

# A Conceptual Model for e-Portfolio Continuous Use Among Students

## Integrating Uses and Gratification Theory and Information System Continuance Model

Rokhsareh Mobarhan  
Department of Information Systems  
Universiti Teknologi Malaysia  
Johor, Malaysia  
Mrokhsareh2@live.utm.my

Azizah Abdul Rahman  
Department of Information Systems  
Universiti Teknologi Malaysia  
Johor, Malaysia  
Azizahar@utm.my

**Abstract**— The development of information technologies plays an important role in the success of higher education. They help universities to provide more effective and efficient services to their students. One of these technologies is e-Portfolio which is described as an online collection of student progress, reflections and achievement. E-Portfolio is being rapidly implemented by universities. In spite of rapid expansion of e-Portfolio, there still exists the issue related to long-term use of the system among students. The main problem is the lack of student motivation and interest to continue the use of e-Portfolio. This paper will consider the students' motivational factors and aims to fill the gap by proposing an integrated model of Information system continuance and Uses and Gratification theory. The proposed model enables researchers to discover how these motivational factors assist students to continue e-Portfolio usage.

**Keywords**- *electronic portfolio; e-Portfolio; students' motivation; continuous use; IS continuance model, uses and gratification theory*

### I. INTRODUCTION

New technology development in higher education has changed the nature of services to electronic versions in order to provide more efficient and effective services to the students and universities [1]. With the advancement of Web technology, e-learning tools play major role in the improvement of teaching and learning process as well as improvement of academic performance [2]. One of the latest pedagogical innovations in higher education, which considered as an extension to e-learning, is electronic portfolio (e-Portfolio), which is a useful tool for universities to monitor their students' progress and for students to enhance their educational outputs. There are an rapid increase in the use of electronic Portfolios over the last decades [3]–[6]. Recently, it has become a fundamental tool in educational context [7]. Therefore, it is increasingly becoming a part of students' educational life.

In spite of the rapid increase in e-Portfolio utilization, there still exist problems in the long term use of e-Portfolio. The students are actually not motivated enough to use e-Portfolio system. Student motivation is always an issue [8]. According to [9], "For the e-portfolio to be considered a successful learning tool, students will need to actively engage with their own e-

portfolio". Nevertheless, a fundamental requirement for effective learning from e-Portfolios is that students are motivated [9], [10].

Students mostly put their efforts into the tasks that provide reward and marks for them. Generally, they put less effort into portfolios if there are no marks [11]. Therefore, the biggest challenge in e-Portfolio context is how to motivate students to invest time and effort into portfolios [8]. Moreover, another issue of e-Portfolios is to sustain the student's intrinsic motivation to use e-Portfolio system voluntarily [12]. If students are not motivated enough, e-portfolio becomes unpleasant work, and students put in only the minimum amount of work to get the required grades, which decline the e-portfolio's advantages [13].

Prior research has shown the effect of motivation in individual's behaviour to use technology [14], [15]. However, still has been no major research studies that have thoroughly examined the factors influencing student motivation to continuously use e-portfolio [16]. Therefore, it is a challenge for universities and lecturers to cope with student's low motivation. Highly motivated students will continue using e-Portfolio to achieve their personal, educational and career developmental goals compared to unmotivated students.

Two prior researches exist regarding e-Portfolio continuous use. [17] aimed to use the perspectives of expectation disconfirmation and attribution theory as the main enablers of changing the long-term attitudes and beliefs. [18] integrated technology acceptance model and IS continuance model to understand what will affect the students' continuous intention to use e-Portfolio. However, the literature on e-Portfolio shows that there are more motivational factors from students' perspective, which have not been taken into account.

Therefore, the main research objective is to address the continuance usage issues by considering the motivational aspect. It is believed motivating student leads to promoting the use of e-Portfolio in long-term. Therefore, the aim of this research is to propose a motivational model which helps to enhance the e-Portfolio continuance usage.

The next section discusses the theoretical background of research. After that, the research methodology is explained.

Then the proposed model is displayed. Finally the conclusion and future work are presented.

## II. THEORETICAL BACKGROUND

In this section, information regarding the concepts of e-Portfolio, motivation and the theories suitable to achieve the research objective are provided.

