

Behavioral Intentions to Online Learning Projects During the COVID-19 Era: Cross-Cultural Evidence

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Abstract

COVID-19 revolutionized the way people work and learn throughout the world. The bulk of businesses and service industries, including education, have begun to operate online. This study explored the intentions and usage behaviors of students in Higher Education Institutions (HEIs) in Pakistan, Bangladesh, and China toward accepting information and mobile technology for learning. Using the Unified Theory of Acceptance and Use of Technology (UTAUT) model and the theory of planned behavior, a multi-method approach was used to determine the model's aims. Cross-sectional data from a focus group discussion in Bangladesh and a case study in China show that university students accept information system-based learning well. However, because of the anxiety that students were experiencing as a result of load shedding and a change in routine, the results revealed a negative correlation between their intentions to utilize an information system and a mobile device for online learning. Furthermore, students urged that IR4.0 be implemented in Pakistan, and Bangladesh has received complete backing for online teaching-learning and research services.

Keywords: COVID-19, online teaching and learning, South Asian countries, higher education; social and psychological safety, COVID-19

Introduction:

Individuals, groups, and organizations were compelled to seal their doors due to the COVID-19 pandemic, but they invented online learning, working, and other activities to compensate (Hendrickson, 2020; Ferdig et al., 2020). Universities and other learning institutions have devised proactive techniques, policies, and frameworks to deal with unfavorable situations and maintain a smoother learning curve (Mohan et al., 2020; Xue et al., 2020; Izumi et al., 2020). The higher education commissions of Pakistan, Bangladesh, and China, in collaboration with the various ministries of education, have resolved to continue online learning for the learners' social, emotional, psychological, ethical, and mental development. In response to explicit orders from South Asian HECs such as Pakistan and Bangladesh, China's university authorities tightened their belts and backs to turn the threat into an opportunity and provide new direction and philosophies to the teaching-learning processes. With the assistance of the education commission, Standard Operating Procedures (SOPs) for university readiness, faculty readiness, and student readiness were designed in these nations to accelerate teaching-learning processes without any errors. The model resulted, to some extent, in the big cities, but in towns and far-flung areas, it failed to give the desired results.

This study has focused on finding out the most important and contributing factors for the usage of information systems and handheld devices for learning purposes in abnormal situations

like COVID-19, and whether information and communication technologies build resilience among learners, provide them with social and psychological safety, and, more importantly, support contiguity in their learning processes or not. Besides this, if we search, all online learning models have been developed in normal situations, where learners' social and psychological safety were not at risk, and there was no resistance towards contiguity and learners' resilience; therefore, all previous models and theories lack to cover abnormal situations like COVID-19.

Moreover, World's largest Learning Management System (LMS) and online learning system like Coursera, edX, Khan Academy, Udemy, iTunesU Free Courses, MIT Open Course Ware, Stanford Online, Codecademy, and Open Culture Online Courses failed to build resilience among learners; providing them social and psychological safety will make them worry and create fears concern like accreditations, verification, and credits hours transferring. Main focus of the study was to assess the social, psychological support and the level of anxiety among the learner, therefore, all demographic variables of the UTAUT model, and effect of effort expectancy, performance expectancy, social influence and facilitating conditions were kept constant and their quantitative assessment were not carried out, because major previous studies, have rendered consistent results regarding them (Zhang et al., 2018; Alonso et al., 2018; Zhang et al., 2018; Williams et al., 2017; Bundy et al., 2017; Al-Ajlouni et al., 2019; Canessa et al., 2017; Chao, 2019; Alhabeeb & Rowley, 2017).

Literature Review:

Technology integration in teaching-learning processes is not a need; it is essential to develop more robust infrastructure for the online mode of education (Gao, 2019; Hendrickson, 2020). Students want to learn with social, moral, ethical, and psychological integrity and support on normal and abnormal days, without any physical violence, hurts and disturbance (Hager & Marc, 2019; Hoque & Sorwar, 2017; Isaac et al., 2019). Psychologically, learning remains productive when the learner is at ease, safe, and secure because these elements keep the caching, capturing, learning, and receptive parts active, motivated, and accelerated (Chao, 2019; Junior & Santos, 2017). Learners feel stronger when they are independent of external pressures, do their best to explore their inner and hidden potentials and capacities, which pushes the learner to the self-actualization phase (Mwalumbwe & Mtebe, 2017). Physical, social, moral, psychological, and emotional safety is the basic right of every human being; therefore, it has been included in corporate and governance policies around the globe. Safety and security provide effort expectancies, performance expectancy, and improvement. According to Hoque & Sorwar (2017) and Williams et al. (2017), workers are expected to deliver more, and their behavioral control increases, when they feel safe and secure in all aspects and are respected.

Similarly, the findings of Panigrahi et al. (2018) stated that consciously and unconsciously at their best when their ergonomics are taken care of. Ergonomics should not be limited only to the working conditions but should include the social, emotional, and psychological safety and security.

