Transition to E - Learning : By Choice or By Force – A Cross - Cultural and Trans-National Assessment

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Abstract

Purpose : This study focused on the transition to e-learning in these turbulent times and its adaptation mode. The study aimed to measure teachers' and students' satisfaction and adoption levels towards e-learning in KSA and India due to the COVID-19 pandemic. In a nutshell, we intended to address three primary research questions: What were the factors affecting the satisfaction and adoption level of teachers & students towards e-learning during the COVID-19 pandemic? Does choice moderate the associations between perceived usefulness, perceived ease of use, satisfaction, and behavioral intention to use? Does satisfaction mediate the relationship between perceived usefulness, perceived ease of use, and behavioral intention to use?

Methodology : Four hundred seventy-six faculty members and students from KSA and India were considered as the sample. A structured questionnaire was used to collect the data, and structural equation modeling was used to analyze the same.

Findings : The findings suggested that Perceived Usefulness (PU) had a significant impact on Satisfaction (SAT) and Behavioural Intention to Use (BIU). Perceived Ease of Use (PEU) did not have a substantial effect on Satisfaction (SAT), but had a significant impact on Behavioural Intention to Use (BIU). Further, Satisfaction (SAT) and Choice (CHO) too had a substantial effect on Behavioural Intention to Use (BIU). Satisfaction (SAT) mediated the relationship between Perceived Ease of Use (PEU) and Behavioural Intention to Use (BIU). Again, Choice (CHO) moderated the relationship between Perceived Ease of Use (PEU) and Behavioural Intention to Use (BIU).

Originality : This study was unique in comparing the impact of different cultures, economies, and governance models on this transition to e-learning. It provided a cross-cultural, trans-national, and cross-sectional analysis with a futuristic e-learning framework.

Keywords : **e-learning, COVID-19, choice, perceived usefulness, perceived ease of use, behavioural intention to use, satisfaction, KSA, India**

JEL Classification : A20, M10, M20

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The most crucial change in learning during the age of information is the change in perspective from an educator focused to student-focused. Electronic learning growth has stimulated the wide reception of student-focused training and several instructive patterns (Klar & Brewer, 2013). Electronic learning has drawn critical consideration from different institutes, companies, and educationists. E-learning has more advantages – with diminished instruction cost, people can access it easily from any part of the world and it is more flexible and comfortable. Instructive qualities can be likewise upgraded by developing the content from time to time for the benefit of students.

Since the end of 2019, the Coronavirus pandemic has rained heavily and picked up the attention among individuals all throughout the world. The pandemic has demolished the travel industry's business as well as the training and education industry in various countries (Nicola et al., 2020). From the financial perspective, COVID-19 has affected countries' economic conditions and raised the joblessness rate due to industries' insufficiency in the market (Mishra et al., 2020). Additionally, every industry is facing problems due to various government policies like physical distancing or social distancing (Kashyap & Raghuvanshi, 2020).

In the education industry, the COVID-19 pandemic forced all the countries to dislodge the institutes' learning exercises offline, and the use of online learning has started everywhere (Liu, et al., 2021). This change drove all educational organizations to amalgamate technology in learning. A complete online course usually requires a plan, for example, suitable online learning materials in a specific theme backed by audio and video content. Due to the pandemic, educational institutions and instructors have been facing many difficulties related to online teaching, like instructors have less experience using online tools, proper infrastructure is not there, there are issues with internet connectivity, etc. (Dhawan, 2020). The instructors also face many online learning problems.

Apart from few disadvantages, e-learning also has many advantages, like assessment is easy to do, interaction with the students is quick, audio and video contents can be used easily, videos can be recorded, etc. At the college level, the advancement of e-learning needs a supportive network from the teachers, students, and technologists, which makes e-learning popular. Regarding India & KSA (Kingdom of Saudi Arabia), the usage of e-learning faces enormous difficulties. E-learning is connected with many problems related to internet connection, content design, instructors' incompetencies to handle e-learning, etc. Nowadays, after the invention of e-learning, it ultimately depends on students whether they are willing to do self-study or not.

The prevailing conditions throughout the world are gloomy due to the attack of COVID-19. Due to the increasing populace affected by the Coronavirus, nations worldwide enforced lockdowns. Along with some other sectors, the education industry is also facing massive trouble for conducting sessions with students, teaching, conducting examinations, evaluating internal assessments, etc. The whole education system has now turned to the e-learning mode. All the work done by teachers and professors with students has to be conducted virtually with physical contact being stopped by the governments.

