European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2020.10.91

AAMC 2019
The 13th Asian Academy of Management International Conference 2019

WEB 2.0 EDUCATIONAL TOOLS CONTINUANCE INTENTION:

Azizul Yadi Yaakop (a)*, Zailin Zainal Ariffin (b), Nomahaza Mahadi (c), Zuha Rosufila Abu Hasan (a), Madzli Harun (a)
*Corresponding author

(a) Universiti Malaysia Terengganu, 21030 Kuala Nerus Terengganu, Malaysiae-mail: azizul_yadi@umt.edu.my
(b) Universiti Pertahanan Nasional Malaysia, Kem Sungai Besi, 57000 Kuala Lumpur Malaysia e-mail: zailin@upnm.edu.my
(c) Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra, 54100 Kuala Lumpure-mail: mahaza@ibs.utm.my

Abstract

Higher Education 4.0 that focuses on integrating technology of Industrial Revolution 4.0 into the education ecosystem was the theme set by the Higher Education Ministry for 2018 - as a pledge to revamp the higher education landscape in Malaysia. One of the elements outlined for Higher Education 4.0 is to implement 21st century pedagogy incorporating the latest teaching and learning technologies. Parallel with this initiative, the usage of Web 2.0 interactive educational tools has gained a significant recognition in Malaysia's higher education recently. In any common circumstance, the adoption of this current technique of teaching has to conform to users' acceptance, attitude and their intention to continue using the technology in the classrooms. This paper introduces a new integrated model of students' acceptance, attitude and continuance intention of using Web 2.0 educational tools as part of creating a systematic current higher education ecosystem. A new model integrating Task-Technology Fit (TTF) model and Technology Acceptance Model (TAM) is presented. This study applied quantitative survey in the main data collection. Purposive sampling technique used and the data collection was conducted in a public university via online survey platform. In this study, SMART PLS is used to analyse the data. Though, the findings are partly hypothetical, it is inspiring to reveal an integrated conceptual model in exploring consumer behavioural intention related to Malaysia higher education context. It is hoped that the findings will suggest the legitimacy of the integrated framework and insights in Malaysian users' continuance intention about adopting Web 2.0 educational tools.

Keywords: Task technology fit model, technology acceptance model, web 2.0 educational tools.

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

The emphasis of technology in pedagogy, particularly by using the Internet, has gained an increasing popularity over these years. This inclination is due to a number of factors, which have made the practice of adopting web-based interactive learning vital to some extent. Advanced information technology literacy and increase in the Internet bandwidth, particularly in Malaysia, may have been the catalyst in the growth of web-based educational tools usage in the classrooms. Together with well-supported and proper planned infrastructure, conducive e-learning policy and environment towards embracing Industry Revolution 4.0, the escalating interests among educationists on web-based educational tools have become more apparent. To be a nation equipped with digital and ICT literacy skills, incorporating technology in the classrooms is vital. Maceira and Wong (2017) argued that the integration of technology into information literacy classes will result in the increase of the level of students' class participation, creativity, and self-thinking in active learning scenarios. Other factors that may have shaped this trend include audiences' demographical features, teachers' delivery styles and the innovation technology itself. Being the Net generation, students nowadays are enthusiastic towards technology integration in information literacy classes (Havelka, 2013; Maceira & Wong, 2017; Marsh, 2014). However, hurdles to this technological integration into higher education are becoming apparent, especially in the context of Malaysian education, such as infrastructure, users' satisfaction towards the technology, institutional effort as well as graduates' competency (Maceira & Wong 2017; Surry et al., 2005). In a recent study by Ghavifekr and Mahmood (2017), the component of co-participatory activities and student demographic element were found to be the main factors affecting the usage of the e-learning platform in Malaysia. They posited that it is best to look on the element generating student-teacher understanding and to improve from there on; as frustration caused by failing to understand the connection amongst academic faculty and students in the hope to exploit the potential of Web 2.0 learning could be the main barrier.

