



Commencing on the Right Foot towards (On)Line of Dance –an Empirical Study in India

Conrad Coelho & Shobha Menon

To cite this article: Conrad Coelho & Shobha Menon (2022): Commencing on the Right Foot towards (On)Line of Dance –an Empirical Study in India, Research in Dance Education, DOI: [10.1080/14647893.2022.2033715](https://doi.org/10.1080/14647893.2022.2033715)

To link to this article: <https://doi.org/10.1080/14647893.2022.2033715>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 03 Feb 2022.



Submit your article to this journal [↗](#)



Article views: 60



View related articles [↗](#)



View Crossmark data [↗](#)

Commencing on the Right Foot towards (On)Line of Dance – an Empirical Study in India

Conrad Coelho ^a and Shobha Menon^b

^aLancashire School of Business and Enterprise, University of Central Lancashire, Preston, UK; ^bCosmopolitan's Valia College of Commerce & Arts, University of Mumbai, Mumbai, India

ABSTRACT

As dance education has moved online, it is imperative to assess the learners' acceptance of e-learning. This research analyses the factors that may determine the utilization of digitalized dance education. The study is based on a sample of 215 online dance learners from 08 urban cities of India, using the UTAUT model framework. The authors have also introduced a new variable, online technology self-efficacy, in the model. The results of the statistical analysis revealed that the exogenous variables (performance expectancy, effort expectancy, social influence, facilitating conditions and technology self-efficacy) have a significant influence on e-learning adoption. The study did not detect any difference in the intent to learn remotely that may stem from socio-demographic characteristics (gender, age and dance experience). The ensuing discussion and suggestions will help dance educators appreciate digital education adoption behaviour and foster successful migration to e-learning platforms that may support the future of performing arts businesses.

ARTICLE HISTORY

Received 24 September 2020
Accepted 21 January 2022

KEYWORDS

Online dance education; empirical study India; e-learning; dance pedagogy; UTAUT framework; performing arts online learning; University of Central Lancashire; University of Mumbai

Introduction

The global situation surrounding the ongoing COVID-19 pandemic has significantly impacted the dance community with many teachers facing studio closures. Dance schools have digitalized the teaching learning process to provide a pathway for learning progression. A previous study by the author in April 2020 had examined dancers' preferences towards online platforms to continue developing their dance knowledge (Coelho and Menon 2020). This research aims to quantitatively analyse the adoption behaviour towards digital dance pedagogy using the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

The UTAUT model developed by Venkatesh et al. (2003) was seen as most appropriate for the context of this research. There were two prime reasons for this selection. Firstly, the UTAUT model synergizes elements of eight preceding socio-psychological models including the Innovation Diffusion Theory (Rogers 1983), the Social Cognitive Theory (Bandura 1986) and the Technology Acceptance Model

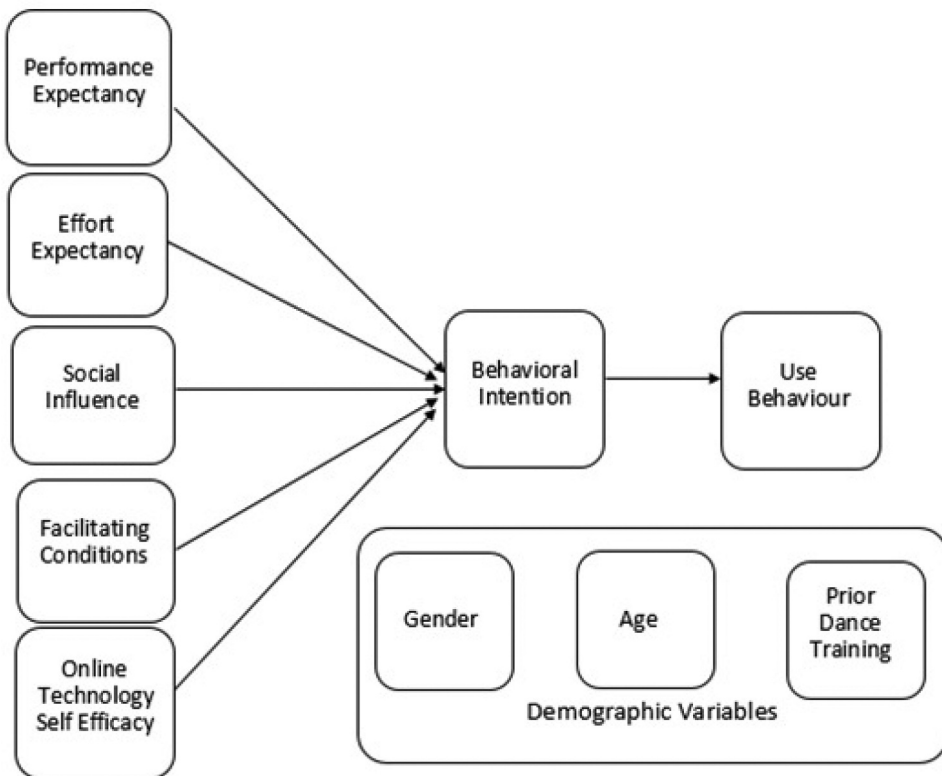
CONTACT Conrad Coelho  conrad_24@hotmail.com  Lancashire School of Business and Enterprise, University of Central Lancashire, Preston, UK

