

Correlation of Acceptance Factors for Career E-Portfolio by Using TAM

Norleeza Muhammad and Khoo Yin Yin

Faculty of Management and Economics, Universiti Pendidikan Sultan Idris,
Sultan Azlan Shah Campus, Proton City, 35900 Tanjong Malim, Perak, Malaysia.

Abstract: The study is to identify the Actual Use (AU) acceptance factors of a career e-portfolio (eP) amongst polytechnic students on the basis of relationships between Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward Using (ATU) and Behavioural Intention to Use (BITU). Data collection was carried out using quantitatively tailored questionnaires on 389 students of the Civil Engineering Department of the Polytechnic. Four hypotheses were proposed to measure the contribution extent of the above factors to the AU of eP. The collected data was then analysed using several analyses comprising the descriptive, Pearson correlation and multiple-regression. The result of the descriptive analysis showed a high value of internal consistency with Alpha Cronbach reading lies within the range between .792 and .918. High relationship on the AU was shown by the Pearson correlation analysis with the following readouts for each factor: PEOU (.755), PU (.853), ATU (.715) and BITU (.755). The overall model reading for multiple regression observed a value of 87.423 for F with $p < 0.005$. Significant results were shown by PU and ATU factors with $\beta = .625$, $T = 6.399$, $p = .000$ and $\beta = .300$, $T = 4.762$, $p = .000$ respectively, while PEOU and BITU showed not significant with $\beta = 0.116$; $t = 1.154$; $p = 0.251$ and $\beta = -.666$, $T = -.620$, $p = .537$ respectively. The result of the analysis is important if the eP application is to be implemented in the Malaysian polytechnic system.

Key words: *Malaysian polytechnic students; career e-portfolio acceptance; TAM; multiple regression analysis*

INTRODUCTION

Rapid growth in Information and Communications Technology (ICT) use has brought changes in many fields including education. The ICT was firstly introduced by the Ministry of Higher Education (MOHE) Malaysia in 2009 to the Department of Polytechnic Studies for educational purposes such as the Curriculum Information Document Online System (CIDOS) platform to realize blended learning [1]. Hence, educational institutions are heading towards the new paradigm of industrial revolution 4.0 by restructuring the curriculum and education infrastructure facility level aims at bridging the existing technology education gap. However, this process requires the use of effective technology involving the existing environmental factors to provide students with the necessary knowledge and to encourage more meaningful learning [2]. Therefore, this study will

identify important acceptance factors to integrate a career e-portfolio (eP) in learning sessions at Institution of Higher Learning (IHL). Lim, Zhao, Tondeur, Chai, and Tsai (2013) have identified factors affecting decisions to adopt innovation in schools occurred at various levels of educators, schools and education systems as a whole [3].

LITERATURE REVIEW

Technology in Education

Rapidly developing technology emergence has changed the paradigm of education development in Malaysia. Many researches have implemented technology integration in the teaching and learning process in order to improve student performance, teaching effectiveness and productivity besides encouraging students' self-learning [4]. The eP is one of the ICT based technologies that have been introduced to education in Malaysia

Corresponding Author: Norleeza Muhammad, Faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Sultan Azlan Shah Campus, Proton City, 35900 Tanjong Malim, Perak, Malaysia. +60123910541

especially for the public IHL students. The eP implementation should consider various educational aspects such as curriculum and pedagogy, institutional readiness, instructor competence and long-term funding support [5].

E-Portfolio (eP) Definition

eP is a portfolio construction method that was previously provided manually, has undergone a revolution as a result of technological developments and has now been recorded electronically [6]. This study refers to a career portfolio aims at improving student marketability and employability. The eP is an online application to allow students uploading and defining the materials or artifacts they want to showcase to potential employers. A student or graduate can provide its eP link to their potential employers thus enabling preliminary assessment prior to interview and employment.

Technology Acceptance Model

The Technology Acceptance Model (TAM) was introduced by Davis [7], adapted the Behavioral Reasoning Theory as the basic theory of model building to link all the variables, namely Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Attitude Towards Use (ATU), Behavioral Intention Towards Use (BITU) and AU (Figure 1).

and Actual Use (AU). The interpretation of the involved variables aims to explain affective and cognitive factors such as perceptions, behaviors and desires involved in the acceptance of a new technology to be introduced. Davis, Bagozzi, and Warshaw [8] have defined the five constructs as: i) PU refers to "the extent to which one believes that using a particular system will improve his performance"; ii) PEOU refers to "the extent to which one believes that using a particular system is independent from any effort"; iii) ATU refers to "the extent to which a person exhibits interest and inclination towards something that involves individual affective factors"; iv) BITU refers to "the extent to which a person's behavior reflects individual's internal intentions to use a system", and v) AU describes "individuals who choose to use a system without compulsion".

