Investigating the intentional approach of assessment of online instructors and digitalized feedback of learners at a virtual based learning environment during the Covid-19 outbreak in Pakistan: An empirical study

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Abstract: *Online education is wireless based dissemination of educational activities via adoption of Information and communications technology (ICT) based infrastructure. This study attempts to produce and discuss the e-pedagogical issues and challenges, online assessment practices by an instructor and investigate the users' viewpoints regarding the use of e-pedagogy and online assessment. Online education is a digitalized learning process to emerge in different institutions which require special Information technology (IT) expertise and skills to meet the planned course and instructions by means of special scientific based communication. The main objective of this study is to measure perception of online instructors to face the issues and challenges in the way to mobilize electronic pedagogy and online assessment in a Pakistan context. These instructors were asked to present their intentional approach to use the digital based teaching and meet the challenges in their online teaching and assessment to students during the Pandemic outbreak. Data has been collected from the teachers and instructors from the six institutions where electronic pedagogical skills and online assessment were delivered. For investigating users feedback proposed factors perceived ease of use, perceived usefulness, social influence, and e-pedagogy, were measured behavioral intention to use online instructional approach and adopt e-pedagogy. For the data analysis survey questionnaires were used and 118 respondents gave their concerns and the analysis of the study was carried out by SPSS version 24 and hypothetical validation tested via egressions and correlations.*

Keywords: *E-pedagogy, Covid-19, Online assessment, Perceived ease of use*

Introduction

Online pedagogy depends on the skills of online instructors to teach courses, which require e-pedagogical skills to ensure the provision of an effective online teaching (Khurshid, 2020; Saba, et al., 2012). Moreover, digitalized feedback is based on the bi directional communication that is carried out by means of internet and reciprocal word of mouth of an instructor and learner (Dellarocas, 2003). The internet based feedback occupies a significant position to substitute the traditional word of mouth which requires an advance research in a context of online learning in order to interpret the perception of users and evaluate issues and scope of use (Chandio, 2020; Dellarocas, 2003). Adoption of technology in the education institutions promoted the virtual learning environment which made a rapid progress and use during the pandemic outbreak in Pakistan and across the globe (Boutkhil, and Maouche, 2020; Chandio, et al., 2020). The use of information and communication technologies (ICTs) in a e-learning process assisted and encouraged distance and virtual learning in the contemporary era of educational digitalization and ensured the provision of a great rapid change in the world of learning (Boutkhil, and Maouche, 2020; Chandio, et al., 2020; Chandio, 2018; Thieman, 2008).

The global pandemic of Covid-19 became a major channel of the suspension of teaching activities across the globe where traditional educational activities halted and curriculum completion remained a serious challenge to be carried out and online methodology substituted the whole scenario (Chandio, 2020; Peñalvo, et al., 2020). The use of internet and wireless based learning became practicable to meet the gape of suspended educational activities during the pandemic outbreak across the world where educator and instructors adopt the information technology to ensure the assessment process (Chandio, 20202; Chandio, et al., 2020; Mukhtar,et al., 2020; Peñalvo, 2020). Instructors' use of innovative system in the way of online assessment of students studies during pandemic outbreak and quarantine days can be useful of a course management and assessment with text and a wireless based collaborative classrooms (Boutkhil, and Maouche, 2020; Chandio, 2020). Online assessment allows summative assessment that is considered appropriate for verifying the final achievements of a learner. Assessment implies the evaluation of educational activities and it is a systematic process to improve the skills, attitude, and improve the learners' human capital (Chandio, 2020). Online assessment is a digital based evaluation which applies the innovative method to calculate students' performance by means of virtual assessment environment. Online assessment has been recognized by different terms like digital assessment, virtual assessment, wireless based assessment; electronic assessment, assessing online learning, and Information and communications technology (ICT) based assessment (Chandio, 2020; Mukhtar,et al., 2020).