### A. *Electronic Portfolio*

There are different definitions of e-Portfolio in the literature. [19] defined e-Portfolio as “a tool for documenting and managing one’s own learning over a lifetime in ways that foster deep and continuous learning”. Another referred to e-Portfolio as “a digital collection that a person or organization produces for a specific purpose. It is overall activities that have structural and meaningful unity, and have certain outputs” [20]. It is also considered as “a personal digital collection of information describing and illustrating a person’s learning, career, experience and achievements” [21]. In conclusion, e-Portfolio provides an environment for students to share their achievements, reflections, experiences, assignments and even their personal information such as photos or videos. It is similar to online educational storage. The students can collaborate with each other and their lecturers and exchange their comments and feedback on each other’s posts. They can keep track of what they are learning and achieving. It also helps students for their future career development opportunities by providing a good resume. Furthermore, it can be used as an important tool to monitor the students’ progress over the semesters. Therefore, it is the most useful tool for students and the universities as well to increase the learning outcomes. E-Portfolio can be used for different purposes such as learning, teaching, assessment or employment [22]. It can be used by students to develop, display and reflect on their own learning [23], It helps lecturers in their assessments by capturing more fully the multi-faceted, complex nature of student learning [24] and helps graduates to showcase their competence to potential employers in job applications [25].

### B. *Students’ Motivation*

Motivation in an educational context means “promoting in students an interest in learning, a valuing of education and a confidence in their own capacities and attributes” [26]. Previous researchers indicated that motivation is the most important factor influencing learning. Students with higher learning motivation have more learning practice and therefore higher learning outcomes [27]. In this case if the students are motivated to use e-Portfolio system, their educational performance will increase over the semesters. Thus they need to be motivated by lectures and university.

A fundamental factor to sustain students’ satisfaction in an online learning environment is motivation. Lack of motivation can be a major barrier that leads to reducing students’ concentration on the system [28]. Therefore, it can result in abandonment of using the e-Portfolio system.

### C. *Uses and Gratification Theory*

Uses and gratification (U&G) theory is derived from mass media communication researches and it provides a user-centered perspective on the users and technology relationship [29]. The main objective of U&G theory is to answer to the question of what are the social and psychological motives that shape a person’s decisions to choose a technology in order to gratify their needs. The major assumption of this theory is that the users are goal-oriented in their behaviour and the use of technology is an active option chosen to satisfy their needs [30]. U&G theory is very useful and applicable when concentrating on the motivation of users about why and how they use a particular technology and what are their reasons to use it [31]. It also attempts to explain the user’s acceptance and continued use of the specific technology [32]. This theory has been applied in different research contexts such as internet, twitter, online games, mobile, e-learning, YouTube, and social networking sites. This theory helps to understand the motivational determinants and reasons for students to use e-Portfolio and to determine the gratification they get by using e-Portfolio, especially in long-term use of the system.

### D. *Information System Continuance Model*

Information System continuance model (ISCM) is adopted from expectation-confirmation theory (ECT). The model tries to explain IS users intention whether continue or discontinue the use of an IS. Based on the model, IS continuance intention is determined by perceived usefulness and satisfaction. User satisfaction is determined by user expectation of the IS which is captured in the perceived usefulness and confirmation of expectation. The confirmation of expectation also tends to affect perceived usefulness with the aim of keeping user expectation consistent with reality [33]. It really fits in explaining the users’ continuance intention. This theory would cover the major part of the research model, which is related to the continuous intention of students to use e-Portfolio.

## III. METHODOLOGY

In order to propose the model, three main steps were conducted. In the first step, the literature was thoroughly reviewed to understand the e-Portfolio features and the students’ motivational factors based on the U&G. In the second step, the qualitative approach was applied by conducting interview with the students who have used e-Portfolio, as the unit of analysis for this research is individuals. The aim of interview was to confirm the identified factors and investigate the new motivational factors from students’ perspective. The results of interview were analyzed using directed content analysis method. In the third step, the derived motivational factors from step 1 and step 2 were integrated into ISCM to propose the conceptual model for the e-Portfolio continuous use.

## IV. FINDINGS

Regarding the step 1, the existing uses and gratification frameworks were examined. They suggested different motivational factors in different contexts. Therefore, those motivational factors were chosen that could be related to e-

Portfolio features. E-Portfolio provides an environment for students to share their experiences, projects and reflections, record their achievements and connect with their peers and lecturers. They can see their friends' portfolio and check what they are sharing and learning. Therefore, these features are mapped into some of the Uses and Gratification factors, namely informativeness, information sharing, self-documentation, perceived enjoyment and social interactivity.

Following the second step, 15 in-depth interviews were conducted with students. The interview was stopped when data saturation occurred. The demographics of respondents showed that they consisted of 9 female and 6 male students. They were from different faculties, namely computing, civil engineering and chemical engineering. They were in second and third years of their studies. According to the directed content analysis, all the factors from literature has been confirmed and supported and two new motivational factors were identified, namely long-term consequences of use and feedback [34]. Majority of the students stated that their reason to use e-Portfolio is to enhance their chance in future career opportunities and employment process, which shows the long-term consequences of use. Moreover, they mentioned that exchanging the comments and feedback enables them to understand their weaknesses and strengths, which motivate them to use e-Portfolio.