2. Problem Statement

In spite of the attention over Web 2.0 interactive learning tools usage and the fact that the implementation of e-learning in Malaysia has been going on for over a decade, in general, there has yet to be a comprehensive study that examines the influence of this pedagogical adoption and satisfaction on continuance intention towards the technology, especially among Malaysian university undergraduates. Understanding the adoption of technology will remain an important issue for all education practitioners as the reliance on IT is indispensable and the growing pace of the technology in learning environment is inevitable (Mun & Hwang, 2003).

3. Research Questions

A previous study in the early years of e-learning implementation was conducted in Universiti Teknologi Malaysia. In that particular study, students were prepared for the innovative approach of learning simply as a secondary tool and not as a key component of knowledge delivery system. After a decade of implementation, the question is – in the era or Industrial Revolution 4.0, has the role of Web 2.0 learning perceived as an integral part of the system? Or is it still a supporting tool? A decade after this

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

implementation, students' acceptance, and satisfaction and continuance usage intention of Web 2.0 educational tools could be further understood.

4. Purpose of the Study

4.1. Task-Technology Fit (TTF) Model

TTF model is empirically tested to examine how the use of technology leads to performance by measuring the task-technology pair characteristics (Wu & Chen, 2017). Consumers' ability to employ the technology is believed to be determined by both the specific features of the task and the technology. While much has been written in the area of technology adoption, not many have focused on the integration of TTF and TAM. TTF consists of two dimensions – it is measured from individual-technology fit (IT) and task-technology fit (TT) pair match. The extent to which individuals are familiar with the technology is an indicator that measures IT. On the other hand, TT is the degree of the information system capabilities to match tasks the consumer has to perform measures TT (Goodhue et al., 2000). A number of previous empirical studies have suggested both IT and TT predict perceived usefulness (PU) and perceived ease of use (PEOU). Thus, the first set of hypotheses is formulated to investigate the influence of task-technology fit (TTF) model:

H1: IT significantly predicts PU of Web 2.0 educational tools in Malaysia.

H2: IT significantly predicts PEOU of Web 2.0 educational tools in Malaysia.

H3: TT significantly predicts PU of Web 2.0 educational tools in Malaysia.

H4: TT significantly predicts PEOU of Web 2.0 educational tools in Malaysia.

4.2. Technology Acceptance Model (TAM)

TAM has gone through tremendous evolution since it was first introduced and extracted from Theory of Reasoned Action (TRA) by Davis (1989) and it was featured to measure consumers' level of technology acceptance. TAM assumes that consumers' behavioural intention to use a particular technology will indicate the actual usage (Rafique et al., 2014). The original TAM can be assessed by these four elements, namely perceived usefulness (PU), perceived ease of use (PEOU), attitude towards usage of the new technology (AT) and the intention toward usage of the new technology. PU and PEOU are known as two fundamental factors to determine users' acceptance of technology. Since then, various version of extended TAM have been proposed and frequently used and they are amongst the most important models for understanding consumers' views toward online learning environment (Abdullah & Ward, 2016; Al-Gahtani, 2016). In the context of this study, TAM is a framework that fits the purpose to predict university students' Web 2.0 continuance usage intentions. However, some studies found that the initial may not adequately to measure the key that influence consumer attitude and intention (Alalwan et al., 2018; Çelik & Yilmaz, 2011). Some have extended the version to include behavioural aspects related to a specific section of customers (Purani et al., 2019). In the context of this research, it is opined that consumers prefer to adopt websites that are user-friendly (Chiu et al., 2005; Jambulingan et al., 2016). A good design website can increase consumer satisfaction and lead to a higher online shopping intention (Lee & Lin, 2005). If consumer perceived the website is difficult to use, complicated and ambiguous, they will have a lower

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

intention toward online shopping. Thus, fifth and sixth hypotheses are formulated to investigate the influence of PEOU on PU and attitude towards usage of Web 2.0 education tools in Malaysia:

H5: PEOU significantly predicts PU of Web 2.0 educational tools in Malaysia.

H6: PEOU significantly predicts the attitude towards usage of Web 2.0 educational tools in Malaysia.

