Assessing the Impact of Cultural Differences on Educational Technology Acceptance

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Abstracts

Cultural characteristics in relation to educational technology acceptance (ETA) aims at analyzing the effect of cultural factors that include norms of the society, values, and practices which shape the perception and usage of technology by the individual as incorporated in his/her education. This concept illustrates that cultural factor increases that perception of helpfulness, ease of implementation, and total satisfaction with technology by a significant notch. Understanding these cultural factors is critical to the development and implementation of pedagogical technologies that are aligned with specific target audiences. A number of people in the study was 2100, out of which 1115 were from Mumbai, India and 985 others were from other areas. The sample included people with various education levels, occupations and ages, which gives a comprehensive idea of the variety of users' perceptions of educational technology. Employing the data based on the collected set of factors, descriptive analysis, factor analysis, and correlation matrixes were used in a process of distinguishing key patterns and relations between particular variables. This cross-sectional research has relied on multiple regression analysis to assess the significant predictor factors that include perceived ease of integration and expected performance of the technology by the users on the two outcomes: user engagement and technology satisfaction. As earlier stated, SPSS was used in this research study to conduct statistical tests. The comparative analysis revealed that there were significant

regional differences concerning the social impact expectations, EE and PC but there was no impact of regions as per PEI and TS. The research thus brings out the importance of cultural differences in the explanation of ETA. This just underline the need for a strategic and specific approach that takes into account regional and cultural factors to improve the reception of technologies as well as to improve the user satisfaction even if it is a diverse population. The paper provides important view on rather engaging culturally competent educational technology systems.

Keywords: Educational technology acceptance (ETA), Policy makers, Cultural differences, Educators perceived satisfaction.

Introduction

Blended learning models of educational technology (EdTech) has changed educational backgrounds and provides diversification of resources, in additional to the means to enhance education. Nevertheless, the acceptance and efficient use of these technologies differ, significantly across the cultural groups. From the second area – cultural factors – it is severe to understand how cultures shape EdTech adoptability to build the comprehensive learning practices that support the diversity of societies [18]. Cultural differences can also be discussed by considering such perceptions as Hofsted's cultural parameters including separation of power, long-term/short-term orientation, masculinity/femininity, individualism collectivism, avoiding uncertainty. and indulgence versus moderation. All of these features influence how people notice and are engaged with technology in educational contexts [11]. It, therefore, implies that ranked system hinders acceptance of technologies especially in cultures that experience a great power break since most selections are usually conducted among authorities. Thus, cultures that have low power distance are more likely to be independent and thus it is easier for them to accept new technology. Collectivistic culture can promote technology hub which fosters collaboration and share of knowledge while on the other hand, individualist culture can choose the tools that support social learning [6]. TAM and its developments including, TAM2 and the amalgamated model of the acceptance and usage of technology provide perceptions for identifying how social cues and facilitators impact on the getting of technology [14]. Based on this framework, perceived ease of use which is observed socially includes language difficulties, prior processes with technology and societal perceptions towards development. At optimal level of uncertainty evading in a given culture, the presumed threat, on the basis of using new technologies can affect acceptance, thus explaining the difficulty faced when pointing at the reliability and safety of the technology in question [9]. It means that cultural differences play a significant role for EdTech adequacy, and it is crucial for instructors, creators, and regulators to be aware of this fact. Cancelation: EdTech should be produced and arranged in a culturally appropriate manner in a way that reflects and honors the cultural norms of several learners [4]. In addition, educational programs are socially adapted to satisfy outstanding needs, for example, language, or technical skill, to increase the accessibility and the relevance of EDTECH. Regarding the appearance of new legislation related to EdTech, the representatives of the power include cultural issues to support equal opportunities and diverse events [17]. The educational systems are not universally

acceptable and used due to cultural differences. Thus, by integrating cultural issues into the EdTech development, implementation, and assessment, policymakers and educators can modify a more favorable and efficient educational profile which meets the needs of the foods of diverse students [15]. As such, this study seeks to find out the moderating effect of culture on the endorsement and adoption of education technology system in different parts of the globe. It seeks to establish how the culture in different regions shapes the users' attitude and use of technology in learning institution.

