



## Acceptance of technology by parent fraternity as a means of remote learning for children: An empirical study

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### Abstract

The main purpose of this empirical study is to understand how acceptance of technology is prevailing among the parent fraternity that helps them to develop a positive attitude towards using technology as a tool to enhance their ward's learning process. A survey among 6361 parents (Indian origin) of primary school students (Kindergarten and primary level) regarding their perceived usefulness and perceived ease of use regarding technology-assisted learning for their wards to understand how these factors influence their attitude towards technology for learning in the future was carried out through an online questionnaire. The result showed that the more parents found the Usage of Technology towards the e-learning process of their wards, the higher they tend to adopt the technology by exhibiting a positive Attitude towards Technology while the perception of Ease of Use of Technology also significantly predicted the perception of Attitude towards Technology. The favourable Attitude towards Technology is more visible among the parents of students who are of lower levels of study as compared to those who are at a slightly higher level of study. It is found that the parents of the student from the rural area schools possessed positive Attitudes towards Technology as compared to their counterparts in the urban areas. The outcome of this study is of greater relevance to the schools especially in the lower level classes to help students to harness technology from a young age because the parent fraternity is already in favour of such initiative.

### Keywords:

*Attitude towards technology  
Parents of primary school students  
Technology acceptance model  
Technology-assisted learning.*

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## 1. Introduction

Like the teachers, the parent fraternity was also forced to experience the advent of technology in their daily life without any preparation for the educational needs of their wards. They needed to assume the roles of a technocrat, an educator, a mentor, etc., during the pandemic when their children were at home undergoing

technology-assisted learning. Now that online education is getting replaced by the traditional methods of learning after the pandemic receded in every part of the world, it would be of research interest to understand the perceptions of parents about the technological skills acquired by them during the pandemic sessions in fact prompting them to continue their positive attitude towards technological assistance in furthering the educational needs of their wards.

However, it is pertinent to mention that any acceptance of technology would take its own time among the receivers to fall in tune with the various skills and attitudes required to harness the technology. Technological literacy on the part of parents was all the more important for the success of online education as they often replicated the role of a teacher at home during remote learning (Currie-Rubin & Smith, 2014). Therefore, it was reasonable to assume that parents of young students must also have learned the technical skills to capacitate them to don the role of a flipped teacher at home. Thus, the main aim of this article is to understand the attitude of the parent fraternity towards technology as one of the main means of knowledge creation among their wards.

## **2. Review of Relevant Literature**

Parents need to spend a considerable amount of time assisting their children during online sessions which might be burdensome on most occasions (Dong, Cao, & Li, 2020). Koskela, Pihlainen, Piispa-Hakala, Vornanen, and Hämäläinen (2020) identified that due to a lack of knowledge, parents often faced challenges to manage the online learning of their children at home. Since they were not technologically prepared to undertake this task, it might lead to stress and dissatisfaction (Smith, Burdette, Cheatham, & Harvey, 2016). Therefore, it is also found reasonable to infer that not all parents might have had an inclination towards technology or are not technically qualified to involve with their children during online education (Chen et al., 2019; Rice & Ortiz, 2021). When parents are more active and satisfied, it is found that children become more competent in online learning independently (Lau, Li, & Lee, 2021) whereas parents might get dissatisfied when the children's abilities to manage online learning independently are low (Pelikan et al., 2021). This often happens when the parents switch their roles of being the provider of necessary resources for their children to attend online classes through a supervisory role (Lu, Le, & Vu, 2020) to that of an online teacher at home while their children are undergoing the sessions (Borup, Chambers, & Stimson, 2019). On the other hand, many families faced challenges in terms of organizing the necessary information technology infrastructure such as laptops, internet connection etc., for their children to undergo online education (Bokayev, Torebekova, Davletbayeva, & Zhakypova, 2021). Sarker et al. (2022) observed that it is important for parents to maintain a positive collaboration with their wards while the online learning process to make them more effective. Sedibe and Fourie (2018) observed that the academic development of students is positively influenced by the support provided by the parents. Such involvement by parents empowers the children to get intrinsically motivated to achieve success (Gonzalez-DeHass, Willems, & Holbein, 2005). However, Dong et al. (2020) identified that one of the reasons why parents resisted online learning was their lack of time and knowledge while their child is undergoing online education. This has led most parents to prefer face-to-face learning to online learning as the former appeared to them as more productive and helpful (Daugvilaite, 2021).