Now, the big question is : Due to this pandemic, has e-learning become a forced choice for the students and teachers or not ? The lack of research on the adoption of e-learning helped us to frame the research objective. The study aims to measure teachers' and students' satisfaction and adoption levels towards e-learning due to the COVID - 19 pandemic.

In a nutshell, we intend to address three primary research questions, which are as follows :

- **RQ1 :** What are the factors affecting the satisfaction and adoption level of teachers and students towards e-learning during the COVID-19 pandemic ?
- **RQ2 :** Does choice moderate the association between perceived usefulness, perceived ease of use, satisfaction, and behavioral intention to use e- learning ?
- **RQ3 :** Does satisfaction mediate the relationship between perceived usefulness, perceived ease of use, and behavioral intention to use e - learning ?

The study also makes two novel contributions to research. First, there are several studies related to e-learning adoption that have been conducted previously, however, no analysis is available on how several factors like perceived usefulness and ease of use affect the satisfaction and behavioral intention of teachers and students in India and KSA. Second, the moderation effect of choice has also been shown in the study ; whereas, nationality has been used as a control variable. Third, the mediation effect of satisfaction has also been shown in the study.

Literature Review, Development of Hypotheses, and Research Model

Perceived Usefulness and Satisfaction

In e-learning, the perceived benefit is a common name and has been used by multiple researchers previously (Salloum et al., 2019). Perceived usefulness towards the online courses delivered through various online mediums helps the students understand the system and gives satisfaction to adopt these kinds of courses shortly (Mohammadi, 2015b). The previous studies also supported that perceived usefulness had a significant impact on students' satisfaction (Saadé & Bahli, 2005). Perceived usefulness has been used as an exogenous and endogenous factor in various studies previously (Biswas & Chakraborty, 2019 ; Chakraborty, 2018). Ease of use, facilitating conditions, and course delivery affect the perceived usefulness (Buchanan et al., 2013). Perceived usefulness has also been examined as a factor for e-learning success (Alsabawy et al., 2016). Previous studies reiterated that perceived usefulness is one of the vital pillars of e-learning success as well as it increases the satisfaction level of students as well as faculty members (Valverde - Berrocoso et al., 2020). Hence, we propose that :

↳ **H1(a) :** Perceived usefulness has a significant and positive impact on satisfaction.

Perceived Usefulness and Behavioral Intention to Use

Past examination recommended that the achievement of e-learning relies upon continuous usage (Al - Qahtani & Higgins, 2013). Studies demonstrated that perceived usefulness adds to the students' behavioral intention to utilize the e-learning framework (Tarhini et al., 2013). Perceived ease of use appears to influence behavioral intention. Nevertheless, despite past examinations, perceived ease of use was the sole determinant of intention to use, while perceived usefulness did not have a critical impact on intention to use (Stocchi et al., 2019). Hence, we hypothesize :

↳ **H1(b) :** Perceived usefulness has a significant and positive impact on behavioral intention to use.

Perceived Ease of Use and Satisfaction

Perceived ease of use is a degree to which a person can quickly or effortlessly use technology (Carter & Bélanger, 2005). Perceived ease of use had a significant impact on students' and faculty members' satisfaction when accessing e-learning courses (Mohammadi, 2015a). The learners also perceived that though online learning is easy to use and effortless to handle, it will automatically give more satisfaction (Chakraborty, 2021 ; Van Tryon & Bishop, 2009). It was also found from previous studies that learners devoted more time to learn the contents which were provided by instructors through e-learning, which led them towards a higher level of satisfaction (Chakraborty, 2020 ; Orvis et al., 2009). Hence, we hypothesize :

↳ **H2(a) :** Perceived ease of use has a significant and positive impact on satisfaction.

Perceived Ease of Use and Behavioral Intention to Use

Perceived ease of use is how much an individual accepts that utilizing a specific framework would be free from effort (Wang et al., 2003). Previous studies recognized perceived usefulness as a contributing component of behavioral intentions (Jeong, 2011). Perceived ease of use has been applied repeatedly in marketing to explore new items or frameworks (Cho & Sagynov, 2015 ; Kumar et al., 2021). Earlier literature approved a particular connection between ease of use and online learning (Vijayasarathy, 2004). Previous investigations additionally affirmed a positive relationship between perceived ease of use and intentions regarding e-learning (Al-Gahtani, 2016). In particular, a shopper is bound to create satisfaction and have positive goals toward online encounters. Buyers had a positive sensation of fulfillment with online meetings when they were valuable and straightforward to utilize (Bridges & Florsheim, 2008). It was also observed that ease of use significantly affected consumers' satisfaction (Belanche et al., 2012). Hence, we propose :

↳ **H2(b) :** Perceived ease of use has a significant and positive impact on behavioral intention to use.