Literature Review

The study [12] determined the connection among organizational learning and organizational culture within a Korean environment. Four types of culture were evaluated: adhocracy, clan, hierarchy, and market. Substantial positive correlations occurred among OC and OL, with such cultures completely mediating OL behaviors. The study [8] assessed the effect of cultural norms and educator views on the acceptance of Information and Communication Technologies (ICTs) among university instructors, demonstrating considerable disparities between the two groups and opposing Hofstede's cultural principles speculation. The cultural, methodological, and pedagogical hurdles could have a substantial influence on the usage of learning technology in both offline and online classrooms analyzed in the study [5]. Implementing Culturally Relevant Pedagogy (CRP) could assist address these hurdles and guarantee that students are treated fairly. Instructors could create better apps for students by adjusting language, using recognizable concepts, and using technologies. The study [1] investigated the acceptance of online education by college students using an improved TAM. It discovered that computer self-worth, subjective standards, perceived satisfaction, perceived value, perceived difficulty in access, mindset toward usage, and behavioral goals impact students' desires regarding online education to ensure instructional sustainability. The study [2] investigated students' intentions to utilize social networks in higher education, with an emphasis on their educational achievement and fulfillment. The TAM and investigationdata systemsuccess models were employed to assess the influence of internet usage on academic satisfaction and accomplishment. The study [7] focused on the acceptability, development, and utilization of educational technologies via the TAM as its most significant paradigm. It emphasized the application of diverse forms of delivery, such as learning management systems (LMS), e-learning, mobile education, and massive open online courses (MOOCs) suggested the necessity for connection with additional concepts. The study [16] evaluated the effect of cultural variations on students' learning habits in an online course with students from three distinct cultures. Considering Hofstede's National Cultural Measures, students in various cultures react differentially due to interrelated variables such as educational practices. Certain student habits were discovered to be inconsistent with their customs, emphasizing the complexities of culture and the requirement for more research. The study [13] evaluated the impact of cultural circumstances on English as an additional language acquisition in Bangladesh, with an emphasis on attitudes, regulations, educational methods, and media coverage. It emphasized the complicated link between cultural heritage and English ability, as well as the obstacles and possibilities to offset their effects. The study [3] analyzed the effect of country culture on handling information and cloud technology acceptance. Undergraduate

learners from Turkey and Malaysia participated. In Turkey, perceived value influenced behavioral intentions considerably, but in Malaysia, it did not. The study revealed that country culture has a major effect on cloud computing acceptance. The study [10] provided generational disparities account for the depth of education's impact on socio-cultural beliefs. It showed that generations raised towards liberal cultures could place a lower value on education in shaping opinions.

Methodological Background

I. Sample Overviews

The collected sample consisted of N = 2100 participants. From these, n = 1115 were from the Mumbai area, and n = 985 were from other regions. Concerning participants' educational status, the survey participants had a high-school diploma (i.e., university students, n = 81), a university diploma (n = 1260), or a master's or doctoral degree (n = 759). The participants had professions in Mathematics, Engineering, Science, or Technology (n = 842) and other fields (n = 1258). The sample provided further diversity in terms of sex (1105 male and 995 female participants) and age (633 participants were under 40, 1260 were between 40 and 60, and 207 were over 60). Table I provides the demographical details.

Table I Demographical Details

Demographical Details	Mumbai Area	Other Regions	Total
Sex			
Female	500	495	995
Male	605	500	1105
Age			
Under 40	340	293	633
40-60	635	625	1260
Over 60	130	77	207
Profession			
Mathematics, Engineering, Science, Technology	410	432	842
Others	695	563	1258
Educational Status			
Schooling	53	28	81
Undergraduate (UG)	700	560	1260
Postgraduate (PG)	285	174	459
Doctorate	67	251	300
Area			
Urban	677	498	1115
Rural	428	497	985
Total	2100	2100	2100

The independent variables, including societal impact (SI), expected performance (EP), expected effort (EE), perceived compatibility (PC), and perceived ease of integration (PEI), were assessed to understand their influence on ETA. SI explores cultural and social norms affecting technology adoption. EP and EE instrument users' insights of the expertise's benefits and ease of use. PE evaluates how well the technology aligns with users' existing practices and values, while PEI measures how smoothly the technology can be incorporated into current educational settings.

The dependent variables, user engagement (UE) and technology satisfaction (TS) were measured to evaluate the level of interaction with and overall satisfaction with the technology.

II Statistical analysis

In this study to carry out the statistical analysis and measure the value of cultural influence on educational technology acceptance using SPSS. Descriptive analyses were able to deal with an overview of patterns in the data and acknowledgment of a few fundamental causes that impacted technology acceptance. Inspecting correlation matrixes in order to discover dependences that exist between variables helped to find out how different factors influence each other. Logistic regression determined the influence of these factors to the acceptance of educational technologies, adjusting for covariates. Lastly, cross-sectional comparison with other regions provided the comparisons indicating regional disparities in technology acceptance, ease of integration perceived and social influence. Altogether, these techniques provided a set of prescriptions of how cultural factors affect technology acceptance.

