OPEN ACCESS
Journal of Advances in Education and Philosophy
Abbreviated Key Title: J Adv Educ Philos
ISSN 2523-2665 (Print) |ISSN 2523-2223 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Review Article

Enhancing Effectiveness of E-Learning: Lessons from Technology Adoption Model

Dr. Sachin Kumar[1*]

[1]Associate Professor Department of Geography, Government Degree College, Shahpur, Kangra, Himachal Pradesh, India

DOI: 10.36348/jaep.2022.v06i04.004 | **Received:** 11.03.2022 | **Accepted:** 18.04.2022 | **Published:** 21.04.2022

***Corresponding author:** Dr. Sachin Kumar
Associate Professor Department of Geography, Government Degree College, Shahpur, Kangra, Himachal Pradesh, India

Abstract

A number of policies, missions and programmes have been initiated to facilitate e-learning enabled by information and communication technologies (ICTs) over recent years both by central as well as state governments in order to enhance effectiveness of teaching-learning process. However, tangible outcomes of such initiatives have been limited so far due to a number of factors especially in government institutions. While in some cases the core reason has been availability, accessibility, adequacy and quality of ICT tools, in many cases intention to use such technologies by teachers has been found conspicuous by its absence. The present paper uses the theoretical framework of the Technology Acceptance Model (TAM) to deduce relevant lessons. The objective is not to deliberate on the nuances of the model but simply to pick out a few relevant constructs in light of the author's own experience of technology adoption in the context of schools and colleges of Himachal Pradesh. After briefly outlining the key tenets of TAM, the paper articulates the rationale for adopting this model and finally discusses key lessons for increasing acceptance of such technologies among educational stakeholders. Since COVID 19 has already created a rationale for adopting technology-enabled learning methodologies, the recommendations of this paper are likely to improve the efficacy and effectiveness of current and future initiatives.

Keywords: E-learning, Information Communication Technologies, Technology Adoption, Model, Himachal Pradesh.

1. INTRODUCTION

Individuals and societies that have survived through troubled times could transform adversities into opportunities. The pandemic COVID 19 is proving to do just that in almost every sphere of life including learning and education. Policymakers and governments both at central and provincial levels have come up with a number of missions, plans, schemes, and programme in order to enhance the effectiveness of the teaching-learning process by using ICT tools. These efforts have so far yielded suboptimal outcomes. But the current pandemic has forced the teaching-learning communities to engage more vigorously with e-learning enabled by information and communication technologies. It is also time to look at ways to enhance efficacy and effectiveness. A number of barriers have been found in the studies on the successful adoption of technology in education so far (e.g., AlAmmari, 2012; Cox & Cox, 1999; Balash *et al*., 2011; Sherry *et al*., 2000; Peeraer & Van Petegem ., 2010; Means et al., 2001; Mumtaz 2000). These barriers include availability, accessibility, adequacy, and quality of ICT infrastructure; teachers' attitude, 'readiness, confidence, knowledge, and ability; lack of incentive to change, systematic training; technical support, support and collegiality in the institution; negative attitude of administrators, and resistance to change. Other than these issues, a number of studies have indicated that the successful pedagogical use of technology depends on teachers' acceptance of technology (Yuen & Ma 2008). As Davis (2011) observes: "the success of educational technology hinges on whether it truly delivers value, is perceived as doing so by human participants, and is adopted and used. Without user acceptance, educational technology cannot hope to deliver whatever value it may be capable of in principle."Therefore, the present paper uses the theoretical framework of the Technology Acceptance Model (TAM) to deduce relevant lessons for enhancing the effectiveness of e-learning. The objective is not to deliberate on the nuances of the model but simply to pick out a few relevant constructs in light of the author's own experience of technology adoption in the context of schools and colleges of Himachal Pradesh. After briefly outlining the key tenets of TAM, the paper articulates the rationale for adopting this model and finally discusses key lessons for increasing

acceptance of such technologies among educational stakeholders.

2. Technology Acceptance Model (TAM)

2.1 A brief outline

A product or a service must be useful and usable then only people will accept it and if people do not accept it then there is no point in the investment of time and other resources for developing and deploying such a product or a service. This is the crux of the widely respected Technology Acceptance Model (TAM) which has been used as the theoretical framework for this paper. TAM is an information technology framework for understanding users' adoption and use of emerging technologies. Originally derived from the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) and Theory of Planned Behavior (TPB) (Ajzen, 1985), TAM was originally proposed by Davis (1989). This has been used in different sectors both for its explanatory powers as well as its predictive validity. The key tenet of the theory is the assertion that a person's *intent to use* (acceptance of technology) and *usage behavior* (actual use) of technology is predicated by the person's perceptions of the specific technology's *usefulness* (benefit from using the technology) and *ease of use*. *Perceived usefulness* is defined as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context. *Perceived ease of use* refers to the degree to which the prospective user expects the target system to be free of effort (Davis, Bagozzi & Warshaw, 1989). The model further suggests that perceptions of usefulness and ease of use are mediated by *external variables* including individual differences, system characteristics, social influences, and facilitating conditions. After being originally proposed by Davis (1986), TAM has seen many avatars over the years as it has got validated, extended, and elaborated over the last 3 decades (Davis and Venkatesh, 1996, Venkatesh *et al*., 2003). Subsequent TAM research has contributed additional key determinants of TAM's perceived usefulness and usage intentions constructs and determinants of the system-specific perceived ease of use.