Satisfaction and Behavioral Intention to Use

Satisfaction is characterized as an individual's disposition or sentiments related to different components that influence a specific circumstance (Cyders & Smith, 2008). In human – PC collaboration, client fulfillment is commonly imagined as the sign of kind gestures accomplished from communication (Chakraborty, 2019 ; Mencarini et al., 2019). The idea of client fulfillment speaks to the degree of congruity between the clients' data framework and their prerequisites (Möller et al., 2008). Learners invest energy, sweat, and cash to get high calibre instruction and accordingly recognize their enlightening experiences as being of higher worth (Cho et al., 2009). Satisfaction impacts learners' inspiration levels, and this inspiration has consistently been considered as one of the main components in scholarly achievement (Chakraborty & Biswas, 2020 ; Dornyei, 1994). Hence, we propose:

↳ **H3:** Satisfaction has a significant and positive impact on behavioral intention to use.

Mediating Effect of Satisfaction

Satisfaction is an essential aspect of e-learning (Paechter et al., 2010). If the students and faculty members are satisfied with online learning, there is always a high chance that they will adopt the e-learning wholeheartedly (Solomon et al., 2010). Similarly, if the faculty members and students are not satisfied with online learning, then there is also a chance that they will not adopt the e-learning courses soon (Svensson & Baelo, 2015). Since the last few decades, satisfaction has received a significant amount of attention in case of online learning (Rienties & Toetenel, 2016). Due to the ease of use, reduced costs, and consistency, e-learning is in high demand, which satisfies the whole community, including students, teachers, and parents (Afshari et al., 2009). Therefore, in this study, we examine the mediating effect of satisfaction on the association between perceived usefulness, perceived ease of use, and behavioral intention to use. Hence, we propose the following hypotheses :

↳ **H4a :** Satisfaction mediates the association between perceived usefulness and behavioral intention to use.

↳ **H4b :** Satisfaction mediates the association between perceived ease of use and behavioral intention to use.

Moderating Effect of Choice

Researchers have used choice as a variable that describes choosing an e-learning platform as someone's own

choice or as something which is forced by the college or university (Seale & Cooper, 2010). It was also observed whether the options could be caused by others or not (Dhar & Simonson, 2003). The choices were mostly dependent on circumstances or rules or policies established by the institutes (David, 1994). Options are an essential aspect in the field of adoption of e-learning (Lee, 2006). The students and faculty members of institutes have different choices when choosing online learning (Bolliger & Wasilik, 2009). Therefore, in this study, we examine the moderating effect of choice on the association between perceived usefulness, perceived ease of use, satisfaction, and behavioral intention to use. Hence, we propose the following hypotheses :

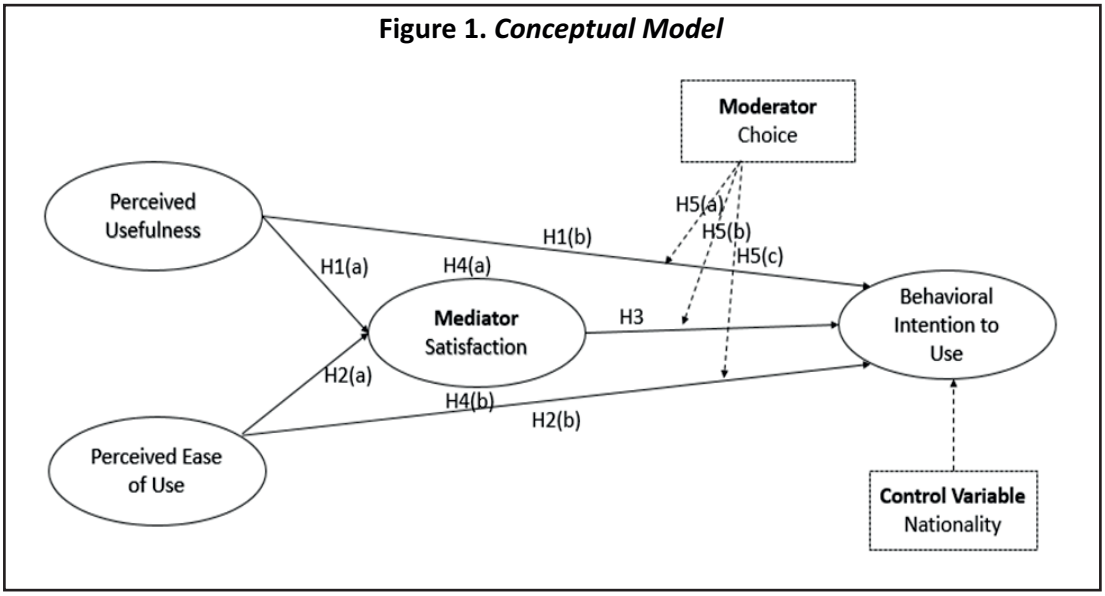
- **H5a :** Choice moderates the association of perceived usefulness and behavioral intention to use.
- **H5b :** Choice moderates the association of satisfaction and behavioral intention to use.
- **H5c :** Choice moderates the association of perceived ease of use and behavioral intention to use.

