such as diagrams, flowcharts, pictures, graphs, flowcharts, videos demonstrations gain the usage of visual learning. Most of the learners feel that visual learning is the best way to learn simply and effectively. Besides that, visualization and 3D interaction enrich learning and making the task easier. It also includes interaction of fine motor skills, virtual object manipulation, and virtual space exploration (Dominic, Francis, and Pilomenraj, 2014).

2.1.2   Component of Web 3.0

i.   Micro Blogging

Micro blogging can also be known as the ability to convert your ideas and imaginations in term of characters or numbers. Micro blogging supports the learning process with the flow endless information between students and teachers. The piece of thought and information published let on users to engage with others in their thinking. For students and especially teachers, the process of learning and working students becomes clearer. Teachers can interventions and rectify the direction of learning. Successful use of micro blogging and the value obtained is causing students and teachers of micro blogging very good use. It can be concluded that micro blogging has great potential for the future by spending teaching and learning out of the classroom (Ebner *et al*., 2010).

ii.   Virtual Reality

Virtual Reality was defined by George Coates as electronic simulation of the environment experienced through eye glasses and wired wear that allows end users to interact in a realistic three-dimensional situation (Hussein and Natterdal, 2015). According to Vaughan *et al.,* (2015), for the medical students, training with virtual reality could be primarily useful for them. Due to orthopaedics, it relies heavily on technical skills; orthopaedic VR simulation holds great potential to create great impact to improve surgical skills. Visual effects and 3D objects can describe specific topics where text cannot be. The combination of both can help students achieve better results especially in science and engineering education. It can also increase the desire to learn for young students with all the advances in technology and a wide range of applications in the education market (Hussein and Natterdal, 2015).