

**Exploratory Study on Gen Z Students' Adoption and Behavioural Intention of Edtech Services in Management Education by UTAUT model**

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**Abstract**

This paper attempts to analyse Generation Z students' in Management education and their acceptance and behaviour toward education-technology (Edtech) services using Unified Theory of Acceptance and Use of Technology (UTAUT) model. This study is situated against a rigorous investigation of the aspects influencing students' adoption intention of Edtech in their higher education. The data for the study was obtained directly from the 120 respondents via questionnaire and analysed for convergent power and composite trustworthiness of the measurement model. Additional regression analyses were performed to examine students' behavioural intentions when using educational technology (Edtech) services based on various factors or constructs identified. The outcome of this study points out that two constructs viz., Performance Efficiency (PE) and Facilitating Conditions (FC) had a moderately positive effect, while the other three constructs viz., Service Quality(SQ), Effort Expectancy (EE) and Social Influence (SI) had a low affirmative effect on Gen Z students' adoption intention of Edtech in management education institutions.

**Keywords:** Edtech, UTAUT model, Gen Z, TAM model, Adoption and Behavioural intention, Higher Educational Institutions (HEIs)

**Introduction**

Education technology refers to the use of modern media and materials to enhance learning experiences. It can refer to any type of teaching or learning that employs technology. In other words, the use of technological apps, tools, or services to boost learning. Mitra & Singh (2020) underlined the relevance of education technology in their essay, which was revealed by the Ministry of Human Resource Development (MHRD) through the National Education Policy (NEP) introduced in the year 2020. The policy outlines the role of technology in tackling a variety of societal concerns and strives to foster multidisciplinary research.

Higher education institutions (HEIs) have already been advised to establish start-up incubator centres and scientific and technological centres, and a National Research Foundation has now been proposed to promote research culture. The National Educational Technology Forum (NETF) will be established as a forum for open dialogue on the use of technology in higher education institutions to improve learning, assessment, planning, and governance, according to the policy.

The policy further encourages investments in digital facilities, the institution of virtual labs and digital repositories, the training of teachers to become high-quality online content producers, the creation and implementation of online assessments, and the incorporation of benchmark tests for content, technological trends, and pedagogical content knowledge for online teaching-learning.

### **Literature review**

Teräs et al. (2020) examined a fundamental focal point to envisage the possible future issues arising from the haphazard adoption of commercial online educational frameworks whose strategies may not typically be driven by best academic methodologies but by business plans that leverage users' data for potential future revenue expectations.

Karapanos et al. (2017) examine the deployment of educational technology through the lens of cognitive and behavioural reasoning hypotheses, drawing implications for creating an enabling environment for technology-assisted learning and teaching. They interviewed 103 undergraduates to establish the benefits and disadvantages of using online courses for academic achievement in a university environment. Their findings revealed that students value the autonomy that web-based colleges have to offer first and probably most importantly. This is usually accompanied by potential savings in terms of money and time, and ease of access. At nearly the same time, students are concerned about the loss of social interaction as well as the increased demands for self-discipline and organisation associated with digital learning.

Goswami et al. (2014) explored the effect of advanced technologies on Indian education and its numerous challenges and benefits. It goes on to suggest that in today's modern world, the role of the educator in classroom instruction is that of a facilitator. The instructor must help learners by letting the students gain access to new technology. Students at various levels use these tools to develop relevant knowledge and skills that are required in today's society.

Paluri et al. (2015) investigated student acceptance and behaviour toward e-learning using the technology acceptance model (TAM). The research looks into the variables that affect students' acceptance of electronic learning in India. Significant correlations were found between user satisfaction, perceived usefulness, attitude, performance expectancy to use, and actual use. The findings of the study have important consequences for educational universities that provide online courses.

Lazar et al. (2020) identified, substantiated, and reviewed an extended Technology Acceptance Model (TAM) in their study, which enables a more thorough understanding of students' motivations to use internet technology in a collaborative learning context of teaching and learning. The prevailing study's findings suggest that educational software, immersive boards, and scientific software should be made available to students for an extended period of time in order to significantly boost their acquaintance with them on their own.

Abu-Al-Aish & Love (2013) investigated randomised control trials in the aforementioned Edtech classifications: (1) access to information, (2) computer-assisted training, (3) digital intervention strategies in learning, and (4) virtual education. The paper mainly summarises and describes exploratory evidence on the effectiveness of digital strategies in education and directions for future research.