PU refers to the consumers' perception on the benefits of Web 2.0 educational tools usage in the classrooms. PU is assumed to have impact on consumers' intentions, directly and indirectly, via attitude formation (Cheng & Yee, 2014; Ducey, 2013; Lai & Wang, 2012; Pavlou, 2003). Therefore, the seventh hypothesis is developed to examine PU to positively influence attitude towards usage of Web 2.0 education tools in Malaysia:

H7: PU significantly predicts consumers' attitude towards usage of Web 2.0 educational tools in Malaysia.

Attitude is defined as a negative or positive evaluative reaction toward something or someone (Davis, 1989). Attitudes also refer to happiness, dislike, and feelings of joy, disgust or pleasure towards a given behaviour (Triandis, 1979). Attitude towards a behaviour refer to the degree of which person has unfavourable or favourable evaluation of the behaviour. Attitude toward online shopping can be defined as positive or negative emotion of consumer drive to stimulus purchasing behaviour on the internet (Schlosser, 2003). According to Davis (1989), consumer intention to use an information system will influence by attitude toward behaviour of use and attitude is an intermediary between perception and behaviour explanatory. In order to investigate users' continuance intention, one needs to know what their attitude towards the subject matter. For this particular study, the attitude towards usage of web-based educational tools has to possess a substantial impact on continuance usage intention. Different research has finds out the similarity result, for example, the attitude and online purchase intention is related and the intention of use of an internet transaction is dominated by attitude (Zarrad & Debabi, 2012). Therefore, the eighth hypothesis was developed to test the predictability of attitude towards usage of Web 2.0 education tools in Malaysia:

H8: Attitude towards usage of Web 2.0 educational tools significantly predicts continuance usage of the technology in Malaysia.

5. Research Methods

This study employed a purposive sampling method due to the inexistence of the population frame and the scope is limited to students attended courses using Web 2.0 educational tools during semester 2, session 2017/2018 and semester 1, session 2018/2019 in a public university in East Coast of Malaysia. A total of 159 responses were collected from the period of the academic semester. Since the study planned to use SMART PLS for analyses, small sample size is common to investigate theoretical models like the one proposed by this study (Willaby et al., 2015). In the quest for a better model to elucidate students' acceptance, satisfaction and continuance intention towards Web 2.0 educational tools, the researcher holds to the belief that past tested framework can direct one to the reality of reasoning. Accordingly, the possibility of the reality being the outcome of an observed model is pursued. This can be achieved through

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

quantitative methods of processing data in which the researcher allow the observed model to describe the reality and, most importantly, are free from making any intuitive judgements in explaining the phenomena. This quantitative survey study was based on an online set of questionnaire consisting of two sections. The online questionnaire launched to all potential respondents at the end of the courses. Section 1 was dedicated for the demographic background of each respondent. The next section was related to variables measuring TAM-TTF. Data collected was coded and recorded in SPSS for preliminary statistical analyses and SMART PLS for post-hoc analyses.

6. Findings

Measurement model is also known as outer model in PLS-SEM. It is used to establish latent variables by certain indicator variables. There are two types of measurement models, which are reflective measurement model and formative measurement model; this paper uses the reflective measurement model. There are several steps to assess the reliability and validity of the construct measure. They are Internal Consistency, Indicator Reliability, Convergent Validity and Discriminant Validity. After the reliability and validity are established, the structural model can then be examined (Hair et al., 2014). The composite reliability (CR) is a method to assess for internal consistency. According to Hair et al. (2013), the CR should be higher than 0.70. According to Table 1, the value of construct range between 0.869 until 0.959. As can be seen on Table 01, the outer loadings and the AVE values are between the suggested values.

Table 01. Result Summary for Reflective Measurement Model

Construct	Items	Loading	CR	AVE	Decision
IT	ITF1	0.846	0.869	0.689	Supported
	ITF2	0.864			
	ITF3	0.778			
TT	TTF1	0.837	0.926	0.806	Supported
	TTF2	0.889			
	TTF3	0.841			
	TTF4	0.892			
PU	PU1	0.910	0.904	0.759	Supported
	PU2	0.930			
	PU3	0.853			
PEOU	PEOU1	0.853	0.905	0.76	Supported
	PEOU2	0.889			
	PEOU3	0.872			
Attitude	ATU1	0.888	0.959	0.921	Supported
	ATU2	0.850			
	ATU3	0.877			
Continuance Intention	CIU1	0.963	0.922	0.748	Supported
	CIU2	0.956			

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Discriminant validity was measured by using Fornell-Larcker criterion. Table 2 indicates that the value of square root of each construct is higher than its highest correlation with other constructs. This indicates that discriminant validity is achieved.

