# Evaluating the perceptions of E-learning users during the COVID-19 outbreak in Pakistan: An empirical study

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*Abstract: The use of the technology in the way of teaching and learning in the higher educational institutions sustained a significant position during the pandemic emergency in Pakistan and across the world to continue the educational activities. The extant study investigates the pedagogical challenges in which proposed factors used to discover the intention of the users in the form of their ease of the technological use and assessing the social influence of people regarding the innovative digital adoption in the online learning atmosphere. This research inculcates the antecedents like perceived ease of use (PEOU) social influence (SI), satisfaction (S), and intention to use (ITU) to chart out the perception of the wireless based educational activities during the COVID-19 outbreak in the country and it aims to produce an empirical analysis of the easiness and social influence of users to accept the newly adopted technology and calculating the Web based pedagogical challenges via interpreting the users' intention. For the data analysis 216 questionnaires have been collected from the teacher and students among three public universities in Sindh and the existing review develops a proposed conceptual framework model to meet the objectives of the study. In the way of the interpretation of data SPSS version 24 was brought in use and the testes of the hypotheses were carried out by means of regression and correlations. The research follows the limitation to meet the quantitative research methodology, teachers' web based easiness and social feedback to deliver the online teaching and the recommendations urge to discover a research by using different factors.*

**Keywords:** Intention to use, ICT, pandemic, online teaching

**Introduction**

An emergence of a scientific revolution made the contemporary world as a global village and a speedy interconnectivity to access any place and information except to meet an expensive cost and Herculean task. Likely, the use of the wireless based technology in the educational spheres also benefits to generation without delay the learning process at the time of emergency and go through a an expensive channel in the time of natural calamity and national emergency (Chandio, 2020; Fetherston, 2001). The significance of the virtual learning enhanced across the globe during the outbreak of pandemic and lockdowns in the way to ensure continuity of educational activities and disclosed the learning institutions via an online means. The Information and Communications Technology (ICT) based teaching and other educational mobility is a hard task towards the third world communities due to scarcity of high investment on the technology , inadequate provision of information technology infrastructure, and an ignorant feedback to adoption of digital based culture in this regard (Haider, et al., 2019; Chandio,et al., 2018). The provision and availability of the digital equipment to teaching staff is based on the information technology (IT) and adequate the approach to ICT infrastructure can assist to mobilize the wireless based learning management. The initiatives of the higher education commission (HEC) in the online learning process took steps during the pandemic outbreak in the country and applied efforts to stop the educational loss and urged the affiliated institutions to deliver online classes (Chandio, et al., 2020; Mukhtar, et al., 2020).

In the Pakistan online education system couldn't achieve an effective outcome due to poor infrastructure supply, imbalance facilitation of computer access, experience, and signal coverage that become the chief factors to succeed the virtual learning environment in the country (Chandio, 2020; Mukhtar, et al., 2020; Chandio, et al., 2018). In Sindh province number of educational institutions like Shah Abdul Latif University Khairpur, Sindh Madressatul Islam University, Mehran University of Engineering & Technology Jamshoro, University of Sindh, and college education department also adopted the electronic learning (E-learning) and met the online classes criteria of the students study (Chandio, et al., 2020). The inadequate infrastructure and government investment higher education commission (HEC) initiatives are in pending to meet the target which requires an appropriate information technology (IT) expertise, and teachers' online teaching skills besides the students' facilitations. The adoption of the digital media created an academic world and the technologies role in the teaching and learning in the higher education sphere is a complex and a deep debate and progressive research in the world and the implementation of the digital system in the educational settings is deeply sided with students learner rather than teaching of a teacher (Rosenblit, 2018; Alexander et al., 2017; Johnson et al., 2016).