Results

I Descriptive Statistics

Table II displays the descriptive analysis for all the variables used in the analysis and the results are as shown below. The mean (M) and standard deviations (SD) show the general shapes of participants' perception about different factors that facilitate ETA.

Table II Descriptive Statistics of Variables

Variable	Mean (M)	Standard Deviation (SD)
SI	4.02	0.78
EP	3.85	0.82
EE	3.62	0.89
PC	3.95	0.76
PEI	4.10	0.81
UE	3.90	0.84
TS	4.05	0.79

The highest value in mean for PEI was 4. 10, which indicates high degree of acceptance that they integration in technology into the recognized developments is efficient. SI and TS both had reasonably high values, representing positive assessments concerning technology's cultural consequences and overall satisfaction. EE established the lowest mean value of 3.62, representing some worry regarding ease of usage. These findings highlight the need to integrate technology through user actions and determine ease-of-use problems to increase suitability.

II Factor analyses

Factor examination serves as a statistical strategy for discovering basic relationships between variables by classifying them according to their connections. It aids in reducing data difficulty and determining hidden outlines within the statistics. To learn and assess the essential variables that affect educational technology satisfactoriness and also to validate the legitimacy and consistency of the assessment tools that assess diverse variables. This procedure helps in

classifying the relations among several aspects and their effects on user perceptions and acceptance. The factor analysis results (Table III) expose excellent validity for all variables, with Cronbach's α standards greater than 0.79 and composite dependability levels through 0.80, suggesting significant internal evenness. The AVE levels are equally within suitable limits, representing that the constructs precisely reflect the anticipated features of ETA.

Table III Factor analysis

Variables	Factor loading	Cronbach 흎	Composite Reliability	Average variance Extracted (AVE)
Societal Impact (SI)		0.82	0.85	0.60
SI 1	0.74			
SI 2	0.78			
Expected Performance (EP)		0.79	0.83	0.58
EP 1	0.71			
EP 2	0.76			
Expected Effort (EE)		0.81	0.84	0.57
EE 1	0.73			
EE 2	0.75			
Perceived Compatibility (PC)		0.85	0.87	0.62
PC 1	0.79			
PC 2	0.81			
Perceived Ease of Integration (PEI)		0.83	0.86	0.61
PEI 1	0.77			
PEI 2	0.80			
User Engagement (UE)		0.80	0.82	0.55
UE 1	0.70			
UE 2	0.74			
Technology Satisfaction (TS)		0.84	0.86	0.59
TS1	0.78			
TS2	0.80			

III Correlation Matrixes of Variables

The Correlation Matrix of Variables measures the strength and direction of correlations among several dimensions associated with learning technology acceptance. Table IV shows how closely connected one variable is to others, allowing us to better understand their interdependence and overall influence on the adoption of technology.

Table IV Correlation Matrix of Variables

Variable	SI	EP	EE	PC	PEI	UE	TS
SI	1.00	0.52 **	0.36 **	0.48 **	0.50 **	0.42 **	0.46 **
EP	0.52 **	1.00	0.33 **	0.60 **	0.58 **	0.57 **	0.61 **
EE	0.36 **	0.33 **	1.00	0.31 **	0.29 **	0.26 **	0.24 **
PC	0.48 **	0.60 **	0.31 **	1.00	0.55 **	0.49 **	0.53 **
PEI	0.50 **	0.58 **	0.29 **	0.55 **	1.00	0.64 **	0.59 **
UE	0.42 **	0.57 **	0.26 **	0.49 **	0.64 **	1.00	0.72 **
TS	0.46 **	0.61 **	0.24 **	0.53 **	0.59 **	0.72 **	1.00

** 퓩 < 0.01:
퐶표푟푟푒푙푎푡푖표푛푖푠푠푖푔푛푖푓푖푐푎푛푡
푠푖푔푛푖푓푖푐푎푛푡h푒 1% 푙푒푣푒푙.

These correlation coefficients suggest significant relationships, emphasizing the interdependence and possible impacts of elements such as perceived ease of incorporation and user engagement.

IV Multiple Regression Analysis

This section analysis is an empirical method that examines the connection among variables to assess how well the independent factors estimate and influence the dependent factors.

Table V Multiple Regression Analysis

Dependent Variable	Predictor Variable	Beta (흃)	Standard Error (SE)	t-value	p-value
UE	PEI	0.41	0.05	8.20	< 0.001
	EP	0.32	0.04	7.00	< 0.01
	PC	0.27	0.06	4.50	< 0.05
TS	EP	0.38	0.04	9.50	< 0.00
	SI	0.29	0.05	5.80	< 0.01
	PC	0.25	0.06	4.20	< 0.05

Table V displays the outcomes of a multiple regression analysis, illustrating how well factor predictors such as PEI, EP, PC, and SI describe the variation in the dependent variables UE and TS. The Beta coefficients (흃) indicate the intensity and direction of these associations, while p-values indicate their statistical significance.