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

(Davis, Bagozzi, and Warshaw 1989). Thus the UTAUT model is seen as a theoretical advancement over existing models. It has eliminated the redundancy in these models and achieved a unified perspective towards acceptance of new technology. Secondly and more importantly, the model has been validated and applied to examine the acceptance of Information and Communication Technologies (Venkatesh, Thong, and Xin 2016) and e-learning systems (Liao, Shim, and Luo 2004; Zeng 2005; Pynoo et al. 2011; Gitau 2016; Chen et al. 2019) in various countries including India (Gupta, Dasgupta, and Gupta 2008; Padhi 2018; Karulkar et al. 2019). Thus the UTAUT model was chosen for this study.

Conceptual Framework of Study

The framework of the model consists of four direct determinants of new technology adoption behaviour, viz., Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC).



As in the study framework above, the authors have also added ‘Online Technology Self Efficacy (OTSE)’ as another direct determinant relevant to this study. This variable was considered important in similar studies by Wang et al. in (2013) and Zimmerman and Kulikowich (2016).

Operational Definitions

Performance Expectancy (PE) is the degree to which an individual believes that using and adopting Digital Dance Pedagogy will be beneficial.

Effort Expectancy (EE) is defined as the degree of ease associated with the use and acceptance of Digital Dance Pedagogy.

Social Influence (SI) is defined as the degree to which an individual perceives how important others believe she/he should use and adopt Digital Dance Pedagogy.

Facilitating Conditions (FC) is defined as the degree to which an individual believes that technical infrastructure exists to support the use of Digital Dance Pedagogy.

Online Technology Self Efficacy (OTSE) is defined as the degree of one's ability to successfully perform a technologically new task online (Miltiadou and Ho Yu 2000).

Behavioural intention (BI) is defined as the degree to which an individual intends to adopt and use Digital Dance Pedagogy.

Use Behaviour (UB) is the actual adoption and use of online platforms for learning dance.

The researchers have used the demographic variables as context variables to study if the BI and UB show any difference across different levels of these variables viz Age and Gender.

As the variable 'Experience' in the UTAUT model describes the experience of the user in using the new technology, it was seen as not applicable in this study as most respondents have recently started learning dance online. The variable 'Voluntariness of Use' is significant in an organisational environment, as Digital Dance Education is highly voluntary, it was not found applicable for this study.

The authors have added 'Prior Dance Training' to the demographic variables of the study as a similar study (Goulimaris, Koutsouba, and Giosos 2008) has found its effect to be significant. The present research has studied Prior Dance Training as the context variable and has analysed the difference in BI and UB due to the same.

Research Design and Data Collection

A certificate of approval for the study was given by the K.P.B. Hinduja College of Commerce, Mumbai. The respondents of the study comprised a mix of recreational dancers and professional aspirants, learning dance online.

Dance enthusiasts from 18 dance schools across eight cities in India have participated in this study. The list of dance schools participating in the study are mentioned in the acknowledgements. The eight urban cities (Mumbai, Pune, Jodhpur, New Delhi, Kolkata, Visakhapatnam, Bengaluru and Tiruchirappalli) from where online dance learners have responded to this study are marked on the map of India below.