Table 02. Fornell-Larcker Criterion

Construct	IT	PU	PEOU	Attitude	Continuance Intention	TTF
IT	**0.830**					
PU	0.645	**0.898**				
PEOU	0.661	0.747	**0.871**			
Attitude	0.682	0.816	0.784	**0.872**		
Continuance Intention	0.652	0.731	0.666	0.815	**0.960**	
TTF	0.754	0.696	0.757	0.788	0.790	**0.865**

Structural models signify the theoretical or conceptual element of the path model (Hair et al., 2013). The methods to assess the structural model are coefficients of determination (R2) and path coefficients. The assessment of structural model also answers H1 until H8. Referring to Figure 1, the value of R2 is 0.664, which means that IT, TT, PU, PEOU and Attitude towards Usage explain about 66.4 percent of the variance in Continuance Usage Intention. Another 33.6 percent is explained by other variables that can be identified in a different research.

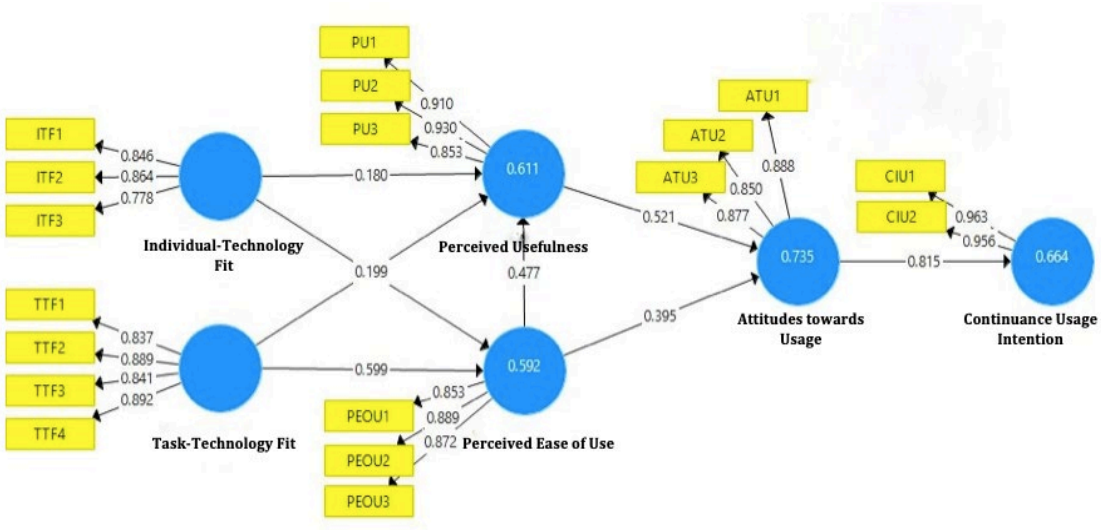

Figure 01. Measurement Model

The PLS-algorithm is run to evaluate the relationship of exogenous variable and endogenous variable. Other than that, in order to determine the significance level, bootstrapping is applied through Smart-PLS and the results are revealed by the output of path coefficient on Table 03. According to Hair et al. (2013), the significant value of one-tailed is **p<0.01 (2.33) and *p<0.05 (1.645). Table illustrates that H1 until H4 is supported (β=0.180, p<0.01, β=0.209, p<0.01, β=0.199, p<0.01, β=0.599, p<0.01) which confirms that IT and TT has influence on PU and PEOU. Other than that, H5 and H6 are also supported

https://doi.org/10.15405/epsbs.2020.10.91
Corresponding Author: Azizul Yadi Yaakop
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

(β=0.477, p<0.01, β=0.395, p<0.01), which confirms that PU and Attitude toward usage was influenced by PEOU. H7 is supported (β=0.521, p<0.01) which confirms that PU has influence on Attitude toward usage. H8 is also supported (β=0.815, p<0.01) which confirms that Continuance usage intention was influenced by Attitude toward usage. The structural model is analyzed to test the hypothesis. The PLS bootstrapping is run to confirm the hypothesis among the variables.

