

# Web-Based E-Learning Systems Acceptance and Success: A Review of Contributing Factors from the Instructors' Perception

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**Abstract** – Web-based e-learning systems turn out to be one of the most significant innovations for educational delivery and have emerged as an imperative paradigm of modern education system. Characterized by non-restriction in time and place, it is offering new possibilities to higher education institutions to be able to provide flexible and cost effective distance learning environment. While substantial numbers of studies and researches have been conducted on e-learning systems, few researches have investigated instructors' perspectives as a major determinant of success in the implementation of such systems. Despite the reported high by-ins into corporate investment in e-learning systems, surveys have shown high rate of failure, with the intention to use such systems being very low and instructors intention to use the systems as against the traditional approach still shows wide margin. Against this background, this paper attempts to fill the gap in the current body of knowledge by reviewing and identifying critical success factors that are likely to play significant roles in instructors' acceptance and sustained use of web-based e-learning systems in higher educational context. Understanding the nature of these factors may help universities in developed countries to endorse the use of e-learning systems for teaching and learning processes.

**Keywords-component;** *Web-based e-learning systems, instructors' acceptance, critical success factors*

## I. INTRODUCTION

Without doubt, information and communication technology (ICT) has presented and offered unlimited opportunities at different levels of human settings such as organizations, nations, educational sectors, business enterprise, societies, and humankind. ICT has overwhelmingly changed the way we do business in the previous few years. Thus, most organizations have struggled to innovate and transform the ways they have adopted for many years [1]. On the educational sector which is the focus of this paper, the explosion of information and communication technologies and in particular and internet usage has led to dramatic shift in the way many higher educational institutions present and deliver their instructions. Through this transformation processes, many higher educational institutions have introduced some online courses in order to enhance communication with the students and to reduce time constraints and location dependency that are associated with the traditional education [2]. This rapid pace of shift has progressively affected the creation and dissemination of educational materials the more and the impact of information and communication technology in the

educational sector has been mentioned to be remarkable [3]

Over the past decade, there has been a huge revelation in educational computer applications; the use of computer applications in education fields is increasing day by day until the concept of e-learning emerged to provide educational content to the learner in a good and effective way via advanced computer systems designed for learning purposes [4]. Advances in information technology have promoted web-based e-learning and many universities these days use various web e-learning systems to develop new communication channels between instructors and students and to strengthen their roles in the learning community [5]. Providing Web-based e-learning services has many advantages for organization, instructors and learners as well. Among such advantages are; reduction in the overall cost and information overload, increasing information accessibility and interactivity, enhanced teaching and learning methods, easy updating and delivery of educational content, elimination of time and distance obstacles [6].

Although e-learning efforts are considered to be significant corporate investment, a lot of failure still exist [2]. Even at the time the e-learning market has shown high growth rate, many institutions have been reported to have failed in their acceptance and implementation of web-based e-learning systems. It has also been mentioned that many universities that offer e-learning initiatives experienced massive difficulties in achieving acceptance and effectiveness of the learning systems among the users [2]. Though both students and instructors are the main users of web-based e-learning systems, most studies have capitalized on students while the roles of instructor have not been given adequate consideration in determining the success of e-learning systems. Instructors play important role in determining the success or failure of the system. According to [7] if instructors choose to perform all or part of their teaching and learning activities through web-based e-learning systems, then students have no choice but to use these systems. At the same time, the emergence of e-learning systems and technologies in higher learning institutions is almost complex and instructors don't usually accept the information technology as they should do since it is considered as a challenge to them sometime [8]. Instructors' decision to use and accept specific e-learning system is one of the success indicators of e-learning system success implementation and adoption [2]. Successful adoption of this information technology to a degree depends on certain aspects related to opinions and attitudes of both students and instructors. At the same

time, successful implementation of an information system and acceptance by users need a solid understanding of user acceptance process and ways of persuading users to engage with these information systems applications [9]. Regardless of the likely value of web-based e-learning systems as tools for improving and enhancing educational and training performance, the values and importance will only gain little appreciation if users do not accept it as a learning tool and make use of its potential advantages. While e-learning market has a growth rate of 35%, it is important to mention that failure still exist [10] and several web-based e-learning systems haven't succeeded to accomplish the expected learning outcomes. If there is a lack in intention to implement and use the required web-based e-learning system among instructors in particular, the unused systems would eventually become obsolete [11], which will have a negative effect on higher education advancement and innovation. Therefore, it is necessary and required to identify the main factors that contribute and influence instructors' acceptance and adoption of successful web-based e-learning systems to assist policy makers in higher education institutions in adopting ways that will facilitate the use of the systems.