Digitalization of the educational institutions maintained an effective position during the pandemic outbreak and it also brought in use in Pakistan in the way to ensure an effective service in the learning management in which virtual environment developed and interconnectivity materialized between educational institution and learners. In the policy of higher education commission (HEC) institutions are urged to mobilize the online learning environment and instructors recommended to manage online classes and assessment to materialize security to the loss of educational process and health safety of students during the pandemic

outbreak as a natural calamity (Chandio, 2020; Mukhtar,et al., 2020). Besides the HEC to take initiatives to apply online based classes where governments and policy makers across the globe supported and ordered to launch virtual based learning environment in the this critical time of natural calamity (Boutkhil, and Maouche, 2020; Chandio, 2020). The prevailing study attempts to mention the intention of wireless based technology users to carry out the online assessment by instructors during the Covid-19 outbreak in Pakistan and it debates educational institutions affected by the pandemic. As a result, universities, colleges, and schools halted the traditional educational activities and adopted the online learning and instructors' assessment in which electronic learning users' perception has been measured how they perceive the innovative system either it remains useful, ease, and social feedback encouragement to them. The use of online learning provide to become useful since the technology was adopted by the educators and teachers in the way to invest the system in the dissemination of education and assure the contact between the learners to receive curriculum activities and their lessons and courses online basis (Boutkhil, and Maouche, 2020; Chandio, 2020; Chandio, et al., 2020). In this scenario, during the outbreak of the Covid-19 pandemic outbreak online learning materialized as the chief factors to ensure the continuity of learning process of students and assisted teachers to evaluate the learners outcomes hence the behavioral factors were used in the study to calculate the perception of the information and communication technologies (ICTs) users in education sector.

Literature review

Online assessment is a wireless based assessment and calculation of students performance as taken by an educator or a teacher under one's online supervision. Educational assessment is the systematic process to evaluate the students' outcome and improve the students learning. Research supports the use of online assessment is beneficial and useful to educators in a student and teachers perspective (Boutkhil, and Maouche, 2020; Habes, et al., 2020) and the more research is required to interpret and compare the existing and previous performance of students (Chandio, 2020) and other research adjusted their studies to discover the students viewpoint concerning the use of technology either it ease and useful to them (Chandio, 2020; Schank, 2001) whereas an advance investigation is awaiting to analyze the degree of performance and evaluation in a tradition learning and online learning of students (Chandio, 2020). E-learning is considered by numerous studies as a tool to provide beneficial service to learners and educators and substituted traditional learning and occupied a significant position during the pandemic outbreak (Boutkhil, and Maouche, 2020; Chandio, 2020; Chandio, et al., 2020; Habes, et al., 2020). Based on the definition and concept of the online assessment major dimensions of study can be summed up and to be included.

- Providing the online learning service to educators and students
- Online assessment of students and measuring teachers perception regarding the use of information technology in educational purpose and how student perceive the system when he/she goes to deliver online classes and take wireless based assessment
- The digital divide creates a gap due to unequal facilitation to students because of their demographics and regions nature and difference
- Social response and support to technological sue in the way of delivering the virtual based learning environment and online assessment of students

This study attempts to delineate the perception of online learning by instructors to ensure their online assessment of students in which intention has been measured with the factors like perceived ease of use (PEOU), perceived usefulness (PU), social influence (SI), and Students Trust on online instruction (OI). An investigation has been carried out to measure the opinion of the online technology users relating to assessment of online instructors and digitalized feedback of learners at a virtual based learning environment during the Covid-19 outbreak in Pakistan and the data collection was gathered by the instructors only and the students viewpoint integrated with teachers feedback that how the digitalized response impact and what response student produce and complain to teachers.