Digital teaching is also said be with different terms as electronic teaching (E-teaching), wireless based teaching, ICT's oriented teaching, and electronic learning that inculcate the teachers role to deliver one's digital class to learners and teachers expertise remain significant to motivate and enhance the comprehending of students to meet the learning criteria and understand the teachers lesson plan an appropriate means (Chandio, 2020). Electronic teaching contains the computation system and ensure the cooperation and communication with the learners that contains the applications like the software team, Zoom and use the World Wide Web which incorporate the advanced computer networking to develop an online center of knowledge (Chandio, et al., 2020; Rosenblit, 2018). There is a noticeable lack of electronic teaching culture in the Pakistani society and a deficient relevancy in a

literature on the digital based learning  also need an advance research to calculate an empirical approach in its multidimensional aspects. The vitality of the role of technology is undeniable in the modern age of science and concept of globalization maintained a significant status during the COVID-19 outbreak in Pakistan when the educational instructions went to stop all their activities (Chandio, 2020; Eltayeb, et al., 2020). The prevailing natural calamity encouraged the importance of technological based learning management systems in the way of students online assessment and wireless based teaching and short comes, poor policy making and other dimensions motivate to meet the concerned issues to adjust the use of technology in the days of quarantine to cover curriculum (Chandio, 2020; Popovici, and Mironov, 2015). Electronic teaching is the dire need of time that must be planned and trained staff to be requires and the teachers and students skills in the information and technology can assist to the educational institution to meet the educational gap during the pandemic outbreak in Pakistan.

## Literature review

Electronic teaching (E-teaching) contains the perceptions to comprise the digital based teaching, electronic learning, virtual learning, wireless based education, computer-assisted instruction, online class, and mobile learning etc (Chandio, 2020; Govindasamy, 2001). E-teaching is a narrowed concept of electronic learning in which dissemination of instruction is propagated via an online means by adoption of the information and communication technologies (ICT) use in the teaching sphere. The practicability of the information technology in the educational purpose has been signified during the pandemic outbreak emergency and lockdown circumstance as the attention of the educational institutions across the world supported the use of digital learning system in order to meet the gap in closures of the faculties (Abbasi , et al., 2020; Chandio, 2020; Chavarría, et al., 2020). Moreover, numerous studies support the online learning adoption and the educational intuitions across the world encouraged its use to meet the gape of the closure of the activities of education during the pandemic to impact the learners study to continue the their academic activities (Abbasi, et al., 2020; Chandio, 2020; Chavarria, et al., 2020).

The prevailing study delineates the intention of the information technology in the education sector to sustain the E-teaching process in the way teachers and students can continue the institutional curriculum activities in which an investigation has been carried out to meet the teacher perception to produce their opinion to consider the system an easy to use and social feedback remains in the favor (Chandio, et al., 2020).  The proposed constructs perceived ease of use (PEOU), Social influence (SI), satisfaction (S), and Behavioral intention to use the electronic learning system (ITU) were used in the previous studies to investigate the perception of the newly technology adoption in the public sector whereas these factors also support to meet the criteria to chart out the use of the digital system in the learning management and educational settings and discover the viewpoint of the users to be assessed  (Al-Okaily , et al., 2020; Chandio, 2020; Haider, et al., 2019; Teo, et al., 2008).  These determinants maintain the relationship with the criterion factor intention to us in order to investigate the electronic learning users' opinion of the university student and teachers (Chandio, 2020). Perceived ease of use implies the users' consideration regarding the system to become an effortless and easy to use and adopt in the learning process to carry out the curriculum and highlight the degree of easiness (Chandio, 2020; Haider, et al., 2019). Moreover, PEOU is a technological easiness to be used and indicate a trouble free system to users as there are numerous research calculate the significance of the factor to maintain its relation with the intention to use (ITU) by means to measure the users standpoint in the way adoption of an innovative technology (Chandio, 2020; Haider, et al., 2019; Phang, et al., 2005).

