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An investigation of the factors that influence engagement with CPD within e-portfolios used for accredited Higher Education course

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ABSTRACT

Engagement with Continued Professional Development (CPD) e-portfolios has been shown to improve graduate employability, but when e-portfolios are un-assessed they traditionally lack student commitment. This research proposes to identify and analyse the factors which may influence engagement with CPD within e-portfolio, focusing on two fundamental disciplines, technology (e-portfolio) and education. In particular the level of engagement with formative CPD and the choices students make are explored, with the study developing and using a theoretical model which integrates the Technology Acceptance Model (TAM) and Task Technology Fit (TTF) constructs, student's Self-Efficacy (SE), Intrinsic Motivation (IM), Extrinsic Motivation (EM), and Social Influence (SI) factors. The model focuses on 5 different technology engagement aspects that may affect the use of e-portfolios for CPD, including student's perception about the e-portfolio, fit between CPD tasks and the e-portfolio functions, individual differences in self-efficacy, students' intrinsic and extrinsic motivations and social influences. Hypotheses are proposed, based on prior research and the model's constructs which can then be used to undertake a study of sample students.

Keywords: E-portfolio, Continued Professional Development, Employability, Un-assessed Learning, TAM, Task-Technology-Fit, Self-Efficacy, Intrinsic and Extrinsic Motivation, Social Influence.

INTRODUCTION

According to Poon (2012, p.430) "employability is an important issue and has become a major concern for the government, universities and graduates". There is an increasing need in Higher Education (HE) for graduate employability. Graduates need to develop and reflect on skills developments. Continued Professional Development (CPD) within students' e-portfolio is important because it allows students to reflect and develop employability skills. The use of e-portfolio is therefore assumed to grow as universities seek new technology tools to support students' learning and employment. Gerbic *et al.* (2009) argue that "e-portfolio's proliferation in universities means that they are increasingly a part of blended learning environments" (p.327). Tzeng and Chen (2012, p.163) add that "currently, many colleges and universities are developing or using school-wide e-portfolio systems, and it is predicted that most schools will do the same in the future".

Although the use of e-portfolio system in HE is growing, researchers believe that students may not use it or "consider it important to have an e-portfolio system, especially when its use is not required by their curriculum" (Tzeng & Chen, 2012, p.163) and "when un-assessed e-portfolios do not 'reward' students for the time and energy they invest in them" (Driessen, 2008, p.13). For example, in a study of e-portfolio engagement Emmett (2011) found that, although students were encouraged to use e-portfolios for learning and employability, 87 per cent of the students chose not to use the e-portfolio after completing an assessment task - "This suggested that students were strongly motivated by the assessment and not by suggested benefits to learning and employment" (Emmett, 2011, p.114). Thus, the importance of CPD to improve graduates' learning and employability and student's lack of commitment towards un-assessed e-portfolios underscore the need to investigate and understand the factors that influence engagement with un-assessed CPD within e-portfolios used in HE.

The aim of this study is to identify and analyse the factors which influence engagement with CPD within e-portfolio. In particular the level of engagement with formative CPD and the choices students make. For this purpose, the study proposes and uses an integrated model which combines TAM and TTF constructs, SE, IM, EM, and SI factors. This paper, firstly reviews prior research related to e-portfolios, CPD and the proposed research model before discussing the research methods and procedures that will be followed to conduct the study. It then proposes research hypotheses based on prior studies and the model's constructs, before finally summarising the paper.

LITERATURE REVIEW

E-portfolio and CPD

E-portfolios were evolved from "faculty-assigned, print-based student portfolios dating back to the mid-80s" (Lorenzo & Ittelson, 2005, p.3) and as a relatively new and highly flexible technology have attracted significant interest from educators (Chen *et al.*, 2012; Gerbic *et al.*, 2009). They are considered an important tool for students learning and development, with its use in HE constantly growing (Gerbic *et al.*, 2009; Tzeng & Chen, 2012). E-portfolios are e-learning tools that enable

students to collect and manage evidence of what they know and can do, and present these to a potential audience, such as teachers and employers. According to Joint Information Systems Committee (JISC) (2008)

e-portfolio can act as an archive which learners can use as evidence of their development, as a basis for reflection on their learning, giving and receiving feedback, planning and setting goals, collaborating and presenting to an audience for various purposes, such as celebration, showcasing achievement, and employment (p.7)... E-portfolio-based learning offers real potential for autonomous and personalised learning (p.36).