Miglani & Burch (2018) held out hope that the study might promote the understanding of how technology can be used to help to learn and outline key areas for new research methods, and help drive improvements to the techniques, projects, and frameworks that contribute to product knowledge and training. According to Burbules & Repp (2020), students who take online-only courses may suffer negative learning outcomes compared to courses that provide some extent of direct instruction.

Amin et al. (2018) conducted a study to investigate students' intentions to use Ed-Tech (Educational Technology) at the higher education level in Bangladesh. The findings of this study could serve as a crucial road map for educators, Ed-Tech businesses, and service providers in designing efficient technology acceptance strategies. Through using the unified theory of acceptance and use of technology (UTAUT) as a foundation, the study explored the determinants that affect students' intentions to embrace Ed-tech in Bangladesh.

Chan et al. (2015) examined the engagement of undergraduates in active plus blended learning approaches with learning technologies. The authors concluded that the model reinforced the UTAUT in anticipating both behavioural intent and incorporating it into the graduate school curriculum. The results suggest that the communication of technology acceptance should be postulated in relation to learner diversity in order to clarify the variation in technology adoption in the higher education setting. Magano et al. (2020) presented a work that employs the UTAUT method to forecast which factors influence higher education marketing students' use and adoption of educational technology tools. According to the researchers, social influence has a substantial mediating outcome on behavioural intention and performance expectation is also an imperative predictor. This revealed that the usage of know-how by these students was highly concentrated on social dynamics, influence, and power expectations.

According to Oyedotun et al. (2020), the unforeseen shift to online pedagogy in developing countries as a consequence of COVID-19 has divulged some inequities and obstacles, as well as perks. According to the research, the abrupt transition of traditional face-to-face instructional strategies to digital learning is thus highly recommended since it will provide the requisite research results on how cost-effective this radical shift has been for students, educators, and the institutional academic schema.

Alshehri et al. (2019) studied how people accept and use the whiteboard style using the UTAUT model. The findings from this research article may contribute to a more effective approach to e-learning acceptance. Based on their findings, the researchers concluded that performance anticipation, social impact, and technical assistance remained crucial conjecturers of participants' goals to use technology. The effort expectation and facilitating conditions seemed to have an insignificant influence on students' behavioural intentions.

Attuquayefio & Addo (2013) explored to have a better knowledge of the challenges surrounding tertiary students' adoption of information and communication technology (ICT). Venkatesh et al. (2003) used the Unified Theory of Acceptance and Use of Technology (UTAUT) structure to define the dependability of predictors for students' objective to adopt and practice ICT for learning and research. This research provides insight into our understanding of the challenges confronting ICT adoption among university students. It investigates technology acceptance behaviour by analysing behavioural intentions toward technological developments in culturally diverse situations and recognising previous research findings. According to the study's findings, the authors conclude that effort probability is the sole inconstant whose effect ominously influences students' behavioural purposes to use

accessible ICTs for learning. This conclusion supports the initial propositions of Venkatesh et al. (2003) but controverts the verdicts of Birch & Irvine's (2009) exploration.

### **Research Objectives**

- a. To understand the behavioural perception of the students towards the adoption of education-technology in their learning.
- b. To study the Gen Z student's preferences in the adoption intention of Edtech services over traditional ways of learning.

### **Research Methodology**

This study is based on a survey method where a questionnaire was constructed and primary data for analysis was collected to study the behavioural intention behind the adoption of Edtech services. The sample population is restricted to the management education students of higher education institutions (HEIs) in Bangalore between the ages of 16 and 25, thus belonging to Generation Z. The time period covered under this study is from September 2021 to January 2022, during the time period in which students transitioned from online to offline and then back to online classes, owing to the end of the second wave and beginning of the third wave of COVID-19 in India.

The sampling method employed in this research is systematic sampling (a non-probability sampling method), by which the sample is drawn from a group of people who are easy to contact or reach. To remain objective and synchronise as a consideration, the random sample for data gathering is constrained to 120 respondents. This kind of sampling helps us study the adoption and behavioural intention of Edtech services by the management education students of higher education institutions (HEIs).