Social influence is a social perception or social feedback in the society as the technology users meet via interaction with the influential persons which either support or not to system. The user perceives that people influenced him/her to urge and emphasize to use the information system in the learning management during the outbreak of the pandemic in Pakistan and it impact the belief of people to meet the outcome by means of the use of technology (Chandio, 2020; Venkatesh, 2003). Social influence is considered as a powerful antecedent to measure the intention of the internet use and its adoption of online services as a newly in an organizational settings (Chandio, 2020; Abbasi, et al., 2011).  Intention is a perception of users to accept the online technology and its use as a beneficial of the users' educational activities and the proposed constructs assist to discover the intentional approach of the electronic learning users of the university students during the pandemic outbreak in the Sindh (Chandio, 2020). In the adoption and introducing an innovative technology assessment of users' intention possess a significant position that can meet to follow the perception of the easiness of technology, social feedback in its favor and users satisfaction also encourage and energize the electronic learning use in the educational purpose. Electronic learning web site is an innovative technological use and the attributes affect the behavior and attitude of the users toward the web site and information satisfaction is binding with the users and organizational satisfactory (Teo, et al., 2008; Shirani, et al., 1994). The satisfaction creates and ensures an effective implementation of information system that decides the confirmation and disconfirmation of the innovative technology adoption. The factor users' satisfaction includes measuring the intention of the electronic learning users and it results the influencing of users to satisfy with the system and the quality based web site (Teo, et al., 2008; DeLone, and McLean, 2004). Satisfaction is an important determinant to measure the opinion of information system user and impact the intention using the system (Teo, et al., 2008; DeLone, and McLean, 2004). The use of technology can be undeniable in the contemporary of globalization and scientific age in the academic arena during the outbreak of the pandemic and it remained a useful equipment to maintain the ongoing process of the education activities under the rising critical condition of the natural calamity (Chandio, 2020; Abbasi, et al., 2020). The given conceptual framework model contains the proposed factors like PEOU, SI,S, and ITU and the theoretical perspective follows the TAM, and UTAUT.
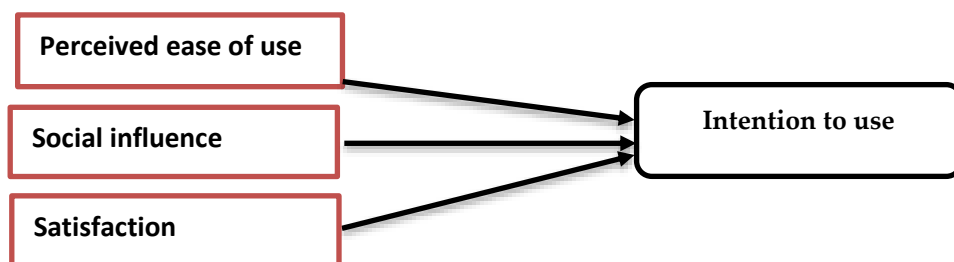
**Conceptual framework model**



Figure 4. Proposed conceptual model

**Research methodology and sampling process**

A cross section study and quantitative research methodology brought in use in this research. Moreover, the structural instrument and survey questionnaires were used in the same line of action of the earlier researchers (Ahmed, et al., 2021; Chandio, 2020; Haider, et al., 2019; Abu-Shanab, 2014). The data was collected from the electronic learning users in which teacher and students produced their feedback in the way to reveal the perception concerning the use of the wireless based technology in the educational activities during the Pandemic outbreak in the country. The demographic section contained gender, age, and education and the prevailing study follows the 13 research items to support to measure the proposed factors and the all the items were written in English language which also inculcate the means and standard deviation.

For the data collection instrument and survey questionnaires were used and five point Likert scale with its 5 options applied to accumulate the respondents' opinions. Factors reliability estimate the level of constructs to meet the acceptability score which ranges vary from (824) to (732) cronbach's alpha and presented as PEOU (.824), SI (.756). Satisfaction (.732), and ITU (.760). Data collection was carried from three public universities in Sindh and this process took up to fourteen months to accomplish task in hand in which users met different experience of the online education activities during the pandemic outbreak to avail from the technological benefits.

**The research questions and hypotheses**

**Research Question**

Based on the earlier literature and the nature, proposed model will try to produce answer of two research question that match to discover the empirical notion of the current research.
RQ1. What type of your vision for supporting digital teaching that is based on the ICT infrastructure?
RQ2. How you perceive the electronic teaching and what sort of perception is belong to you to compare the digital and non-digital teaching

**Hypotheses**

H1. A positive and significant relationship between the construct perceived ease of use (PEOU) and Intention to use (ITU) has been restored.