According to Edwin Guthrie's contiguity theory, association may become stronger between learners and learning when it is continuous, smooth, and with long-lasting social and psychological support (Sadaf & Johnson, 2017). Similarly, if we take Maslow's theory of needs, McClelland's Human Motivation Theory, or Alderfer's existence-relatedness-growth theory, all argue for the safety and security of the agents at all levels and tiers (Khechine et al., 2020; Murray et al., 2013; Alonso et al., 2018). Besides all the above evidence, if we look into the

history, Sommer et al. (2013) have presented a model in which they described the process of learning in emergencies and crises like Corona, and they take both the individual and society both to respond and should be aligned to the social and individual needs, concerns, and requirements. Similarly, Hites et al. (2014) postulated a model for learning in emergencies in which the individual should be provided with social support and behavioral control for the continuity and contiguity of learning. Additionally, Murray et al. (2013) demanded the latest technological installation for smoother learning on normal and abnormal days for collaborative scenario modeling and special connectivity of learning. These models and theories also support social safety and contiguity for the learning process; therefore, demands for the deployment of the latest technological tools.

There are many theories and previous research findings that talk about the acceptability and applicability of the technology in our individual, group, and organizational lives. Theory of Planned Behavior talks about the behavioral aspects of the user's intentions and actual use of the technology in their daily operations (NiuLung-Guang, 2019; Gao, 2019). Similarly, socio-technology theory focuses on the deployment of the technology for the effective and efficient production and operational processes (Peechapol et al., 2018; Gao, 2019). Moreover, Organizational Theory and New Institutional Theory support the acceptance and applicability of information and communication technologies for sustainability, maintainability, and development (Kao et al., 2018; Kanwal & Rehman, 2017). Especially, the theory of Interpersonal Behavior and the Theory of Reasoned Action are more engaged with individual engagement in certain behavior in a certain space and time. Further, it states that behaviors are driven by behavioral intentions, which are further based on three constructs: an individual's attitude, performance expectancy, effort expectancy, social norms, and facilitating conditions. It guides individual Intentions to actions; positive attitudes and behaviors, supported by favorable social norms, facilitating conditions, and high levels of perceived performance and effort expectancy, are the best predictors of behavioral Intentions and use behaviors (Steinmetz et al., 2016; Hites et al., 2014; Kanwal & Rehman, 2017).

Similarly, according to human psychology, it adopts all those objects that are productive, facilitative, and provide them better behavioral command and control (Hori et al., 2016). So many external stimuli exert their forces to change our behaviors voluntarily or involuntarily by stating their assumed usability, utility, and better control mechanisms. We act upon certain reasons, logic, and from a construct which influence our decisions (Panigrahi et al., 2018; Beach, 2017). Therefore, we can easily extend the UTAUT model towards operating and benefiting from LMS. For the current research, we have considered the UTAUT model. However, some additional variables are added to the model, based on the prevailing COVID-19 crisis, to examine how online LMS provides social, emotional, and psychological safety and security without compromising their learning processes. Based on the previous studies' results and theory extensions, variables of effort expectancy, performance expectancy, social influence, and facilitating conditions have been found to support exogenous variables to behavioral Intentions and use behaviors. The variables, i.e., "Effort Expectancy," "Performance Expectancy," "Social Influence," and "Facilitating Conditions," were taken from the UTAUT model (Kanwal & Rehman, 2017; Sadaf & Johnson, 2017). The construct of social and psychological safety has roots in distributive justice, contiguity behavioral learning theory, and Maslow's theory of human needs and organizational theories, respectively. These theories analyse behavioral intentions and technology acceptance and usage, and the prevailing social conditions, which even

force the learners to go for online classes (Hites et al., 2014; Alonso et al., 2018; NiuLung-Guang, 2019).

Unified Theory of Acceptance and Use of Technology (UTAUT) focuses more on the behavioral intentions of the user to adopt technology of any kind and type, not only limited to the adaptation of mobile and information technology in their learning and working operations (Zhang et al., 2017; Kanwal & Rehman, 2017). This theory provides a unified view and ground for the different perspectives from the personal, social, and organizational levels, which need to be taken into consideration while accepting any technology. Due to the versatility of the UTAUT model, it has proven its applicability in different domains and has been extended to different walks of life. UTAUT has the same utility for academia and has been used to measure the applicability and acceptability of the technology for learning and management systems (Dağhan & Akkoyunlu, 2016; Zhang et al., 2018).

UTAUT is basically derived from the Theory of Reasoned Action (TRA), but it has equal roots in Theory of Planned Behavior (TPB), Information System Theory, Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Interpersonal Behaviors (TIB), and Decomposed Theory of Planned Behaviors (DTPB) (Wang & Xiao, 2018; Khechine et al., 2020; Gunasinghe et al., 2019). One of the main premises of the UTAUT is how easy technology is to operate and how much it is considered useful, easy, and effective for the tasks assigned (Hori et al., 2016). In learning and management systems, the penetration of ICT is unavoidable; students and teachers are moving towards a paperless environment, getting notes and lectures on smartphones and information systems (Steinmetz et al., 2016). The increasing access to ICT creates a new paradigm for education known as online learning. Therefore, universities around the world have started to revise their strategies in order to adopt technologies that assist in achieving their pedagogical goals. Coursera, MOOC, MIT, Virtual University of South Asian Countries like China, Pakistan, Bangladesh, and NPTEL of India are examples of online learning management systems, which are operating around the clock at a click, and learners around the world are benefiting from it. Underdeveloped countries like Nigeria have developed their own open courseware system, where students around the country access NOUN OCW¹ (Sommer et al., 2013; Mwalumbwe & Mtebe, 2017). Similarly, the concept of Learning Factory (LF), especially for the humanities and language subjects, cannot be implemented without ICT support on normal and rainy days. These factors force learning organizations to be transformed at a faster pace due to technological disruption for effective and productive performance, besides stakeholders' satisfaction.