2.2 Rationale

It is said that practice gets strengthened if it has got a theory at its back. Theories are known to provide useful organizing frameworks to understand reality and pointers for effective application. Atheoretical approaches make fallacious assumptions that make success impossible. The outcome of most initiatives to promote the adoption of ICT in schools and colleges is a case in point where despite the availability of requisite infrastructure, outcomes are not satisfactory. TAM has been found to be a useful framework in the field of technology acceptance across diverse spheres of life including in the realm of learning and teaching for a variety of learning domains, learning technologies, and types of users which is evident from a number of literature reviews and meta-analyses (e.g, Abdullah & Ward, 2016; Al-Emran, Mezhuyev, Kamaludin, 2018; Granić & Marangunić, 2019; Imtiaz & Maarop, 2014; Scherer, Siddiq & Tondeur, 2019; Šumak, Heričko & Pušnik, 2011; Weerasinghe & Hindagolla, 2017). In the context of education, a number of ICTs are being and could be potentially used to support the process of both the acquisition as well as the transfer of knowledge by students, teachers, administrators, and other stakeholders. TAM has emerged as the most dominant grounded theory in e-learning acceptance literature where its 's applicability has been studied for different learning technologies such as mobile learning, personal learning environments (PLEs), Learning Management Systems (LMSs), open-source LMS, Moodle, and commercial LMS Blackboard (Granić & Marangunić, 2019).

3. Key observations and lessons

The author is active in the education sector of Himachal Pradesh for the last 20 years as a faculty in various undergraduate colleges in different parts of the state of Himachal Pradesh which includes engagement as a teacher educator for both in-service and pre-service school teachers for the last 5 years. He has a good ringside view of this sector and has observed the implementation of a number of initiatives for the effective adoption of ICT tools in schools and colleges. The observations made here do not claim complete generalizability, yet these may be treated to be the case in most instances. Thanks to state policies, the issue of limited access to technology is no longer the case, while good internet connectivity may be cited as a limiting factor for inappropriate usage levels. However, this paper is being written in response to the assertion that behavioural intention to use ICT tools is not completely there. As mentioned in the introductory paragraph, the constructs of TAM are being used as anchors for articulating key concerns and ways forward.

3.1 The first set of constructs that is relevant in our context for determining perceived ease of use is that of computer self-efficacy and computer anxiety. Computer self-efficacy has been defined as The degree to which an individual believes that he or she has the ability to perform a specific task/job using the computer (Compeau & Higgins, 1995) while computer anxiety has been defined as the degree to an individual's apprehension, or even fear when she/he is faced with the possibility of using computers (Venkatesh, 2000). These two variables which can largely be discerned operational among senior teachers can be tackled with intensive hands-on training. While a number of training programmes have been conducted in the state but the component of practical training has rather been limited on a number of pretexts that include but are not limited to: inadequate training infrastructure, non-willingness

of the trainer, and trainees, lack of time and proper planning. It can safely be surmised that if we enhance teachers' confidence in using technology in general that would increase their willingness to use other e-learning technology in the future since lack of knowledge and experience in using ICT has been found to be one of the most common reasons for teachers' negative attitude. It has also been pointed out in the literature that merely provides additional training opportunities but also aids them in experimenting with technology before being able to use it in their classroom (Yuen & Ma, 2008).

3.2 The fact that subjective norm and image have been found to be key determinant of perceived ease of use and hence intention to use, it is important to address the imperatives. Subjective norm has been defined as the degree to which an individual perceives that most people who are important to him think he should or should not use the system (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000). On the other hand, image has been defined as the degree to which an individual perceives that use of an innovation will enhance his or her status in his or her social system (Moore & Benbasat, 1991). In order to address subjective norm, it is important to develop an institutional culture such that the ''important figures'' could provide a model for the use of e-learning technology. Identifying those important figures needs further brainstorming. It has been observed that a principal/headmaster who uses technology effectively can be a role model worth emulating by teachers. On the other hand, there have been cases where teachers who have excelled in the use of ICT tools and are being recognized by authorities, the teacher's colleagues get inspired to adopt the technology. Enhancing the status of those who are using it effectively in a social system is likely to motivate others as well.