PEOU denotes the use of a system based on except any troublesome and the users perceive an effortless and easiness to invest the ICT based infrastructure in the educational purpose (Chandio, 2020). The proposed construct has been used by the numerous researches to discover the intention of the information technology use in the organization as innovative equipment to be introduced to substitute the tradition work mechanism (Chandio, et al., 2020; Chandio, 2020; Abu-Shanab, 2014). The focus of this research is perception of user to use the electronic learning as the literature concentrates and the factor PEOU hypothesized with intention to use electronic learning of websites. Moreover, the TAM is a most reputable model (TAM, Davis,et al., 1989; Davis,., 1989) materialized PEOU in predicting the intention to use ITU (Abu-Shanab, 2014).

H2. A positive and significant relationship between the construct Social Influence (SI) and Intention to use (ITU) has been restored.

The proposed factor highlights the social perception concerning the electronic learning services as to meet the social waves of people's feedback. Social influence is an important determinant to be recognized to assess the internet users attitude and evaluate the acceptance of the technology to them (Ahmed, et al., 2012; Chandio, 2020; Haider, et al.,2018; Abbasi, et al., 2011). The factor social influence presents influence of social perception by a close society and highlights the social wave to adopt the electronic services which develops a connection of a perception and psychology to users to approve the information system and by making social influence to introduce the innovative technology impact the intention of users to use the electronic

learning system. It is perceived that social influence the users perception and intention to adopt the newly introduced technology in an organization service delivery and the factor measured with the ITU(Chandio, 2020; Abu-Shanab, 2014; Malhotra and Galletta, 1999). Social influence hypothesized with ITU and the theory of acceptance and use of technology (UTAUT) (UTAUT, Venkatesh, et al., 2003) materialized the effect on the intention of users to use the introduced technology (Ahmed, et al., 2021; Chandio, 2020; Abu-Shanab, 2014; Albesher, 2016; Abdel ghaffar, and Magdy, 2012).

H3. A positive and significant relationship between the construct Satisfaction (S) and Intention to use (ITU) has been restored. In the context of this study Satisfaction refers acceptability and comfort of a user towards the computer application in the course of the content consumption and interaction with the system which assist the users' intention to be with deep proximity to one's satisfaction. The uers satisfaction relating to information system substitute and measure the success and the satisfaction influence by number of factors and it impact the user intention (Li,and Yeh, 2009; Hong, et al., 2017)and, the satisfaction along PEOU is be mediated with intention to use electronic learning (Bataineh, 2015; Almahamid, and Rub, 2017); the construct E-learning satisfaction also made an important predicting factor with intention to use electronic learning (Liaw, 2008). In the study to be investigated maintained the positive relationship of satisfaction with the intention or behavior of user where both factors measured (Arshad, 2019; Agag, et al., 2016; Bee, et al., 2014; Belanche, 2012).in the context of the prevailing study, Satisfaction is used to evaluate a user's perspective of system and one's behavioral perception and attitude of approval results to justify the system and use and the construct satisfaction effects on intention to use electronic learning or wireless based websites to attain educational activities.

| H/N | Hypothesis proposed | RESULT |
|---|---|---|
| H1 | There is a positive significant relationship between perceived ease of use (PEOU) and intention to use E- learning (ITUEL). | Supported |
| H2 | There is a positive significant relationship between social influence (SI) and intention to use E-Learning (ITUEL). | Supported |
| H3 | There is a positive significant relationship between Satisfaction (S) and intention to use E-learning (ITUEL) | Supported |

Tables1. Research Hypotheses Results

**Result and Discussion**

This study inculcates the quantitative methodology, survey based research and cross-sectional study. The relationship of all factors hypothesized with positive association to criterion variable as the proposed determinants like PEOU, SI and S reveal significant relationship with INTUEL and the hypotheses validity correlation and regression analysis was used. Data has been collected from three universities of Sindh province like University of Sindh, Shah Abdul Latif University Khairpur, and University of Karachi and whole process of data accumulation secured from the February 2020 to March 2021 in this period electronic learning user maintained their online educational activities. In addition, existing study meets the criteria of the previous research in the way to discover the intention of innovative technology users with deep proximity of the Pandemic outbreak and light different in nature and area of research (Chandio, 2020; Haider, et al., 2019; Bee, et al., 2014; Venkatesh, et al., 2003). For collection of data five point Likert scale was used in options given in the form of strongly disagree (SD), Disagree (D), Neutral (N), Agree (A), and strongly agree (SA).