Projects within the e-portfolio domain in the UK (JISC, 2008) reported a number of advantages of using e-portfolios for CPD, including "supporting and evidencing the pursuit and achievement of personal or professional competences" (p.8). Megginson and Whitaker (2003, p.5) defined Continued Professional Development as "a process by which individuals take control of their own learning and development, by engaging in an on-going process of reflection and action". Through CPD individuals can reflect on his/her present knowledge and skills and work from his/her present position towards a future direction. CPD can focus on individuals' development needs as well as educational or organisational competency requirements. Therefore, "CPD can facilitate advancement and promotion, balance and quality of life, and capability enhancement" (Megginson & Whitaker, 2003, p.16).

Technology Acceptance Model (TAM)

To examine the level of students' engagements with technology in education, researchers have used a number of different models including Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Task Technology Fit (TTF) and Technology Acceptance Model (TAM). Among these models, TAM has been widely used to underpin the adoption of information technology (IT) (Chen *et al.*, 2011; Park *et al.*, 2012; Wu *et al.*, 2013). TAM, shown in figure 1, was adapted from the TRA by Davis in 1986, its purpose is to explain technology adoption behaviour. According to TAM, a technology usage (U) is determined by user's behavioural intention (BI) to use the technology, BI to use is determined by users' positive or negative attitude towards (AT) using the technology, AT using then determined by users' two key perceptions, perceived ease of use (PEOU) and perceived usefulness (PU), PU also influenced by PEOU, and both perceptions are affected by external variables.

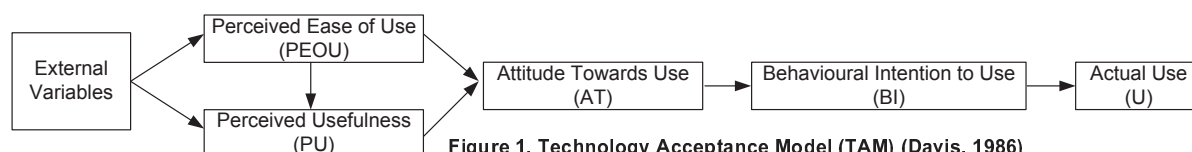


Figure 1, Technology Acceptance Model (TAM) (Davis, 1986)

Prior empirical research have successfully adapted and extended TAM to analyse the use of different software applications or IT within education, including university's e-learning (Pituch & Lee, 2006), university's e-portfolios (Chen *et al.*, 2012), Web Course Tools (Ngai *et al.*, 2007), Educational Wikis (Liu, 2010) and Mobile Learning (Chang *et al.*, 2012; Park *et al.*, 2012). The result of these studies support the validity of TAM for predicting the use of technology for learning. Further, Shroff *et al.* (2011) recent study suggests the use of TAM model for "understanding conceptual issues related to e-portfolio use" (p.602). It should be noted that however, TAM has not been used to investigate the use of e-portfolio for CPD and the research reported here will extend and use TAM to investigate the factors that influence engagement with CPD within e-portfolios.