Students' and employed teachers' frustrations and psychological impacts are observed, whereas Andalib & Halim (2019) have proposed a conceptual framework to deal with the significant factors to reduce negative impacts. On the other hand, to reduce the challenging atmosphere in the career field and to channelize the negativity into a positive approach, Andalib et al. (2020) have also focused on the entrepreneurial side of the institutions or any organizations to deal with the demanding changes. Previously, through FGD data, Andalib et al. (2020) have also emphasized the financial establishment and support of the institutions through which other factors like remuneration and technological modifications are dealt with. Therefore, we can rightly conclude that LMS is one of the rapidly emerging technologies and is widely used in higher education. The proposed research model is illustrated in Figure 1.

¹ National Open University of Nigeria, Open Courseware

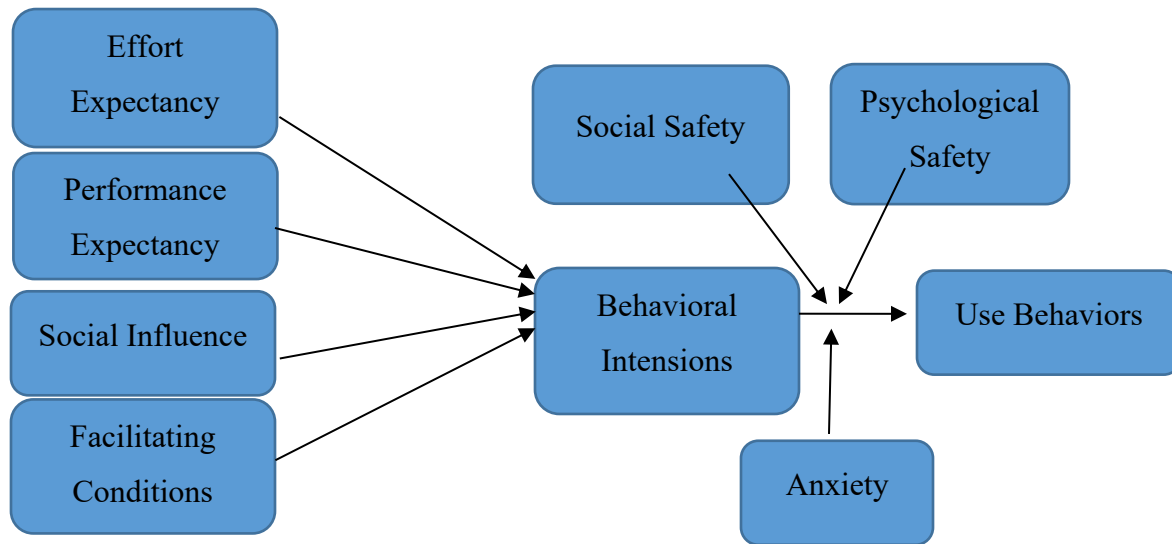


Figure 1: Hypothesis development and research model

- H₁: Effort expectancy has a significant effect on use behaviors with moderation of social safety and mediation of behavioural intention.
- H₂: Effort expectancy has a significant effect on use behaviours, with moderation of Psychological safety and mediated by behavioural intention.
- H₃: Effort expectancy has a significant effect on use behaviours, with moderation of anxiety and mediated by behavioural intention.
- H₄: Performance expectancy has a significant effect on use behaviours, with moderation of social safety and mediation of behavioural intention.
- H₅: Performance expectancy has a significant effect on use behaviours, with moderation of psychological safety and mediation of behavioural intention.
- H₆: Performance expectancy has a significant effect on use behaviours, with moderation of anxiety and mediation of behavioural intention.
- H₇: Social influence has a significant effect on use behaviours, with moderation of social safety and mediation of behavioural intention.
- H₈: Social influence has a significant effect on use behaviours, with moderation of psychological safety and mediation of behavioural intention.
- H₉: Social influence has a significant effect on use behaviours, with moderation of anxiety and mediation of behavioural intention.

H₁₀: The facilitating condition has a significant effect on use behaviours, with moderation of social safety and mediation of behavioural intention.

H₁₁: The facilitating condition has a significant effect on use behaviours, with moderation of psychological safety and mediation of behavioural intention.

H₁₂: The facilitating condition has a significant effect on use behaviours, with moderation of psychological safety and mediation of behavioural intention.

