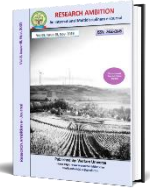




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## HOW GENERATIONS RESPOND TO ONLINE EDUCATION: STUDY OF GENERATION Y AND Z APPLYING BRT THEORY

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### KEYWORDS

Online education, Generation Y, Generation Z, Adoption, Behavioral reasoning theory, Attitude, PLS-SEM, Second order constructs

### ABSTRACT

The adoption of online education among generations Y and Z in India is being examined in this study using the behavioural reasoning theory (BRT). The PLS-SEM method is used to analyze data on a sample of 284 participants. The results show that while usage barriers, image barriers, and traditional barriers hinder the adoption of online education, factors like career opportunities, learning autonomy, self-efficacy, and relative advantage promote it. The importance of openness is positively correlated with the adoption of online learning. Positive factors also affect attitude and adoption intention, whereas negative factors have the opposite effect. The study also finds a strong positive correlation between intention to adopt and attitude. Although limited to Indian generation Y and Z learners, this research offers practical implications for designing effective online courses and highlights new insights into learners' perspectives on mobile apps, websites, and other learning sources. The study's originality lies in its application of the BRT theory to understand the reasons for and against adopting online education platforms.

## I. INTRODUCTION

Online learning, electronic learning, and blended learning also known as hybrid learning all refer to using technologies in education. There are many different types of online learning, from supplemental materials to entirely online degree programmed with enhanced teaching elements [1]. Distance and Open learning have rejuvenated in the 21st century as more and more courses are delivered worldwide through distance education models. The emergence of Massive Online Open Courses and Open Education Resources aims to

make learning accessible to a broader audience. It is an example of how the new media, mainly digital connective technologies, sparked a new interest in distance and opened learning opportunities to deliver courses from a distance. The online education for student body is becoming more diverse in terms of sex, age, ethnicity, and educational background. As students from different generations have varying approaches to learning, it is essential to consider these differences.

Online education benefits both students and teachers because it offers several benefits, like

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flexibility, accessibility, and lower educational costs [2], [3]. Online education has been found to promote development of intellectual and high levels of accomplishment [4]. Notwithstanding these benefits, students and teachers confront encounters when working with the technology for online learning. Students' anxiety and performance may be negatively impacted by difficulties with utilizing technology for online education [5]. Age influences a person's ability to use technology, and various generations have distinct capacities.

Age is one of the most prevalent indicators of attitude and behavior variations. On topics ranging from international affairs to social policy, age disparities in beliefs can occasionally be among the most significant and informative. Age reflects a person's life stage; Childhood, adult, middle-aged, or a retiree. Using a cohort analysis technique, researchers may track a group of individuals throughout their lifetimes due to the nature of age as a variable over time. Age cohorts can provide insight into how historical events, social, and cultural values shape people's views and beliefs. By understanding these changes, researchers can better understand how individuals are influenced by their experiences and how this may affect their behaviours, attitudes, and decision-making processes. Age cohorts can also help identify trends and patterns across different generations, informing policy decisions and interventions for specific age groups.

According to Dimock [6] and Prater [7], there is no specific formula to accurately predict the duration of each generation, and Various sources cite ages

ranging from 15 to 18 years ( $\pm 4$  years). Researchers mainly focus on the 4 generations; baby boomers (1946-1964), X (1965-1980), millennials or Y (1981-1996), and centennials or Z (After 1997) [6], [8], [9]. Due to the early stages of technological development, conventional educational methods were used to educate baby boomers [9]. The temperament of baby boomers is competitive, disciplined, and idealistic and has profoundly affected how they learn and, consequently, how they are instructed [7], [10]. Members of Generation X have more technology experience than baby boomers. They frequently have great problem-solving skills, are reality-oriented, resourceful, and value independence and work-life balance [7], [11]. Compared to other generations, Generation Y are self-assured, cooperative, and open-minded individuals. Still, they may require direct feedback and shorter attention spans [12]. On the other hand, Generation Z individuals are often recognized as "multimodal learners" because of their proficiency in using digital resources and their ability to learn independently [13], [14]. The current student population comprises individuals primarily from the borderline between Generation Z and millennials, while faculty members are mainly from the baby boomers and Generation X cohorts [15]. As individuals with an open mind and self-confidence, generation Y & Z are more at ease accepting the newest technologies.

Students today have a deep awareness of social connectivity and technology. Compared to their professors, they connect, communicate, and learn

differently<sup>[7]</sup>. It is crucial to modify how instruction is delivered to handle the massive quantity of information and offer it in a way that puts students at the center of the lesson rather than one that favors a passive learning style<sup>[16]</sup>. Prior research indicated that incorporating technology into online learning is crucial to increase students' motivation to learn<sup>[14]</sup>. Therefore, it is critical to understand the perception, attitude, adoption intention, and impacts of different factors on these generations towards online education. In this study, authors examined the perception, attitudes, and intentions of gen Y and Z toward online education, as most of these generations are either studying or newbies at the workplace.

## II. LITERATURE REVIEW

New opportunities are available to educators, teachers, and learners thanks to online learning. It provides numerous people with access to top-notch education and will have a huge positive impact in the years to come<sup>[18]</sup>. According to <sup>[19]</sup>, "teacher-led education that occurs through the Internet when the teacher and student are physically separated," is what online learning is. Numerous studies have been done on how quickly technology is developing and how that affects businesses and the workplace<sup>[20],[21]</sup>. On the other hand, the introduction of technology into higher education has received less attention, leaving many administrators and professors trying to understand how technology will impact the way their student populations are taught <sup>[22], [23], [24], [25]</sup>. Palloff and Pratt <sup>[26]</sup> believe that the move to remote online learning still causes significant problems for

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educators and their organizations.