Theoretical approach and development of Conceptual Framework model

The theoretical approach has been inculcated to encircle the unified theory of acceptance and use of technology (UTAUT) and Technology Acceptance Model (TAM) to discover the user's perception to use the online assessment and ensure the students digital feedback. The mentioned variables were derived from the theses models in which intention to use (ITU), perceived ease of use (PEOU), and perceived usefulness (PU) borrowed from the TAM model (Chandio, 2020; Chandio, et al., 2020; Chandio, et al., 2019; Punnoose, 2012; Haider, et al., 2019; Davis, 1989). The chief aim to TAM model is to investigate the acceptance and use of technology or information system whereas in this theory researchers borrow constructs (PEOU, PU and ITU) in order to investigate the users' intentional level to adopt the innovative system in their use of the digital assessment process (Chandio, 2019). Another model like UTAUT also measure the tendency of users to use the technology as the construct social influence has been derived from the model that assess the social and psychological influence and social wave of people regarding the use of information technology (Chandio, 2019; Haider, et al., 2019; Venkatesh, et al., 2003)
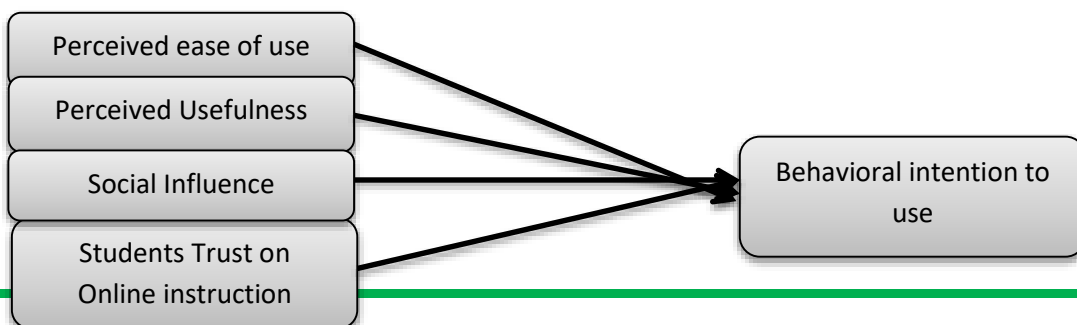
Conceptual framework model

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 assessment that is based on the technology infrastructure?
RQ2. How you perceive the digital learning and online assessment and what sort of perception is belonging to you to compare the digital and non-digital assessment?
RQ3. How students complain and ensure their digital feedback and assessment transparency. How student perceive to compare the traditional and online assessment towards their study career?
Hypotheses
H1. There is positive and significant relationship between the construct perceived ease of use (PEOU) and Behavioral intention to use (ITU).
H2. There is positive and significant relationship between the construct perceived usefulness (PU) and Behavioral intention to use (ITU).
H3. There is positive and significant relationship between the construct Social Influence (SI) and Behavioral intention to use (ITU).
H4. There is positive and significant relationship between the construct Students trust on online instructions (TIOI) and Behavioral intention to use (ITU).
The proposed construct PEOU implies the trouble free use of system by the users and it is based on the digital assessment users to use particular system in their study except any uneasiness (Chandio, 2020; Chandio, et al., 2020). There are numerous researches maintain the PEOU and PU relationship with the intention to use (ITU) and it also mediated with the criterion variable in order to discover the effortless perception of users relating to use of technology (Chandio, 2020; Chandio, et al., 2020; Chayomchai, et al., 2020; Haider, et al., 2019; Almahamid, 2010). This study focuses to meet the 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, and PU in predicting the intention to use ITU (Abu-Shanab, 2014).
Perceived usefulness is a perception of a user to consider the use of information technology to be more beneficial to educators in the way to maintain educational activities (Chandio, 2020). The proposed construct perceived usefulness (PU) implies the perception of digital technology users in their online assessment considers the adoption of innovative technology is a useful (Chandio, 2019). The proposed factors have been use in varies studies of the earlier researchers with a slight modification of language and subject matter of study as in the TAM model (PU), job fit (Thompson et al., 1991) and by Moore and Benbasat, (1991) mentioned as elative gain. The proposed variable perceived usefulness is to highlight the perception of users to consider the acceptance of technology is useful in their use to deliver online assessment. (Chandio, 2020; Haider , et al., 2019). The construct Students trust on online instructions has deep significance as the factors just maintain proximity to users' reliability in behalf of students how they perceive online instruction and trust in technological use in this process. Trust on online instructions can be defined as to encircle reliability of students on teachers adopted system and innovative mode of assessment during the pandemic outbreak in the country. Based on the data analysis it is investigated that all independent factors (PEOU, PU, SI, and TIOI) were maintained the considerable affect with the Behavioral intention to use (ITU). 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., 2021; Chandio, 2020; Haider, et al.,2018). 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.
Research methodology and sampling process
This study encircles the research methodology and sampling process which can be enumerated as below.
- A cross sectional study and quantitative research methodology was followed in the extant study.
- For data collection survey items were sued and five point likert scale with its 5 options applied to accumulate the respondents' opinions.
- In the way of data collection researcher followed the personal participation, colleagues' assistance, and online survey method as well.
- Data was collected from the teachers or online instructors who conducted online assessment to students in which 118 respondents participated.
- Data has been collected from the teachers and instructors from the six institutions where electronic pedagogical skills and online assessment were delivered. In this perspective, sampling has been secured from the participants of Shah Abdul Latif university, University of Sindh, Shaheed Mohtarma Benazir Bhutto Medical University, University of