In order to achieve the step 3, the motivational factors from literature and interview were combined with ISCM. The proposed model and hypotheses are discussed in the next section.

## V. CONCEPTUAL MODEL DEVELOPMENT

Based on the determined factors, four main themes were recognized, namely social gratification, process gratification, content gratification, and outcome gratification. According to literature, all the constructs of this model are reflective. The definition of each construct of the model is provided in Table I.

TABLE I. DEFINITIONS OF THE CONSTRUCTS

Construct	definition	Adapted from
Social Interactivity	The students' desire to use e-Portfolio to interact and communicate with their friends and lecturers.	[35]
Perceived Enjoyment	The extent to which using the e-Portfolio is enjoyable and interesting in its own right.	[36]
Informativeness	The extent to which e-Portfolio provides students with useful, resourceful and relevant learning information.	[37]
Information Sharing	The students' desire to share personal and educational information with their friends and lecturers	[38]
Self-Documentation	The students' desire to use e-Portfolio to record their learning progress and achievements during their educational period.	[39]
Feedback	The extent to which others provide advice on the goodness or weakness of the students' reflections and educational performance.	[40]
Long-term Consequences	An expected long-term outcome of being engaged in e-Portfolio.	[41]
Perceived Usefulness	The degree to which students believes that using e-Portfolio would enhance their educational performance.	[33]

Construct	definition	Adapted from
Confirmation	Students' perception of the congruence between expectation of e-Portfolio use and its actual performance.	[33]
Satisfaction	The extent to which e-Portfolio performance is perceived to have met or exceeded student's desires and expectations.	[33]
Continuous Intention	Students' intention to continue using e-Portfolio.	[33]

In prior uses and gratification frameworks, three main categories were developed for the uses and gratification determinants, namely content gratification, process gratification and social gratification [32]. However, one new category is added in this research based on the investigated motivational factors, which is outcome gratification. The related hypotheses are discussed below:

### A. Social gratification

Social gratification is derived from using the medium as a social environment [32]. It arises from interaction with others through the medium [39]. E-Portfolio provides an environment for students to be connected with their friends and lecturers. Social gratification of e-Portfolio is influenced by their social interaction.

According to previous studies, social interaction can influence the users' satisfaction [39], [42], [43]. Hence, it is expected that students' interaction with others is a motivational factor that make students satisfied:

**H1:** Social interactivity is positively associated with students' level of satisfaction with e-Portfolio use.

### B. Process gratification

According to [44], process gratification is related to using the medium for itself. The individual receives process gratification mainly from being engaged in the process of usage, rather than from the content of the message of the medium. Perceived enjoyment is included in this category.

The effect of perceived enjoyment on user satisfaction has been supported in literature [45]–[49]. Therefore, it is expected that if the use of e-Portfolio makes students feel pleasure, they will be satisfied with the system:

**H2:** Perceived enjoyment is positively associated with students' level of satisfaction with e-Portfolio use.

### C. Content gratification

Content gratification is derived from the use of the medium for the value of the messages carried by the medium [32], [44]. In the context of e-Portfolio, content gratification is concerned with increasing the students' knowledge, gaining useful information to solve the students' educational problems, recording effective achievements and experiences and receiving feedback to improve their mistakes. It includes informativeness, information sharing, self-documentation and feedback factors.

Informativeness is one dimension of information quality, which is one component of IS success model (ISSM) [50]. The

positive relation between informativeness and satisfaction is tested in prior researches [51], [52]. It is also expected that when students believe that e-Portfolio provides information related to their needs, they will be more interested to use the system:

**H3:** Informativeness is positively associated with students' level of satisfaction with continued e-Portfolio use.

According to [39], information sharing has effect on satisfaction. Therefore, it is also expected that exchanging information with each other leads to students' satisfaction in order to continue the use of e-Portfolio:

**H4:** Information sharing is positively associated with students' level of satisfaction with e-Portfolio use.

Based on the prior findings, self-documentation and satisfaction are associated [39]. Hence, it is expected that the capability of recording the students' learning material leads to students' satisfaction:

**H5:** Self-documentation is positively associated with students' level of satisfaction with e-Portfolio use.

The relationship between feedback and satisfaction has been tested in prior researches [53]–[55]. Thus, it is expected that if the students' lecturers and peers provide more feedback on the students' work, reflections and experiences, the student will find positive feeling about the system:

**H6:** Giving and receiving feedback are positively associated with students' level of satisfaction with e-Portfolio use.

#### D. Outcome gratification

According to the U&G, individuals' behaviour is goal-oriented. The users are informed about their requirements and needs. The use of any system is mainly to achieve their goals and needs. Therefore, outcome gratification is derived from the short-term and long-term results of using the system. In this context, students continue the use of e-Portfolio if they are convinced that using the system will help them to achieve their short-term and long-term objectives. This category consists of long-term consequences and perceived usefulness.