Materials And Methodology:

In this project mixed method has been used. First off, interviews were conducted with 19 experts and educational leaders with the major consent to know the behavioural intentions of students in online learning during COVID-19. The experts thought that ‘yes’(90%), the capacity and capability of learning through online has been developed through information and mobile technology. It also includes routines, programs, and subroutines, which help in the online teaching-learning process. They also added that information systems and mobile technology ensure a platform for independent and self-paced learning has resolved much of the learning issue, but according to the opinions of 10%, anxiety remains in online learning because logistical and infrastructural support in the developing countries is not as robust as it should be. Similarly, a focus group discussion was added to the study from Bangladesh, where all critical factors were graded as more crucial to the online learning processes. Similarly, a case study of China has been added to contextualize the concepts and get lessons learnt. Moreover, a cross-sectional survey was conducted, which was quantitative, and data were collected from registered public and private universities of South Asian Countries like Pakistan and Bangladesh, and 392 graduate and undergraduate students participated in the survey. In Pakistan, a total of 100 students participated in the survey, where 50% were postgraduate students and another 50% were undergraduate students. 72.5% were in favor of the online teaching-learning process, and 19% of them expressed their dissatisfaction, as internet facilities and other supportive technologies are not available. Either they are too expensive to afford or unavailable. 8.5% of students were neutral in this matter. In Bangladesh, 292 students participated in the survey. Among them, 150 were postgraduates, and 142 were undergraduates. 88% supported the online platform for the teaching process because students were happy with the online assessment policy and teaching methods. Only 12% showed anxiety because of insufficient logistical support and little knowledge about online apps like Zoom and Classroom in rural areas. The Stratified Random Sampling technique was used to ensure that all faculty registered with the Higher Education Commission (HEC) of South Asian countries such as China, Pakistan, and Bangladesh received a decent representation. This sampling technique was chosen in response to a recommendation in the social and management sciences to cover a larger geographical area with suitable presentation to all types of demographic respondents (Geerreddy, 2017; Leavitt, 2011). The study’s objectives were determined using a questionnaire adapted from previous investigations. To make the study more meaningful, a quota (purposive) sampling technique was used in the second phase of the sampling to collect data only from faculty and students who had experience

using an information and communication system for a year (Akgün et al., 2007; Alhabeeb & Rowley, 2017; Birmingham, 2015).²

Analysis and Discussion:

This section presents the demographic information on the final 392 respondents retained in the study. The age and qualification of the respondents are among the key demographic data sought in the survey. As part of the screening process, some basic information on the respondents' network patronage was also obtained. The demographic information of the respondents is presented in Table 1.

Table 1: Demographic Information of the respondents

Items		Frequency	Percentage
Type of university	Public	207	47.2%
	Private	185	52.8%
Qualification	BS	13	3.3%
	MS	171	43.6%
	PhD	208	53.1%
Experience using Information System	1-5 years	193	49.23%
	6-10 years	122	31.12%
	11-15 years	47	11.98%
	More than 15 years	30	7.6%
Experience using Mobile technology	1-5 years	201	51.27%
	6-10 years	138	35.20%
	11-15 years	53	13.52%
Faculty Details	Social Science	211	53.8%
	Engineering Sciences	106	27.0%
	Medical Sciences	75	19.1%
Total		392	100%

Confirmatory Factor Analysis:

The measurement model exhibits the relationship between manifest variables and their underlying construct (i.e., latent variable). The structural model shows causal relationship among the measurement models, which are commonly driven by research hypotheses. Before assessing the structural model, the measurement model must first be assessed.

Table 2 shows that all factor loadings are acceptable, as they are greater than 0.700. Based on the factor loadings, AVE and CR were computed. Similarly, AVEs of the constructs are also high, ranging between .678 and .740 for the constructs under study, and between .681 and .744. Moreover, CR of all the constructs, indicating the internal consistency of measurement items, is also at a high level. CR values for organizational learning effectiveness are greater than .852. Based on the factor loadings, AVEs, and CRs, the criteria of convergent validity are

² There is no conflict of interest among the authors. Moreover, the data collected promises all ethical aspects. Furthermore, the researcher acknowledges the support of academic leaders, who helped us during the research project.R

successfully fulfilled for all the indicators of each variable. In conclusion, for each construct, all the items are one-dimensional and converge or share a high proportion of variance in common. Similarly, the assessment of Predictive Accuracy, Effect Size, and Predictive Relevance (Q^2 , R^2 , F^2) falls in the acceptable range; therefore, the model is fit enough to proceed with the research study comprehensively.

Table 2: CFA Table for Research Constructs

Construct	No. of item*	Factor Loading**	AVE	CR	χ^2/df	Goodness of Fit Indices		
						Q^2	R^2	F^2
EE	6	.748 - .901	.688	.901	1.170	0.254	0.451	0.295
PE	4	.764 - .936	.681	.922	2.696	0.17	0.438	0.201
SI	5	.832 - .854	.743	.917	1.276	0.203	0.444	0.086
FC	4	.826 - .839	.744	.927	2.924	0.272	0.209	0.380
C	4	.744 - .840	.611	.852	1.813	0.291	0.437	0.020
SS	6	.714 - .869	.675	.894	2.904	0.211	0.342	0.020
PS	6	.766 - .886	.666	.915	2.471	0.293	0.446	0.091
BI	4	.772 - .879	.714	.923	2.155	0.254	0.451	0.402
UB	4	.753 - .835	.718	.922	1.915	0.17	0.438	0.024