Control Variables

The present study uses nationality as a control variable. Previous studies have expressed that nationality is associated with e-learning, and it can influence the decision-making process of choosing or adopting e-learning (Alenezi, 2012). We have tested the hypotheses using nationality as a control variable.

The present study has conceptualized a research model with choice as a moderator, satisfaction as a mediator, and nationality as a control variable. Figure 1 depicts the conceptual model.

Figure 1. ***Conceptual Model***



Methodology

Sample Selection and Data Collection

The respondents were faculty members and students located in KSA and India. The responses were collected with the help of a questionnaire and a stratified random sampling method was used to select the sample. Both online and

Table 1. ***Demographic Profile of the Survey Respondents***

		Nationality								
		KSA			India			Total		
		Type of Respondent			Type of Respondent			Type of Respondent		
		Teacher	Student	Total	Teacher	Student	Total	Teacher	Student	Total
Age (years)	<30	24	42	66	28	32	60	52	74	126
	31–45	36	70	106	62	79	141	98	149	247
	>45	19	34	53	28	22	50	47	56	103
	Total	79	146	225	118	133	251	197	279	476
Gender	Male	47	75	122	75	74	149	122	149	271
	Female	32	71	103	43	59	102	75	130	205
	Total	79	146	225	118	133	251	197	279	476
Education	UG	0	75	75	0	66	66	0	141	141
	PG	29	66	95	62	61	123	91	127	218
	PhD	50	5	55	56	6	62	106	11	117
	Total	79	146	225	118	133	251	197	279	476

offline modes were used to distribute the survey instrument. A total of 1,000 questionnaires were distributed, and 476 responses were finalized after discarding incomplete and wrongly filled surveys. Three universities from KSA and five universities/institutions from India were considered for the same. Non-response bias, representativeness, and accuracy were focused on in the study. The period of data collection was from August 1, 2020 – November 30, 2020. The convenience sampling method was used to collect the data. We used the duration from August 1, 2020 – November 30, 2020 to collect the responses through Google Forms because the duration of the study was sufficient to extract the information from teachers and students. Table 1 depicts the demographic details of the respondents.

Measurement Model Summary

A well-structured questionnaire was developed with different sections : the first section had all the demographic details. Another section had the constructs used for the study, and the last section involved feedback and suggestions. The constructs section was made with a 5-point Likert summation scale, where 1 means *strongly disagree* to 5 means *strongly agree*. Pretesting was done with a limited number of respondents, and the necessary changes were also adopted.

Once the data were collected, it got tested for normality, reliability, and validity. Both exploratory and confirmatory factor analyses have been conducted to assess the same. All the details of the CFA are depicted in Table 2. Five factors were generated, with a total variance explained at 73%. All the factor loadings were more than 0.7. AVE for all the constructs was more than 0.5, and CR was greater than 0.7.

Similarly, Cronbach's α was also more than 0.7 for all the five constructs. Once the normality, reliability, and validity of the constructs were assessed, Goodness-of-fit indices were checked for unidimensionality. Table 2 depicts a good model fit (CMIN/DF : 2.952, Goodness-of-fit index (GFI) : 0.934, Adjusted goodness-of-fit index (AGFI) : 0.901, Root mean square residual (RMSR): 0.065, Root mean square error of approximation (RMSEA) : 0.068, Tucker – Lewis Index (TLI) : 0.923, Normed fit index (NFI) : 0.914, Comparative fit index (CFI): 0.935).