Extending TAM with external factors

Mathieson (1991) argues that TAM without external factors, provides only broad information on user's opinions about a system but does not offer "specific information that can better guide system development" (p.173). According to Davis *et al.* (1989) and Liu *et al.* (2010, p.601) both PEOU and PU of a system could be affected by external variables. Emmett (2011) also stated that "researchers seeking to extend the TAM focus on long-term viability and on the model's explanatory power through the addition of external factors" (p.66). Further, TAM with specified external factors not only predict technology usage but also provides explanation of why a particular system may not be adopted, so that researchers and practitioners "pursue appropriate corrective steps" (Davis *et al.*, 1989, p.985). For these reasons we included in our research model (see figure 2), not only the core determinants of TAM but also seven sets of technology engagement factors that have been found to affect the users PEOU and PU constructs in other technology adoption studies. We extended TAM with the following factors: Self-efficacy, Intrinsic Motivation, Extrinsic Motivation, Social Influence, Task-Technology-Fit, Task Characteristics (TAC) and Technology Characteristics (TEC).

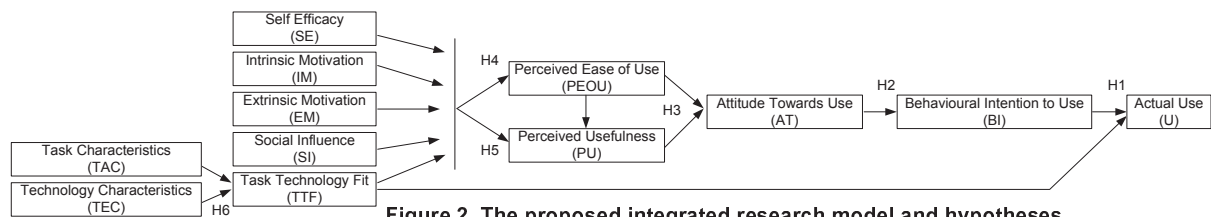


Figure 2, The proposed integrated research model and hypotheses

Self-efficacy (SE) construct

According to Bandura (1982, p.122) "self-efficacy influences thought patterns, actions, and emotional arousal". Compeau and Higgins (1995, p.196) argued that "the higher the individual's computer self-efficacy, the higher his/her use of computers". Igbaria and Iivari (1995, p.590) also stated that "Individuals who consider computers too complex and believe that they will never be able to control these computers will prefer to avoid them and are less likely to use them". This suggests that, students with high e-portfolio self-efficacy are more likely to use e-portfolios and students with low e-portfolio self-efficacy are more likely to avoid using e-portfolios. Self-efficacy defined as "a person's judgment of his/her capability to organize and execute the actions required to attain designated types of performances" (Bandura, 1982, p.391). Previous research showed that self-efficacy influences technology adoption. For example Igbaria and Iivari (1995, p.587) study reported that, self-efficacy affected computer usage directly and indirectly. Munguatocha *et al.* (2011, p.315) found self-efficacy to be a significant determinant factor for social networked learning adaptation. Liu (2010, p.62) study provided evidence for self-efficacy as a significant predictor of PEOU and PU of educational wikis. Other studies have found that computer self-efficacy had direct effect on PEOU of computer systems (Venkatesh & Davis, 1996; Pituch & Lee, 2006). Empirical evidence also exists for a causal link between computer self-efficacy and both PEOU and PU of e-portfolio (Chen *et al.*, 2012, p.121). Further, Shroff *et al.* (2011, p.610) study called for the need of further research to integrate TAM and SE to examine technology usage in education. Self-efficacy is therefore, considered as a valid construct to be studied and hypothesised to influence engagement with CPD e-portfolios.

Motivation Constructs

Motivation theories often categorise motivation into two types, Intrinsic Motivation (IM) and Extrinsic Motivation (EM) (Ryan & Deci, 2000). First, IM, which defined by Ryan and Deci (2000) as "doing something because it is inherently interesting or enjoyable", has been known as an important factor that influences the use of technology (Yoo *et al.*, 2012; Agrifoglio *et al.*, 2012). When the term Intrinsic Motivation is used in this study we mean using the e-portfolio because it is inherently interesting or enjoyable. The second type of motivation, extrinsic motivation defined as "doing something because it leads to a separable outcome" (Ryan & Deci, 2000, p.55). Separable outcome refers to outcomes that detached from the actual enjoyment of using the technology, such as effectiveness in future learning, improved study/job performance, higher grade and better pay. When the term Extrinsic Motivation is used in this study, we mean using the e-portfolio because it leads to separable outcomes. Hoyle, 2010 (p.194) stated that "individuals may be motivated to engage in an activity both because it brings about some desired outcome [EM] and because it is interesting [IM]". This suggests that students may use e-portfolio for CPD because they find it rewarding or/and interesting.