Figure 2. The location of participating Dance Schools in India

A web-based survey was utilised to enable a Pan-India reach. The questionnaire with 40 items and a 5-point Likert Scale was adopted from the UTAUT model by Venkatesh et al. (2003) and modified for the context of this research. In line with similar studies, related items were arranged in order for higher validity and reliability of the model.

The online questionnaire was first administered to 20 respondents to facilitate a pilot test

Reliability Statistics	
Cronbach's Alpha	N of Items
0.964	40

analysis. SPSS V 21 software was used to calculate the Cronbach Alpha index of reliability.

According to Nunnally and Bernstein (1994) and Pallant (2005), Cronbach Alpha coefficient higher than 0.70 is considered satisfactory for social science researches. As in the table above, the five constructs of the extended UTAUT model reported a high reliability of 0.964 of the Cronbach alpha coefficient. Hence, the same tool was used for final data collection.

KMO measure of Sampling Adequacy
0.930**

**Significance at .0001

Descriptive statistics.

Gender	Frequency	Percentage
Males	60	28
Females	155	72
Total	215	100
Age	Frequency	Percentage
Less than 21 years	62	29
21 to 35 years	104	48.3
36 to 50 years	49	22.7
Total	215	100
Dancing Experience	Frequency	Percentage
Less than 6 months	47	21.8
6–24 months	51	23.8
More than 24 months	117	54.4
Total	215	100

Pearson Coefficient of Correlation (N = 215)

PE-> BI	EE-> BI	SI-> BI	FC-> BI	OTSE - > BI	BI-> UB
.621**	.545**	.547**	.469**	.362**	.612**

** 2-tailed Significance at .0001

Data from 215 respondents were obtained for the final analysis. The adequacy of the sample was measured by the Kaiser–Meyer–Olkin Measure (KMO) in SPSS. According to Hutcheson and Sofroniou (1999) and Andy (2000), the sample size is sufficient if the KMO value is larger than 0.5 and very good if the value is above 0.9.

As seen in the table above, the KMO value is 0.930 and thus the sample size of 215 can be considered sufficient for the analysis.

The above table provides the socio-demographic characteristics of the respondents. In this cross-sectional study (i.e. the research is based on the data that is gathered at one point of time), the data gathering process was conducted in August 2020.

Quantitative Analysis and Discussion

The correlation between the constructs EE, PE, SI, FC and OTSE with BI; and between BI and UB was measured using Karl Pearson Correlation as all the concerned variables were measured using the interval scale.

The table below provides a summary of the Pearson Correlation Analysis to test the coefficients of correlation.

The correlation analysis shows that the correlations between variables in the model are statistically significant. By observing the coefficient of correlation of the five independent variables with BI as well as between BI and UB, it may be seen that all variables show significant positive correlation. A significant positive correlation implies that an increase in the independent variable significantly correlates with an increase in the dependent variable. These results of the study variables were found to be in line with the findings of Venkatesh et al. (2003)