A considerable number of researches and studies have been conducted regarding the acceptance and adoption of web-based e-learning systems. However, very limited studies have been conducted on instructors' acceptance of these systems in higher educational context [8] and the number of studies examining instructors' adoption and acceptance toward web-based e-learning systems' success is not sufficient to make a generalization and they tend to vary in terms of the contributing factors [2]. Instructors' use of e-learning system is relatively limited. Therefore, the present research focuses on factors influencing e-learning success. The goal of the study is to find out the most critical acceptance and success factors affecting e-learning system implementation from the perspectives of instructors in higher education context.

## II. LITERATURE REVIEW

Previous e-learning researches applied different theories to study and examine the determinants of e-learning effectiveness and acceptance among instructors. In the domain of information technology, the subject of acceptance of information technology has been discussed using different theories and models. This part reviews critical success factors presented in the e-learning literature and identify major theoretical perspectives relates to e-learning research.

### A. Web-Based E-Learning systems

Different web based learning systems have been developed for higher education to support e-learning. The web course homepage system, blackboard learning system, web course tool, and the system of multimedia integrated learning etc. are the latest technology based academic tools that use internet as a delivery mechanism. According to [12] web-based e-learning systems include

course support software, learning management or course management software, distribution technologies and communication and collaboration software. Therefore, many higher educational institutions implement and use such web-based e-learning systems in their daily education process.

In this evolution, e-learning has been identified as using computer system and modern information and communication technologies to deliver information, instruction and content via electronic media such as internet [13]. E-learning also known as the use of internet-based courses or programs that deliver instruction using pedagogical tools as part of a formal educational program. The development of e-learning systems is coming as an outcome of the growth of information and communication technologies in education context because there is a large number of students need to be provided with education as well as training. Lie and Wang [14] in their review of e-learning found that the primary characteristics of e-learning process are mainly based on the internet, information dissemination and knowledge flows in the form of network courses, worldwide sharing of learning resources, and flexibility of learning as a virtual learning environment is created to overcome distance and time obstacles. Such environment may assist high level of interaction and cooperation between learners and instructors than traditional learning environment. According to [15], e-learning system is described as follows:

“a learning technology system that uses Web-browsers as the primary means of interaction with learners, and Internet or an intranet as the primary means of communication among its subsystems and with other systems. These systems work as platform to facilitate teaching and learning”.

E-learning systems are large web-based information systems, which are also referred to as the delivering of education in a flexible and easy way through the use of internet to support individual learning and achieve organizational performance goals [16] with no concerns to the constraints of space and time. The main stakeholders of e-learning systems are learners, faculty, administrative, technical staff, and instructors.

### B. Instructors' acceptance of e-learning systems

In general, like any other information system, user acceptance and usage are essential primary measures of information system success [17]. However, studies have shown that the acceptance of the technologies by instructors is considered as one of the major contributing factors leads to successful implementation of educational technology. Instructors' willingness to adopt and accept web-based e-learning systems as a modern approach of instruction and learning is attributed in the first place to their feelings; the reason is that they have to be near their students, and therefore, using e-learning technology may perhaps significantly transform the way traditional teaching is conducted. It has been mentioned that e-learning is essential and challenging for instructors and

learners at the same time since web-based e-learning is mainly based on the use of technology to deliver content via internet. Al-alak and Alnawas [18] pointed out that instructors ought to acquire various skills and play different roles in order to be able to adopt the use of information technology in learning. At the beginning, instructors should be aware of the implication of system complexity and technology obstacles in order to adopt such technology and improve students' learning experience. Then, instructors should be willing to use the technology. Therefore, instructors possibly will refuse to accept adopting the use of such information system. Instructors are becoming more and more critical determinant in the implementation of e-learning systems. Consequently, reasons affecting instructors' acceptance and adoption of e-learning systems require explanations for a successful implementation of such systems in higher institutions of learning [2]. Instructors' acceptance of information technology is considered as a multidimensional approach affected by a range of technical, individual, organizational and social factors. Acceptance of information technology systems and technologies in literature has been assessed based on perceived ease of use, perceived usefulness, instructors' satisfaction, IS technical characteristics and intention to use, many frameworks were developed for this purpose such as Delon and Mclean and technology acceptance model.