Intrinsic and Extrinsic Motivation in Technology Research

Prior research has shown that both intrinsic and extrinsic motivators influence individual's behaviour to use technology (Chen *et al.*, 2012; Zhang *et al.*, 2008). For example, Intrinsic and Extrinsic motivation were found to be key determinant of behavioural intention to use computer software application (Davis *et al.*, 1992). In a study of Twitter Usage Agrifoglio *et al.* (2012, p.38) found both types of motivation positively affected behavioural intention to use Twitter. Further, Lee *et al.* (2005, p.1095) study showed that EM (as perceived usefulness) and IM (as perceived enjoyment) directly influenced undergraduate student's intention to use Internet-based Learning Medium. Several other researchers also found "user motivation to be the most important factor affecting both behavioural intention and attitudes towards e-portfolios" (Chen *et al.*, 2012, p.123). The results of Zhang *et al.* (2008, p.315) study also showed both types of motivations significantly influenced individual behaviour towards using Web-Based Learning Systems, and they concluded that "a successful e-learning system should integrate the components of both utility and fun" (p.316). In the context of work place Yoo *et al.* (2012, p.948) found that EM had no direct effects on use's intention to use e-learning, but their study identified a direct link between IM and user's BI to use e-learning.

Researchers argued that "TAM investigates IT adoption primarily from the instrumental perspective focusing mainly on functional or extrinsic motivational drivers such as perceived usefulness and

perceived ease-of-use, while ignoring an individual's subjective feelings of joy and pleasure with IT usage" (Agarwal & Karahanna, 2000, p.666). In the context of students use of e-portfolio for CPD, we believe intrinsic motivators such as fun and frustration, enjoyable and un-enjoyable, etc, ... also play important roles in explaining students' attitude and behavioural intention towards using e-portfolio for CPD. Incorporating both (IM and EM) in our research model could therefore provide better explanation of student's use of e-portfolio for CPD. It should be noted that however, previous research has not investigated the influence of IM and EM on use of e-portfolio for CPD. This research attempts to fill this gap by including both types of motivations in our research model.

Social Influence

Social influence (SI) has found to affect the use of technology (Venkatesh *et al.*, 2003; Zhou *et al.*, 2010). Social influence is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh *et al.*, 2003, p.460). SI is similar to subjective norm of TRA (Venkatesh *et al.*, 2003) and focuses on the influences of social factors on using technology. Choi and Chung (2013) studied social-networking-site; their research findings explained that subjective norm was an important determinant of both PEOU and PU (p.3). Park *et al.* (2012) study provided empirical data proving that subjective norm had a direct significant influence on PU and BI to use mobile-learning (p.601). Social Influence construct may therefore have a significant effect on student's engagement with technology for learning. It will be used in this study to determine the influences of teachers, career advisors and the university on student's engagement with CPD.

Task Technology Fit

The task technology fit (TTF) model, shown in figure 3, developed by Goodhue and Thompson in 1995, "focuses on the match between user's task needs and the available functionality of the technology" (Dishaw & Strong, 1999, p.9). TTF literature shows that users are motivated to use a technology because they believe the technology functions best fit their tasks' requirements than other alternative methods (Junglas *et al.*, 2008, p.1046). According to TTF model individuals will adopt a technology based on the fit between the technology functions and task requirements (Goodhue & Thompson, 1995). Thus, "user adoption is determined not only by user's perception of the technology but also by the task technology fit" (Zhou *et al.*, 2010, p.760). Therefore, to increase the use of e-portfolio for CPD, the e-portfolio functions need to match with the CPD tasks' requirements.