Table 2. ***Measurement Model Summary***

Construct/ Factor	Items/ Statements	FL	Contribution	Items Retained
Perceived Usefulness *(PU)*	*PU1:* E-learning is very useful.	.870	Lee et al. (2009),	All 4
AVE=0.61	*PU2:* E-learning improves the	.822	Masrom (2007),	
CR=0.85	effectiveness of my learning/ teaching.		Liaw (2008),	
α=0.85	*PU3:* E-learning improves overall	.854	Sánchez-Franco	
	course effectiveness.		et al. (2009)	
	PU4: E-learning improves my productivity.	.791		
Perceived Ease of Use *(PEU)*	*PEU1:* E-learning is easy to use.	.848	Imamoglu (2007),	All 3
AVE=0.6	*PEU2:* E-learning study methods	.880	Ong et al. (2004)	
CR=0.82	are easy to understand.			
α=0.81	*PEU3:* It would be easy for me to find	.804		
	information ine-learning.			
Satisfaction *(SAT)*	*SAT1:* I am satisfied with the	.788	Dash et al. (2021)	All 3
AVE=0.59	e-learning resources and quality.			
CR=0.81	*SAT2:* I am satisfied with the provider/	.884	Zhang et al.	
α=0.8	platform of e-learning.		(2020),	
	SAT3: I am satisfied with the stakeholders	.831	Dečman (2015)	
	(teacher/ student/ administrator).			
Behavioural Intention	*BIU1 :* I prefer e-learning to	.853	Venkatesh	3, BIU4
to Use *(BIU)*	traditional learning.		et al. (2003)	dropped
AVE=0.67	*BIU2 :* I am willing to participate in other	.899		
CR=0.85	e-learning opportunities in the future.			
α=0.83	*BIU3 :* I think e-learning should be implemented	.776		
	in other courses/ programs/universities.			
Choice *(CHO)*	*C1 :* I am using e-learning by own	.829	Introduced by us	All 3
AVE=0.58	choice (not influenced by others).			
CR=0.79	*C2 :* I am happy with my choice.	.836		
α=0.78	*C3 :* Others can't force me to choose.	.810		

Note. α : Cronbach's α ; CR : construct reliability ; AVE : Average variance extracted ; FL : factor loading

Model Fit Summary : CMIN/*DF* : 2.952, Goodness-of-fit index (GFI) : 0.934, Adjusted goodness-of-fit Index (AGFI) : 0.901, Root mean square residual (RMSR) : 0.065, Root mean square error of approximation (RMSEA) : 0.068, Tucker–Lewis index (TLI) : 0.923, Normed fit index (NFI) : 0.914, Comparative fit index (CFI) : 0.935.

Analysis and Results

Hypotheses Testing

As expected by previous research findings, perceived usefulness has a significant and positive impact on satisfaction and behavioral intention. Perceived usefulness mostly discusses the use and effectiveness of online learning. It has also been found that if the students and faculty members find the online courses practical and useful, productivity will automatically increase. The rising productivity will ultimately increase the satisfaction level and the behavioral intention to use online learning services. Therefore, in this study, the H1(a) and H1(b) are significant (refer to Table 3 and Figure 2).

In comparison, perceived ease of use has a significant and positive impact on behavioral intention to use. Still,