HTMT Criterion:

Table3: The HTMT Values

	EE	PE	SI	FC	C	SS	PS	BI	UB
EE	0.702								
PE	0.079	0.636							
SI	0.057	0.524	0.459						
FC	0.099	0.841	0.476	0.630					
C	0.060	0.675	0.386	0.523	0.458				
SS	0.076	0.508	0.525	0.454	0.403	0.642			
PS	0.078	0.599	0.637	0.534	0.433	0.759	0.643		
BI	0.048	0.533	0.608	0.440	0.449	0.685	0.791	0.64	
UB	0.841	0.476	0.841	0.476	0.841	0.476	0.841	0.54	0.62

The third and most recently advanced method of establishing discriminant validity is through the HTMT criterion advanced by (Ashkanasy, 2016). The HTMT refers to the average of the correlations of indicators between different constructs, relative to the average of the correlations of indicators within the same construct (Ashkanasy, 2016; Canessa-Terrazas & Morales-Flores, 2017). The HTMT ratio is suggested as a better and more stringent criterion for assessing discriminant validity. In using the HTMT ratio to assess discriminant validity, the presence of ratios closer to one is considered evidence of a lack of discriminant validity between constructs. Two cut-off ratios are often considered in HTMT evaluation: (1) the conservative ratio of 0.9 (HTMT.90) advocated by Gold et al. (2001) or (2) the stringent ratio of 0.85 (HTMT.85) advocated by Kline (2011). The cut-off ratio of 0.85 (HTMT.85) is however, noted as offering the best criterion when compared to all other methods of assessing discriminant validity (Ramayah et al., 2016). Thus, any inter-construct ratio greater than 0.85 would be considered as having poor discriminant validity.

The HTMT ratios obtained in this study, as shown in Table 3, clearly indicate that there is no problem of discriminant validity between the constructs. The highest inter-construct HTMT recorded is the value of 0.84 (i.e., between ETH and LEG). This value is below 0.85, and as such there is sufficient evidence of discriminant validity in the study.

Fornell-Larcker Criterion:

Discriminant validity is established using the Fornell-Larcker criterion by comparing the correlation estimates between the constructs with the square root of the average variance retrieved from the corresponding constructs (Fornell and Larcker, 1981). If (1) the correlation estimates among components do not exceed 0.85, and (2) the square root of the AVE is bigger than the correlation estimates of other constructs, discriminant validity is proven (Fornell and Larcker, 1981). As shown in Table 3, discriminant validity was proven in this investigation because the inter-construct correlation values were less than 0.85. Moreover, the square roots of AVE for each construct, such as the diagonal values in bold font, are all higher than the off-diagonal association values with other constructs. As a result, these findings give sufficient evidence of the constructs' discriminant validity.

Table 4: Squared Roots of AVEs

	EE	PE	SI	FC	C	SS	PS	BI	UB
EE	0.824								
PE	0.037	0.747							
SI	-.018	0.357	0.780						
FC	0.082	0.569	0.362	0.753					
C	0.022	0.445	0.288	0.380	0.708				
SS	0.044	0.363	0.428	0.362	0.308	0.822			
PS	0.063	0.423	0.508	0.415	0.328	0.630	0.797		
BI	0.037	0.319	0.422	0.298	0.283	0.483	0.552	0.738	
U	0.022	0.445	0.288	0.380	0.708	0.313	0.207	0.459	0.814

To assess the students' intentions in online learning, the bootstrap algorithm was applied to the model. In the model, besides the actual constructs of the UTAUT model, the moderating effect of social and psychological safety and anxiety was assessed on the behaviour Intentions and actual use of information system devices like mobile (smartphone), laptop, personal computer, and other electronic devices. The model is given in Figure 2.

The hypothesis for the moderating effect of social safety and psychological safety on effort expectancy, performance expectancy, social influence, and facilitating conditions has significant effects on use behaviors, with the moderation of social safety and mediation of intention to use. All dependent, independent, and moderating variables, i.e., social safety, psychological safety, effort expectancy, anxiety, social influence, and performance expectancy factors, are above 1.96; therefore, all of the items have been loaded fully to their respective constructs and are reliable. Similarly, the moderating effect of social safety and psychological safety is positive, which indicates that students were feeling social and psychologically safe and secure during online classes during COVID-19. But moderating effect of anxiety remained negative when assessing its effect, which means that students felt boredom and anxiety during online classes.

As mentioned in the research methodology phase, the study was conducted in two phases, i.e., survey and feedback through online interviews; the students urged that there were many reasons for anxiety, where the change of routines and the self-isolation pushed us towards depression and anxiety. Secondly, in South Asian Countries like Pakistan, Bangladesh, etc. Infrastructure for 3G and 4G has not been developed and is not available in the off-city localities, which added to their depression; fear of missing the class and, eventually, anxiety.