The holistic view based on the technology acceptance (UTAUT) prototype is an augmentation of Venkatesh et al. (2003)'s technology acceptance model. UTAUT is a useful tool for managers assessing the probability of success for new technology launches. It is widely regarded as the most significant and integrated model available in the field of internet technology adoption studies, with high instrument reliability in terms of the key components. Both consumer aspirations to implement the technology and subsequent capability to fulfil are outlined in the concept. According to the hypothesis, the four key abstractions, Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC), are the crucial antecedents of usage intention and behaviour. The researcher has

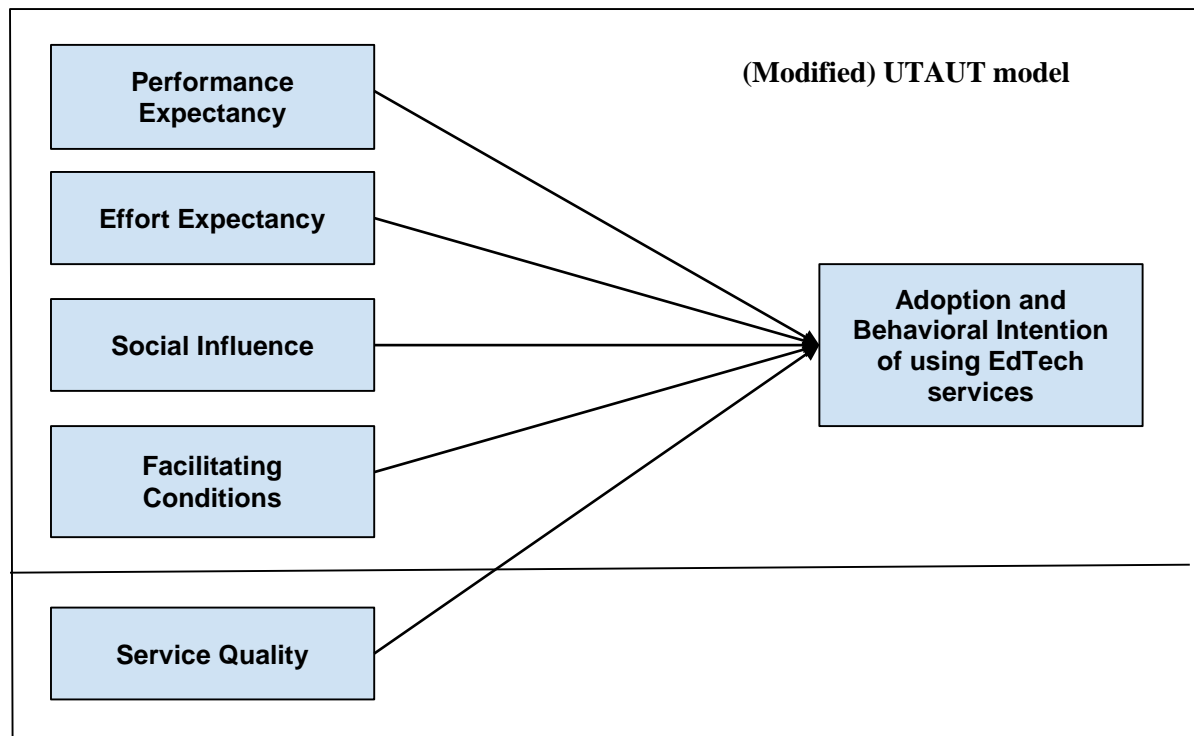
considered one additional construct, i.e. Service Quality (SQ), which is considered to be yet another major influencer on adopting any Edtech service.

Confirmatory Factor Analysis is used on the data to find the convergent validity and composite reliability for the measurement model. The internal reliability of the instrument used for data collection is verified using the Cronbach Alpha test. Finally, multiple regression analysis is performed to study the strength of the relationship between the constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) model and adoption and behavioural intention to use Edtech services as independent and dependent variables, respectively.