According to the aforementioned allegations, <sup>[27]</sup> claim that educators and researchers have difficulty comprehending how the current educational system will be affected as well as the new roles that students, teachers, and administrators will need to play. Online distance learning, though in the beginning are costly and underutilized by certain educators, is a crucial part of the educational infrastructure for the next generation <sup>[28]</sup>. To use these skills and knowledge in this setting, educators and students will need more comprehensive and improved professional technological development<sup>[28],[22],[29]</sup>. Though it has not always been widely accepted in education, technological advancements have increased the use of technology in our homes, workplaces, and social lives <sup>[30], [31], [32]</sup>. Higher education has been forced to reevaluate its goals as a result of this reluctant acceptance as well as significant technological advancements, shifting demographics, and financial constraints<sup>[28],[22]</sup>. Peter Drucker, an economist and management expert, cautioned in 1997 that higher education institutions must assess and adapt to the changing needs of "net-generation"<sup>[33]</sup> students to avoid becoming "Wastelands."<sup>[34]</sup> The different age divisions that make up each generation are used to classify them. The silent generation (1928-1945), baby boomers (1946-1964), X (1965-1980), Y (1981-1996) and Z (1997-2012) [35]. In order to categories people into generations,<sup>[36]</sup> used political, social, and economic events.

Howe and Strauss<sup>[36]</sup> characterize each of these

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events as awakenings that help different generational features and attributes emerge among cohorts of people aged 17 to 24 who have divergent perspectives on generational. Additionally, this study describes each occurrence as awakenings that help groups of people between the ages of 17 and 24 emerge with distinguishable generational characteristics and attributes. Research has shown that each generational cohort has distinctive traits that are shaped by societal expectations, fashion trends, and historical events. The provided classification dates, according to are arbitrary.<sup>[37], [38], [39], [41], [42], [43]</sup> The development of more efficient teaching strategies is made possible by a deeper comprehension of the diverse student population entering higher education, according to research by <sup>[44], [45]</sup> and <sup>[46]</sup>

The premise of this study is that students' current learning strategies are influenced by their prior educational experiences and environments<sup>[47],[48]</sup> was the first to introduce the idea of developmental perspectives on learning, and Magolda<sup>[49]</sup> later expanded it to higher education. Every generational group has distinctive "Self-Authoring" experiences that set them apart from other generations<sup>[46]</sup>. Individual preferences are influenced by generational self-authoring within each generational group, highlighting the importance of teachers comprehending how students process information.<sup>[46], [50]</sup>

## UNDERPINNING THEORIES

### A. Resistance to Online Education

The public's resistance to innovation and technology received less attention than adoption  
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factors in models of innovation diffusion and technology adoption. According to Ram <sup>[51]</sup>, the causes of the opposition to the innovation is hampered by resistance to innovation, which leads to changes in current technology, goods, and services. Consumer resistance to change is referred to as innovation resistance<sup>[51]</sup>. Due to the consumer's adverse compatibility, perceived benefit, tribalism, and a more positive than negative perspective on the risk and complexity of the innovation, consumer traits, perceived innovation, and propagation mechanisms influence The theory of reasoned action (TRA)<sup>[55]</sup>, innovation resistance<sup>[51], [52]</sup>.

### B. Models of Adoption Behavior

Learning innovation and development can be studied using the innovation diffusion theory (IDT)<sup>[53]</sup>, the Technology Acceptance Model (TAM)<sup>[56]</sup> the extended TAM<sup>[58]</sup>, the Theory of planned behaviour (TPB)<sup>[59]</sup> and the Unified theory of acceptance and use of technology (UTAUT)<sup>[60]</sup> all can be used to analyze the adoption of online education. In the study, which involved surveying college students, it was found that there is significant impact of perceived usefulness on whether or not people accepted online education<sup>[61],[62]</sup> Socio-cultural factors help learners get accepted to online education according to the UTAUT model<sup>[63],[65]</sup>. Performance expectations were found to be a more accurate predictor than self-efficacy, effort expectancy, mobility, attainment value, and self-management. It is also found that students' motivation to participate in online activities is influenced by their perception of

how much fun those activities are<sup>[64]</sup>. In this investigation, the TPB theory was used to demonstrate that attitudes, behavioural control and subjective norms are indicators of the acceptability of mobile learning<sup>[66]</sup>. Ease of use, relative advantage, visibility, image, compatibility, the voluntariness of usage, results in demonstrability, and online education as an innovation were the constructs for technological adoption that were used. The IDT was used to define these concepts<sup>[67]</sup>. Kim<sup>[68]</sup> discussed IDT and the Model of Innovation Resistance (MIR). People's attitudes, perceptions of its utility, enjoyment, innovativeness, ease of use, expectations for their performance, and expectations for their effort are the main factors influencing their decision to choose online education.<sup>[61],[62],[64]</sup>

### C. Behavioral Reasoning Theory

According to social psychology research factors and barriers do not always logically conflict<sup>[69]</sup>. According to Westaby<sup>[70]</sup>, BRT is the only theory that looks at how context influences customer acceptance and resistance.