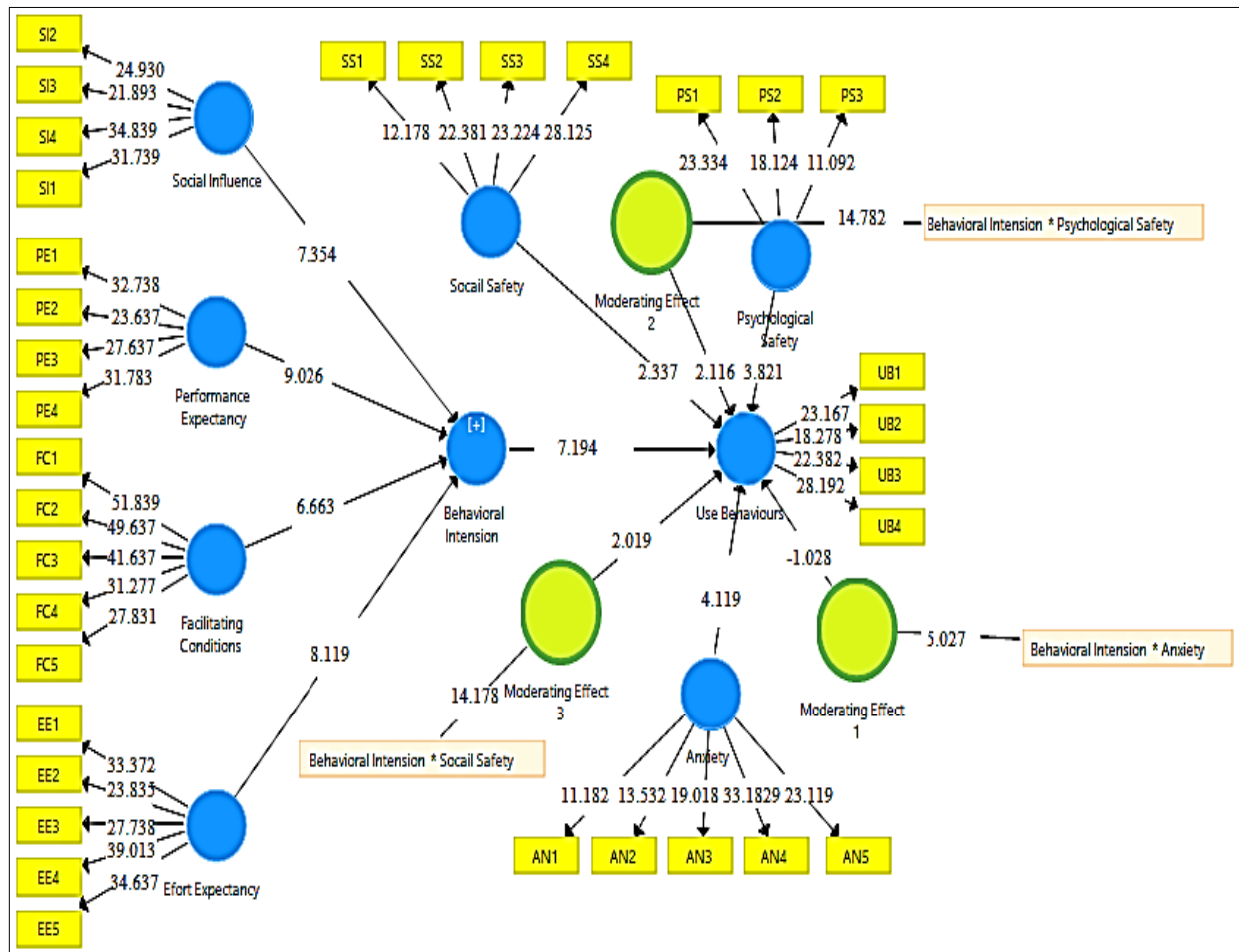


Figure 2: PLS Bootstrapping Results to Assess the Effect of the Online Learning Intentions

Moreover, the light/energy load-shedding further added to our anxiety; in extremely hot weather, the pressure of study, self-isolation, and the fear of missing classes and assignments, many students froze the semester, and some dropped the technical and analytical subjects. The findings can also be supported by Table 4.

Table 5 shows the results of the bootstrap algorithm, in which all hypotheses have been assessed. The path coefficient, T-value, p-value, and limits of the hypothesis indicate that, except for anxiety, all variables and their associated interactions and mediation have a significant effect on the use behaviors of the learner. The anxiety may be due to the Covid-19 pressure, may be the shortages of learning support facilities and resumption (shortages of power), but has affected the

learner capacity in online mode of learning. The rest of the hypothesis and variables' results are also supported by the previous research (Al-Ajlouni et al., 2019; Aldholay et al., 2018; Alhabeeb & Rowley, 2017). These numbers indicate that the use of information and communication technology devices provided social and psychological safety and security, in which the students continued their learning smoothly and without any disruption. But the anxiety factors remained consistently hindrance, which was due to load shedding, non-availability of communication signals, and abrupt changes in routine, as proclaimed during the interview session. Furthermore, the value of $R^2=0.210$ indicates the role of information and communication devices in online learning and the provision of social and psychological safety and security. The facts indicate that the use of information systems moderates social and psychological safety by 21.0% when used for learning effectiveness in learning. It also means that the higher the level of use of information systems, the more effective online learning will be. The findings also indicate that hypothesis for the social and psychological safety have been accepted, and the hypothesis for anxiety has not been supported, but the reasons for this were other than academic.