Dishaw and Strong (1999) argued that "a weakness of TAM for understanding IT utilisation is its lack of task focus" (p.11). They also stated that "TTF models do not explicitly include attitudes toward IT, which is the core of TAM". For these reasons they added the strengths of the TTF model to TAM and produced an integrated model that gave emphasis to both attitudes toward IT and fit between technology functionality and user tasks' requirements (p.12). The result of their study showed that adding TTF constructs to TAM increased their ability to better understand and explain IT utilization than either TAM or TTF alone (Dishaw & Strong, 1999, p.10). They concluded that "research integrates TAM and TTF should lead to a better understanding of choices about using IT" (p.9). It is also argued by Yen *et al.* (2010, p.906) that, both TAM and TTF models are significant theoretical basis for understanding IT utilisation. Encouraged by this, we added Task Characteristics, Technology Characteristics and Task Technology Fit constructs from the TTF model to our proposed model. This is to explain the effects of fit between e-portfolio functionalities and CPD tasks' requirements on students engagement with CPD within e-portfolios.

Further, the results of Yen *et al.* (2010) study showed that task technology fit as well as users PEOU and PU had direct significant influence on user's intention to adopt wireless technology in organizations. Also in Zhou *et al.* (2010, p.760) study, TTF significantly affected user technology adoption. A good TTF might therefore, promote the use of e-portfolio for CPD.

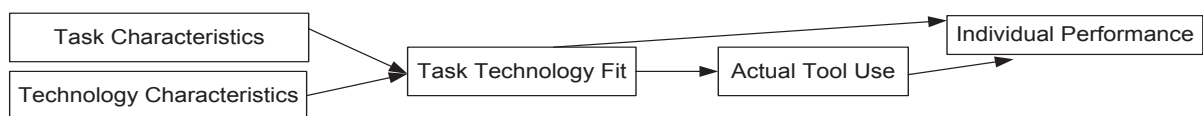


Figure 3, Basic Task Technology Fit Model (Goodhue and Thompson, 1995)

Methodology

Structural equation modelling techniques and SPSS framework will be used to explain the factors that influence engagement with CPD within e-portfolios. Data will be collected through a questionnaire. The questionnaire was developed based on previous research and the constructs in the proposed model. Participant will be first year undergraduate students studying at the University of Huddersfield. Table 1 shows the proposed model's constructs, constructs' definitions and the research hypotheses (acronyms correspond to areas referred to in this paper).

