# MOTIVATIONAL MODEL FOR CONTINUOUS INTENTION OF ELECTRONIC PORTFOLIO USAGE AMONG STUDENTS

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*To my lovely husband,*

*my adorable parents and parents-in-law,*

*my kind sister and brother*

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# ABSTRACT

The implementation of the electronic portfolio (e-Portfolio) has increased in higher education, as it can serve students in new and creative ways. However, despite its advantages, students are not willing to continue the use of the e-Portfolio system. One of the reasons is the lack of motivation to spend the time and effort required to use the system. The aim of this study is to provide a better understanding of the motivational factors affecting students' continuous intention regarding e-Portfolio usage by means of proposing a motivational model. The model is based on the synergy of four theories, namely, self-determination theory, use and gratification theory, unified theory of acceptance and use of technology, and Information Systems continuance model. A qualitative approach using face-to-face interviews was employed to confirm the factors identified in the literature and to explore potential factors that are not currently presented in the literature. Thereafter, a quantitative method using the survey technique was applied to collect data from students. The survey yielded 374 useable responses which were further analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) technique. This technique was used to validate the measurement items and to test the hypotheses and research model. The results indicate that students' satisfaction is the most significant predictor of the students' continuous intention to use the e-Portfolio system, followed by social influences, perceived usefulness, facilitating conditions, feedback, long-term consequences of use, and perceived enjoyment. The results also indicate that five categories of uses and gratification, including outcome, content, process, social and technology gratification, have an influence on the students' continuous intention to use e-Portfolio. Based on the findings, this study provides some practical recommendations for higher education institutions to enhance the continued use of e-Portfolio among students and classifies based on the different roles of managers and administrators, academic advisors and lecturers, designers and developers, and students.

# ABSTRAK

Pelaksanaan portfolio elektronik (e-Portfolio) telah meningkat di peringkat pengajian yang tinggi, kerana ia mampu menyampaikan cara yang baru dan kreatif kepada pelajar. Walaupun ia terdapat banyak kelebihan, pelajar masih agak keberatan untuk meneruskan penggunaan sistem e-Portfolio. Antara kekangan yang dikenal pasti adalah kerana kurang motivasi untuk memperuntukan masa dan usaha yang diperlukan untuk menggunakan sistem ini. Tujuan kajian ini adalah untuk memberi pemahaman yang lebih mendalam tentang faktor motivasi yang boleh mempengaruhi niat pelajar yang secara berterusan dalam penggunaan e-Portfolio iaitu melalui cadangan model motivasi. Model ini adalah berdasarkan gabungan empat teori, iaitu teori penentuan kendiri, teori penggunaan dan kepuasan, teori kesatuan penerimaan dan penggunaan teknologi, dan model penerusan sistem maklumat. Pendekatan kualitatif menggunakan temubual bersemuka digunakan untuk mengesahkan faktor yang dikenal pasti dalam sorotan kajian dan untuk meneroka faktor yang berpotensi yang ketika ini tiada dalam sorotan kajian. Selepas itu, kaedah kuantitatif menggunakan teknik soal selidik diaplikasi untuk mengumpul data daripada pelajar. Kaji selidik ini menghasilkan 374 respon yang sah dan seterusnya dianalisis dengan lebih lanjut menggunakan teknik Kuasa Dua Terkecil Separa-Model Persamaan Berstruktur (PLS-SEM). Teknik ini digunakan untuk mengesahkan set soalan dan menguji hipotesis dan model penyelidikan. Keputusan menunjukkan kepuasan pelajar adalah faktor yang paling penting yang mempengaruhi niat pelajar untuk menggunakan sistem e-Portfolio secara berterusan, diikuti oleh pengaruh sosial, anggapan kepentingan, keadaan yang memudahkan, maklum balas, kesan jangka panjang penggunaan dan anggapan keseronokan. Keputusan ini juga menunjukkan lima kategori penggunaaan dan kepuasan, termasuk hasil, kandungan, proses, sosial dan kepuasan teknologi mempunyai pengaruh terhadap niat pelajar untuk menggunakan e-Portfolio secara berterusan. Berdasarkan hasil dapatan, kajian menyarankan beberapa cadangan praktikal untuk pihak pengajian tinggi dalam meningkatkan penggunaan berterusan e-Portfolio di kalangan pelajar dan cadangan dikategorikan mengikut peranan sebagai pengurus dan pentadbir, penasihat akademik dan pensyarah, pereka dan pembangun sistem, serta pelajar.