Figure 2. ***Path Analysis (SEM) with Moderation Effect (For All)***

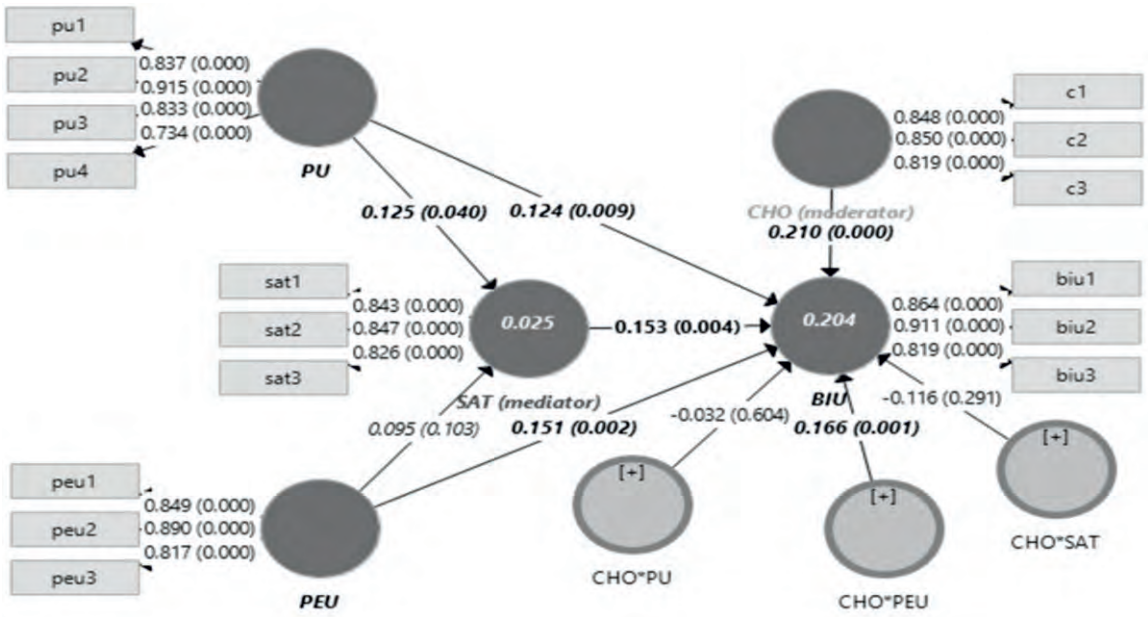


Table 3. ***Standardized Regression Weights***

Hypothesis	Hypothesized Relationship			Estimate	Significant/ Insignificant	Accepted/ Rejected
H1(a)	*PU*	→	*SAT*	**.12**	**Significant**	Accepted
H1(b)	*PU*	→	*BIU*	**.13**	**Significant**	Accepted
H2(a)	*PEU*	→	*SAT*	.09	Insignificant	Rejected
H2(b)	*PEU*	→	BIU	**.15**	**Significant**	Accepted
H3	*SAT*	→	BIU	**.15**	**Significant**	Accepted

it has an insignificant effect on satisfaction. Somehow, the learners were not happy with the content provided through online learning and felt that the content was not very easy to understand or interpret. Hence in this study, H2(a) is non-significant and H2(b) is significant. Simultaneously, satisfaction substantially impacts behavioral intention to use. It is very evident from the relationship that learners and faculty members will use the online learning platforms if they are satisfied with the same. If the satisfaction level is high, then there is always a fair chance that the students and faculty members will use it. Consequently, H3 is significant (refer to Table 3 and Figure 2).

Mediation Effect

H4(a) and H4(b) indicate that satisfaction partially mediates the relationship between perceived ease of use and behavioral intention to use. In contrast, satisfaction does not have any mediating effect between perceived usefulness and behavioral intention to use. Accordingly, when learners and faculty members found online platforms easy to use, they showed positive intentions to adopt online learning. Comparatively, if the students and

Table 4. ***The Summary of the Mediation Effects***

Satisfaction as a Mediator				
Relationship	**Hypothesis**	**Direct Effect**	**Indirect Effect**	**Result**
PU→ SAT → BIU	H4 (a)	**.124***	.014	No
PEU → SAT → BIU	H4 (b)	**.151***	**.019***	Partial

faculty members did not see online learning as useful and practical, they did not embrace online learning (Table 4 and Figure 2).

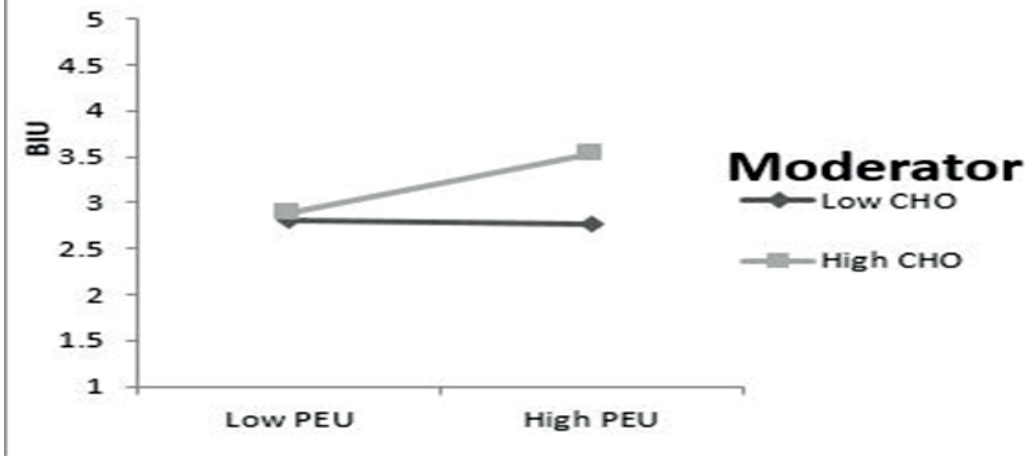
Moderation Effect

H5(a), H5(b), and H5(c) illustrate that choice only moderates the relationship between perceived ease of use and behavioral intention to use. It is also found that choice has no moderating effect on perceived usefulness, satisfaction, and behavioral intention to use. Choice strengthens the positive relationship between perceived ease of use and behavioral intention to use. As users move from low to high perceived ease of use, their behavioral intention to use online learning increases as their choice increases (refer to Table 5 and Figures 2 & 3).