Online shopping, M-learning programmes, and mobile banking have all been studied using BRT.<sup>[71],[72],[73],[74],[75],[76]</sup> In highlighting the significance of comparative reasoning in tying intention, overall motives, and people's beliefs, the theories of reasons<sup>[54]</sup> and decision-making<sup>[78]</sup> are in line with the BRT theory<sup>[70]</sup>. Although beliefs are distinct from reasons, BRT classifies the arguments in favour of and against a particular behaviour as "reasons for" and "reasons against"<sup>[70]</sup>, which can be further divided into

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advantages and disadvantages, facilitators and restrictions, and cost and benefit considerations<sup>[70]</sup>. Technology adoption and innovation research in BRT, however, is distinct from that in other fields. The "reasons for" and "reasons against" adoption approach used in BRT is consistent with the justifications made and necessitates more investigation in a different field.

This study investigates how Generation Y and Z use online education and focuses on the following objectives.

### III. HYPOTHESES DEVELOPMENT

The behavioural reasoning theory looks into behaviour that can be predicted from the user's intention, like other theories do. The global motives (attitude) and reason (for and against) influence the attitude, which in turn affects the users' intentions<sup>[70]</sup>. The beliefs and values of learners are the predictors of "for" and "against" reasons, so the reasons are the predictors of the users' intention to adopt, according to<sup>[70]</sup>. Here is a discussion of these theories:

#### A. Attitude and Adoption Intention

An attitude is "a psychological inclination manifested by assessing a particular entity favorably or unfavorably," according to Eagly and Chaiken<sup>[78]</sup>. According to studies<sup>[56], [79], [55], [57], [58]</sup> attitude affects behavior intention. The acceptance of online education research suggests, TAM model suggested that a person's attitude affects their intention to use online learning<sup>[80]</sup>. The study uses BRT to show how behavioral intention affects the adoption of innovations<sup>[75]</sup>, mobile shopping, M-learning apps, and mobile banking<sup>[77], [71], [76]</sup>.

among other things. Online education is the latest technological innovation for remote learning, so hypothesis H1 is developed:

H1. Users' attitudes toward online education for learning influence their adoption intentions.

### **B. Reason and Attitude**

Where BRT differs from other related theories is in the contextual factors that have an impact on expected behavior<sup>[70]</sup>. The psychological concepts of "reason against" and "reason for" fall under the heading of reasons and sense-making. The unique feature of BRT is that it clarifies the important variables that influence a person's attitude towards acting in a particular way<sup>[70]</sup>. The reasons, which are arbitrary standards that consumers use to describe their intended behavior, are a key indicator of the intentions and overarching motivations (attitude) that underlie actions<sup>[79]</sup>. Depending on the situation, "reasons for" and "reasons against" the innovation may have an impact on its acceptance<sup>[75], [70]</sup> states that "it has been found that beliefs have demonstrated better predictive validity when compared to reasons." Belief reveals the employee's viewpoint on online learning and, more generally, the adoption of online learning. The arguments "for" and "against" online courses, however, concentrate on context-specific factors that influence their uptake. According to BRT, factors influence overall motives (attitudes). Hence the two hypotheses H2a and H2b, are developed:

H2a. Users' "reason for" online education will positively influence their attitude toward online education adoption.

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H2b. Users' "reason against" online education will negatively influence their attitude toward online education adoption.

### **C. Reason and Intention**

According to earlier behavioral theories, behavioral intentions drive behavior<sup>[59], [55]</sup> Consumers are more at ease when sufficient justification is provided for expected behaviors<sup>[70]</sup>. The specific factors influencing behavioral intention to adopt are examined in previous research on technology adoption<sup>[56], [60]</sup> and online education<sup>[61], [62], [80]</sup> A recent study<sup>[68]</sup> found that 187 adoption and resistance variables affect people's propensity to use mobile learning. Antecedents, or the reasons, are what support the ability to predict attitude<sup>[79]</sup>. The H3a and H3b hypotheses are designed to understand how arguments (for and against) influence behavioral intentions for online education.

H3a. Users' "reason for" adoption of online education will positively influence their adoption intention toward online education.

H3b. Users' "reason against" adoption of online education will negatively influence their adoption intention towards online education.

### **D. Value and Reason**

The expectancy theory of motivation holds that a person's motivation is influenced by how important they believe the likely outcome to be<sup>[55], [81]</sup>. The clear message that a person's motivation for his opinions and the outcome of the situation influence his actions is supported by the body of existing literature. According to Wanous<sup>[82]</sup> and Chiu<sup>[83]</sup> value affects how students use online learning.



When new developments are consistent with consumers' values, they are more likely to adopt them<sup>[74]</sup>. Research on innovation uptake using the BRT demonstrates that expectations are influenced by beliefs and values, which is consistent with the BRT theory<sup>[71],[74]</sup>. The hypotheses H4a and H4b are developed because they will influence the arguments "for" and "against" the adoption of online education:

H4a. Users' values of openness will positively influence their "reason for" adoption of online education.