Research Model and Hypotheses

The research design was derived from the TAM that has undergone various modifications and widely used by researchers to study on various aspects of user acceptance of technology [9]. Basically this model involves five factors namely PEOU, PU, ATU, BITU and AU (Figure 1).

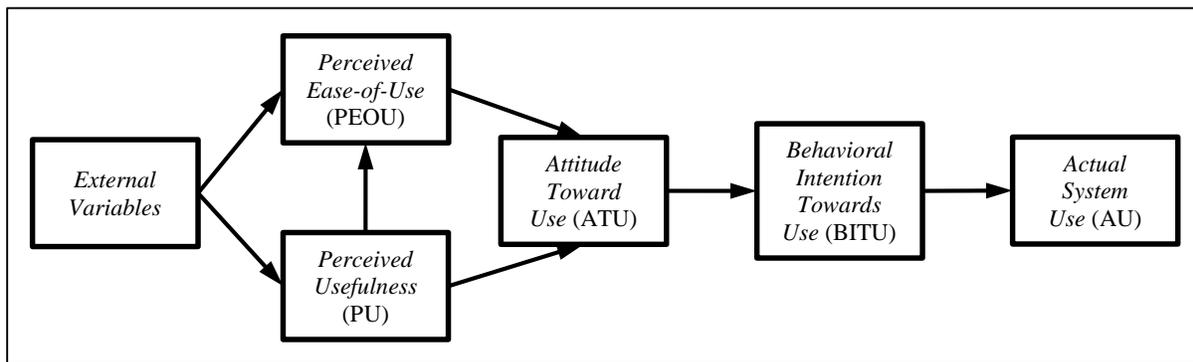


Figure 1 Technology Acceptance Model [8]

This empirical study aims to investigate the extent to which these five major factors support each other and contribute to the use of eP. According to Rym, Olfa and Mélika [10] there are four factors that affect the PEOU and the PU of an eP: social factors (interpersonal and intrapersonal influences), system factors (content

quality), organizational factors (technical assistance) and individual factors (eg self-efficacy). Therefore, the model for the implementation of this study based on Figure 2 will investigate the influence factors of PU, PEOU, ATU, and BITU towards AU.

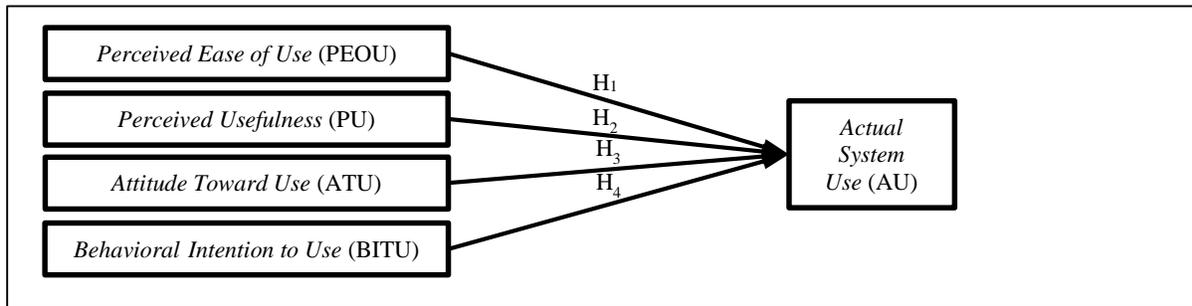


Figure 2 TAM Adaptation Study Model

Four hypotheses have been proposed to answer each question of the study concerned are: i) H1: There is a significant relationship between PEOU and AU of eP; ii) H2: There is a significant relationship between PU and AU of eP; iii) H3: There is a significant relationship between ATU against AU of eP, and iv) H4: There is a significant relationship between BITU against user’s AU of eP.