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| | | |
|---|---|---|
| AVE | - | Average Variance Extracted |
| CA | - | Cronbach's Alpha |
| CB | - | Covariance Based |
| CIN | - | Continuance Intention |
| CONF | - | Confirmation |
| CR | - | Composite Reliability |
| ECM | - | Expectation Confirmation Model |
| ECT | - | Expectation Confirmation Theory |
| EE | - | Effort Expectancy |
| FC | - | Facilitating Conditions |
| FEED | - | Feedback |
| ICT | - | Information and Communication Technology |
| IDT | - | Innovation Diffusion Theory |
| INFO | - | Informativeness |
| INSH | - | Information Sharing |
| IS | - | Information Systems |
| ISCM | - | Information Systems Continuance Model |
| IT | - | Information Technology |
| LC | - | Long-term Consequences |
| MGA | - | Multi Group Analysis |
| PA | - | Perceived Autonomy |
| PC | - | Perceived Competence |
| PE | - | Perceived Enjoyment |
| PLS | - | Partial Least Squares |
| PR | - | Perceived Relatedness |
| PU | - | Perceived Usefulness |

| | | |
|---|---|---|
| SAT | - | Satisfaction |
| SCT | - | Social Cognitive Theory |
| SD | - | Self-Documentation |
| SDT | - | Self-Determination Theory |
| SEM | - | Structural Equation Modeling |
| SI | - | Social Interactivity |
| SIN | - | Social Influences |
| SIN | - | Social Influences |
| TAM | - | Technology Acceptance Model |
| TPB | - | Theory of Planned Behavior |
| TRA | - | Theory of Reasoned Action |
| UGT | - | Uses and Gratification Theory |
| UKM | - | Universiti Kebangsaan Malaysia |
| UTAUT | - | Unified Theory of Acceptance and Use of Technology |
| UTM | - | Universiti Teknologi Malaysia |
| VIF | - | Variance Inflation Factor |

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# CHAPTER 1

# INTRODUCTION

## 1.1 Introduction

The development of information technologies has become an inseparable part of any organization in recent years. New technology has enabled universities to serve students in new and creative ways, such as delivering the learning material and administrative services via electronic tools to make the services easier, cheaper, faster and more efficient and effective than manual tools (Sutarso and Suharmadi, 2011). Following the introduction of the internet to the educational context, some pedagogical tools have been transformed to electronic versions. The internet and its supplementary instructive tools have provided numerous benefits such as increased accessibility, time savings and the enhanced ability to share experience and information (Baris and Tosun, 2011).

Universities also faced the demand to reduce the university workload and increase engagement, and it was seen that this could be achieved through sharing the procedures with students to enable them to easily perform their tasks. Electronic-based services were seen as the best solution for both students and universities (Sutarso and Suharmadi, 2011). Therefore, a global effort has been made to incorporate electronic services into the learning environment, with the focus of integrating IT with teaching. Based on the results of this effort, electronic portfolios (e-Portfolios) have emerged as one of the latest educational tools. The e-Portfolio is a student-centered online system that collects learners' output in order to demonstrate

their progress and to enable the learners to watch, assess and share their achievements and experiences and to reflect on their educational accomplishments (Chen et al., 2012b).