Diagram with Correlations

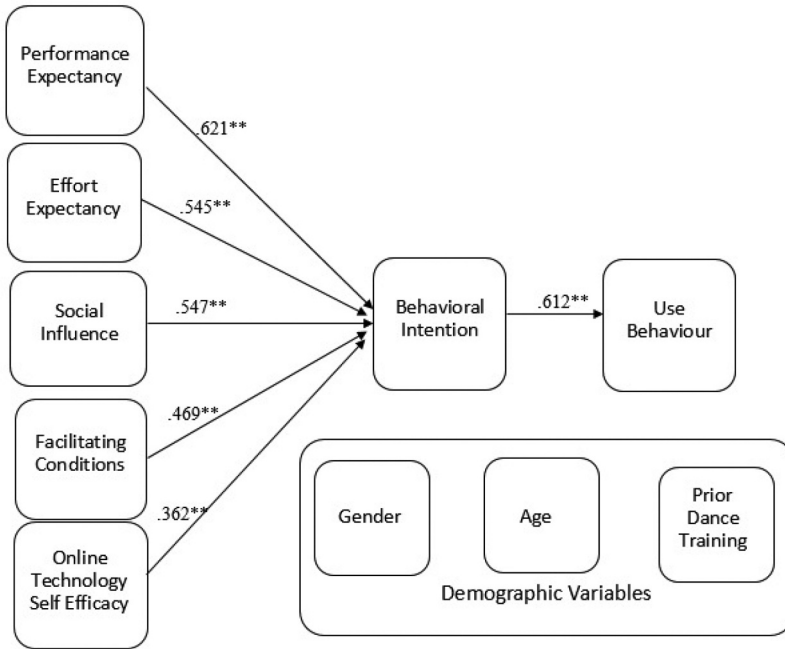


Figure 3. Conceptual Framework with Correlations
 ** 2-tailed Significance at .0001

Performance expectancy (PE) and Behavioural Intention (BI)

PE comprises sub determinants such as Perceived Usefulness, Relative Advantage and Outcome Expectations of learning dance online. PE is thus the users’ belief that by using the online mode one can enjoy the recreational benefits as well as have a good experience learning dance online. Online learning can allow users to learn from distant/ international teachers without the expense and time of travel. Users feel digital dance pedagogy can help them develop their dancing abilities and offer a path for learning progression. Thus, PE is seen to have most significant correlation to the Intention of using Online Dance Pedagogy.

Effort expectancy (EE) and Behavioural Intention (BI)

EE is the Perceived Ease of Use while learning dance online. Digital platforms allow users to conveniently adjust audio and video settings. Users perceive their interaction with online platforms while learning dancing to be understandable and clear.

As it is convenient to use, users feel everyone can learn dance online easily. Thus, EE is also seen to have a significantly positive correlation to the Intention of using Online Dance Pedagogy. Marchewka, Liu, and Kostiwa (2007) also inferred that EE had a positive significant influence on BI. The findings of this study thus support existing literature. Thus dance educators teaching online should continue to teach in a format that is simple to operate for the users.

Social influence (SI) and Behavioural Intention (BI)

The sub determinants of SI include Subjective norms, Social factors and Public Image while learning dance online. In this study it translates to the social influence on using online modes to learn dancing. These factors show a significant positive correlation with the Intention of using Online Dance Pedagogy among the respondents. This implies that dance learners do give importance to recommendations from peers while deciding to learn online but this may not be a very important aspect.

Facilitating conditions (FC) and Behavioural Intention (BI)

FC includes the availability of resources to learn dance online. As seen in the Table, FC shows a significant positive correlation to BI. Thus, as the required infrastructure such as internet connectivity and speed, apps and digital technologies develop, the intention to use online mode of learning dance will also increase. The respondents believe that compatible technical infrastructure currently exists to consistently assist online dance learning.

Online Technology Self Efficacy (OTSE) and Behavioural Intention (BI)

OTSE is the ability to perform tasks independently online. The study reveals, OTSE also has a significant positive correlation to BI. This supports existing literature as according to Wang, Shannon, and Ross (2013); and Zimmerman and Kulikowich (2016), Online Technology Self-Efficacy is positively related to a learners' motivation to use online learning resources. Thus as dance learners explore digital technologies they will be more confident and self-sufficient in using online platforms. And this will enhance their intention to adopt online dance learning.

Behavioural intention (BI) and Use Behaviour (UB)

BI would be the aim of the user in learning or continuing to learning dance online. The statistical analysis reveals that BI has a significant positive correlation with UB. This implies that Intention to learn dance online affirmatively corresponds to the actual adoption of online dance education. The respondents feel that online dance learning fulfils their requirements.

t Test	BI		UB	
	Female	Male	Female	Male
t – Calculated	0.844		0.48	
t – Critical	1.97		1.97	
Result	Not Significant		Not Significant	

Demographic variables (Gender, Age and Previous Dance Experience)

The demographic variables of the sample such as gender, age and previous dance experience are important aspects in this study as they impact the intent to adopt online dance learning.

Gender

The variable of gender was analysed using the t-test. The Mean values of the BI and UB of Male and Female respondents were compared. It was observed that the difference between the Mean values of the BI and UB in case of Male and Female respondents were not significantly different from each other.