V Comparative Analyses between Mumbai and Other regions

Table VI compares ETA and associated characteristics among participants from several geographic locations. This research helps in the identification of regional differences in technological perspectives and attitudes, which can be utilized later to guide specific initiatives and strategies.

Table VI Comparative Analysis by Region

Variable	Mumbai Area (n = 1115)		Other Regions (n = 985)		Mean Difference (MD)	퓽-value	p-value	Significance Level
	씷쐣	푀	씷쐣	푀				
SI	0.75	4.10	0.81	3.94	0.16	2.76	< 0.05	significant
EP	0.81	3.80	0.83	3.91	−0.11	−1.78	> 0.05	non-significant
EE	0.92	3.56	0.85	3.68	−0.12	−2.21	< 0.05	significant
PC	0.74	4.02	0.78	3.87	0.15	2.40	< 0.05	significant
PEI	0.79	4.15	0.82	4.04	0.11	1.73	> 0.05	non-significant
UE	0.82	3.92	0.86	3.88	0.04	0.80	> 0.05	non-significant
TS	0.78	4.08	0.80	4.01	0.07	1.22	> 0.05	non-significant

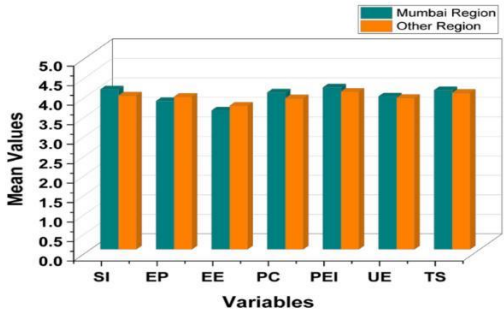

Fig 1 Comparisons between Mumbai and Other regions

Fig. 2 present a comparative analysis of educational technology variables between participants from the Mumbai area (n = 1115) and other regions (n = 985). For SI, Mumbai respondents had a higher mean (푀 = 4.10, 푆퐷 = 0.75) compared to other regions (푀 = 3.94, 푆퐷 = 0.81),
with a significant mean difference of 0.16 (푡 = 2.76, 푝 < 0.05). EP showed a lower mean in Mumbai (푀 = 3.80, 푆퐷 = 0.81) compared to other regions (M = 3.91, SD = 0.83), this variance was non-significant (푀퐷 = −0.11, 푡 = −1.78, 푝 > 0.05). EE had a mean of 3.56 in
= 2.21, 푝 < 0.05). PC also showed a significant difference with Mumbai reporting a higher mean (푀 = 4.02, 푆퐷 = 0.74) compared to other regions (푀 = 3.87, 푆퐷 = 0.76),
Mumbai versus 3.68 in other regions, with a significant mean difference of 0.12 (푡 = PEI,
4.04) 푆퐷 = 0.82), but the mean difference of 0.11 was not significant (푡 = 1.78, 푝 > 0.05). UE had a mean of 3.92 in Mumbai, slightly higher than in other regions (푀 = 3.88), by a slight mean variance of 0.04 and a non-significant (푡 =0.80 푝 > 0.05). TS showed a mean of 4.08 in Mumbai versus 4.01 in other regions, with a mean difference of 0.07 and a non-significant t-value of 1.22 (푝 > 0.05).

Conclusions

This study discovered the influence of cultural variations on the endorsement of educational technology, highlighting the influence of societal norms and individual perceptions on technology adoption. The findings exposed that participant from the Mumbai area generally reported higher levels of PEI with a mean of 4.15 compared to 4.04 in other regions, and SI with a mean of 4.10 compared to 3.94 in other regions. Significant differences were observed in SI (푀 = 0.16, 푡 = 2.76, 푝 < 0.05), EE with an M of −0.12 (푡 = −2.21, 푝 < 0.05), and PC
with an M of 0.15 (푡 = 2.40, 푝 < 0.05), indicating that cultural context plays a crucial role in shaping technology acceptance. However, other variables such as EP (푀 = −0.11, 푡 =

$-1.78, 푝 > 0.05$) and TS ($푡 = 0.07, 푝 = 1.22, 푝 > 0.05$) presented no significant changes. Statistical methods such as factor analysis and multiple regression to measure relations among independent variables and dependent variables. These techniques assisted in classifying key predictors of technology acceptance and regional variances in perceptions. In conclusion, understanding cultural impacts is essential for adapting educational technology to varied user groups. Future directions could discover how specific cultural dimensions influence technology acceptance in different demographic groups and regions.

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