

Factors Affecting Indian Parents' Adoption of Online Learning Applications for Their Children

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Abstract

We are seeing a daily increase in online learning platforms and choices of learning applications are on the increase. Parents are gearing up to exercise these choices to ensure that their children receive a lifelong quality education. However, parents are still somewhat hesitant about the adoption of these online learning applications for their children. Therefore, there is a need to determine why this is happening by identifying the factors that affect the parents' online learning application adoption decisions for their children. To do this we developed a survey, which was subdivided into two sections. The first section consisted of 3 multiple-choice questions relating to demographics. The second section was made up of 20 statements relating to online application used. Parents were asked to answer their level of agreement to the statements using a 5-point likert scale. The data received from 272 Indian parents was subjected to exploratory factor analysis and the Cronbach alpha using the SPSS version 26 software application. Findings highlighted that the parents' selection criteria for learning applications related to 1) concerns regarding the child's health, 2) the payment options and 3) the curriculum and teaching pedagogy.

Keywords

Human-computer interface, improving classroom teaching, learning communities, teaching/learning strategies, 21st-century abilities.

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Introduction

The COVID-19 pandemic has resulted in the shutdown of all schools across the world. Due to this COVID pandemic, billions of children are out of the classroom across the world. As a result, the system of the education industry has changed adequately with the rapid growth of technology blended learning platforms, whereby teaching is undertaken on digital platforms. Online learning refers to "learning experienced through the internet" where the students are engaged with mentors and other students at their convenient place and time (Singh and Thurman, 2019). It has shown tremendous growth during the past decade. Before the COVID-19 pandemic, the eLearning industry was growing steadily. However, due to this pandemic, the closure of most educational institutions and businesses has led to new opportunities in this industry and many companies are investing in virtual learning platforms. According to Global Market Insights, (2021) the market for eLearning players is growing at a faster pace and is expected to reach \$375 billion by 2026. This means that there are immense opportunities for business houses that are looking to enhance their business in this sector. With the help of online learning platforms, large information can be stored and used at any point in time.

The 21st-century abilities provide online learning applications with human-computer interfaces in a friendly way, using games, personalized care, point-scoring and data-driven insights to sharpen their basic skills and knowledge in fundamental courses. Such teaching/learning strategies revolutionized the process of learning and motivated the students in a variety of ways to showcase their talent in classrooms. EdTech start-ups act as a solution for this and are emerging as a major business industry in India. Byju's, Toppr, Vedantu, Meritnation, Unacademy, UpGrad etc are examples of some of the start-ups in the Indian Education sector, which is improving classroom teaching and starting a revolutionary change in the education system of India. The major companies that provide online learning applications are benefiting from creating e-content helping the learning communities to fill the learning gaps that have been created due to the global pandemic. There is a huge demand for high-quality e-content and such learning applications. According to Sensor Tower 2020 Reports, the COVID-19 pandemic caused a surge in Educational applications downloads (Sensor Tower, 2020). The details are shown in Figure 1-