It is inferred that both genders had similar intentions towards learning dance online. While gender has been recognized to play an important role in acceptance of digital learning. The male gender's relative tendency to be more confident with new technology has been previously demonstrated in few UTUAT studies. However, it is inferred that gender did not seem to have a differential effect on the intention to learn dance online.

Age

The Age was studied at three different levels 'less than 21 years', '21–35 years' and '36–50 years'. Analysis of Variance (ANOVA) was applied to test the difference among three levels of age in case of BI and UB.

	F	Sig.	Result
BI (3 levels)	.633	.532	Not Significant
UB (3 levels)	.519	.596	Not Significant

ANOVA revealed that Age did not appear to have a significant difference on the intention to learn dance online across different age levels.

Although Venkatesh et al. (2003) concluded that age does effect the adoption of new technologies, it appears that for the age groups considered in this study, people of all ages show similar intent to learn dance online. This suggests that dance learners of all ages are comfortable learning dancing online in the privacy of their homes. Moreover, the respondents may have become more digitally proficient in recent time, due to the increased use of technology during the pandemic. This competency has probably further propelled the willingness to learn online.

Previous Dance Experience

This study divided the respondents in three groups based on the Previous Dance Experience viz. ‘Less than 6 months’, ‘6–24 months’, ‘More than 24 months’. ANOVA was applied to test the difference among three levels of previous dance experience in case of BI and UB.

Previous Dance Experience	F	Sig.	Result
BI (3 levels)	1.025	.360	Not Significant
UB (3 levels)	.108	.898	Not Significant

The ANOVA test did not find any significant difference across these three groups towards the intention to learn dance online as well as use behaviour. It is inferred that the amateur, intermediate and advanced dance students have similar intentions to learn dance virtually.

Validation of Findings

Additionally, the authors have attempted to test these findings by observing subsequent Online Classes conducted by ‘Conrad Coelho Dance Company’. These online dance lessons were conducted internationally from Mumbai, India, and few from Lancashire, England, for learners in Mumbai, India.

As it did not matter to the learners if the instructor was teaching from India or England, this performance expectancy aspect of online dance education was advantageous to the students as well as the teacher. The effort expectancy factor of being able to easily record and retrieve the online sessions, provided the learners both, synchronous and asynchronous learning options. Moreover, the teachers were able to provide feedback by conveniently accessing the videos sent by the learners. The authors further found that in addition to Zoom and MS Teams, users were now also comfortable using WhatsApp video calls, as a medium for the online dance education and thus the facilitating conditions available for online dance education were more than adequate and users have a growing resource base to choose from. Further, recent studies (Owusu-Agyeman, Serwaa Andoh, and Lanidune 2021; Chen et al. 2021) have found that the online technology self-efficacy developed, during the pandemic, among students, teachers and the sector as a whole, has enhanced the adoption of online learning.

This pilot study serves a proof of concept to evaluate the components of the UTAUT model influencing the adoption of online dance education. There is a growing affinity towards e-learning as users continue to explore and realise its many advantages as the social uncertainties, caused by pandemic, continue in 2022.

Suggested Digital Communications Strategy to promote adoption of Online Dance Education

The statistical analysis of this study support existing literature, the authors conclude that the UTAUT is a valid model to quantitatively analyse the determinant factors that impact the adoption of e-learning among dance learners.

The technological factors of performance expectancy and effort expectancy play a pivotal role in a dance learners intention to avail digital education. The performance-related benefits of online dance lessons include learning from the comfort and privacy of your home, attending remote classes by international teachers, accessing recorded videos anytime, etc. It is suggested that teachers make such advantages more recognizable and tangible by posting short informational videos on popular social media platforms such TikTok, Instagram Reels and YouTube Shorts. An awareness of these benefits combined with easy to operate digital interfaces can help accelerate the adoption of e-learning.

This study also concludes that the attributes of facilitating conditions and social influence have significant effect on the intention to learn online. It is suggested that dance educators email newsletters with infographics so learners could have a better understanding of the technological functionalities. These newsletters will also be beneficial while troubleshooting. Additionally, peer chat groups can be formed on WeChat, WhatsApp, etc for Q&As and discussions on best practices of e-learning. Performing Arts Institutes may also engage IT service providers and vendors for technical support to their members. These initiatives will provide adequate facilitating conditions and foster positive social influence among the learners, enhancing their virtual learning experience. The aforesaid capabilities will further enhance the online technological self-efficacy of learners, which is positively associated with the desire to learn dance on digital platforms.