The utilization of the e-Portfolio in the educational context has increased over recent decades (Baris and Tosun, 2013; Kimball, 2005 ; Lorenzo and Ittelson, 2005; Shroff et al., 2013; Yu, 2011). Recently, they have become an essential tool in higher education institutions (Huang et al., 2011b). The e-Portfolio system is capable of promoting the students' educational performance through various styles of learning and even changing the nature of learning environments (Ayala, 2006). E-Portfolio provides students with the opportunity to create, develop and share their reflections and ideas (Baris and Tosun, 2013). According to the literature, when students are using e-Portfolio, they feel more positive and confident regarding their learning (Hussein, 2009; Shroff et al., 2011; Wright et al., 2002; Zhang et al., 2007).

E-Portfolios can play a fundamental role in supporting students as a navigational strategy for 21st century learning outcomes. Undoubtedly, the new technologies will move on and the e-Portfolio functionality will change in the future. However, lifelong learning is an important concept that has been prioritized in the e-Portfolio as it records the learning process and exchanges information (Stefani et al., 2007). According to Dorninger and Schrack (2008), the e-Portfolio can promote the idea of lifelong learning and support individuals throughout their studies, training and career-related experiences.

This chapter provides an overview of the study. Firstly, it looks into the background of the research problem (Section 1.2). Then, it presents the problem statement (Section 1.3). It next reviews the main research questions (Section 1.4), followed by the research objectives (Section 1.5). The scope of this research is also outlined (Section 1.6). The chapter then reviews the significance of the study in terms of its theoretical and practical contributions (Section 1.7). Finally, the chapter is summarized in the last section.

## 1.2 Problem Background

Although the use of new educational technology has recently increased, technology acceptance and usage has remained a challenging topic for educational institutes (Baylor and Ritchie, 2002; Gong et al., 2004; Saunders and Klemming, 2003). Researchers have found that, despite the huge investments made by higher education institutions in pedagogical technology, most systems have been totally abandoned due to limited usage (Liu et al., 2009; Park, 2009; Teo, 2009). Prior studies indicate that the long-term feasibility and success of an information system depends more on the users' continuous use rather than on the initial use (Bhattacherjee, 2001; Davis et al., 1989; Hung et al., 2007; Zheng et al., 2013) (a detailed elaboration of continuous use is presented in Chapter 2 (Section 2.3)). Therefore, the students' continuous intention to use e-Portfolio is a critical challenge in higher education in order to ensure the long-term use of the system and ensure the return on the investment.

Some reseachers suggest that the continuous use of an IT system or tool may be habitual (Limayem et al., 2007), while some others indicate that continuance usage behavior may rely on emotional or affective reactions (Agarwal and Karahanna, 2000) (discsussed in Chapter 2 (Section 2.3)). However, Bhattacherjee and Lin (2014) reported that there was no empirical research exploring the role of these kinds of influences on the users' intention to continue the use of the system. Consequently, the effect of these factors on students' continuous intention to use e-Portfolio should be examined.

A comprehensive literature review revealed that there are few studies looking into the e-Portfolio continuance intention. The existing studies were done by Hsieh (2014) and Hwang (2011). Hsieh et al. (2014) conducted a longitudinal study and explained the changes in students' beliefs about e-Portfolio use from adoption to the continued use stage. They treated expectation and confirmation as the key factors in users' attitudes and beliefs regarding the continuous use of the IS. Hwang et al. (2011) aimed to explain students' behavior and continuous use of e-Portfolio by integrating the technology acceptance model (TAM) and the information systems

continuance model (ISCM) to investigate the influential factors on e-Portfolio continuance intention. Their findings are discussed in more detail in Chapter 2 (Section 2.5, Table 2.2).