Table 5: Hypothesis Testing

No	Hypothesis	Path Co-efficient	T-Value	P-value	LL	UL	Decision on hypothesis ³
1.	EE*BI*SS*UB	.213	5.205	.000	.130	.155	Yes
2.	EE*BI*PS*UB	.378	9.023	.001	.029	.284	Yes
3.	EE*BI*AN*UB	-0.341	8.013	.000	.120	.314	No
4.	PE*BI*SS*UB	.472	7.930	.001	.138	.319	Yes
5.	PE*BI*PS*UB	.034	5.028	.017	.001	.438	Yes
6.	PE*BI*AN*UB	-.054	3.091	.000	.002	.273	No
7.	SI*BI*SS*UB	.073	0.056	.007	.045	.310	Yes
8.	SI*BI*PS*UB	.213	5.205	.000	.105	.130	Yes
9.	SI*BI*AN*UB	-1.18	9.023	.001	.029	.284	No
10.	FC*BI*SS*UB	.378	0.013	.009	.290	.314	Yes
11.	FC*BI*PS*UB	.472	7.930	.001	.208	.319	Yes
12.	FC*BI*AN*UB	-.213	5.205	.000	.105	.130	No
Total $R^2=.210$		Delta $R^2= .007$					

Focus Group Discussion Analysis:

In the last, the qualitative data have been collected through focus group discussions in the institutes of the South Asian region. Among various emphasized factors, the few significantly highlighted factors found in this region are financial capital and financial support, Entrepreneurial bricolage, Grievance Management system of the employees, social safety of the students, social recognition of the academic staff and the institutions, social security, technological upgradations, frustration regarding mental and physiological health dealing in the institutions, and employees' rights. FGD data has been collected and coded with the NVivo tool.

Table 6 reveals that the focus group discussion among thirty participants, who were from both public and private institutes, discussed various factors, of which they emphasized ten factors most significantly. These ten factors are always negligible in this region but are definitely in increasing demand over time. The factors are related to quantitative data in a way to show if a

³ Note: Supported=Yes, Not Supported=No

certain qualitative factor is emphasized, the quantitative data also simultaneously increases. Andalib and Darun (2018) have increasingly discussed employees' rights and related factors to disclose the real scenario that needs to be matched with the theoretical ones as soon as possible in the world context.

Table 6: Qualitative Data

No.	Emphasized Factors	Relating to Quantitative Data	Type of Institution	FGD P
1.	Financial Capital and Financial Support	EE and PE	Private	> 10
2.	Entrepreneurial Bricolage	PE and EE		> 15
3.	Grievance Management System of the employees	PE		>20
4.	Social Safety for the Students	SI	Public	> 20
5.	Social recognition of the Academic staff and institutions	SI and EE		> 10
6.	Social Security	SI and EE	Private	> 8
7.	Technological upgradations		Public	>15
8.	Employees’ Rights as per UN		PE	>10
9.	Frustration regarding mental and physiological health dealing in the institution	PE, EE	Private	>20

Case of China:

China was the major first attack of the Covid-19. Being a technologically advanced country, distance education started in approximately in 1940s with postal, radio, and televised programs, and online and e-learning facilities have been available for the last two decades, as indicated in Figure 3, showing the increasing interest in online learning, besides contributing to the national economy. China has already implemented IR4.0, which provided infrastructural support for the entire online learning process. During Covid-19, they launched two global online learning platforms, "XuetangX"⁴ and "iCourse International"⁵, which deliver around 3000 courses from the best universities in the world. But still, anomalies were found in the online classes, especially for the technical classes, quantitative classes, and music classes. The newly enrolled students were not comfortable and had reported disruptions. Similarly, in the rural-urban areas, the same kind of disruption has been reported (Huang et al., 2020). Some researchers have reported that the officials are not clear regarding the effectiveness of the mode of delivery, and unexpected time losses are expected to come back (Zhang et al., 2020; Huang et al., 2020). Thus, we can conclude that being technologically developed country, China also faced problems replacing physical classes. Social and psychological support must be a prerequisite for classes because social, psychological, and emotional comfort keeps reception and perception active. Therefore, there is a dire need for the social and psychological needs of the learner to be fulfilled, so that they can grasp the materials with head and heart.