Because of the cardinal and key role of instructors, higher educational institutions are expected to increase their attempts to encourage instructors to use and ensure their satisfaction for a successful adoption of web-based learning systems. Therefore, it is very important to understand what factors drive instructors to accept and use a new information technology designed for learning purposes.

### III. THEORETICAL FRAMEWORKS

Various factors can be used to measure the successful implementation and acceptance of an e-learning system. Based on previous studies on e-learning success measurement, and the different models and theories presents in literature such as DeLone and McLean IS success mode and Technology Acceptance Model, with the use of theory of Planned Behavior and theory of Reasoned Action, the present study grouped various factors into specific dimensions in accordance with their similarity and the opinions of a group of experts.

#### I. Critical Acceptance and Success Factors

Without the prioritization of critical acceptance and success factors among instructors regarding e-learning systems, it is difficult to discover the most important factors affecting e-learning success in higher educational institutions [19]. Based on previous studies on e-learning system success measurement, the present study grouped various factors into four dimensions in accordance with their similarity. The dimensions are summarized and presented in Fig1.



Figure 1: Acceptance and Success Factors

#### 1) *Instructor Factors*

Some studies have researched the instructors' attributes in the acceptance, adoption and usage of web-based e-learning systems. Instructors' characteristics play an important role in the perception of the effectiveness and acceptance of e-learning systems in higher education.

Computer self-efficacy is one of the individual factors consistently supported in IS literature as an important construct to predict individuals' use of IT. According to [20], Bandura's definition of self-efficacy suggests that the self-efficacy judgment of accepting e-learning systems is rooted in instructors' cognitive process. Shih hypothesized that computer self-efficacy is a cognitive factor referring to individuals' self-assessments regarding their confidence or ability to use e-learning systems. Instructors' self-efficacy is exceedingly perceived as an imperative issue in the acceptance and rejection of any information system including web-based e-learning systems. Computer self-efficacy represents instructors' self assessment on their capabilities to apply computer skills to get tasks done and accomplish their work. Ball and Levy [21] in their research on evaluating the main contribute factors that affect lecturers' acceptance of information system concluded that computer self efficacy had main effect on instructors' acceptance and usage of information systems.

Instructors' attitude and intention toward e-learning systems acceptance is a further concern associated with acceptance of web-based e-learning systems. Attitude ought to be considered when investigating web-based e-learning system acceptance. Based on [22], attitude is a key construct that appears to influence individuals' intention to use information technology applications in organizations. Therefore, understanding individuals' attitude toward e-learning systems is important. According to [23] "no matter how advance or capable information technology is, its effective implementation depends upon individuals having a positive attitude toward that information technology. Thus, as individuals' attitude toward e-learning systems becomes more positive, they expect to have greater intention to use those systems".

The level of experience using information technology plays also a significant role in the acceptance of this technology. Regarding technology use in education, the

current level of computer skills and extent of use of computing skills in teaching are key issues on instructors' acceptance of information systems. In their recent empirical research, Ball and Levy [21] found that experience had a significant effect on instructors' intention to use emerging information systems and educational technology.

Moreover, individual innovativeness is an alternate critical issue that has been recently highlighted in the e-learning literature. Individual innovativeness in information technology setting means individual's attitude reflecting his propensity to experiment and try different things and to adopt new information technologies of the communicated experience of others; innovative individuals may understand the helpfulness and the convenience of new systems more rapidly than non innovative individuals [24]. Yet, instructors' resistance to change is a critical factor in their lack of intention to use e-learning systems. According to [25] instructors often appeared resistant to change; hence, they were unfavorable to innovation. Instructors' resistance appears to create negative contribution to their intention to use e-learning systems .

## 2) *Organizational Factors*

The influence of organizational factors on the instructors' acceptance of web-based e-learning systems has been captured by few theoretical and empirical studies. Some of the very common factors found in the literature that maybe influence the use of e-learning system in teaching are: university culture, motivation to use the systems, organizational support, facilitating conditions, training, available infrastructure and perceived usefulness.