Definition	Hypotheses
Actual Use (U)	Hypothesis 1
"Use refers to an individual's actual direct usage of the given system in context of his or her job" (Davis, 1986, p.25).	The Actual Use of the e-portfolio for CPD is positively and directly affected by Behavioural Intention to Use (H1a) and Task Technology Fit (H1b). Further, AT (H1c), PEOU (H1d), PU (H1e), SE (H1f), IM (H1g), EM (H1h), SI (H1i), TAC (H1j) and TEC (H1k) will positively affect the Actual Use of the e-portfolio for CPD indirectly, that is, through other determinants in the model.
Behavioural Intention to Use (BI)	Hypothesis 2
"An Individual's subjective probability that he or she will perform a specific behaviour" (Davis, 1986, p.16)	Behavioural Intention to Use the e-portfolio for CPD is positively affected by Attitude Towards Use (H2a). Also, PEOU (H2b), PU (H2c), SE (H2d), IM (H2e), EM (H2f), SI (H2g), TTF (H2h), TAC (H2i) and TEC (H2j) will positively affect BI to Use the e-portfolio for CPD indirectly, that is, through other determinants in the model.
Attitude Towards Use (AT)	Hypothesis 3
An individual's positive or negative feelings about performing the target behaviour. (Davis <i>et al.</i> , 1989, p.16)	Attitude Towards using the e-portfolio for CPD is positively and directly influenced by perceived ease of use (H3a) and perceived usefulness (H3b). In addition, SE (H3c), IM (H3d), EM (H3e), SI (H3f), TTF (H3g), TAC (H3h) and TEC (H3i) will positively and indirectly impact attitude towards using the e-portfolio for CPD via other constructs (PEOU, PU and TTF) in the model.
Perceived Ease of Use (PEOU)	Hypothesis 4
"Is the degree to which a person believes that using a system would be free of effort". (Davis, 1989; Davis <i>et al.</i> , 1989, p.985)	Perceived Ease of Use is positively and directly affected by Self-Efficacy (H4a), Intrinsic Motivation (H4b), Extrinsic Motivation (H4c), Social Influence (H4d) and Task-Technology-Fit (H4e). Further, Perceived Ease of Use is positively but indirectly affected by TAC (H4f) and TEC (H4g) through TTF.
Perceived Usefulness (PU)	Hypothesis 5
"The degree to which a person believes that using a particular system would enhance his or her job performance". (Davis 1989; Davis <i>et al.</i> , 1989, p.985)	Perceived Usefulness is positively and directly affected by Perceived Ease of Use (H5a), Self-Efficacy (H5b), Intrinsic Motivation (H5c), Extrinsic Motivation (H5d), Social Influence (H5e) and Task-Technology-Fit (H5f). Further, Perceived Usefulness is positively but indirectly affected by TAC (H5i) and TEC (H5j) through TTF.
Task Technology Fit (TTF)	Hypothesis 6
"Is the degree to which a technology assists an individual in performing his or her portfolio of tasks" (Goodhue & Thompson 1995, p.216).	Task-Technology-Fit positively and directly affected by Task Characteristics (H6a) and Technology Characteristics (H6b).
Technologies "are viewed as tools used by individuals in carrying out their tasks" (Goodhue & Thompson, 1995, p.216).	
Tasks "are actions carried out by individuals in turning inputs into outputs" (Goodhue & Thompson, 1995, p.216).	

SUMMARY

The use of e-portfolio to increase students' independent learning and employability has assumed to grow in HE. Although educators and researchers believe that e-portfolio-based learning offers real potential for personalised and independent learning, there are issues regarding student's engagement with un-assessed e-portfolios. Emmett (2011) study showed that majority of students were motivated to use e-portfolios for assessed work but not by suggested benefits of e-portfolio for learning and employment. The purpose of this study is to identify and analyse the factors which influence engagement with CPD within e-portfolios. In particular the level of engagement with un-assessed CPD and the choices students make. To do this, the research model was proposed which focuses on 5 different technology engagement factors that may affect the use of e-portfolio for CPD, including student's perception about the e-portfolio, fit between CPD tasks' characteristics and the e-portfolio functions, student's self-efficacy, intrinsic and extrinsic motivations and social influences. Research hypotheses were developed and they will be tested using SPSS framework. The results of this study will be presented in the near future.