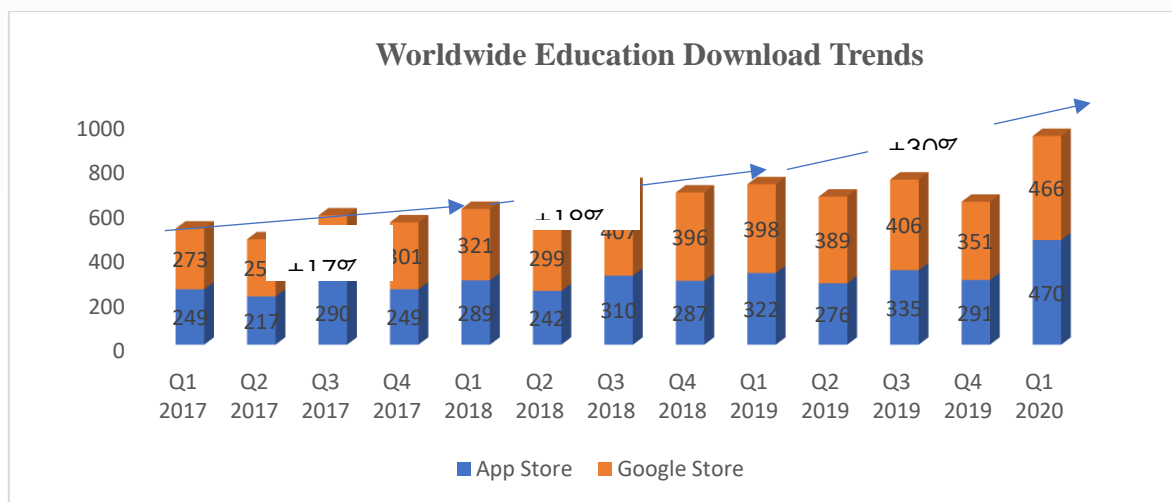


Figure 1- Adopted from the worldwide Education Download Trends adopted from Sensor Tower 2020 Reports (Sensor Tower, 2020)

The above figure 1 indicates the worldwide education quarterly download trends (in millions) on the Application Store and Google Play. When schools were closed, and nationwide lockdown took place then parents needed alternative educational solutions for their children. Q1 2020 shows the highest growth this category has seen since 2017 as it bounced back with a 30% growth since Q1 2019, after a 6% year-on-year decrease in Q4 2019.

To be more successful and competitive in a global workforce, students require new pathways to learn unique expertise and skills. This learning journey starts with the foundation skills and abilities that can be upgraded and augmented throughout our lives. Technology can be used as a powerful tool to reimagine learning experiences. Historically, when using traditional methods of learning, learners' educational opportunities have limited resources, and they restrict themselves to whatever was available to them within the school boundaries. However, technology blended learning provides opportunities to learners to utilize a wide range of resources and expertise anywhere in the world. According to Deragon (2011), technology is exponentially growing at a faster pace and is influencing a diverse range of people across the nations, gender, traditions, class, ethnicity, and age. Consequently, children are now being introduced to modern technological equipment from a young age. It has resulted in various behavioural changes such as children becoming adaptable to the technology. The rapid change and up-gradation in technology and its usage in the daily lives of children served as the sense of motivation for parents to investigate parents' experiences of their young children who are using online learning at home in India. According to Radesky et al (2015), technology is upgrading and changing day by day. Some parents are unable to understand the technology and this negligence leads them to believe that this is 'not good for their children. Parents should come forward and take the initiative to allow the children to use the technology from a young age.

In the context of the rate of technology adoption, research regarding children in early childhood and their intention to use technology has lagged (Radesky et al., 2015). Learning can be described as "a change taking place in behaviour as a result of practice and experience" (Altman et al., 1985). According to De Wit (2009), children grasp and enjoy new learning practices through playing. When children engage and start participating in play, they develop physical, cognitive, social, and emotional skills (Nicolopoulou et al., 2010). Digital applications are specially designed in a more specialized and interactive way so as it helps in the child's development. Dinesh (2016) found that children use such learning applications at a faster rate because they feel like they are playing a game and having fun with it. They are learning and enjoying without even realizing it.

Two main dominant discourses are very evident; some research studies show that some parents still have hitches and negative feelings regarding the use of technology, and they do not want to use it for themselves. Whereas other research studies show that some parents are becoming much more aware of the importance and value of technology usage by their young children and consider that it has a positive impact on their children's lives (O'Conner et al., 2015).

Lots of research has been carried out on parental attitudes towards technology adoption for their children, school selection for their children, the pros and cons of online learning etc. The above literature review reveals that there exists a wide research gap in the literature and seeing the significant growth of online learning apps, necessitates the research to unravel the complexities of the variables under the study. In this study, we try to fill that gap. We investigated the factors influencing parents' adoption behaviour with regards to the online learning applications. This since when technology is implemented in the education industry, it is essential to also understand the behaviour of parents, which directly influence the Edtech business growth. Therefore, our objectives are as follows:

- To evaluate the scale used to measure the variables under the study.
- To identify underlying factors affecting Indian parents' response to the adoption of online child learning applications.

After putting the readers in the context of the study through an introduction, background of existing literature and highlighting the research gaps and objectives, the next sections will describe the research design and tools for data analysis. Thereafter, we will lay out the findings and conclusion.