Karachi, Sindh Agriculture University (Tandojam), and Shaheed Zulfqar Ali Bhutto Agriculture College (Dokri) and whole data collection process took place nine months (September 2020 t0 May 2021).

The main objective of this study is to measure perception of online instructors toward the adoption of innovative online assessment mechanism and instructors were asked to present their intentional approach in this regard according to designed survey items written in English language.

Data Analysis

This study inculcates the quantitative and survey based research and contains the cross-sectional study. All proposed hypotheses withstand a positive association with independent and dependent variables. The proposed determinants such as PEOU, PU, SI, and TIOI show their positive relationship with the criterion factor Behavioral intention to use. In addition, the factors were used by numerous earlier researchers with light variation in language, area of research, and nature of study as this research related to discover the intention of digital assessment users (student and teacher) during COVID-19 outbreak who apply information and communication technologies (ICTs) infrastructure in learning purpose and it investigates to highlight the electronic learning users in the way to present their online assessment (Chandio, et al., 2020; Chandio, 2020; Haider, et al., 2019). Five point Likert scale is used in this study for the data collection that contain five options for instance strongly disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly agree (SA). For the testing the validity of hypotheses correlation and regression analysis has been used.

Variables	Description	Frequency	Percentage
Gender	Male	102	86.4%
	Female	16	13.5%
	21-35	107	90.6%
Age	35-45	11	9.3%
Education	Master/Bachelor	38	32.2%
	M.Phil/ P.hd	80	67.7%

Table 2. Demographic characteristics

Proposed Items	Mean	SD
Q1: I intent to prefer the use of online assessment to be beneficial to learners and it can become powerful tool to evaluate the students study and class work (ITU).	3.672	.9634
Q2: I expect online assessment to benefit and become helpful to students during the pandemic outbreak and halted traditional educational activities and assessment (ITU).	3.7544	.74112
Q3: I envision the use of online assessment system can cover the assessment gap during the quarantine days (ITU).	3.7423	.86545
Q4: Using online assessment becomes an easy to my students and they prefer to adopt the innovative assessment system and to produce the digital feedback (PEOU).	3.7552	.84663
Q5: The use of online assessment is the trouble-freefor to students and they appreciate and take interest with the acceptance of technological use in their assessment process (PEOU)	3.7412	.76443
Q6: It would easy to students to produce their assessment by of online means and implement the online assessment initiatives (PEOU)	3.7545	.75623
Q7: Online assessment can be helpful for my students to meet the gap of traditional assessment process and to carry out their examination and study evaluation process timely (PU)	3.8354	.75634
Q8: Online assessment provides students an easiness to perform their examinational activities to be done (PU).	3.8443	.75243
Q9: Using online assessment can assist to produce students' performance and eliminate hindrance to asses them and their class outcome easily (PU).	3.7645	.76545
Q10: People influence me to continue to apply online assessment system to my students (SI)	3.7425	.74234
Q11: People of Influential class and educationist of my society consider support and encourage me to adopt the online assessment to my students in order to overcome assessment gap during COVID-19 outbreak (SI)	4.6543	2.66245
Q12: the most significant people consider the online assessment to be useful and prefer the online technological assessment to my students to be beneficial in their evaluation process of their studies (SI)	3.8645	.76534
Q13: Students Trust on Online instruction can help them to carry out their online assessment process and Online tests are more accessible like a paper-based exam. (TIOI)	3.7325	.73542