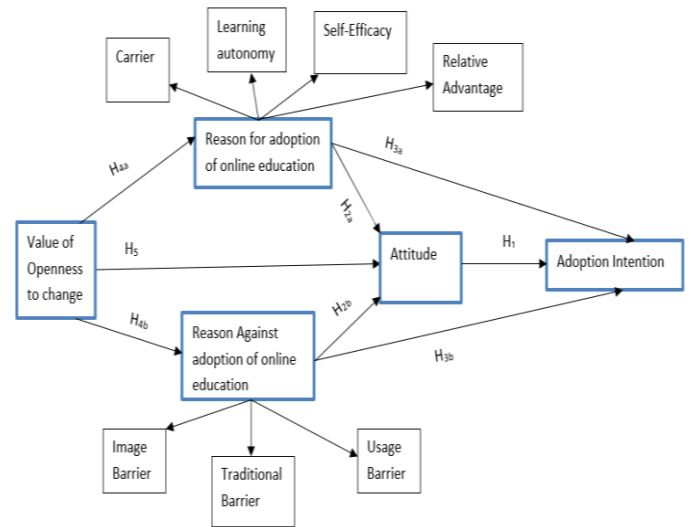
H4b. Users' values of openness will negatively influence their "reason against" the adoption of online education.

**E. Value and Attitude**

According to BRT, beliefs and values influence the consumer's attitude<sup>[79]</sup>. It is mentioned that individuals use distinct and distinct psychological pathways and processes when making choices<sup>[79]</sup>. The current theory supports the connection between consumer values and attitudes, demand for heuristic motives and rapid information processing<sup>[84]</sup>.

H5. Users' values of openness will positively influence their attitude toward online education.

Using this methodology, the study emphasizes the adoption of online education in context-specific "reasons for" and "reasons against". Furthermore, it describes how values and attitudes influence the utilization of online education. The conceptual model is shown in Figure -1



**Fig. 1. Conceptual Model**

**IV. RESEARCH METHODOLOGY**

**A. Measures**

The study incorporated the BRT measurement from previous research. [69], [70], [66], [75], [85], [76] [71] as well as research on innovation resistance theory [86], [52] and Online-education [85], [76] as shown in Table I. Appendix A displays the measurement utilized in the study. A five-point Likert scale were taken (5 = Strongly disagree, 3=Neutral and 1 = Strongly agree). In light of the previous study's findings, attitudes and adoption intentions are assessed.

**TABLE I: CONSTRUCTS**

Construct	Items	Source
<i>Value of Openness to Change (V.O.)</i>	3	[64], [76]
Reason for → <i>Carrier (C)</i>	3	[85]
Reason for → <i>Self-Efficacy (S.E.)</i>	3	[76]
Reason for → <i>Learning Autonomy (LA)</i>	3	[76]
Reason for → <i>Relative Advantage (R.A.)</i>	3	[76]
Reason against → <i>Image Barrier (I.B.)</i>	3	[76]
Reason against → <i>Traditional</i>	3	[76]

<b>Barrier (T.B.)</b>			
Reason against → Usage	3	[76]	
<b>Barrier (U.B.)</b>			
Attitude (AT)	3	[76]	
Adoption Intention (A.I.)	3	[74], [76]	

**B. Value**

Openness to change is the quality that drives someone to follow their emotional and intellectual interests in uncharted territory<sup>[87]</sup>. The researcher has found that an individual adopts a new product if he is open to change<sup>[64]</sup>. Online education transforms training and learning; thus, research can consider openness to change of value. The ability to adapt to change is adopted from available literature.<sup>[76], [64]</sup>

**C. Research instrumental**

The BRT research instrument was used in this study to evaluate how the learner uses online education to further their education <sup>[70]</sup>. This study made extensive use of earlier research <sup>[76], [71], [75], [69] [70], [64]</sup> when analyzing the BRT model. The scales for each of the constructs were confirmed by this investigation because it is crucial to demonstrate the validity and reliability of the measurement scale <sup>[88]</sup>.

The pre-test survey was finished after assessing views and hypotheses regarding the applicability of each construct. In this study, operationalized constructs were assessed using a Likert scale (five-point). Additionally, the validity and reliability of the instrument were investigated through a pre-test and pilot test. We used the Cronbach alpha( $\alpha$ ) formula to assess the dependability and internal consistency of the data. A pilot test (N = 40) was

conducted before significant data collection because the constructs had already been evaluated and only minor changes were required.

**D. Sampling and Data Collection**

For this We have collected the data from the online learning users. The population size of the study is unknown, so <sup>[89],[91]</sup>, and <sup>[92]</sup> used the multiplication method to conduct their sampling. When the study's chosen indicators are multiplied by 10, there are 30 samples total (30 x 10). The constructs were measured using a five-point Likert scale as discussed earlier. The measurement and constructs used in the study is shown in table 2.

Furthermore, out of 300 previously collected samples, only 284 are still present because the remaining data were found to be insufficient and were eliminated. To gather the primary data, a structured questionnaire, as seen in Appendix 1, was used. Researchers maintained the confidentiality of the responses' data and identities in accordance with the ethical compliance expressed in the questionnaire. The demographic information is mentioned in Table II.

**TABLE II- DEMOGRAPHIC PROFILE OF THE STUDY**  
(N=284)

Demographics	Characteristics	Frequency	(%)
Generations	Z	182	64.1
	Y	102	35.9
Gender	Male	212	74.6
	Female	72	25.4
Profession	Student	206	72.5
	Employee	78	27.6
	PhD	51	18.0
	Masters	127	44.7
Education	Bachelors	87	30.6
	12TH	14	4.9
	Others	5	1.8
Marital Status	Married	35	12.3
	Unmarried	248	87.3
	Others	1	0.4



**E. Common Method Bias**

A survey was used in this study to collect data for testing hypotheses. When response data are compiled from various sources, there is a chance of a common technique bias [93], [94], [95]. In this study, researchers utilized the single-factor Harman test to detect any prevalent method biases [93]. After analyzing the research framework, the results indicate that a single component, less than 50 per cent, explains 39.979 per cent of the variation. It implies that the study was unaffected by common procedure bias.