Research Design

To carry out our study we developed a survey, which we subdivided into two sections. The first section consisted of 3 multiple-choice questions relating to demographics such as the age of the child, the gender, and the school board of the Indian child. The second section was made up of 20 statements relating to online courses and the applications used. Parents were asked to answer their level of agreement to the statements on a 5-point Likert Scale- '1' being the strongly disagree and '5' being strongly agreed. This survey was conducted online using a dedicated online application software 'Qualtrics, XM® (Suen, et al., 2014) and administered across various states of India. We received a total of 272 valid responses from Indian parents. This was deemed sufficient for carrying out our study based on the rule of thumb of a minimum of 1:4 and a maximum of 1:10 (Deb and David, 2014) (Malhotra, 2010), that is a minimum of 80 and a maximum of 200 based on 20 statements in section 2.

We received responses from four regions-

- North (Punjab, Himachal Pradesh, Chandigarh, Haryana, Lucknow and Delhi),
- East (Guwahati and Ranchi),
- West (Surat, Mumbai Ahmedabad, Bhopal and Pune) and
- South (Bangalore, Kochi, Hyderabad, Chennai and Vishakhapatnam).

Table 1

Distribution of Respondents

Particulars	N=272	Percentage
Age of your child (in years)		
2-6	54	19.8
7-11	76	27.9
12-16	92	33.8
Above 16	50	18.3
Total	272	100
Gender of your child		
Male	108	39.7
Female	164	60.2
Total	272	100
School Board		
Indian Certificate of Secondary Education (ICSE)	92	33.8
(Central Board of Secondary School (CBSE)	124	45.5
OTHERS	56	20.5
Total	272	100

Source: Authors' Compilation

Table 1 represents the respondent's demographic profile. In this research, around 60% of the respondent's children are females, 33.8 per cent of the participant's children are between the age of 12-16 years. The majority of the children belong to the CBSE board. The data received from this survey was then subjected to Exploratory Factor Analysis (EFA) and the Cronbach Alpha using the IBM SPSS® (version 26) application software. We applied descriptive statistics to analyse the participants' demographics. Exploratory factor analysis (EFA) was applied to determine the grouped factor variables. EFA "summarises and groups variables into a set of clusters so that relationships and patterns can be easily interpreted and understood. This helps one to understand better the data obtained from the self-administered questionnaires, by reducing it, into meaningful categories" (Yong and Sean, 2013). To measure the consistency of these grouped characteristics variables, we used Cronbach alpha.

Results And Discussions

Evaluation of Scale

In this study, 20 items have been framed after preliminary interviews with experts and a thorough literature review. This scale consists of items that include the statements relating to the payment option, the child's health concerns, the effectiveness of the delivery of services by the service provider and the teaching pedagogy used. These items have been drafted on the basis that they have not been considered in the literature review. For evaluation of the scale, we conducted the Cronbach Alpha to ensure reliability and validity of the scale used. That is the degree to which the items that make up the scales 'hang together' (Pallant, 2007:95). Results are shown in Table 2 below.

Table 2
Reliability Statistics

Cronbach's Alpha		0.895	
Number of Items		20	
Number of Cases		272	
Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	
V1	The language used in the class can be easily understood by students	0.395	0.893
V2	The teaching style and pedagogy used is unique	0.357	0.894
V3	Application or webpage of the company is quite easy to use	0.411	0.893
V4	Mentor understands the students very well and is experienced in their field	0.354	0.894
V5	It appears to be costly as similar stuff is already being taught in school	0.551	0.889
V6	The fee should be charged monthly	0.668	0.885
V7	Company should offer discounts/ scholarships	0.629	0.887
V8	Materials associated with teaching such as notes, worksheets,	0.602	0.888