Q14: The technology used in online assessments is reliable to students (TIOI)	3.7413	.76445
Q15: Online assessments favour some students more than others (TIOI)	3.67564	.76244
Q16: I perceive that online assessment can do things paper based exams to my students (TIOI)	3.64365	.76554

Table 3. Survey items, standard deviations and mean

The relationship of constructs become significant in which correlation assists to find out to it and measure the degree relation of two factors to each other. Pearson's correlation reveals to find out the factorial relationship of independent factors and dependent Variable and a significant relation at the 0.1 level highlight to support the model and all determinants to remain significant with the criterion variable.

	ITU	PEOU	PU	SI	OA
ITU	1				
PEOU	.587**	1			
PU	.566**	.545**	1		
SI	.553**	.587**	.565**	1	
TIOI	.583**	.574**	.566**	.564**	1
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 4. Pearson Correlation

The all variables correlation has been measured that remained between (.545 to .587) in which correlation of PEOU (.587), PU (.566 .545) , SI (.487 .465), and TIOI (.566 .564) confirmed. In this way the highest relation sustained in the variable (.587) whereas the correlation to be measured the lowest with (.566 .545). Multiple regression shows the impact independent factor to dependent factor and test the hypothesis and it used to predict the value of two or more variables.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.799	.295		-2.687	.008
	PEOU	.383	.082	.284	4.680	.000
	PU	.354	.083	.265	4.316	.000
	SI	.2$7	.073	.178	3.415	.001
	TIOI	.238	.092	.163	2.411	.003

Table 5. Regression analysis

In the existing study 118 respondents produced their feedback to assist to meet the empirical study. The majority teachers according to findings support the adoption of digital assessment to meet the gap of traditional assessment process which was halted during the pandemic outbreak in the country. Moreover, it is recommended to pursue the longitudinal study and apply different factors to investigate the students' perception and dynamic nature of human being. The extant study highlights that all proposed variables supported and recommended researcher to expand the limitation and range of research at Pakistan level in order to drive out the technology users' intention to use online assessment. Moreover, parents of students and other citizen participation must be added to coming investigation of the electronic learning in the education sector thus at large scope study must broadened. The flaws and fluctuations in the education setup and poor investment on the information technology impact on the propagation and disseminating 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 can support to meet the situational requirement to boost up information technology literacy. The faculty member and users must adopt the necessary initiatives to promote electronic learning in assist learners to evaluate their study and meet the digital assessment criteria during the COVID-19 pandemic lockdown and other future critical natural calamities.

Conclusion

Assessment is an evaluation and calculating the learners' performance in the numerous ways and methods in their learning process and progress. Digital assessment literacy is also a cheap process to government itself that is based on the technological environment and users' expertise in the way to benefit from the online assessment process. Reviewing, evaluating, and grading assignments often turn a teacher's everyday work into a routine. In the digital assessment online tools and development of technology educators can materialize grade the work of students speedily and easily by saving precious time and high cost. According to findings, hypothetical development, and literature supported the assessment of online instructors where all assessor preferred the use of technological acceptance in the virtual based evaluation of students learning. The user s' outcomes is based on the teachers perception regarding their digital assessment and it is materialized via information communication technologies (ICT) and the internet.

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