**F. PLS-SEM**

The Partial least squares-structural equation modeling (PLS-SEM) path modelling technique can be used to express the latent variable constructions in this study. The conceptual framework for the study is tested, and the causal relationship between latent components and indicators is assessed[96]. When expanding a known theory is the goal of the study [89], maximum likelihood is preferred over PLS-SEM because it is a flexible tool for modelling the research constructs[97]. For data analysis, the clever PLS software[98] was used.

**V. RESULTS**

**A. Measurement Model**

As per the evaluation of the measurement model, the constructs of the study are assessed for quality. Factor loadings are the first thing to be evaluated when evaluating the quality criteria, followed by construct validity and construct reliability.

**B. Reliability Analysis**

"Reliability refers to the consistency and stability of measurement outcomes or scores obtained from a measuring instrument or procedure"[91]. The core of dependability is consistency will be using an instrument a second time yield different results. The most popular measurements for assessing dependability are Cronbach alpha( $\alpha$ ) and composite reliability (CR). The results for Cronbach's alpha( $\alpha$ ) and composite reliability (Table III) shows that, Composite Reliability 0.921 to 0.986 and Cronbach's Alpha 0.878 to 0.979. Both indicators' dependability statistics exceed the minimum requirement of 0.70.[89]. Hence, construct reliability and validity are established.

**TABLE III. CONSTRUCT RELIABILITY ANALYSIS**

	$\alpha$	CR
AI	0.949	0.967
AT	0.978	0.985
C	0.930	0.955
IB	0.979	0.986
LA	0.923	0.951
RA	0.937	0.960
SE	0.944	0.964
TB	0.878	0.921
UB	0.959	0.973
VO	0.907	0.942

**C. Construct Validity**

The establishment of construct validity through statistical analysis using PLS-SEM requires the existence of both convergent and discriminant validity.

**D. Convergent Validity**

Convergent validity is defined by Bagozzi [99] as the degree to which results from various measurements of a concept are consistent, indicating a high degree of covariance.

As per [88], to establish convergent validity, an Average Variance Extracted (AVE) value should be at least 0.50. This value signifies that the items are adequately converging to measure the intended construct. In the context of this study, all constructs demonstrated an AVE exceeding 0.70 (Table IV), which suggests a strong convergence of items in measuring the respective constructs. Additionally, the C.R. scores for each construct are greater than 70, which confirms the convergent validity.

**TABLE IV: CONSTRUCT CONVERGENT VALIDITY**

Average variance extracted (AVE)	
AI	0.908
AT	0.958
C	0.876
IB	0.959
LA	0.867
RA	0.888
SE	0.899
TB	0.796
UB	0.924
VO	0.844

**Discriminant Validity**

The term "discriminant validity" describes how distantly related measurements of different concepts are from one another. Valid measures of each concept should not significantly correlate with one another if each concept is distinct [99].

**Fornell and Larcker Criterion**

As per the criterion set by Fornell and Larcker [88], discriminant validity is confirmed when the square root of the Average Variance Extracted (AVE) for a construct exceeds its correlation with all other constructs. This means that each construct is distinct and measures a different concept compared to other

constructs. A construct's correlation with other constructs was less significant than its square root of AVE. Strong evidence is provided by the data to establish discriminant validity.

Table 5 Discriminant validity -Fornell & Larcker criterion.

	AI	AT	C	IB	LA	RA	SE	TB	UB	VO
AI	0.953									
AT	0.657	0.979								
C	0.474	0.509	0.936							
IB	-0.131	-0.124	-0.033	0.979						
LA	0.523	0.531	0.556	-0.022	0.931					
RA	0.483	0.597	0.541	-0.139	0.586	0.942				
SE	0.552	0.575	0.615	-0.018	0.675	0.569	0.948			
TB	-0.074	-0.17	0.02	0.247	-0.019	-0.124	0.045	0.892		
UB	-0.203	-0.213	-0.109	0.202	-0.188	-0.217	-0.175	0.328	0.961	
VO	0.599	0.554	0.579	-0.036	0.554	0.563	0.574	-0.016	-0.15	0.918

**Factor Loadings**

The correlation between a given item and the underlying construct it is meant to measure is referred to as the factor loading. Greater absolute values indicate a more robust correlation between the item and the underlying factor, with the scale extending from -1.0 to +1.0.[100]. Table 6 demonstrates that all study items have factor loadings above the suggested value of .50.

**TABLE 6 Factor loading**

AI1	0.952
AI2	0.952
AI3	0.955
AT1	0.981
AT2	0.979
AT3	0.976
C1	0.938
C2	0.942
C3	0.929
IB1	0.975
IB2	0.978
IB3	0.985
LA1	0.924
LA2	0.92
LA3	0.95
RA1	0.938
RA2	0.932
RA3	0.956

SE1	0.954
SE2	0.936

**Table 7: Higher order constructs validity**

SE3	0.954
TB1	0.848
TB2	0.931
TB3	0.895
UB1	0.956
UB2	0.972
UB3	0.955
VO1	0.938
VO2	0.908
VO3	0.909

**Validating Higher Order Construct**

In the study, the primary constructs were the reasons for and against the adoption of online education. These were based on seven secondary constructs: openness to change, career, self-efficacy, learning autonomy, relative advantage, image barrier, traditional barrier, and usage barrier. To validate these higher-order constructs, certain criteria had to be met, such as significant outer weights, outer loadings, and a Variance Inflation Factor (VIF). The outer weights in this study were found to be significant. as per [101]. Additionally, the outer loadings for each lower-order construct exceeded .50, indicating strong associations with the intended higher-order construct [101]. The VIF values were also examined to ensure that collinearity was not a concern, and all values were found to be less than the recommended threshold of 5, as per [101]. The Higher Order Construct (HOC) validity was established, and all criteria were met.