### **Constructs of the UTAUT model used in the Research**

- i. Performance Expectancy (PE) is defined as the extent to which a person believes that technology progresses job performance. PE connotes students' beliefs about whether using Edtech services will work on improving their learning performance.
- ii. Effort Expectancy (EE) has been defined as the degree of comfort associated with using technology. EE represents university students' attitudes toward the usability, flexibility, and resilience of Edtech services.
- iii. Social Influence (SI) is defined as the degree to which an individual comprehends it is important that everyone else believe he or she ought to use new information technology. SI would include lecturers, friends, peers, and family members influencing them to utilize new technologies in their educational setting.
- iv. Service Quality (SQ) is defined as sturdiness and turnaround time, content quality, and security.
- v. Facilitating Conditions (FC) are defined as a person's confidence in the existence of a technological and organisational environment that promotes system throughput. Resources, wisdom, and information exchange were recognized by the researcher as sycophants for a learning process to employ any Edtech services.
- vi. Adoption and Behavioural Intention (ABI) is defined as the level to which a person has made conscientious decisions about whether or not to implement or accept a specific future behaviour. This is the impression that the vast majority of individuals either concur or disagree with the behaviour.

The aforementioned constructs and the relationship that the paper tries to establish with the use of a modified UTAUT model are provided as a theoretical framework in figure 1.



*Figure 1 - Theoretical framework based on modification of UTAUT model (Venkatesh et al., 2003) with added construct*

### Research Hypothesis

**H1:** Performance Expectancy (PE) has a statistically substantial impact on acceptance and behavioural intention (ABI) to use Edtech services.

**H2:** Effort Expectancy (EE) has a statistically significant impact on adoption and behavioural intent (ABI) to use Edtech services.

**H3:** Social Influence (SI) has a statistically significant impact on adoption and behavioural intention (ABI) to use Edtech services.

**H4:** Service Quality (SQ) has a statistically noteworthy impact on adoption and behavioural goal (ABI) to use Edtech services.

**H5:** Facilitating Conditions (FC) has a statistically weighty impact on adoption and behavioural purpose (ABI) to use Edtech services.

### Data Analysis and Discussion

Convergent validity reveals the connection between 2 factors that claim to assess the same concept. Convergent validity can be determined using the three requirements postulated by Fornell and Larcker (1981), which are enumerated below:

1. Factor loadings larger than 0.50 were considered extremely significant;
2. composite reliability should be significantly larger than 0.7; and

3. the average extracted variance should be stronger than 0.5.

When the Composite Reliability (CR) and Average Variance Extracted (AVE) numbers exceed the above-mentioned criteria, we can infer that our measurement model is valid.

The results, as given in table 1, reveal that all components suit their associated variables quite well. All of the factor loadings are more than 0.50. Except for PE and EE, the composite reliability values (CR) are all greater than 0.7, and the average extracted variances (AVE) are all higher than the acceptable 0.5 level. However, it has been asserted that if your AVE is fewer than 0.5 and the Composite Reliability is larger than 0.6, is therefore considered acceptable (Fornell & Larcker, 1981).

**Table 1 - Results for Convergent Validity and Composite Reliability**

<b>Construct</b>	<b>Item</b>	<b>Item Description</b>	<b>Standardised Factor Loadings</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted</b>
PE	PE1	Usefulness	.802	0.7853	0.4821
	PE2	Productivity	.887		
	PE3	Efficiency	.773		
	PE4	Effectiveness	.742		
EE	EE1	Ease of use	.805	0.7729	0.4641
	EE2	Flexibility	.922		
	EE3	Adaptability	.908		
SQ	SQ1	Accuracy	.879	0.7840	0.6448
	SQ2	Reliability	.851		
FC	FC1	Resources	.648	0.7587	0.5205
	FC2	Knowledge	.817		
	FC3	Communication	.861		
SI	SI1	Lecturer	.886	0.9682	0.7312



	SI2	University	.799		
	SI3	Friends and Family	.878		
BI	BI1	Intend to use	.922	0.7636	0.6215
	BI2	Plan to use in near future	.908		

Cronbach's alpha analysis has been performed on all acceptable variables to assess the questionnaire's reliability and to test for significant defects that can occur while developing a questionnaire. Cronbach's alpha levels should be in the range of 0.7 to 0.9. Table 2 shows that all of the constructions exceeded the standard cut-off at 0.70 (Fornell and Larcker, 1981; Hair et al., 2010), indicating strong internal consistency.

*Table 2 - Validity (Cronbach Alpha) Test*

Constructs	Cronbach Alpha
PE	0.829
EE	0.75
SQ	0.822
FC	0.755
SI	0.836
BI	0.867

According to Table 3, the combined impacts of all components investigated in our study have a substantial influence on behavioural intention to embrace any Edtech services, with  $R^2 = 0.095$ . The  $R^2$  is a metric used to compare the regression line to the actual data point line. The closer the  $R^2$  number is to one, the superior the model fits the actual data that was obtained. In other words, all of the components together can predict only 9.5 per cent of Gen Z students' desire to use Edtech services.