Table 03. Path Coefficients

Hypothesis		Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
H1	IT -> PU	0.180	0.076	2.380	0.018	Supported
H2	IT -> PEOU	0.209	0.075	2.782	0.006	Supported
H3	TT -> PU	0.199	0.103	1.943	0.053	Supported
H4	TT -> PEOU	0.599	0.067	8.989	0.000	Supported
H5	PEOU -> PU	0.477	0.109	4.359	0.000	Supported
H6	PEOU -> Attitude toward usage	0.395	0.058	6.874	0.000	Supported
H7	PU -> Attitude toward usage	0.521	0.063	8.316	0.000	Supported
H8	Attitude toward usage -> Continuance usage intention	0.815	0.027	30.097	0.000	Supported

Note: **p<0.01 (2.33), *p<0.05 (1.645)

7. Conclusion

This study further verifies the notion that the two-dimensional TTF has a strong influence on students' perception about the ease of use and usefulness of this new pedagogical method of teaching. In a recent article by Sun et al. (2019), TTF were also found to have an impact on TAM. In a nutshell, this empirical study offers an alternative measurement of technology acceptance measurement together with the suggestion to establish an integrated model of TFF-TAM, in the design and improvement of technological continuance usage context. The structural model for the current study was developed and assessed based on SMART-PLS. This provides theoretical and methodological contributions to pedagogical studies, as the number of this discipline is relatively small despite its growing interest among education scholars. Each dimension is found to have a significant positive relationship as hypothesized. It is inspiring to reveal an integrated conceptual framework in exploring students' continuance usage behavioural intention in this new pedagogical methodology in Malaysia. Facing more sophisticated students' needs, the advancement of technology and challenged by more aggressive demands of the industry in the job market, educators may use this proposed framework in strategizing their approaches to new methods of delivering lesson in the classrooms.

Having said that, with the rapid development of pedagogical technology and the advent of numerous web-based educational tools, the application of such may also change in the future. The idea of executing a content that is current and entertaining may have successfully gotten educators and students to interact electronically. However, for some, the popularity Web 2.0 educational tools to provide creative content for

the new generation via online avenues could be seen as a way to boost brand awareness; nothing much than a huge marketing buzz. Nevertheless, Web 2.0 is seen as the beginning for a bright future of education and may become more figurative in users' minds than the conventional pedagogy as a marketing stimulus that stands out relative to others in their environment. In general, the researcher hopes that this study has offered a modest contribution to the limited body of scholarly research in this subject area. Specifically, it is hoped that it has contributed to a greater understanding of the integrated effect of TTF and TAM. Besides providing literature for future scholarly research avenues, for a factor that so profoundly affect continuance usage, it is also hoped that this will be a good starting point for researchers to further examine technology acceptance measurement particularly in the education sector. The researchers proposed that other context of educational application should be explored; further research could be examined to include mobile educational system or intelligent tutoring systems – which is gaining popularity in community or institutions that practice heutagogy. Faculty members could be also be examined to understand their motives, acceptance and continuance intention towards a specific novel pedagogical methodology.

Acknowledgments

The authors acknowledge the support of Centre for Research and Innovation Management, Universiti Malaysia Terengganu. The research was funded by a generous educational grant from Talent and Publication Enhancement – Research Grant (TAPE-55107).

References

Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, *56*, 238-256.

Alalwan, A. A., Baabdullah, A. M., Rana, N. P., Tamilmani, K., & Dwivedi, Y. K. (2018). Examining adoption of mobile internet in Saudi Arabia: Extending TAM with perceived enjoyment, innovativeness and trust. *Technology in Society*, *55*, 100-110.

Al-Gahtani, S. S. (2016). Empirical investigation of e-learning acceptance and assimilation: A structural equation model. *Applied Computing and Informatics*, *12*(1), 27-50.

Çelik, H. E., & Yilmaz, V. (2011). Extending the technology acceptance model for adoption of e-shopping by consumers in Turkey. *Journal of Electronic Commerce Research*, *12*(2), 152.