⁴ www.xuetangx.com

⁵ www.icourse163.com

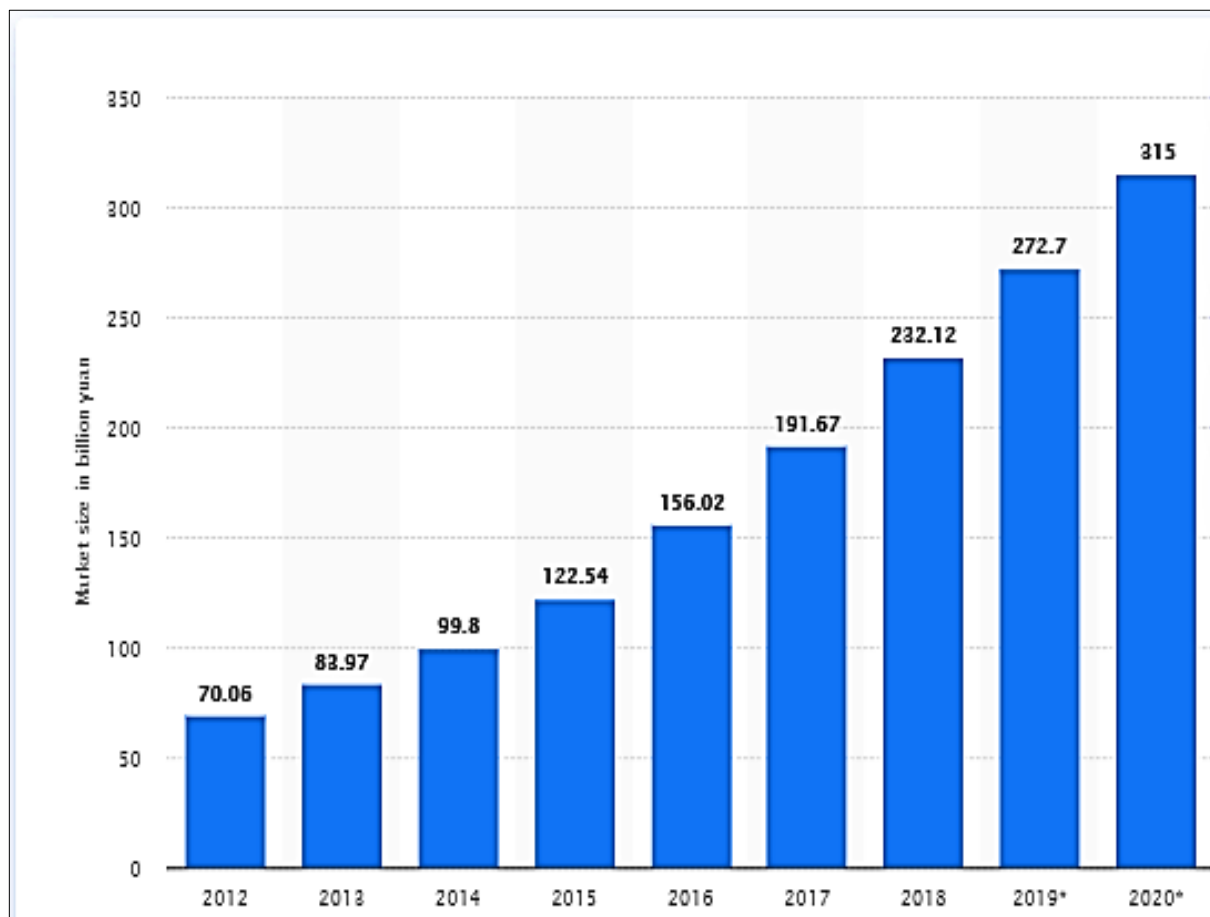


Figure 3: Increasing interest in online learning⁶

Conclusion and Recommendations:

According to the conclusions of the study, information systems and mobile technologies have the competency and ability to support online learning. R^2 indicates that students found the information system and mobile technologies to be useful for online learning and growth. Similarly, the Beta was found to be significant for social and psychological constructs, implying that the role of information systems and mobile technologies plays an important role in the smooth delivery of online learning, because social or physical distancing is the most important requirement for staying safe in this pandemic situation. Moreover, the T-value and P-value were both significant, supporting the hypothesis that information systems and mobile technologies have a role in the effectiveness of online learning. Furthermore, the study's findings contradict earlier research findings, which suggest that information systems and mobile technology may lack the capacity and capability to give social and psychological support to individuals and organizations (Aggestam, Durst & Persson, 2014; Alalwan et al., 2016; Apostolou, 2014) . This

⁶ Source: <https://www.statista.com/statistics/739487/china-online-education-market-size/>

study also paves the way for future research into how information systems and mobile technology can produce specific applications, algorithms, and sub-routines, such as decision support systems and expert systems, that can improve the effectiveness and development of online learning. This research also added to the corpus of knowledge by expanding socio-cognitive development theory, organizational theory, and new institutional theory while focusing on learner social psychological support. Furthermore, according to Anthoine, Moret, Regnault, Sébille & Hardouin (2014) and Ballo & Martin (2014), the social and behavioral sciences have an R^2 value of more than 20%, indicating that they have larger effects than natural and biological sciences. The R^2 value for all of our constructs is above the specified limit, implying that the moderation of the information system and mobile technology influence is significant, which is the study's key contribution according to this premise. This research added to the body of knowledge and built on prior research that claimed that information and communication technology play a key role in ensuring social and psychological safety and security (Alalwan et al., 2016; Al-Mamary et al., 2014; Agarwal & Garg, 2012; Aljuaid et al., 2013). This report also advises policymakers to implement South Asian policies. Countries such as Pakistan and Bangladesh are deploying 4G, and China has launched and implemented 5G, which will support infrastructure development for 3G, 4G, and 5G in the future, which will not only benefit teaching and learning, but will also accelerate the country's economic development. There will be more online business and operations management options available.

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