HOCs	LOCs	Outer weight	t-Statistics <sup>a</sup>	P value	Outer loading	VIF
	C	0.288	18.873***	0.000	0.810	1.809
Reason for adoption	LA	0.296	16.324**	0.014	0.845	2.117
	RA	0.303	16.822***	0.000	0.811	1.758
	SE	0.313	20.291***	0.000	0.863	2.247
Reason against adoption	IB	0.364	2.456***	0.000	0.584	1.084
	TB	0.347	2.012**	0.044	0.654	1.165
	UB	0.661	4.956***	0.000	0.848	1.141

Notes: <sup>a</sup> t-values for two-tailed test: \*\*\*t-values 2.58 (sig. level = 1%); \*\*1.96 (sig. level = 5%); \*t-values 1.65 (sig. level = 10%), [89]

**Hypotheses Testing**

After establishing the validity and reliability of the measurement model, a path analysis was conducted via PLS-SEM to evaluate the strength and significance of the path coefficients and to consider the structural model relationships between the constructs. The relationships between the research constructs and the level of R2 values were evaluated and presented in Tables 8 and 9, respectively.

**Table 8 Structural relationship and results of hypothesis testing**

Hypothesis	Path	Path Coefficient	t-Statistics	Decision
	<b>First order</b>			
H1	Attitude -> Adoption Intention	0.439	5.517+ ++	<b>Supported</b>
H2a	Reason for -> Attitude	0.513	7.203+ ++	<b>Supported</b>
H2b	Reason Against -> Attitude	-0.136	2.242+ +	<b>Supported</b>
H3a	Reason for-> Adoption Intention	0.311	3.759+ ++	<b>Supported</b>
H3b	Reason Against -> Adoption Intention	-0.047	0.895	Not Supported
H4a	Value of Openness -> Reason for	0.682	16.395 +++	<b>Supported</b>
H4b	Value of Openness -> Reason Against	-0.118	1.63	Not Supported

H5	Value of Openness -> Attitude	0.189	2.972 <sup>+</sup>	<b>Supported</b>
<b>Second order</b>				
	Reason For -> Self-efficacy	0.863	40.102 <sup>+++</sup>	<b>Supported</b>
	Reason Against -> Usage barrier	0.848	9.725 <sup>++</sup>	<b>Supported</b>
	Reason for -> Learning autonomy	0.845	28.419 <sup>+++</sup>	<b>Supported</b>
	Reason for -> Relative advantage	0.811	27.691 <sup>+++</sup>	<b>Supported</b>
	Reason for -> Carrier	0.810	28.771 <sup>+++</sup>	<b>Supported</b>
	Reason Against -> Traditional barrier	0.654	4.406 <sup>+</sup>	<b>Supported</b>
	Reason Against -> Image barrier	0.584	3.92 <sup>+++</sup>	<b>Supported</b>

Notes: <sup>a</sup> t-values for two-tailed test: <sup>+++</sup> t-values 2.58 (sig. level = 1%); <sup>++</sup> 1.96 (sig. level = 5%); [89]

The study finds that the value of openness significantly influences the reason for adopting online education H<sub>4a</sub> ( $\beta = .682$   $t = 16.395$ ,  $p < .01$ , supported). The results of this study indicate that certain factors specific to the context play a significant role in predicting the adoption of online education. The study reveals that "reasons for" impact the intention to adopt online education (H<sub>3a</sub>), with a statistically significant impact ( $\beta = .311$   $t = 3.759$ ,  $p < .001$ , supported), as well as the attitude towards online education (H<sub>2a</sub>), with a statistically significant impact ( $\beta = .513$   $t = 7.203$ ,  $p < .001$ , supported). Furthermore, the study finds that "reasons against" have a negative impact ( $\beta = -0.136$   $t = 2.242$ ,  $p < .05$  supported). The attitude

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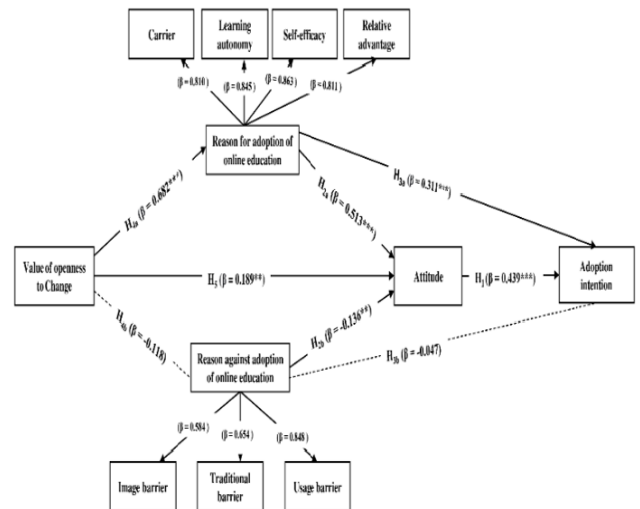
significantly stimuli the adoption intention towards online education ( $\beta = .439$   $t = 5.517$ ,  $p < .001$  supported). It demonstrates that the "reasons for" adopting online education positively impact adoption intentions and attitudes. However, the influence of the value of openness to change on reason against H<sub>4b</sub> ( $\beta = .118$   $t = 1.63$ ,  $p > .05$ , not supported) and reason against on adoption intention H<sub>4b</sub> ( $\beta = .118$   $t = 1.63$ ,  $p > .05$  not supported) was insignificant.