3.3 A number of changes in the design characteristics of ICT-enabled e-learning can also enhance perceived ease of use by teachers and students. What would be those additional or more user-friendly functionalities would be, can only be determined by systematic research. As one example, converting content and user guides in Hindi would certainly improve the perceived ease of use and usefulness.

3.4 On the one hand, TAM is a most studied framework for studying technology acceptance in an educational context, none of the most cited literature reviews and meta-analyses have mentioned any study on the Indian sample. It is important to find out: what are the influences on teachers' behavioral intention to accept e-learning and related technologies?; what are the antecedents influences of technology acceptance and what are their interrelationships? what motivates learners, educators, and other stakeholders to accept or reject new educational technologies?; what kind of design features would spur their motivation to use such technologies?; how does acceptance depend on contextual variables? It would be interesting to see if usage levels and perceived barriers vary according to stream (Science/Languages/Humanities/Commerce), years of experience, age, and management type of the institution.

4. CONCLUDING THOUGHTS

ICT-enabled e-learning has been considered an innovation in education for decades and like any other innovation; its adopters could be put on a continuum, as proposed by Rogers (2003): innovators, early adopters, early majority, late majority, and laggards. The push received by COVID 19 is likely to convert many laggards into adopters and the time has come when e-learning would be *new-normal* and would not be treated as an *educational innovation*. But this is not going to happen unless the state and systems do not proactively engage in enhancing perceived usefulness and ease of use ultimately affecting the intention to use such technologies. Otherwise, material investment in this regard is likely to go down the drain.

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.
- Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: Kuhl, J., Beckmann, J. (eds.) Action Control: From Cognition to Behavior. Springer, New York.
- Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Prentice Hall, Englewood Cliffs.
- AlAmmary, J. (2012). Educational technology: A way to enhance student achievement at the University of Bahrain. *Procedia-Social and Behavioral Sciences*, *55*, 248-257
- Al-Emran, M., Mezhuyev, V., & Kamaludin, A. (2018). Technology Acceptance Model in M-learning context: A systematic review. *Computers & Education*, 125, 1-41.
- Balash, F., Yong, Z., & Bin Abu, B. (2011). Lecturers and educational technology: Factors affecting educational technology adoption in teaching. In *2nd International Conference on Education and Management Technology IPCSIT* (Vol. 13).
- Compeau, D. R., & Higgins, C. A. (1995b). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly, 19*, 189–211.
- Cox, M., Preston, C. & Cox, K. (1999) What Factors Support or Prevent Teachers from Using ICT in their Classrooms? Paper presented at the British Educational Research Association Annual Conference, University of Sussex, Brighton, and November.

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*, 319–340.
- Davis, F. D., Bagozzi, R. P.,&Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*, 982–1002.
- Davis. (2011). Foreword. In Teo, T. (Ed.). (2011). *Technology acceptance in education*. Springer Science & Business Media.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Granić, A., & Marangunić, N. (2019). Technology acceptance model in educational context: A systematic literature review. *British Journal of Educational Technology*, *50*(5), 2572-2593.
- Imtiaz, A., & Maarop, N. (2014). A Review of Technology Acceptance Studies in the Field of Education. *Jurnal Teknologi (Sciences & Engineering)*, 69(2), 27-32.
- Means, B. Penuel, W., Padilla, C. (2001). The connected school: Technology and learning in high school, San Francisco, CA: Jossey-Bass.
- Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, *2*, 192–222.
- Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: a review of the literature. *Journal of information technology for teacher education*, *9*(3), 319-342.
- Peeraer, J., & Van Petegem, P. (2010). "Factors Influencing Integration of ICT in Higher Education in Vietnam", In Z. Abas. (Eds.), Proceedings of Global Learn *Asia Pacific*, 916-924
- Rogers, E. (2003). *Diffusion of Innovations, 5th Edition*. Simon and Schuster.
- Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, 128, 13-35.
- Sherry, L., Billig, S., Tavalin, F., & D. Gibson, D. (2000)." New insights on technology adoption in schools", *T.H.E. Journal*, 27(7), 43–46
- Šumak, B., Heričko, M., & Pušnik, M. (2011). A meta-analysis of e-learning technology acceptance: The role of user types and e-learning technology types. *Computers in Human Behavior*, 27, 2067-2077.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model. *Information Systems Research, 11*, 342–365.
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision sciences*, *27*(3), 451-481.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*,186–204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*, 425–478.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*, 425–478.
- Weerasinghe, S., & Hindagolla, M. (2017). Technology Acceptance Model in the Domains of LIS and Education: A Review of Selected Literature. *Library Philosophy & Practice*, 1-26.
- Yuen, A. H., & Ma, W. W. (2008). Exploring teacher acceptance of e-learning technology. *Asia-Pacific Journal of Teacher Education*, *36*(3), 229-243.