METHODOLOGY

This empirical study by quantitative method adopted the random sampling technique uses questionnaire as a research instrument. Data collection has been conducted through a survey with sample consists of 389 (n) students from the Civil Engineering Department. Respondents chosen by this random sampling technique method have been given a clear explanation of the scope and objective of the study. The questionnaire instrument for this study has been adapted from various sources such as The FSU Online Career Portfolio Program (CPP) [11] and An Online Survey among Employers Conducted on Behalf of The Association of American Colleges and Universities [12] and have been modified according to the suitability of the respondent’s category. The questionnaire consists of six parts: the first part representing respondents' information namely race and gender, while the second to sixth part representing each study consisting of PEOU, PU, BITU, ATU and AU. All items are measured using Likert scale consisting of 5 scales ie "highly agreeable" to "highly disagreeable." In order to ensure the clarity of items in terms of meaning and structure of the sentence, this questionnaire has been piloted and tested on 20 respondents. The positive feedback received from the respondents showed no difficulty in understanding the structure of the sentences and questionnaires.

DATA ANALYSIS AND RESULTS

The first part of the questionnaire was to collect information about the respondents' background. The sample of the respondents showed that the distribution of respondents was 51 male (51%) and 49 female (49%). Reliability testing was conducted using the Alpha Cronbach (α), which measures the internal consistency of each item used in the research. The acceptable minimum limit for "alpha" reliability is 0.60 [13]. Table 1 lists the results of α for all research constructs showing that the scales used in this study have internal consistency and reliability that meet the needs of the analysis ie the items constructed are able to consistently measure the subject for each construct.

Table 1 Reliability Analysis

Variable	Cronbach's Alpha(α)
Perceived Ease of Use (PEOU)	.803
Perceived Usefulness (PU)	.918
Attitude Towards Use (ATU)	.774
Behaviour Intention Toward Use (BITU)	.903
Actual Use (AU)	.792

The Pearson correlation analysis was carried out to test the strength of the relationship between each independent variable (PEOU, PU, BITU and ATU) against the dependent variable AU towards the use of eP. Before this method is selected, interval data for all items has been tested and found to meet the assumption requirement ie the data shows the normal distribution collectively and uniformly scattered in a scatterplot graph. The findings show that all variables are interconnected with each other (Table 2). According to Hair [13], the correlation coefficient value ‘r’ is defined according to the following range: i) 0.10 to 0.29 is considered to have a weak relationship; ii) values

ranging from 0.30 to 0.49 are assumed to be moderate, and iii) values ranging from 0.50 to 1.0 are considered to have strong relationships. However, according to Field, 'r' should not exceed 0.8 to avoid multicollinearity [14]. By examining the Variance Inflation Factors (VIF), the value of the multicollinearity between factors of 3.269 is considered

to be related even though it is not strong but below the level 5. $VIF > 5$ is categorized as problematic factor in terms of number of samples or items that cannot measure the subject to be measured [15].

Table 2 Correlation, Mean Value and Standard Deviation Matrix

	AU	PEOU	PU	ATU	BITU
Actual Use (AU)	1.000	.755	.853	.715	.755
Perceived Ease of Use (PEOU)	.755	1.000	.833	.583	.859
Perceived Usefulness (PU)	.853	.833	1.000	.622	.844
Attitude Towards Use (ATU)	.715	.583	.622	1.000	.642
Behaviour Intention Towards Use (BITU)	.755	.859	.844	.642	1.000
Mean	24.4300	28.1800	68.2000	11.2600	59.5500
Std. Deviation	3.27604	3.64977	8.78474	2.27245	7.60964

Multiple regression analysis was performed to test the hypothesis relationship between independent variables and dependent variable. This study used all independent variables as predictors on the dependent variable. Four hypotheses have been proposed and the findings as in Table 3. For F values referring to the ANOVA table, the overall regression model corresponds to the data being tested, ie $F = 117.189$ is significant with $F < 0.01$.

Thus the three factors are significantly interconnected. The results of multiple regression analysis showed that $R = .866$ stated that it was at a good predictor level. While the value of the coefficient of determination, $R^2 = .786$, has explained that the three factors of PEOU, PU and ATU have contributed significantly by 78.6 percent to the student's intentions towards using eP.