	PowerPoint presentations, videos etc. are designed appropriately		
V9	Apart from online learning, children will play online games, watch YouTube kids etc when they are not under supervision and this is affecting his/her health	0.606	0.887
V10	The syllabus is quite similar to the school curriculum	0.577	0.888
V11	Additional reading materials will help my child to learn more	0.583	0.888
V12	Apart from school online classes, such additional classes will affect my child's eyesight	0.551	0.889
V13	The fee Package should be nominal and economical	0.668	0.885
V14	It is a waste of time as the child is spending more time on screen and this is affecting his/her health	0.625	0.887
V15	It has a bad effect on health as my child's time is being spent on screen	0.602	0.888
V16	Children spent less time reading books as they got tired after online study	0.606	0.887
V17	Prompt responses of student's requests by telephone /apps/ emails	0.348	0.895
V18	The mentor is always willing to help the students	0.394	0.894
V19	The mentor is always concerned about problem-solving when students raise any doubt/query	0.393	0.893
V20	Mentor always conducts the classes exactly as per the given schedule	0.403	0.893

Source: Authors' Compilation

As per this reliability metric, the value of Cronbach's Alpha is 0.895, which is higher than the minimum acceptable limit of 0.70. Therefore, the scale is highly reliable. All the values headed under the column "Cronbach's alpha if item deleted" were smaller than 0.895. Therefore, the reliability of the scale cannot be increased further by deleting any of the items. Hence, this scale cannot be further improved because the values of 'Cronbach's coefficient if items are deleted' are less than 0.895. All the values headed under the column 'Corrected item-total Correlation' were above 0.50. Therefore, as per the rule of thumb for item-total correlations, the above scale has an acceptable level of reliability. The face validity method was used for checking the validity of the scale and it was found to be satisfactory to carry out further research. Hence, the first objective was achieved (Hulin et al., 2001).

Factors Affecting Indian Parents' Response for the Adoption of Online Child Learning Applications

As noted above we carried out EFA on the 20 variables. We analysed them using the Principal Component Method (PCM) with Kaiser Normalization and the Varimax Rotation (Orthogonal Rotation). EFA loaded best on three factors (See Table 3). The scope of rotation is to find an arrangement in which each variable loads high on a factor and low on others, for ease of interpretation. The Kaiser–Meyer–Olkin (KMO) statistic, a measure of sampling adequacy, for the appropriateness of applying factor analysis fell within the acceptable range (above 0.6), with a value of 0.876. It indicates the degree to which each variable in a set is predicted without error by the other variables. This further supported the continuance of factor analysis. We determined that four of the statements explaining the characteristic variables were to be eliminated from the model, V12 – “Apart from school online classes, such additional classes will effect on my child’s eyesight”; V13 – “Fee Package should be nominal and economical”, V15 – “It has a bad effect on health as my child 's most time is being spent on-screen” and V16 – “Children spent less time on reading books as they got tired after online study”. This was because these characteristic variables did not explain much of the variance and therefore was unstable and unreliable since they were defined by other variables. This left us with the 16- statements explaining the characteristic variables included in the model. Based on this analysis, EFA loaded best on 3 factors and 16 statements, which in combination explained 68.45% of the variance. Table 2 shows the statements that are grouped under each of the four factors (Hair, 1998).

Table 3
Factor Analysis Results

Factor Name	Eigenvalue	% of variance	Statements	Factor Loadings
F1 Effective Curriculum and Teaching Pedagogy	5.237	32.73	V8-Materials associated with the teaching like notes, worksheets, PowerPoint presentations, videos etc. are designed appropriately	0.726
			V11-Additional reading materials will help my child to learn more	0.744
			V10-Syllabus is quite similar to the school curriculum	0.814
			V2-Teaching Style and pedagogy used is unique	0.813
			V3-App or webpage of the company are quite easy to use	0.813
			V1-Language used in the class can be easily understood by students	0.809
			V18-Mentor is always willing to help the students	0.803
			V17-Prompt responses of student's requests by telephone /apps/ emails	0.801
			V20-Mentor always conducts the classes exactly as per the given	0.804

			schedule	
			V19-Mentor always concerned about problem-solving when students raise any doubt/query	0.792
			V4-Mentor understands the students very well and are experienced in their field	0.780
F2	4.947	30.92	V6-Fee should be charged monthly	0.800
Concerns			V7-Company should offer discounts/scholarships	0.756
Regarding			V5-It appears to be costly as similar stuff is already being taught in school	0.808
Payment options				
F3	0.768	4.80	V14-It is a waste of time as the child is spending more time on screen and this is affecting his/her health	0.766
Child's Health				
Concern			V9-Apart from online learning, children will play online games, watch YouTube kids etc. when they are not under supervision and this is affecting his/her health	0.794