Dance learners of both genders, across age groups, of varying dance experience have shown similar intent towards e-learning. Ergo dance educators may now consider the results and suggestions of this empirical study to enrich the virtual education of their students and progress along the (On)Line of Dance!

Acknowledgments

The authors are highly obliged and thankful to the respondents who participated in this study. The respondents were from one of the following Performing Arts Institutions in India:

- (1) Conrad Coelho's Dance Company (Mumbai)
- (2) Sayan Choreography (Mumbai)
- (3) Vishrut Doshi (Mumbai)
- (4) 2toTango (Mumbai)
- (5) Nrityasamskar Academy (Mumbai)
- (6) Nritya Pravesh (Mumbai)
- (7) Refractor Dance Crew (Mumbai)
- (8) Rocky Poonawala's Dance School (Pune)
- (9) Shilpa Nrityalay (Pune)
- (10) Nupuranand Academy (Pune)
- (11) Tarun Dance Institute (Jodhpur)

- (12) Shiamak Davar (Delhi)
- (13) Dance Works (Delhi)
- (14) Jonaki's Dance Academy (Kolkata)
- (15) Kala Aradhana Institute of Fine Arts (Visakhapatnam)
- (16) Furor Entertainment (Bengaluru)
- (17) Latin Dance India (Bengaluru)
- (18) Kalai Kaveri College of Fine Arts (Tiruchirappalli)

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

Conrad Coelho is a Lecturer in Business and Marketing at the University of Central Lancashire, UK. He is due to complete his PhD studies in Digital Marketing and his research straddles between adoption of digital technologies, social media marketing and performing arts education. Conrad has been an exponent of Latin and Ballroom Dancing in India and holds a professional teaching qualification in Latin American and Ballroom Dancing from the ISTD, UK. He is also the World's first teacher to gain the Salsa Licentiate Certification from the ISTD. His complete profile can be viewed on www.conradcoelho.in. Conrad has previously published his work in the ISTD Magazine DANCE and the NDEO journal Dance Education in Practice.

Dr. Shobha Menon is a postgraduate in Industrial Psychology from the University of Mumbai. She also has to her credit an MPhil degree in Psychology from the University of Mumbai and a Doctoral degree in Management Studies from S.N.D.T University, Mumbai. Currently the Principal of Cosmopolitan's Valia College, a college affiliated to the University of Mumbai she has more than 25 years teaching experience. She is guide for doctoral studies in Management Studies at the University of Mumbai. Her research interests and published work are in the areas of Business Ethics, Organizational Behaviour, Marketing as well as Higher Education.

ORCID

Conrad Coelho  <http://orcid.org/0000-0001-5411-831X>

References

- Andy, F. 2000. "Discovering Statistics Using SPSS for Windows: Advanced Techniques for the Beginner." Sage Publications.
- Bandura, A. 1986. "Social Foundations of Thought and Action." Englewood Cliffs, NJ: Prentice Hall. 23–28.
- Chen, P.-Y., and G.-J. Hwang. 2019. "An Empirical Examination of the Effect of Self-regulation and the Unified Theory of Acceptance and Use of Technology (UTAUT) Factors on the Online Learning Behavioural Intention of College Students." *Asia Pacific Journal of Education* 39 (1): 79–95. doi:10.1080/02188791.2019.1575184.
- Chen, G., Jin, Y., Liang, W., Liu, Y. 2021. "Study on the Influence of Middle School Students' Self-efficacy on the Willingness to Use Online Learning Platform." *The International Journal of Electrical Engineering & Education*. doi:10.1177/0020720920984030.
- Coelho, C., and S. Menon. 2020. "Online Dance Training in a Social Distancing Environment: Examining Preferences of Latin and Ballroom Dancers." *Dance Education in Practice* 6 (4): 23–29. doi:10.1080/23734833.2020.1831856.