Table 5. ***The Summary of the Moderation Effects***

Relationship	**Hypothesis**	**Estimate**	**Significant/ Insignificant**	**Accepted/ Rejected**
PU → BIU	H5(a)	–0.032	Insignificant	Rejected
SAT→ BIU	H5(b)	–0.116	Insignificant	Rejected
PEU → BIU	H5(c)	**0.166***	**Significant**	**Accepted**

Figure 3. ***Moderation Effect of Choice***



Nationality as a Control Variable : KSA vs. India

In India, we identified that perceived ease of use, perceived usefulness, and satisfaction significantly impact

Figure 4. ***Path Analysis (SEM) with Moderation Effect (India)***

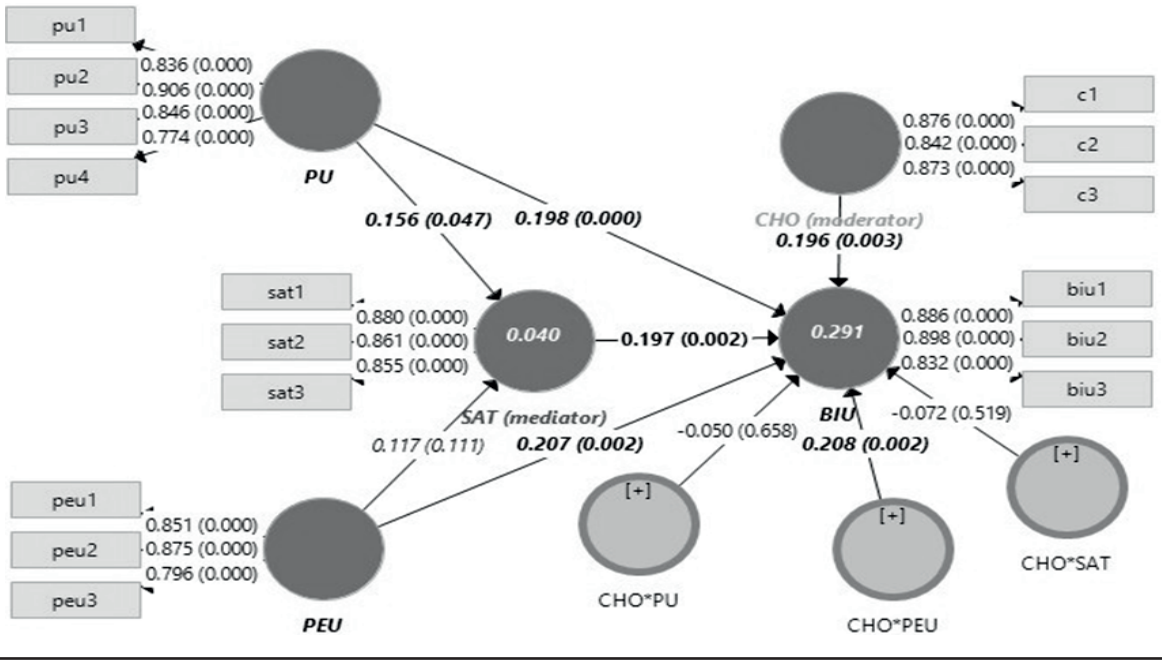
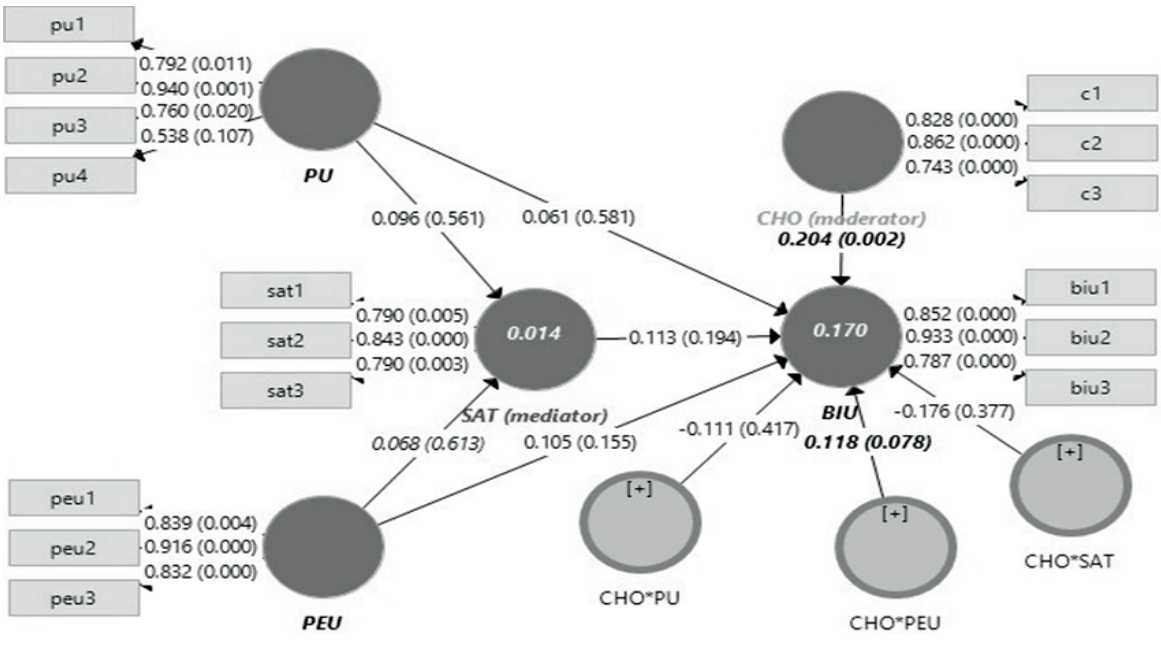