Since an e-Portfolio is a student-centered learning system, its effectiveness will be established by the students' long-term use of the system (Hsieh et al., 2014). According to the literature, students' behaviors and intentions towards e-Portfolio usage have not been clearly identified, in comparison to the understanding of users' behaviors and intentions towards other information systems (Shroff et al., 2011). Consequently, in order to increase the levels of usage, university administrators and educators should try to recognize the complicated and diverse range of students' needs, purposes and preferences regarding e-Portfolio usage. These aspects then need to be combined into the procedure of e-Portfolio development and implementation (Abrami and Barrett, 2005; Swan, 2009).

Furthermore, some of the research in the continuance intention area has looked at students' continuance intention by integrating the technology acceptance models. However, the individual's continuance intention is not understandable using traditional technology acceptance models, which leads to a theoretical gap between acceptance and the intention to continue to use the system (Kim and Malhotra, 2005; Mark and Vogel, 2009).

From another angle, it is generally understood by researchers that motivation is the main significant factor influencing users' behavior (as discussed in more detail in Chapter 2, Section 2.4). Student motivation is an ongoing issue and challenge. Similarly, the biggest challenge in the e-Portfolio context is to motivate students to spend their effort and time in using the e-Portfolio system (Heinrich et al., 2007). Moreover, a key requirement for effective learning from the use of e-Portfolios is that students are motivated (Al Kahtani, 1999; Tosh et al., 2005). If students are not sufficiently motivated, using the e-Portfolio becomes an unpleasant task, and students only perform the minimum work required to get grades, which decreases the e-Portfolio's advantages (Tuksinvarajarn and Todd, 2009).

Another major issue is enhancing the learners' intrinsic motivation to willingly engage in the e-Portfolio process (Barrett, 2005b). Students are usually known for performing an activity that offers direct rewards such as marks and grades. Although it is generally understood that students are less active in e-Portfolios if no grades are provided, it sometimes happens that students are inspired by individual pleasure in developing their portfolios (Struyven et al., 2003). It shows that the students' intrinsic motivation is significant for e-Portfolio continuance utilization, as well as extrinsic motivation. The students' understanding of the system and its advantages and values can thus be significant in motivating the student to use the system.

Based on a review of the previous studies, it is concluded that a key factor influencing students' behavior towards their learning process in the educational context is the students' motivation. Consequently, this study attempts to highlight the role of motivation in sustaining e-Portfolio utilization. Motivation to use often requires an answer to the question of "what is in it for me?". The added-value of e-Portfolio utilization needs to be identified in order to enhance the level of student engagement (Tosh et al., 2005). In spite of the advantages of the e-Portfolio for students, less attention has been paid to exploring the students' motivational reasons for using e-Portfolio. When developing an e-Portfolio system, the students' motivational factors must be taken into account, as the success of these kinds of systems relies on the students' intention to continue to use the system.

As an example, Universiti Teknologi Malaysia (UTM) implemented an e-Portfolio system in 2005 (Wardah Zainal and Rose Alinda Alias, 2013). The main objective was to assess and monitor the students' achievements within semesters. To achieve this aim, the rule was set making e-Portfolio use mandatory for first year students (the background of the UTM e-Portfolio is presented in Chapter 4 (Section 4.3.1)). It was expected that, within the first year, students would get to know the system and would then continue its usage in the following years. However, according to the UTM e-Portfolio administrators and Zainal-Abidin (2011), the results showed the contrary outcome. The number of active users throughout these years did not reflect any incline. This means that students only used the system in the

first year because it was compulsory and then they abandoned it for the remainder of their academic career. This problem has become a critical issue for UTM and for the e-Portfolio owners and managers.

## 1.3 Problem Statement

Contemporary teaching has become more flexible through the use of new technologies to organize online learning and overcome the restrictions of traditional teaching approaches. In recent years, many universities have begun using e-Portfolio systems as a new technology for evaluation and education (Barrett, 2004a; Chang et al., 2011; Lopez-Fernandez and Rodriguez-Illera, 2009). Universities are starting to set up e-Portfolio systems to get the benefits of supporting student accomplishments, both for peer and self-reflection, and showcasing student performance, in addition to providing a tool for making learning assessment more reliable (Kong et al., 2009; Orland-Barak, 2005; Pelliccione and Raison, 2009). However, there is a need to understand how to increase the long-term use of an e-Portfolio system. In this regard, two main emphases need to be contemplated.