REFERENCES

- Agarwal R. & Karahanna E. (2000) 'Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage'. *MIS Quarterly*. 24 (4), pp.665-694.
- Agrifoglio, R. Black, S. Metallo, C. & Ferrara, M. (2012) 'Extrinsic Versus Intrinsic Motivation in Continued Twitter Usage'. *Journal of Computer Information System*. 53 (1), pp.33-41.
- Bandura, A. (1982) 'Self-efficacy mechanism in human agency'. *American Psychologist*. 37, pp.12-147.
- Chang, C. C., Yan, C. F. & Tseng, J. S. (2012) 'Perceived convenience in an extended technology acceptance model: Mobile technology and English learning for college students'. *Australasian Journal of Educational Technology*. 28 (5), pp.809-826.
- Chen, M. Y. Chang, F. M. T. Chen, C. C. Huang, M. J. & Chen, J. W. (2012) 'Why do Individuals Use e-Portfolios'. *Educational Technology & Society*. 15 (4), pp.114-125.
- Chen, S.-C. Li, S.-H. & Li, C.-Y. (2011) 'Recent Related Research in Technology Acceptance Model: A Literature Review'. *Australian Journal of Business and Management Research*. 1 (9), pp.124-127.
- Choi, G. & Chung, H. (2013) 'Elaborating the technology acceptance model with social pressure and social benefits for social networking sites (SNSs)'. *Proceedings of the American Society for Information Science and Technology*. 49 (1), pp.1-3.
- Compeau, D. R. & Higgins, C. A. (1995) 'Computer self-efficacy: Development of a measure and initial test'. *MIS Quarterly*. 19 (2), pp.189-211.
- Davis, F. D. (1986) *A technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Result*, Doctoral dissertation, Sloan School of Management, Massachusetts Institute of Technology, Available at: <http://dspace.mit.edu/handle/1721.1/15192> [Accessed 15th April 2013].
- Davis, F. D. (1989) 'Perceived usefulness, perceived ease of use and user acceptance of information technology'. *MIS Quarterly*. 13, pp.319-339.
- Davis, F. D. Bagozzi, R. P. & Warshaw, P. R. (1989) 'User acceptance of computer technology: a comparison of two theoretical models'. *Management Science*. 35, pp.982-1003.
- Davis, F. D. Bagozzi, R. P. & Warshaw, P. R. (1992) 'Extrinsic and intrinsic motivation to use computers in the workplace'. *Journal of Applied Social Psychology*. 24 (14), pp.1111-1132.
- Dishaw, M. T. & Strong, D. M. (1999) 'Extending the technology acceptance model with task Technology Fit constructs'. *Information & Management*. 36 (1), pp.9-21.
- Driessen, E. W. (2008) *Educating the self-critical doctor, Using a portfolio to stimulate and assess medical students' reflection* [online] available at: <http://www.maastrichtuniversity.nl/web/Faculties/FHML/Theme/Education/InstituteForEducationFHML/SchoolOfHealthProfessionsEducationSHE/PhDProgramme/PhDThesesExamples.htm> [Accessed on 10th October 2012].
- Emmett, D. J. (2011) *Student engagement with an ePortfolio: A case study of pre-service education students*. Published PhD Thesis. Queensland University. Available at http://eprints.qut.edu.au/40957/1/David_Emmett_Thesis.pdf [Accessed on 20th October 2012].
- Gerbic, P. Lewis, L. & Northover, M. (2009) *Student Perspectives of eportfolios: A longitudinal study of growth and development*. Ascilite Conference. 2009 Auckland, New Zealand. pp. 327-331. [online] Available at: <http://www.ascilite.org.au/conferences/auckland09/procs/gerbic.pdf> [Accessed 20th March 2013].
- Goodhue, D. L. & Thompson, R. L. (1995) 'Task-technology fit and individual performance'. *MIS Quarterly*. 19 (2), pp.213-236.
- Hoyle, R. H. (2010) *Handbook of Personality and Self-Regulation*, Wiley-Blackwell
- Igbaria, M. & livari, J. (1995) 'The effects of self-efficacy on computer usage'. *Omega*. 23 (6), pp.587-605.
- Joint Information Systems Committee (JISC) (2008) *Effective practice with e-portfolios: Supporting 21st century learning*. [online] available at: <http://www.jisc.ac.uk/media/documents/publications/effectivepracticeeportfolios.pdf> [Accessed on 18th November 2012].
- Junglas, I. Abraham, C. & Watson, R. T. (2008) 'Task-technology fit for mobile locatable information systems'. *Decision Support Systems*. 45 (4), pp.1046-1057.
- Lee, M. K. O. Cheung, C. M. K. & Chen, Z. (2005) 'Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation'. *Information & Management*. 42 (8), pp.1095-1104.
- Liu, I. F. Chen, M. C. Sun, Y. S. Wible, D. & Kuo, C. H. (2010) 'Extending the TAM model to explore the factors that affect Intention to Use an Online Learning Community'. *Computers & Education*. 54 (2), pp.600-610.