Figure 5. ***Path Analysis (SEM) with Moderation Effect (KSA)***



behavioral intention to use. In contrast, perceived ease of use does not affect satisfaction, and perceived usefulness significantly impacts satisfaction. In comparison, in KSA, we found that perceived ease of use, perceived usefulness, and satisfaction do not affect behavioral intention to use. Perceived ease of use and perceived

usefulness have no impact on satisfaction. In both India and KSA (almost), the moderating effect of choice between perceived ease of use and behavioral intention to use is present (Figures 4 and 5).

Implications

This study provides numerous contributions. First, we have developed a detailed moderated and mediated mechanism to investigate all the stakeholders of e-learning's satisfaction levels (Chakraborty & Biswas, 2019). Not much work has been done on this moderation and mediation approach. We have used satisfaction as the mediator and choice as the moderator. For PEU, both mediation and moderation effects have been established. It provides the necessary support for our adapted approach. Second, we focus specifically on the impact of choice on BIU and its relationship with other constructs. The moderation effect of choice on the impact of PEU on BIU proves our study's primary objective (as the title suggests too). Choice is crucial to influence a user's behaviour intention. Third, we make a comparative analysis of two countries, KSA and India. In the relevant domain, it is the first study to date and provides a new framework. There is a considerable difference between the two countries regarding the relationship between the given constructs. Finally, the adaption of TAM theories, UTAUT theories, and the successful introduction of moderation and control variables in e-learning proves our research topic's choice.

Conclusion

This paper has highlighted the important aspects of e-learning as which are the factors actually affecting the satisfaction and adoption level of teachers and students towards e-learning during the COVID-19 pandemic. We also created one integrated model where the satisfaction and adoption level can be measured. Though the study has been conducted in KSA and Indian contexts only, but this particular framework can be implemented in other countries also. The moderation and mediation effects of choice and satisfaction have also been shown in the study. The institutions in India and KSA have already implemented the e-learning technologies and in the near future, they are going to adopt advanced e-learning technologies. E-learning is easy to use and will definitely increase the performance of the students. Higher education institutions also need to train the faculties as well as the students to use the e-learning technologies in a better manner.

Limitations of the Study and Future Research Directions

The study encourages future works in the domain of e-learning.This study also provides a lot of scope for further deep diving and future research direction. First of all, the developed model is available for further expansion. More moderators and control variables can be explored. Second, various antecedents to PU and PEU (many are known in the literature) can also be developed to improve the elaborative model. Similarly, few consequents can also be introduced. Third, more countries can be included to make it a genuinely global and standard framework. Fourth, country-specific deep-diving studies, especially in KSA, can be developed. Finally, a perfect approach to blended learning that is well balanced and futuristic can be established.

Authors' Contribution

Dr. Ganesh Dash generated the quantitative design for empirical investigation of the study. Methodology, formal analysis, and validation have been performed by him including project administration. Dr. Debarun Chakraborty was involved in conceptualization, performing the literature review, and drafting of the manuscript.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter, or materials discussed in this manuscript.

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