The first emphasis is on e-Portfolio continuance intention. The e-Portfolio system is considered to be an important self-learning platform, which helps share experiences and knowledge and supports self-reflection. E-Portfolio is a useful tool for recording the students' educational work and presenting their attempts, accomplishments and self-reflection (Huang et al., 2011a). Moreover, it is a student-centered tool and its success and effectiveness relies on the students' long-term use of the system (Hsieh et al., 2014). Stefani (2007: 135) identified some questions that need to be addressed in future research, including: "Will students want to engage with e-Portfolio over an extended period, perhaps their entire life?". This question indicates the importance of the continuous use of e-Portfolio. It points out that, if students are provided with sufficient knowledge to understand the e-Portfolio benefits for their career and learning development, they will be more encouraged to continue the use of e-Portfolio (Chen et al., 2012b). However, the students' intentions towards the continued use of e-Portfolio should be investigated. Based on

the current studies on e-Portfolio usage, it is not easy to understand the students' reasons to change their beliefs regarding the long-term use of e-Portfolio (Hsieh et al., 2014). Moreover, the review of the literature revealed that researchers have paid less attention to the continuous usage stage of e-Portfolio. Therefore, this research focuses on the continuance intention of e-Portfolio usage.

The second emphasis is on student motivation in order to increase students' continuous intention to use e-Portfolio. Researchers have explained that the students' motivation when using their portfolios is a significant issue (Al Kahtani, 1999; Chang, 2001; Tosh et al., 2005). As the previous section explained, despite the importance of e-Portfolio in the students' learning process, there still exist some issues and challenges regarding the students' intention to continue to use the system. The problem is that the role of motivation has almost been ignored in the literature. In order to encourage the students, their needs and motives must be taken into consideration. In contrast with earlier studies, this research highlights the particular question of "How can universities motivate students to use e-Portfolio continuously, even after their graduation?".

Consequently, this research is designed to address these gaps by investigating e-Portfolio motivational factors from the students' perspective. It is expected that the findings will help to increase students' continuous intention to use the system, as it is stated that the significant factor influencing both behavioral intention and attitudes towards the use of e-Portfolios is "user motivation".

## 1.4 Research Questions

The main concern of this research is: "How can students be motivated to continue the use of e-Portfolio in higher education institutions?". To address this problem, the following sub-research questions have been drawn up:

1. What are the key motivational factors that contribute to increase the students' continuous intention to use the e-Portfolio system?

2. How can a motivational model that describes e-Portfolio continuous intention to use among students be designed?

3. How can the identified motivational factors be considered in e-Portfolio system implementation?

## 1.5 Research Objectives

This study emphasizes three main objectives as follows:

1. To identify the motivational factors that would help to increase the students' continuous intention to use the e-Portfolio system.

2. To propose a motivational model that describes e-Portfolio continuous intention to use among students.

3. To make recommendations on e-Portfolio implementation based on the identified motivational factors.

## 1.6 Scope of the Research

This study aims to solve the problem of e-Portfolio continuous intention to use by considering the role of motivation in the proposed model. The target organizations are the higher education institutions that have been using e-Portfolio systems. The focus of this study is on Malaysian universities, specifically those that have implemented an e-Portfolio system and have been using the system for several semesters. There are different users of the e-Portfolio system, including students, academic advisors, lecturers and administrators. The students are the most common users of e-Portfolio in the university context. This study is only targeted at the students who have used and were engaged with an e-Portfolio system. Therefore,

only the students' e-Portfolio usage comes within the scope of the study. A literature review and interviews were conducted to understand the motivational factors from students' point of view. This was followed by a survey-based method using a questionnaire. The collected data were analyzed using the structural equation modeling (SEM) technique and SmartPLS 2.0 software.