Instructors' training is another important consideration. Providing instructors with training could be in type of seminars, courses, online tutorials, and workshops. Facilitating conditions, on the other hand, measured by administrative and technical support, indirectly affect instructors' acceptance of information technology systems in higher education; Accordingly, educators in the e-learning environment who believe that they will have a top management support with regard to the implementation of e-learning systems, which requires changes in university structures and educators roles, will have a positive effect on the adoption of e-learning system [18]. Motivation is a key concern for online instruction as attrition rates remain relatively high for online learning as well [26]. Moreover, supportive university culture positively influences the instructor' intention to participate in e-learning system. According to [6], It seems probable that if university is relatively large and has a supportive culture toward e-learning systems, it will be more likely that higher education instructors will use e-learning systems and technologies. Related to the infrastructure for e-learning implementation, most interviewees perceived that the existing IT infrastructure is generally important in e-learning systems success and acceptance. Lecturers expect the management to play a

vital role in rectifying these issues before launching the systems.

## 3) *Social and Behavioral Factors*

Social factors test individual's cognitive perception regarding the functionality of the system and his belief that using that system will have job done or, in general, useful outcomes [27]. According to [2] the factors under this dimension measure how individual's perception is affected when they use information technology systems which provide utilitarian outcomes like improving effectiveness and efficiency in accomplishing tasks, fulfilling tasks effortless and timeless; In this context, perceived Ease of Use and Perceived Usefulness are grouped under this dimension as indicative factors to evaluate how system's utility and easiness affect users' perception and intention to use the information system . These two factors have become evident to have direct effects on behavioral intention to use web-based e-learning systems. However, very few studies validate empirically the relationship between intention to use and perception in the context of e-learning from higher education instructor's perspectives.

Davis [28] described perceived ease-of-use as the degree to which a particular system user believe that using certain information system will be effortless. Wang, Lin and Tang [29] reported that perceived ease-of- use has important consequence on behavioral and usage intention. Ong and Lai [30] found that perceived ease of use had a significant influence on the behavioral intention of users to use e-learning. On the other hand, Davis [28] described perceived usefulness as the degree to which a system user believe that using a particular information system would enhance his/her job performance and will influence productivity positively.

Social factors function is described by [2] to explore effects of environmental factors like other people's attitudes and behaviors and social to the individuals. Social factors capture that how individuals who are important for end users have an effect on them towards using a system. Voluntariness and Subjective Norm is grouped under environmental dimension and defined in the model to evaluate the effects of others' opinions on the instructors' decisions.

## 4) *Technical/System Factors*

Service quality, information quality, data linkage, and systems quality are included under technology and system factors. Systems factors found to play a major role on the instructors' perceived self-efficacy, previewed enjoyment, and perceived usefulness which accordingly affect their intention to use the systems.

System quality relates to a learner's belief about e-learning performance characteristics and characteristics of a system and is measured by functionality, ease of use, interface design, reliability, flexibility, data quality, portability, integration, and importance [31]. System quality has a strong positive effect on learners' satisfaction [13] and directly affects user beliefs [28]. This dimension consists of internet quality, facilitating

conditions, reliability, ease of use, equipment accessibility, and system characteristics, which includes system interactivity, system functionality, and system response [19].

On the other hand, Information quality describes the output quality from an information system [32], and can directly affect instructor's perceived ease of use. The more the instructors find the system is easy to use and can find required information simply, the more the output of the system is considered complete, accurate, and timely [7]. In the e-learning context, Roca, Chiu and Martínez [33] measured information quality by indicators related to sufficiency, accuracy clarity, timeliness, and relevance, and proved information quality significance directly on satisfaction and indirectly on perceived usefulness. Thomas and Stratton [34] argued that if information and services provided by the web-based e-learning system is in advantage for students and valuable, the instructor's perceived usefulness of web-based e-learning system will increase.

Service quality is the effectiveness of the support provided to information system users to assist their use of an information system. It has a direct effect on instructor perceived ease of use and usefulness. For example, the availability of training tools has a positive effect on instructor perceived ease of use. Roca, Chiu and Martínez [33] evaluated service quality by pointers identified by responsiveness, empathy and reliability, and affirmed its important directly on satisfaction and indirectly on perceived usefulness.