- Davis, F. D., R. P. Bagozzi, and P. R. Warshaw. 1989. "User Acceptance of Computer Technology." *Journal of Management Science* 35 (8): 982–1003.
- Gitau, M. W. 2016. "Application of the Utaut Model to Understand the Factors Influencing the Use of Web 2.0 Tools in E-learning in Kenyan Public Universities." PhD diss., University of Nairobi.
- Goulmaris, D., M. Koutsouba, and Y. Giosos. 2008. "The Organisation of a Distance Postgraduate Dance Programme and the Participation of Students Specialising in Dance." *Online Submission* 9 (3): 59–73.
- Gupta, B., S. Dasgupta, and A. Gupta. 2008. "Adoption of ICT in a Government Organization in a Developing Country: An Empirical Study." *The Journal of Strategic Information Systems* 17 (2): 140–154. doi:10.1016/j.jsis.2007.12.004.
- Hutcheson, G. D., and N. Sofroniou. 1999. *The Multivariate Social Scientist: An Introduction to Generalized Linear Models*. Sage Publications.
- Karulkar, Y., Pahuja, J., Uppal, B.S., Sayed, S. 2019. "Examining UTAUT Model to Explore Consumer Adoption in Online Food Delivery (OFD) Services." *Pramana Research Journal* 9 (8): 146–162.
- Liao, Q., J. P. Shim, and X. Luo. 2004. "Student Acceptance of Web-based Learning Environment: An Empirical Investigation of an Undergraduate IS Course." AMCIS 2004 Proceedings. Americas Conference on Information Systems (AMCIS), 377.
- Marchewka, J., C. Liu, and K. Kostiwa. 2007. "An Application of the UTAUT Model for Understanding Student Perceptions Using Course Management Software." *Communications of the IIMA* 7 (2): 93–104.
- Miltiadou, M., and C. Ho Yu. 2000. "Validation of the Online Technologies Self-Efficacy Scale (OTSES)." ERIC (Education Resources Information Center).
- Nunnally, J. C., and I. H. Bernstein. 1994. *Psychometric Theory*. 3rd ed. New York, NY: McGraw-Hill.
- Owusu-Agyeman, Y., J. Serwaa Andoh, and E. Lanidune. 2021. "The COVID-19 Pandemic and Student Engagement in Online Learning: The Moderating Effect of Technology Self-efficacy." *Journal of Pedagogical Research* 5 (4): 119–139. doi:10.33902/JPR.2021473586.
- Padhi, N. 2018. "Acceptance and Usability of OER in India: An Investigation Using UTAUT Model." *Open Praxis* 10 (1): 55–65. doi:10.5944/openpraxis.10.1.623.
- Pallant, J. 2005. *SPSS Survival Manual*. McGraw-Hill Education: Open Uni. Press.
- Pynoo, B., P. Devolder, J. Tondeur, J. Van Braak, W. Duyck, and P. Duyck. 2011. "Predicting Secondary School Teachers' Acceptance and Use of A Digital Learning Environment: A Cross-sectional Study." *Computers in Human Behavior* 27 (1): 568–575. doi:10.1016/j.chb.2010.10.005.
- Rogers, E. M. 1983. *Diffusion of Innovations*. 3rd ed. New York: Free Press of Glencoe.
- Venkatesh, V., M. G. Morris, G. B. Davis, and F. D. Davis. 2003. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly* 27: 425–478. doi:10.2307/30036540.
- Venkatesh, V., J. Y. L. Thong, and X. Xin. 2016. "Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead." *Journal of the Association for Information Systems* 17 (5): 328–376. doi:10.17705/1jais.00428.
- Wang, C.-H., D. M. Shannon, and M. E. Ross. 2013. "Students' Characteristics, Self-regulated Learning, Technology Self-efficacy, and Course Outcomes in Online Learning." *Distance Education* 34 (3): 302–323. doi:10.1080/01587919.2013.835779.
- Zeng, Y. Y. "The Study of Employees' Acceptance Towards Enterprise's Online-learning system—Take China Steel as an Example." PhD diss., Master Thesis, 2005.
- Zimmerman, W. A., and J. M. Kulikowich. 2016. "Online Learning Self-efficacy in Students with and without Online Learning Experience." *American Journal of Distance Education* 30 (3): 180–191. doi:10.1080/08923647.2016.1193801.