Table 3 Multiple Regression Analysis Results

		Variables In The Equation					
		B	SEb	Beta	T	p value	
Multiple R	.887						
R ²	.786						
Adjusted R ²	.777						
Standard Error	1.545						
F	87.423						
Sig. F	0.000						
		Constant	2.402	1.287		1.867	.065
		Perceived Ease of Use	.105	.091	.116	1.154	.251
		Perceived Usefulness	.233	.036	.625	6.399	.000
		Attitude Towards Use	.433	.091	.300	4.762	.000
		Behaviour Intention Towards Use	-.029	.046	-.066	-.620	.537

H1 suggests that PEOU will have a positive impact on the AU. The results showed that the findings were not significant ($\beta = 0.116$; $t = 1.154$; $p = 0.251$). Therefore, H1 rejects that students will not use eP because it is difficult to use the technology. Szajna stated that PEOU is not a factor that will encourage a user to use and master a newly introduced technology [16]. Venkatesh argued that PEOU aspects need to be integrated with other factors such as intrinsic motivation and emotion to increase the acceptance of a technology [17]. The next analysis of the study was conducted on the proposed H2

that there was a significant relationship between PU and AU of eP. Table 3 confirms that PU ($\beta = 0.625$; $t = 6.339$; $p = 0.000$) is significant on AU. Therefore, H2 hypothesis has been confirmed based on the findings of multiple regression analysis. The positive intention to use ePs is due to the fact that students think eP benefits the development of their interpersonal and future career [18].

Subsequently, H3 proposed a significant relationship between ATU and AU. The findings suggest that it supports the ATU ($\beta = 0.300$; $t = 4.762$; p

= 0.000). According to Zanna and Fazio, for candidates to use a new technology, they tend to show a more positive attitude when they have been exposed to the system over a long period of time [19]. This opinion was also supported by Bajaj and Nidumolu that found users of the information system provided positive feedback based on the early exposure to the technology either theoretically or practically [20]. The findings for H4 indicate that BITU factor is not significant to AU ($\beta = -.066$; $t = -620$; $p = 0.537$). Mun and Hwang [21] and Dishaw and Strong [22] in their studies linked BITU by integrating the individual self-efficacy, personal pleasure and goals of the individual as an external variable capable of supporting BITU components. Generally, multiple regression analysis has been carried out to predict which factors among PEOU, PU, BITU and ATU are most influential towards the real use of eP. Based on the value of β , only PU and ATU meet the predictions as the main contributors to AU with values of 62% (PU), 30% (ATU) and 11% (PEOU).

DISCUSSION

This study aims at identifying and explores the relationship between each variable based on TAM. The results of the study will help in applying the use of a career eP as a medium for graduates to increase employment opportunities. The findings show that AU of eP is determined by two main factors namely PU and ATU. This illustrates the real use of eP to be driven by their perceptions of the use of the technology which in turn affects the individual's positive attitude. Based on the four factors studied, PEOU and BITU have shown insufficient results on the actual use of eP. In this context, PEOU is considered only as an additional requirement, but not an important criterion for encouraging students to use eP. However, it can still be considered based on a small percentage of β that can affect the behavior of students. Although PU and PEOU are mutually supportive, the ease of use of a technology will increase the PU of the item. However, there are factors that may deny PEOU due to appealing and non-user-friendly application approaches, as research by Cho and Hung found that user-interface design plays an important role in the decision whether user will accept or not an e-learning forum for communication and learning session in college [23]. For BITU factor, a study by Norazah and Norbayah found that different effects were different when it involved the various levels of education [24]. In the context of this study which

makes the students a key respondent, eP application focusing on graduates' job marketability may be seen as not important, as students are still unclear in their direction and career goals.

CONCLUSION

Various factors need to be considered to drive the adoption and use of eP. The results show an approach to application of convenient, accessible and communicable method with optimal data transmission speed to be considered. Further research may include other factors such as institutional involvement in terms of financial preparation, infrastructure and facilitators to assist students in the development of career ePs.

REFERENCES

- [1] Mohamed Amin Embi. 2011. "E-Learning in Malaysian Institutions of Higher Learning: Status, Trends and Challenges." In International Lifelong Learning Conference (ICLLL 2011), 14–15.
- [2] Barnard-Brak, Lucy, Valerie Osland Paton, and William Yun Lan. 2010. "Profiles in Self-Regulated Learning in the Online Learning Environment." *The International Review of Research in Open and Distributed Learning* 11 (1): 61–80.
- [3] Lim, Cher Ping, Yong Zhao, Jo Tondeur, Ching Sing Chai, and Chin-Chung Tsai. 2013. "Bridging the Gap: Technology Trends and Use of Technology in Schools." *Journal of Educational Technology & Society* 16 (2). JSTOR: 59–68.
- [4] Jamil, Mubashrah, and Jamil Hussain Shah. 2011. "Technology: Its Potential Effects on Teaching in Higher Education." *New Horizons in Education* 59 (1): 38–51.
- [5] Fullan, Michael, and Maria Langworthy. 2014. *A Rich Seam: How New Pedagogies Find Deep Learning*. London: Pearson.
- [6] Barrett, Helen. 2007. "Researching Electronic Portfolios and Learner Engagement: The REFLECT Initiative." *Journal of Adolescent & Adult Literacy* 50 (6): 436–49.
- [7] Davis, Fred D. 1989. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13 (3): 319–40.
- [8] Davis, Fred D, Richard P Bagozzi, and Paul R Warshaw. 1989. "User Acceptance of Computer