**Table 3 – Model Summary of Multiple Regression Analysis**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	0.309	0.095	0.073	0.86731

However, in Table 4 the individual constructs are found to be significantly influential on the behavioural intention for adopting Edtech services with the significance value (p) being less than 0.05 at 95% confidence interval. Furthermore, we can see that the standard coefficient value ( $\beta$ ) for all constructs is positive, indicating that the constructs are directly proportional to behavioural intention. The greater the Beta value ( $\beta$ ) of the constructs, the greater the user's intention to adopt Edtech services as a result of the favourable influence of these constructs on their own. Because  $\beta$  is lower but positive for all constructs, it can be concluded that the constructions positively affect Gen Z students' behavioural intent to use Edtech services, except for Performance Efficiency (PE) and Facilitating Conditions (FC), which are at moderate levels.

**Table 4 – Table showing Coefficients of Constructs**

<b>Independent Variables</b>	<b>Significance value (p)</b>	<b>Standard Coefficient (<math>\beta</math>)</b>
PE	0.007	0.415
EE	0.0195	0.293
SQ	0.0089	0.255
FC	0.0093	0.321
SI	0.0145	0.116

The data confirmed the model's strong internal reliability and predictability, which implies that it has a sizable explanatory potential. This study discovered that Performance Expectancy (PE) and Facilitating Conditions (FC) are critical factors that influence students' behavioural intentions when it comes to using Edtech services. Furthermore, the results demonstrated that Service Quality (SQ), Effort Expectancy (EE), and Social Influence (SI) all have a favourable influence but are not deemed to be the most significant. Based on the responses, the researcher concluded that the majority of students would continue to use Ed-Tech Platforms after the

Covid-19 Pandemic, but they would prefer blended learning, where they could benefit from both social interaction and Edtech services introduced alongside their academics.

The researcher further advises that Higher Education Institutions (HEIs) recognise the relevance of technology and encourage students to use Edtech platforms by instituting an obligatory curriculum. They must raise knowledge about the Edtech platforms and services that are available to improve learning outcomes. It was discovered that resources such as laptops, stable network connections, mobile phones, computers, and other necessary infrastructure are critical determinants in a Gen Z student's behavioural intent to use Edtech services. Consequently, the government should incentivize or subsidise these resources so that students can easily purchase them.

### **Scope and limitations of the research**

This research explores the impact of the adoption of educational technology services by the demand side, i.e., students. Investigating the factors influencing education technology adoption by student users might aid in providing better services and strengthening relationships among education technology vendors and consumers. It can bring new insights and a decent grasp of Edtech service platform adoption approaches. By investigating students' requirements and intentions about the adoption and use of Edtech solutions, Edtech service providers may focus on addressing the demands of users, thereby benefiting the education system through the effective use of e-learning technology.

Despite its broad scope, this study has certain inevitable drawbacks. The responses to survey questions are heavily influenced by what respondents think to be true. As a result, students' responses are prejudiced based on their beliefs about Edtech, and their impressions may evolve over time as they gain more experience with Edtech systems and applications. Furthermore, due to resource as well as time constraints, the sample size is restricted and is not a realistic reflection of the entire population, i.e., India in general.

### **Conclusion**

In many sections of the worldwide community, the COVID-19 pandemic has ushered about a dramatic upheaval that has essentially turned everything upside down. Every aspect has been impacted, especially education, which has seen some surprising shifts in numerous parts of the world. As a result of COVID-19, developing countries have rapidly transitioned to online education, with both pros and cons. These obstacles and inequalities are now widespread in the educational systems of developing nations.

The rate at which learners adopt technology determines the success of educational technology. As a result of this research, we were able to learn about students' preferences, intentions, and objectives for using Edtech services, which will aid in the design and deployment of better learning programmes and, as a result, enhance student adoption of these services. The study's outcomes may be useful to educational institution decision-makers as well as other Edtech stakeholders. Tech-enabled education can not only transform the online education experience, but it may also augment and supplement traditional classroom-based pedagogy. It would provide more mobility and learning assistance than conventional practices.

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