| Variables | Description | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 187 | 86.5% |
|  | Female | 29 | 13.4% |
|  | 21-30 | 109 | 50.4% |
| Age | 31-40 | 107 | 50.46% |
| Education | Bachelor/Master | 169 | 78.2% |
|  | MPhil/ PhD | 47 | 21.7% |

Table 2. Demographic characteristics

The respondents profile has been categorized into Gender, Age, and Education. In this perspective, Gender male respondents remain high number 86.5% (N=187) and female 13.4 % (N=29), Age between 21to30 is in 50.4% (N=109) whereas Bachelor and Master level respondents in high number participated 78.2% (N=169) as compare to MPhil/ PhD 21.7% (N=47).

| Proposed Items | Mean | SD |
|---|---|---|
| Q1: I intent and prefer to us the E-learning during pandemic outbreak (ITUEL). | 3.682 | .8645 |
| Q2: I expect to use of Wireless based educational activities (ITUEL). | 3.6768 | .86132 |

| | | |
|---|---|---|
| Q3: I envisage a plan to establish the use of online learning system (ITUEL). | 3.7424 | .84546 |
| Q4: Using online learning is easy to me to produce the feedback to a question (PEOU). | 3.6652 | .87530 |
| Q5: The use of online education is the trouble-freefor to achieve curriculum objects (PEOU) | 3.7412 | .76543 |
| Q6: It would easy to me ensure the assessment and educational activities via implementing the online learning system (PEOU) | 3.6873 | .75733 |
| Q7: People influence the user to substitute the traditional learning to digital or online system during the pandemic outbreak (SI) | 3.7434 | .74501 |
| Q8: Influential people in my society consider that I must adopt the online based educational activities to produce outcome during COVID-19 outbreak (SI) | 4.5443 | 2.78615 |
| Q9: The most significant people consider the electronic learning user to prefer the online technological system to be beneficial in the evaluation ongoing process of curriculum (SI) | 3.7655 | .76344 |
| Q10: I am satisfied with the Web site to meet my interaction with the educational insitution (S) | 3.7554 | .75545 |
| Q11: I am satisfied with using e-learning as a learning assisted tool (S) | 3.7610 | .77573 |
| Q12: I am satisfied with using e-learning functions and multimedia instruction (S) | 3.7896 | .77210 |
| Q13: I am satisfied with learning contents (S) | | |

Table 3. Survey items, standard deviations and mean

Bivariate Pearson's correlations were utilized for testing the linearity in data. The correlations significant scales set at two levels as P=0.01 and P=0.05 and (r) values encompass from–1 to +1 (Pallant 2013). The strength of relation is based on the absolute value and sign in front of the value highlight a negative and positive relation. Finding the constructs relationship based on the significant correlation can be materialized and the degree of relation measured by its statistics of two variables to each other. In this criteria, Pearson's correlation assist to meet the relationship of independent factors and dependent factor (Pallant 2013). The significant relation has been maintained at the 0.1 level to support the factors to conceptual model and proposed determinants remained in significant with the criterion variable. In this study all constructs and their correlation of the proposed variables remained between (.587 to .486) in which correlation of PEOU (.587), SI (.560 .486) , and S (.574 .535) confirmed. The highest relation persisted in the variable (.587) whereas the lowest correlation remained (.486) and regression highlights to impact the independent variables and dependent factor.

| | ITU | PEOU | SI | S |
|---|---|---|---|---|
| ITU | 1 | | | |
| PEOU | .587 | 1 | | |
| SI | .560** | .486 | 1 | |
| S | .566 | .574 | .535 | 1 |

Table = S ,social influence = SI ,perceived ease of use = PEOU ,intention to use = ITU :Note :4Correlation Satisfaction