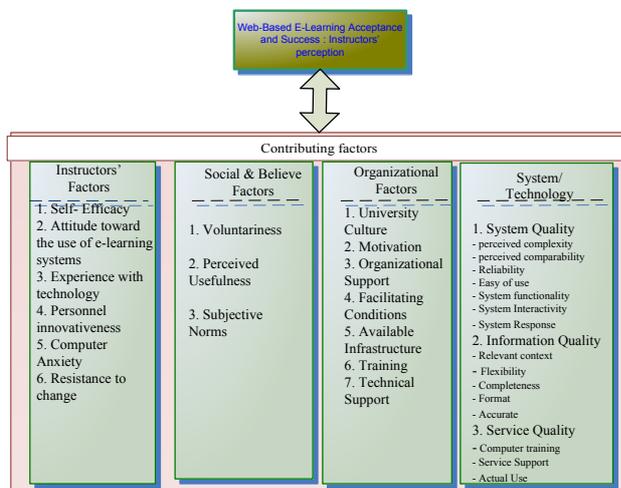


Figure 2: Hierarchical framework for critical success factors of e-Learning in Higher Education

#### IV. CONCLUSION

As e-learning is increasingly adopted by educational institutions, e-learning success factors need to be evaluated and taken into consideration in the development of the e-learning system to deliver an effective educational services. The success of web-based e-learning systems in any institution starts by instructors' acceptance

which in turn initiate and promotes learners' utilization of the e-learning systems.

Consequently, the objective of this review paper is to examine the critical factors that might influence the instructors to accept and use e-learning systems successfully. The review found four dimensions which have direct effect on instructors' intention to use e-learning systems. These include instructors' factors, system and technological factors, organizational factors as well as social and believe factors. Since the research is still in progress, a conceptual model will be proposed in the second stage and an empirical analysis will be conducted in the next stage to verify the effects of these factors. Future qualitative and quantitative investigation will be conducted to validate the finalized model and generalize it.

#### REFERENCES

- [1] S. A. Odunaike, O. O. Olugbara, and S. O. Ojo, "E-learning Implementation Critical Success Factors," *innovation*, vol. 3, p. 4, 2013.
- [2] D. Findik Coskuncay and S. Ozkan, "A Model for Instructors' Adoption of Learning Management Systems: Empirical Validation in Higher Education Context," *Turkish Online Journal of Educational Technology-TOJET*, vol. 12, pp. 13-25, 2013.
- [3] Y. Yusof, C. Derashid, M. Yaakob, and R. Husin, "Readiness towards E-learning amongst Telecenter Users," 2013.
- [4] H. Al-Mobaideen and S. Allahawiah, "Factors influencing the effectiveness of E-learning systems in the educational process (" Electronic learning system")(Eduwave): Jordan case study," *European Scientific Journal*, vol. 8, 2012.
- [5] S. Alhomod and M. M. Shafi, "Success Factors of E-learning projects: A Technical perspectives," *Turkish Online Journal of Educational Technology*, vol. 12, 2013.
- [6] T. T. Ahmed, "Toward Successful E-Learning Implementation in Developing Countries: A Proposed Model for Predicting and Enhancing Higher Education Instructors' Participation," *International Journal of Academic Research in Business and Social Sciences*, vol. 3, pp. 422-435, 2013.
- [7] W.-T. Wang and C.-C. Wang, "An empirical study of instructor adoption of web-based learning systems," *Computers & Education*, vol. 53, pp. 761-774, 2009.
- [8] H. Motaghian, A. Hassanzadeh, and D. K. Moghadam, "Factors affecting university instructors' adoption of web-based learning systems: Case study of Iran," *Computers & Education*, vol. 61, pp. 158-167, 2013.
- [9] M.-C. Lee, "Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation–confirmation model," *Computers & Education*, vol. 54, pp. 506-516, 2010.
- [10] E. Adewole-Odesi, "Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model," 2014.
- [11] Å. Grönlund and Y. M. Islam, "A mobile e-learning environment for developing countries: The Bangladesh virtual interactive classroom," *Information Technology for Development*, vol. 16, pp. 244-259, 2010.
- [12] B. J. Ferdousi, "A study of factors that affect instructors' intention to use e-learning systems in two-year colleges," *Nova Southeastern University*, 2009.