Source: Authors' Compilation

V2 – 'Teaching Style and pedagogy used is unique' and V3 –' App or webpage of the company are quite easy to use; have emerged as the most important factor having the highest loading value on the first factor (F1), which relates to 'Effective Curriculum and Teaching Pedagogy' loaded with 11 items, an Eigenvalue of 5.237 and variance explained of 32.73%. This factor relates to the quality of services offered by service providers. That is the teaching pedagogy, interactive methods adopted promotional strategies such as scholarships, gifts, rewards, bonuses etc. Things that would capture a child's attention for the learning applications.

V6 – 'Fee should be charged on monthly basis, has emerged as the most important factor having the highest loading value on factor F2, which we labelled as 'Concern Regarding the Payment Options' with 3 items, an Eigenvalue 4.947 and variance explained of 30.92%. The major variable of this factor is V6- 'Fees should be charged monthly', with a factor loading of 0.828. This might indicate that these learning platforms are seen as too costly by most parents and they would prefer to pay monthly fees, which is more affordable. Therefore, a much more suitable option for the parents.

The third factor (F3) relates to the 'Child's Health Concern'. This emerged from 2 items, V14 and V9 with an Eigenvalue of 0.768 and a variance explained of 4.80%. Parents are concerned that the more time spent on-screen (laptop/mobile/computer etc.) is a time-waster affecting the child's health.

The results of the Cronbach alpha as shown in Table 4 are higher than 0.5 and therefore are acceptable. Hinton et al. (2004) note that a Cronbach alpha value between 0.5 to 0.7 shows moderate reliability. Therefore, it can be concluded that this scale is reliable and that we can group the Factors affecting Indian parents' adoption of online learning applications for their children under 3 main characteristics (Taber, 2016).

Table 4
Cronbach Alpha

Characteristic Variable	Name of Characteristic Variable	Item	Cronbach Alpha
Characteristic Variable 1 (F1)	Effective Curriculum and Teaching Pedagogy	11	0.854
Characteristic Variable 2 (F2)	Concern Regarding the Payment Options	3	0.816
Characteristic Variable 3 (F3)	Child's Health Concern	2	0.709

Source: Authors' Compilation

Conclusions

Concisely, we find that most parents believe that the learning platforms are providing quality teaching services and their teaching style, content, quizzes, assignments, promotion strategies are fit for purpose. However, when they analyse it in terms of value for money, they see it as being too costly to pay out as a lump sum. Therefore, they prefer to pay for the services in monthly instalments. Moreover, some parents fear that too much time spent online will affect the child's eyes and health. Today many opportunities for technology-blended learning are available and the majority of the schools are upgrading their teaching pedagogy by adding modern technology. Technology has revolutionized the education industry in both a positive and a negative way. Notwithstanding the location and other barriers, additional learning programs are penetrating the marketplace where students can learn and achieve their goals. During the COVID-19 pandemic, many companies have provided free certification courses and internships for students and start-ups are emerging with innovative ideas that impart their skills to students in a variety of fields. Educational technology has become the reality and a solution that can provide advantages to the students as well as to their teachers. The major benefits of educational technologies are the generation of new ideas to provide solutions to problems, which are less time consuming and enable two-way communication, leading to fundamental transformations in the system of education that supports the learning cycle of the education system, improving productivity and effectiveness of technologies. On the other hand, there are some barriers to innovation in education. Most parents still believe that such learning platforms are out of their pocket and that they cannot afford it due to a lack of financial resources. They are also concerned that online education has a bad effect on the health of children and that some applications do not provide the right value in terms of curriculum and teaching pedagogy. However, despite their concerns, most parents believe that without digital technology their children would miss out on education and at a later stage competition for jobs. Therefore, to ensure a healthy child upbringing, it is recommended that more supervision be required to check the students' daily activities on technology are in balance with other non-virtual activities and that these applications are sustainable.

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