Regression is a statistical technique to explore the interrelationship of the construct of independent and dependent and it is also argued to determine the relationship of the independent and dependent variable with few predictors (Hair, et al., 2014; Pallant 2013). On the ground of multiple regression analysis, tests of the research hypotheses were carried out on the basis of standardized estimate and value for data analysis, in which research brought SPSS 24.0 into use as Windows software to launch the functional mechanism of the model in order to examine the hypotheses. Using path estimates and four hypotheses were mobilized to be examined in the prevailing study. The key purpose of this existing research is to examine the contributory associations between criterions construct (ITU) and independent constructs (PEOU, SI and S). The findings highlighted that PEOU, SI and S, possess the significant and positive impact to the dependent variable ITUEL.

| Coefficients[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -.799 | .297 | | -2.687 | .008 |
| | PEOU | .380 | .081 | .284 | 4.681 | .000 |
| | SI | .354 | .082 | .245 | 4.326 | .000 |
| | S | .257 | .085 | .188 | 3.435 | .001 |
| a. Dependent Variable: ITUEL | | | | | | |

Table Regression Analysis 5

This study pursues the quantitative methodology, survey based research, and the cross-sectional study. The proposed variables (PEOU, SI, SI, and ITUEL) in this research maintain a positive relation between the independent and dependent factors in which the determinants like PEOU, SI, and S impact the (ITU) or intention of users to use electronic learning. Data was collected from the public universities of Sindh like University of Sindh, Shah Abdul Latif University and University of Karachi and the researchers also applied the proposed varaibles with a light different in area of research and nature of the study to discover the intention of the newly introduced technology in an work atmosphere (Chandio, et al., 2020; Chandio, 2020; Arshad, 2019; Haider, et al., 2019; Abu-Shanab, 2014; Venkatesh, et al., 2003). For the data collection Five point Likert Scale was used that contains 5 options and regression and correlation were used to ensure the validity of the Hypotheses test.

This study is concerned to discover the intention of the wireless based technology users and it is very hard task to interpret the behavioral approach of man like triumphant of newly technological acceptance relies on the users' perception and degree of reliability to adopt the innovative system. The implications of this study inculcates the assessment of the users tendency towards the technology adoption in the time of the natural calamity in the form of pandemic outbreak and the outcomes of the findings highlight the users support to meet their behavioral approach in the favor of the technological acceptance and the users satisfactory and social perception also support them to introduce the wireless based educational activities and the accomplishment of curriculum. The chief findings in this study encircle as below.

- The maximum correlation and significant relationship was found between the independent and dependent variables of perceived ease of use, social influence, satisfaction and intention to use.
- In the regression analysis it was discovered via independent constructs and dependent variable relation to meet the users' intention to use the online educational activities.
- All the proposed variables like PEOU, SI, and S possesses the positive significant relationship with the criterion variable.
- It can assist to discover the users degree of reliability which is based on the ease of system, social influence, and satisfactory to determine the intention of users of electronic services in the educational settings.

**Limitation and Future directions**

The limitations of this study inculcate the quantitative research methodology, cross sectional, survey based design and applies the single source data. Moreover, it confined to three public universities investigation relating to online based technology users in education and it also narrow downed to student and teachers perception whereas the coming research can apply this nature research to other organization and broaden the research at country level. The recommendations include to follow the different context ad factorial acceptance to meet this type of study and the proposed model can also be applied the private sector possibly. In addition, citizens' perception must be investigated via adopting behavioral and technology factors to interpret their intention regarding the government scheme to adopt online education initiatives in Pakistan.

**Conclusion**

E-learning is an online evaluation attaining education and it assists to support the student and teaching staff to ensure the ongoing process educational activities and continue the curriculum during the time of emergency, natural calamity and in distance study programs. The user s' outcomes is based on the students perception regarding their digital adoption and information technology skills and infrastructure which is materialized via information communication technologies (ICT) and the internet easy availability and government initiatives. The flaws and fluctuations in the education setup and poor investment on the information technology impact on the propagation and disseminating the online teaching and learning. In Pakistan technology users in education sector require deep keen interest and acquisition of IT short courses in each discipline as compulsory that can support to meet the situational requirement to boost up information technology literacy to add the expertise to users in order to invest the technology in time of crises. The faculty member and users must adopt the necessary initiatives to promote electronic learning in the way to assist the learners to evaluate their study and meet the digital assessment criteria during the COVID-19 pandemic lockdown and other future critical natural calamities.

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