Table 9 Results of R<sup>2</sup>

Endogenous latent variable	R <sup>2</sup>
Adoption intention toward online education	0.483
Attitude toward online education	0.474
Reason against online education	0.011
Reason for online education	0.463

**Structural Model**

Figure 2. Result of PLS-SEM



The study reveals that the values of openness to change significantly impact the attitude regarding "reasons for and against" adopting online education. Specifically, the value of openness to change has a direct positive impact on the attitude towards online education (H<sub>5</sub>) with a statistically significant impact ( $\beta = .189$   $t = 2.972$ ,  $p < .05$ ).

The study also finds that the values of openness to change do not have a significant influence on the "reasons against" adoption (H4b) ( $\beta = -0.118$   $t = 1.6$  not significant), but do have a significant influence on the "reasons for" adoption (H4a) ( $\beta = .682$   $t = 16.395$ ,  $p < .001$ ). It is observed that the values of openness to change positively influence the "reasons for" adoption and do not affect the "reasons against" adoption. Therefore, openness to change is the primary factor influencing the "reasons for" adopting online education.

All constructs of second-order reasoning are found to be significant. In relation to online education, the constructs of career (C) ( $\beta = 0.810$   $p < 0.001$ ), learning autonomy (LA) ( $\beta = 0.845$   $p < 0.001$ ), self-efficacy (SE) ( $\beta = 0.863$   $p < 0.001$ ), and relative advantage (RA) ( $\beta = 0.811$   $p < 0.001$ ) are identified as the "reasons for" adopting online education. Based on the outcomes, self-efficacy is the main reason for adopting online education, as learners find it a fun learning experience. The younger generations, such as Generation Y and Z, are more open to the latest technology, and therefore the value of openness positively influences their attitude towards adopting online education.

Because they are accustomed to the technology, students in Generations Y and Z have the self-efficacy to learn using online education. Because it allowed them to proceed at their own pace, learners thought that learning autonomy in online education was beneficial. Carriers are another significant factor that influences the adoption of online learning. Self-efficacy and learning autonomy are crucial factors in deciding whether

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to adopt online learning. The ability to access online education at any time and from any location is one of the essential components for its widespread adoption. For students from generations Y and Z, online education is seen as more time and effort efficient than traditional methods of learning.

The study identifies several reasons against the adoption of online education, including usage barriers ( $\beta = 0.848$   $p < 0.001$ ), traditional barriers ( $\beta = 0.654$   $p < 0.001$ ), and image barriers ( $\beta = 0.584$   $p < 0.001$ ). Usability barriers, such as complicated user interfaces on various online education platforms and internet connectivity issues, are considered major obstacles to adopting online education. These barriers often result in lengthened and complex learning processes.

One of the biggest problems facing students and teachers today is connectivity <sup>[102]</sup>. To support online learning, the connectivity issue must be fixed, and synchronous class lectures must be made available in asynchronous classes. The student who experienced connectivity problems will benefit from receiving a lecture, which they can use for review. Because many employees prefer the tried-and-true classroom setting where the instructor can interact with students more effectively, one of the biggest obstacles to the widespread use of online education is this preference. Designers of online education platforms (M-learning applications, websites, and other means) should create engaging and dynamic experiences to maintain students' interest and motivation <sup>[76]</sup>. The updated transactional distance

theory may be used to design online course delivery systems<sup>[103]</sup>. Any effective online learning environment should aim to keep students' attention through a variety of interactive exercises. Tools for self-directed, collaborative, and instructor-led learning can be created by designers of online learning platforms by keeping in mind the traits of the target audience's generation. It will make it easier to remove obstacles to online learning. The usage, traditional, and image barriers to adopting online education can be overcome by providing appropriate instruction for using mobile apps.

### **Discussion**

This research employs the Behavioral reasoning theory to gain insights into the usage of online education by Generation Y and Z students, thereby enriching the existing literature on this theory. By investigating the “pros” and “cons” of adopting online education among employees across different scenarios within a unified framework, this study offers a unique contribution. The literature <sup>[77]</sup> <sup>[80]</sup>, <sup>[83]</sup>, <sup>[75]</sup>, <sup>[68]</sup>, <sup>[76]</sup> confirms the factors influencing the intention to choose online education.