The relationship between usefulness and satisfaction has been tested in different context [33], [56], [57]. Furthermore, there is a direct effect between usefulness and continuous intention [33], [57]–[61]. These relationships come from the ISCM itself. It is also expected that if the students find progress in their educational output through the semesters, they will have positive evaluation of e-Portfolio system, which make them satisfied with using the system and they will continue the usage. It is mostly to reconfirm the theory hypotheses.

**H7a:** Students' belief in e-Portfolio perceived usefulness is positively associated with their level of satisfaction with e-Portfolio use.

**H7b:** Students' belief in e-Portfolio perceived usefulness is positively associated with their level of intention to continue the use of e-Portfolio.

The concept of long-term consequences is similar to outcome expectations in Social Cognitive Theory (SCT) [62]. The effect of long-term consequences and expectation on satisfaction has been tested in prior researches [63]–[65]. Moreover, researchers examined the relation between long-term consequences and continuous intention [40], [66], [67]. Therefore, it is expected that the long-term outcome of e-Portfolio use leads to students' satisfaction and motivating the students to continue its usage:

**H8a:** Long-term consequences of e-Portfolio use are positively associated with students' level of satisfaction with e-Portfolio use.

**H8b:** Long-term consequences of e-Portfolio use are positively associated with students' level of intention to continue the use of e-Portfolio.

#### E. Confirmation

According to the ISCM, confirmation is related to perceived usefulness and satisfaction [33], [47], [57], [60], [68]. Moreover, previous researchers suggested the relationship between confirmation and perceived enjoyment [47], [57], [69]. Consequently, it is expected that if the students' prior expectations are confirmed using e-Portfolio, the students will revise their post-usage beliefs of whether e-Portfolio services are useful, enjoyable and in line with their future needs. Moreover, their confirmation of expectation is expected to lead the students' satisfaction with e-Portfolio use:

**H9a:** Students' level of expectation confirmation is positively associated with the students' belief of e-Portfolio perceived usefulness.

**H9b:** Students' level of expectation confirmation is positively associated with long-term consequences of e-Portfolio use.

**H9c:** Students' level of expectation confirmation is positively associated with e-Portfolio perceived enjoyment.

**H9d:** Students' level of expectation confirmation is positively associated with students' level of satisfaction with e-Portfolio use.

#### F. Satisfaction

The relationship between satisfaction and continuous intention are theorized based on the ISCM and has been tested in different contexts [17], [33], [60], [70]. Therefore, it is expected that when students are satisfied with their initial use of e-Portfolio, they will have positive feeling to continue the use of the system. It is also mostly to reconfirm the theory hypotheses.

**H10:** Students' level of satisfaction with e-Portfolio use is positively associated with their intention to continue using e-Portfolio

Summary of the proposed model and related hypotheses is presented in Figure 1.

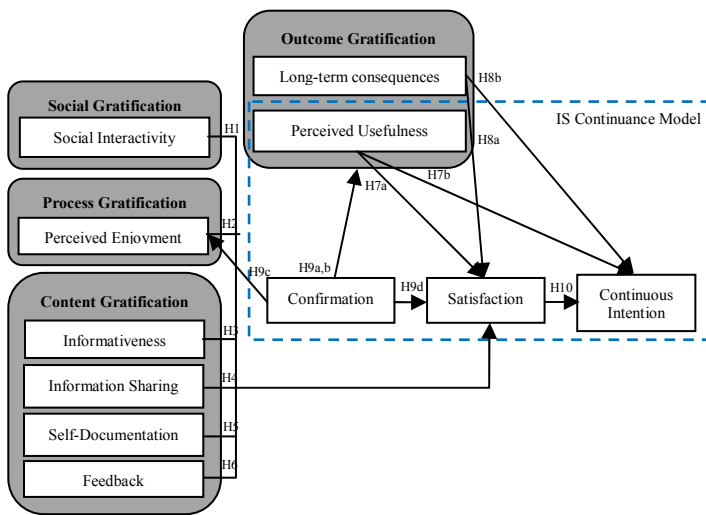


Figure 1. Conceptual Model

## VI. CONCLUSION

This paper tried to provide a solution to address the problem of continuous use of e-Portfolios by considering the students' motivational perspective. The proposed model is developed through literature review, interview with students and integrating two theories, namely Uses and Gratification theory and IS continuance model. The motivational factors were grouped into four Uses and Gratification categories, which are content gratification, process gratification, social gratification and outcome gratification. In the next step, the significance of identified factors, the hypotheses and research model need to be tested using quantitative approach which will be done in the future work. The results of this study expose major benefits for universities. It helps them to realize the importance of students' motivational factors and to sustain their e-Portfolio usage among students and therefore, to have a successful e-Portfolio system.

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