- Technology: A Comparison of Two Theoretical Models.” *Management Science* 35 (8): 982–1003.
- [9] Bahmanziari, T, J M Pearson, and L Crosby. 2003. “Is Trust Important in Technology Adoption? A Policy Capturing Approach.” *Journal of Computer Information Systems* 43: 46–54.
- [10] Rym, Bouzaabia, Bouzaabia Olfa, and Ben M Berek Mélika. 2013. “Determinants of E-Learning Acceptance : An Empirical Study in the Tunisian Context.” *American Journal of Industrial and Business Management* 2013 (July): 307–21.
- [11] Reardon, R. C., Meyer, K. E., & Lumsden, J. A. (2005). Developing an E-Portfolio Program: Providing a Comprehensive Tool for Student Development, Reflection, and Integration. *Journal of Student Affairs Research and Practice*. <https://doi.org/10.2202/1949-6605.1513>
- [12] Hart, P. D. (2008). How should colleges assess and improve student learning? Employers’ views on the accountability challenge. *The Association of American Colleges and Universities*. Retrieved from <http://www.eric.ed.gov/PDFS/ED499718.pdf>
- [13] Hair, JF, RL Tatham, RE Anderson, and W Black. 2010. *Multivariate Data Analysis*. 7th ed. Pearson Prentice Hall.
- [14] Field, Andy. 2009. *Discovering Statistics Using SPSS*. Sage publications. <http://library.wur.nl/WebQuery/clc/1809603>.
- [15] O’Brien, Robert M. 2007. “A Caution Regarding Rules of Thumb for Variance Inflation Factors.” *Quality & Quantity* 41 (5). Springer: 673–90.
- [16] Szajna, Bernadette. 1996. “Empirical Evaluation of the Revised Technology Acceptance Model.” *Management Science* 42 (1). INFORMS: 85–92.
- [17] Venkatesh, Viswanath. 2000. “Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model.” *Information System Research* 11 (4): 342–65.
- [18] Igarria, Magid, Nancy Zinatelli, Paul Cragg, and Angèle L M Cavaye. 1997. “Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model.” *MIS Quarterly* 21 (3): 279–305.
- [19] Zanna, M. P., & Fazio, R. H. 1982. “The attitude-behavior relation: Moving toward a third generation of research”. In M. P. Zanna, E. T. Higgins, & C. P. Herman (Eds.), *Consistency in social behavior: The Ontario Symposium* (Vol. 2, pp. 283–301). Hillsdale, NJ: Erlbaum.
- [20] Bajaj, Akhilesh, and Sarma R Nidumolu. 1998. “A Feedback Model to Understand Information System Usage.” *Information & Management* 33 (1998): 213–24.
- [21] Mun, Y Yi, and Yujong Hwang. 2003. “Predicting the Use of Web-Based Information Systems: Self-Efficacy, Enjoyment, Learning Goal Orientation, and the Technology Acceptance Model.” *International Journal of Human-Computer Studies* 59 (4). Elsevier: 431–49.
- [22] Dishaw, M. T., & Strong, D. M. (1999). Extending the technology acceptance model with task-technology fit constructs. *Information & Management*, 36(1), 9–21.
- [23] Cho, Vincent, and Humphry Hung. 2009. “A Study of the Relationship between PEOU & PU in Technology Acceptance in E-Learning.” *Ubiquitous Commerce for Creating the Personalized Marketplace: Concepts for Next Generation Adoption: Concepts for Next Generation Adoption*. IGI Global, 149.
- [24] Norazah, Mohd Suki, and Mohd Suki Norbayah. 2011. “Relationship between Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude and Subscribers’ Intention towards Using 3G Mobile Services.” *Journal of Information Technology Management* XXII (1): 1–7.