The study's findings support the idea that the main obstacles to the widespread adoption of online learning are usage, conventional, and image barriers <sup>[76]</sup>, <sup>[52]</sup> <sup>[86]</sup>. The findings show that the carrier<sup>[85]</sup>, learning autonomy <sup>[76]</sup>, <sup>[66]</sup>, self-efficacy <sup>[76]</sup>, <sup>[71]</sup>, <sup>[68]</sup> and relative advantage are all significant in explaining why people choose to participate in online education. <sup>[76]</sup>, <sup>[73]</sup>

This study highlights the distinctive context-specific justifications for embracing online education for learning and connects them to the **Research Ambition e-Journal**

existing literature. Online learning supports the innovation adoption hypothesis because of its role as a technical innovation in growth and education. Findings from the study emphasize the significance of carrier, learning autonomy, self-efficacy, and relative advantage when taking "Reasons for" adoption into account. This study demonstrates that because Generation X and Y learners are the main focus of online education, employees are enthusiastic about and proficient with it. Additionally, it gives flexibility to the learners because they can use the online learning platform whenever they want, from anywhere, and at their own pace. Learners in Generation X and Y think online education is superior to traditional teaching methods. Because Internet education has drawbacks, Generation X and Y students prefer the traditional training method in front of a trainer. Asynchronous physical interaction with a trainer is frequently not available. Consequently, one of the obstacles is the one that is customary. It might occasionally be difficult to use online education platforms because they are typically internet-based. Because employees believe that learning platforms are complicated, online education is not as popular as it could be.

Additionally, it was found that employees feel more empowered because they can use the online learning platform whenever they want, from anywhere, and at their own pace. Learners in Generation X and Y think online education is superior to traditional teaching methods. Because Internet education has drawbacks, Generation X and Y students prefer the traditional training



method in front of a trainer. Asynchronous physical interaction with a trainer is frequently not available. Consequently, one of the obstacles is the one that is customary. It might occasionally be difficult to use online education platforms because they are typically internet-based. Because employees believe that learning platforms are complicated, online education is not as popular as it could be.

This study suggests that designers and marketers should pay close attention to the "Reason against" adoption. More interactive, learner-friendly user interface, they can make online education easier. Online education should offer free lessons and trials to encourage more use. The fact that online education is still in its infancy and places a high value on adaptability has a significant impact on how people view it and whether they intend to adopt it. According to this survey, suppliers and training coordinators are also crucial in shaping a positive perception of online education and providing training for using it, which will increase acceptance.

### Limitations and Future Directions

Generations Y and Z, who use online learning for certificate or non-certificate courses, were the primary focus of this study's online education section. 284 samples were gathered for the study, which was restricted to India. Researchers can dig deeper to discover the differences between the attitudes of various generations towards online learning. Future researchers may look into how an online certificate affects the ease of finding employment or how an online education affects an

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employee's career development. Future researchers can also look into how online education affects concepts like motivation, performance, and job satisfaction.

The Behavioural Reasoning Theory is used in this study to analyze how generations Y and Z use online learning. By examining both the "reason for" and "reason against" adoption of online education among employees in different contexts, it adds to the body of literature. According to the study, there are a number of important factors that affect whether or not online learning is adopted, including career, learning autonomy, self-efficacy, and relative advantage. The study also recommends that marketers and designers should make online education simpler, provide a graphical user interface that is more interactive and learner-friendly, offer free lessons and demos, and foster a positive perception of online education through training. In designing and creating e-learning platforms. The results of this study will be useful for marketers and those in charge of designing online instruction.

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#### APPENDIX I: OPERATIONALISATION OF CONSTRUCTS

Variables		References
<i>Value of Openness to change</i>		
VO1	I like to learn new things in multiple disciplines	[64], [76]
VO2	I am a risk taker and like to learn new things	
VO3	I am open to new experiences	
<i>Reason for the adoption of online education</i>		
<i>Carrier</i>		
C1	I like to learn new things that might help my business or career	[85]
C2	Online education allows me to explore different career options	

C3	Online education will help me to succeed in my chosen profession	
<b>Self-Efficacy</b>		
SE1	I am confident in using online education apps/platforms for learning	[76]
SE2	It is not challenging for me to use online education apps/platforms for learning	
SE3	I am very much comfortable using online education apps/platforms for learning	
<b>Learning autonomy</b>		
LA1	I am actively able to access online education apps/platforms as per my will to learning	[76]
LA2	I have more opportunities to create my knowledge using online education apps/platforms for learning outside the classroom	
LA3	I can control my pace of learning as per the organisation's expectations using online education apps/platforms	
<b>Relative Advantage</b>		
RA1	Online education is easier than other means of training	[76]
RA2	Online education saves my efforts and time in learning	
RA3	Online education is method of training that is simple for learning than other means of training	
<b>Reason against the adoption of online education</b>		
<b>Image Barrier</b>		
IB1	Society has a positive image in my mind of online education	[76]
IB2	The use of technology for learning is often easy	
IB3	I have an image in my mind that online education is not complicated	
<b>Traditional Barrier</b>		
TB1	I don't particularly appreciate learning in physical trainer-led training programs	[76]
TB2	I do not like to learn in the presence of a trainer in the classroom or on the job	
TB3	I am happy with my traditional way of learning at the workplace	
<b>Usage Barrier</b>		
UB1	online education is not easy to use for learning	[76]
UB2	Online education is not convenient for learning	
UB3	Use of online education is limited due to internet facility access	
<b>Attitude</b>		
AT1	Generally speaking, online education apps/platforms for learning are a great idea	[76]
AT2	online education apps/platforms provide many benefits for learning	
AT3	M-learning apps will add a lot of value to my learning	
<b>Adoption Intention</b>		
AI1	I will use online education apps/platforms for learning	[76]
AI2	I can see myself using online education apps/platforms for learning	
AI3	I intend to use online education apps/platforms for learning	

In this study, the researcher utilized the single-factor Harman test to detect any prevalent method biases.

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