- Liu, X. (2010) 'Empirical Testing of a Theoretical Extension of the Technology Acceptance Model: An Exploratory Study of Educational Wikis'. *Communication Education*. 59 (1), pp.52-69.
- Lorenzo, G. & Ittelson, J. (2005) *An Overview of E-portfolios, Educause Learning Initiative advancing learning through IT innovation*, [online] Available at: <http://www.pgce.soton.ac.uk/IT/Research/Eportfolios/ELI3001.pdf> [Accessed on 15th July 2013].
- Mathieson, K. (1991) 'Predicting user intentions: comparing the technology acceptance model with the theory of planned behaviour'. *Information Systems Research*. 2 (3), pp.173-191.
- Megginson, D. & Whitaker, V. (2003) *Continued Professional Development*, London, Hartered Institute of Personnel and Development.
- Munguatosha, G. M. Muyinda, P. B. & Lubega, J. T. (2011) 'A social networked learning adoption model for higher education institutions in developing countries'. *On the Horizon*. 19 (4), pp.307-320.
- Ngai, E. W. T. Poon, J. K. L. & Chan, Y. H. C. (2007) 'Empirical examination of the adoption of WebCT using TAM'. *Computers and Education*. 48 (2), pp.250-67.
- Park, S. Y. Nam, M. W. & Cha, S. B. (2012) 'University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model'. *British Journal of Educational Technology*. 43 (4), pp.592-605.
- Pituch, K. A. & Lee, Y. K. (2006) 'The influence of system characteristics on e-learning use'. *Computers & Education*. 47 (2), pp.222-244.
- Poon, J. (2012) 'Real estate graduates' employability skills The perspective of human resource managers of surveying firms'. *Property Management*. April, 30 (5), pp. 416-434.
- Ryan, R. M. & Deci, E. L. (2000) 'Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions'. *Contemporary Educational Psychology*. 25, pp.54-67.
- Shroff, R. H. Deneen, C. C. & Ng, E. M. W. (2011) 'Analysis of the technology acceptance model in examining students' behavioural intention to use an e-portfolio system'. *Australasian Journal of Educational Technology*. 27 (4), pp.600-618.
- Tzeng, J-Y. & Chen, S-H. (2012) 'College students' intentions to use e-portfolios: From the perspectives of career-commitment status and weblog-publication behaviours'. *British Journal of Educational Technology*. 43 (1), pp.163-176.
- Venkatesh, V. & Davis, F. D. (1996) 'A model of the antecedents of perceived ease of use: Development and test'. *Decision Sciences*. 27 (3), pp.451-481.
- Venkatesh, V. Morris, M. G. Davis, G. B. & Davis, F. D. (2003) 'User acceptance of information technology: Toward a unified view'. *MIS Quarterly*. 27 (3), pp.425-478.
- Wu, W-W. Lan, L. W. & Lee, Y-T. (2013) 'Factors hindering acceptance of using cloud services in university: a case study'. *The Electronic Library*. 31 (1), pp.84-98.
- Yen, D. C. Wu, C.-S. Cheng, F.-F. & Huang, Y.-W. (2010) 'Determinants of users' intention to adopt wireless technology: An empirical study by integrating TTF with TAM'. *Computers in Human Behavior*. 26 (5), pp.906-915.
- Yoo, S. J. Han, S.-H. & Huang, W. (2012) 'The roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace: A case from South Korea'. *Computers in Human Behavior*. 28 (3), pp.942-950.
- Zhang, S. Zhao, J. & Tan, W. (2008) 'Extending TAM for Online Learning Systems: An Intrinsic Motivation Perspective'. *Tsinghua Science & Technology*. 13 (3), pp.312-317.
- Zhou, T. Lu, Y. & Wang, B. (2010) 'Integrating TTF and UTAUT to explain mobile banking user adoption'. *Computers in Human Behavior*. 26 (4) pp.760-767.