## 1.7 Significance of the Research

The use of an e-Portfolio system offers numerous advantages for universities, educators and learners. Thus, sustaining the e-Portfolio usage requires a significant effort on the part of universities. Students are the most important users of the e-Portfolio system. The e-Portfolio is a learner-centered system, which allows students to manage their own learning environment. It increases the students' control and responsibilities over how they want achieve their learning objectives. The continuous use of the e-Portfolio can help students to understand their weaknesses and strengths, which leads to increases in the learning outcome and performance. Moreover, it is helpful in job-seeking processes in the future as it helps to record information that students can use in their resume. Therefore, they can work more efficiently by using the e-Portfolio. Furthermore, universities can take the benefits of e-Portfolio usage through the ability to assess the students' progress over the semesters and provide advice to improve their achievements. Therefore, any research that can assist to improve the continuous intention to use e-Portfolio systems is valuable. The results of the study will make a contribution to the body of knowledge through both theoretical and practical implications and through suggestions for future research. The results from this study can be used to enhance the current e-Portfolio usage and as a guide for ensuring the success of future e-Portfolio project implementation.

In terms of theoretical contributions, this research enhances the literature on e-Portfolio systems and the relevant theories of motivation and IS continuous intention to use. As part of that, the intention of this research is to support the motivational processes of e-Portfolio usage in higher education institutions. This study extends the ISCM by integrating it with the self-determination theory (SDT),

the use and gratification theory (UGT) and the unified theory of acceptance and use of technology (UTAUT). This integration helps to understand e-Portfolio continuous intention to use from the motivational perspective. Therefore, this research is among the first to empirically examine the impact of students' motivation on e-Portfolio continuance intention. Regarding the methodology, the study provides comprehensive information on how to develop and analyze a survey with the specific tests and methods that are relevant to this domain of enquiry.

In terms of practical contributions, the proposed research model provides a better understanding of how students perceive and evaluate e-Portfolio systems and how they can be encouraged to continue their use of the system. Universities must take into account the motivational factors identified in the model to enhance students' intention to use e-Portfolio continuously. The research offers practical recommendations for universities on how to enhance students' motivation to use the system. These instructions relate to different e-Portfolio users in a university, including managers and administrators, designers and developers, lecturers and academic advisors, and students. Furthermore, the findings can be useful for universities that are planning to implement an e-Portfolio system to consider these factors in the first steps of development and implementation.

## 1.8 Structure of the Thesis

This thesis consists of six chapters, with the structure of the thesis organized as follows:

Chapter 1 presented the introduction of the research context and problem background. It also highlighted the research objective, significance and scope.

Chapter 2 provides comprehensive information regarding the literature on e-Portfolio systems, continuous usage, motivation and the relevant theories and models of motivation and continuous use.

Chapter 3 presents the methodology and research design. This chapter reviews the research paradigm and research approaches of the study. The research design is also developed with the details of each step presented.

Chapter 4 provides the information about the constructs of the model and the preliminary findings from the interviews. Then it discusses how the research model was developed.

Chapter 5 provides detailed information on the data analysis results. It first presents the results of the pilot data for finalizing the questionnaire and then shows the data analysis of the proposed model and hypotheses using the SEM method with SmartPLS 2.0 and discusses the recommendations on how to implement the identified motivational factors.

Chapter 6 emphasizes the key findings of the study and draws the conclusions along with highlighting the contributions and implications, limitations and future research directions.

## 1.9 Chapter Summary

This chapter introduced the research topic and discussed the issues and problems within the topic of e-Portfolio continuous intention to use. It then highlighted the problem statement, research questions and research objectives. The scope and significance of the research were also explained. Finally, it presented the structure of the thesis.

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