- [13] S. Ozkan and R. Koseler, "Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation," *Computers & Education*, vol. 53, pp. 1285-1296, 2009.
- [14] Y. Liu and H. Wang, "A comparative study on e-learning technologies and products: from the East to the West," *Systems Research and Behavioral Science*, vol. 26, pp. 191-209, 2009.
- [15] E. W. Ngai, J. Poon, and Y. Chan, "Empirical examination of the adoption of WebCT using TAM," *Computers & Education*, vol. 48, pp. 250-267, 2007.
- [16] R. C. Clark and R. E. Mayer, *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*: John Wiley & Sons, 2011.
- [17] A. Al-Adwan, A. Al-Adwan, and J. Smedley, "Exploring students acceptance of e-learning using Technology Acceptance Model in Jordanian universities," *International Journal of Education and Development using ICT*, vol. 9, 2013.
- [18] B. A. Al-alak and I. A. Alnawas, "Measuring the acceptance and adoption of e-learning by academic staff," *Knowledge Management & E-Learning: An International Journal (KM&EL)*, vol. 3, pp. 201-221, 2011.
- [19] O. Xaymoungkhoun, W. Bhuasiri, J. J. Rho, H. Zo, and M.-G. Kim, "The critical success factors of e-learning in developing countries," *Korea*, vol. 305, p. 701, 2012.
- [20] H.-P. Shih, "Using a cognition-motivation-control view to assess the adoption intention for Web-based learning," *Computers & Education*, vol. 50, pp. 327-337, 2008.
- [21] D. M. Ball and Y. Levy, "Emerging Educational Technology: Assessing the Factors that Influence Instructors' Acceptance in Information Systems and Other Classrooms," *Journal of Information Systems Education*, vol. 19, 2008.
- [22] A. Bhattacharjee and G. Premkumar, "Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test," *MIS quarterly*, pp. 229-254, 2004.
- [23] S.-S. Liaw, "Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system," *Computers & Education*, vol. 51, pp. 864-873, 2008.
- [24] W. Bhuasiri, O. Xaymoungkhoun, H. Zo, J. J. Rho, and A. P. Ciganek, "Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty," *Computers & Education*, vol. 58, pp. 843-855, 2012.
- [25] S. K. Badu-Nyarko, "Faculty attitudes towards distance education: A review of the literature," *International Journal of Instructional Technology and Distance Learning*, vol. 3, pp. 59-71, 2006.
- [26] K.-C. Chen and S.-J. Jang, "Motivation in online learning: Testing a model of self-determination theory," *Computers in Human Behavior*, vol. 26, pp. 741-752, 2010.
- [27] D. C. Karaiskos, "A predictive model for the acceptance of pervasive information systems by individuals," Unpublished PhD Dissertation, Athens University of Economics and Business, 2009.
- [28] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS quarterly*, pp. 319-340, 1989.
- [29] Y.-S. Wang, Y.-M. Wang, H.-H. Lin, and T.-I. Tang, "Determinants of user acceptance of internet banking: an empirical study," *International Journal of Service Industry Management*, vol. 14, pp. 501-519, 2003.
- [30] C.-S. Ong and J.-Y. Lai, "Gender differences in perceptions and relationships among dominants of e-learning acceptance," *Computers in Human Behavior*, vol. 22, pp. 816-829, 2006.
- [31] W. H. Delone, "The DeLone and McLean model of information systems success: a ten-year update," *Journal of management information systems*, vol. 19, pp. 9-30, 2003.
- [32] K. A. Al-Busaidi and H. Al-Shihi, "Instructors' Acceptance of Learning Management Systems: A Theoretical Framework," *Communications of the IBIMA*, 2010.
- [33] J. C. Roca, C.-M. Chiu, and F. J. Martínez, "Understanding e-learning continuance intention: An extension of the Technology Acceptance Model," *International Journal of human-computer studies*, vol. 64, pp. 683-696, 2006.
- [34] A. Thomas and G. Stratton, "What we are really doing with ICT in physical education: a national audit of equipment, use, teacher attitudes, support, and training," *British Journal of Educational Technology*, vol. 37, pp. 617-632, 2006.