Cheng, B., & Yee , S. (2014). Factors Influencing Consumers' Online Purchase Intention: A Study among University Students in Malaysia. *International Journal of Liberal Arts and Social Science*, *2*(8), 121-133.

Chiu, Y. B., Lin, C. P., & Tang, L. L. (2005). Gender differs: assessing a model of online purchase intentions in e-tail service. *International journal of service industry management*, *16*(5), 416-435.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Ducey, A. J. (2013). *Predicting tablet computer use: An extended technology acceptance model* (Master Thesis). University of South Florida.

Ghavifekr, S., & Mahmood, H. (2017). Factors affecting use of e-learning platform (SPeCTRUM) among University students in Malaysia. *Education and Information Technologies*, *22*(1), 75-100.

Goodhue, D. L., Klein, B. D., & March, S. T. (2000). User evaluations of IS as surrogates for objective performance. *Information & Management*, *38*(2), 87-101.

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European Business Review*, *26*(2), 106-121.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, *46*(1-2), 1-12.

Havelka, S. (2013). Mobile information literacy: Supporting students' research and information needs in a mobile world. *Internet Reference Services Quarterly*, *18*(3-4), 189-209.

Jambulingan, M., Sorooshian, S., & Selvarajah, C. (2016). Tendency of Generation Y in Malaysia to purchase online technological products. *International Business Management*, *10*(2), 134-146.

Lai, E., & Wang, Z. (2012, June). An empirical research on factors affecting customer purchasing behavior tendency during online shopping. In *2012 IEEE International Conference on Computer Science and Automation Engineering* (pp. 583-586). IEEE.

Lee, G. G., & Lin, H. F. (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management*, *33*(2), 161-176.

Maceira, T. E., & Wong, D. A. (2017). Beyond Passive Learning: Utilizing Active Learning Tools for Engagement, Reflection, and Creation. In R. Canuel & C. Crichton (Eds.), *Mobile Technology and Academic Libraries: Innovative Services for Research and Learning* (pp. 73-89). ACRL, Association of College and Research Libraries. http://scholarworks.umb.edu/hlpubs/37

Marsh, H. W. (2014). Academic self-concept: Theory, measurement, and research. In *Psychological Perspectives on the Self, Volume 4* (pp. 71-110). Psychology Press.

Mun, Y. Y., & Hwang, Y. (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), 431-449.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International journal of electronic commerce*, *7*(3), 101-134.

Purani, K., Kumar, D. S., & Sahadev, S. (2019). e-Loyalty among millennials: Personal characteristics and social influences. *Journal of Retailing and Consumer Services*, *48*, 215-223.

Rafique, M., Rizwan, M., Batool, A., & Aslam, F. (2014). Extending TAM, in terms of Trust and Attitude towards the online shopping intention. *Journal of Public Administration and Governance*, *4*(3), 90-108.

Schlosser, A. E. (2003). Experiencing products in the virtual world: the role of goal and imagery in influencing attitudes versus purchase intentions. *Journal of consumer research*, *30*(2), 184-198.

Sun, S., Xiong, C., & Chang, V. (2019). Acceptance of Information and Communication Technologies in Education: An Investigation Into University Students' Intentions to Use Mobile Educational Apps. *International Journal of Enterprise Information Systems (IJEIS)*, *15*(1), 24-44.

Surry, D. W., Ensminger, D. C., & Haab, M. (2005). A model for integrating instructional technology into higher education. British journal of educational technology, *36*(2), 327-329.

Triandis, H. C. (1979). Values, attitudes, and interpersonal behavior. In *Nebraska symposium on motivation.* University of Nebraska Press.

Willaby, H. W., Costa, D. S., Burns, B. D., MacCann, C., & Roberts, R. D. (2015). Testing complex models with small sample sizes: A historical overview and empirical demonstration of what partial least squares (PLS) can offer differential psychology. *Personality and Individual Differences*, *84*, 73-78.

Wu, B., & Chen, X. (2017). Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model. *Computers in Human Behavior*, *67*, 221-232.

Zarrad, H., & Debabi, M. (2012). Online purchasing intention: Factors and effects. *International Business and Management*, *4*(1), 37-47.