It has been identified by Hollingworth, Mansaray, Allen, and Rose (2011) that parental involvement in the acceptance of technology as a mode of learning by getting used to technology is indispensable for assisting children at the primary level. In the light of the above, Technology Acceptance Model (TAM) has gained considerable importance to determine whether it would influence the acceptance of online learning (Salloum, Alhamad, Al-Emran, Monem, & Shaalan, 2019) as an alternate method of learning. Powell and Wimmer (2017) described TAM as the causal relationship of the Perceived Ease of Use (PEOU) & Perceived Usefulness (PU) in relation to Behavioral Intention to use the technology. They also identified that PU is more powerful in predicting a positive attitude towards Technology as compared to PEOU. While PEOU denotes the easiness with which the individual perceives the utilization of technology, PU represents the perception of individuals regarding the extent to which such technology would upgrade their performance (Bong, Bergland, & Chen, 2019; Mostaghel & Oghazi, 2017). The intention to use the technology refers to the willingness on the part of the individual to use the technology for achieving various objectives in future (Lekjaroen et al., 2016). Kusumadewi, Lubis, Prastiyo, and Tamara (2021) identified that TAM has been useful in identifying the acceptance of online applications by the parents of primary school students for their children's technology-assisted learning. Since parents' involvement is of great importance in the success of primary students, their acceptance of technology plays a major role in the success of remote learning with the help of technology (Hollingworth et al., 2011). Koskela et al. (2020) identified that there is still a lack of clarity in the minds of parents about the success of online education even though they accepted it as a new mode of learning. Many research identified that the location of residence of parents (urban or rural) also influences the perception of teaching methods wherein urban parents have shown more involvement. While Vanan and Subramani (2015) observed that the geographic location did not differ much in accepting the technology, Perceived Usefulness among rural people is influenced by demographic factors and other facilitating conditions (Tambotoh, Manuputty, & Banunaek, 2015). Zuo, Hu, Luo, Ouyang, and Zhang (2022) observed that school location is one of the factors that could potentially influence technology acceptance.

In light of the above discussions, the research questions that prompted this study are as follows:-

- a. The response of the parents who helped their children during the pandemic to undergo online learning regarding their perception of the use of technology for learning.
- b. Are they still fascinated by the use of technology for the education of their children?
- c. Will all parents perceive the use of technology in education, in the same manner, irrespective of the location of residence and the level of students?

Based on the above discussion, we postulate the following hypotheses in this study:-

*H<sub>1</sub>. Parents of students hailing from urban areas will hold better attitudes towards technology-assisted learning for their wards than the parents of students hailing from rural areas.*

*H<sub>2</sub>. Parents of students of higher primary classes will show better attitudes towards the use of technology for the education of their wards than the parents of students of lower primary classes.*

*H<sub>3</sub>. Perceived Usefulness by the parents will be more influential in determining the positive attitude towards technology than Perceived Ease of Use.*

### 3. Methods

#### 3.1. Participants and Procedures

In order to address the above research questions, we proposed using the TAM model to identify the perceptions of parents. A survey among the parents of expatriate primary school students (Kindergarten and primary level) of Indian origin regarding their perceived usefulness and perceived ease of use regarding technology-assisted learning for their wards to understand how these factors influence their attitude towards technology for learning in the future was carried out through an online questionnaire. 6361 parents of them out of 14000 responded with (a response rate of 45.4%). While 3130 respondents (49.2%) are the parents of girl students, 3231 (50.8%) are the parents of boy students. The number of students hailing from rural areas of the country is 1573 (24.7%) whereas the number of urban students whose parents participated in the survey is 4788 (75.3%). Simple random sampling was carried out to collect data because of the geographical spread of the population across the country. SPSS statistical tool has been used for analysing and interpreting the data. The descriptive demographic details are as provided in Table 1.

Table 1. Demographic descriptives.

Demographic details	N	Mean	Std. deviation
Location of the school	6361	0.75	0.43
Gender of the student	6361	0.51	0.50
Students class	6361	2.91	1.52

#### 3.2. Measures

Apart from the demographical variables, the questionnaire through which the data was collected consisted of three aspects of the Technology Acceptance Model i.e., Ease of Use (4 items), Usefulness (5 items), and Attitude towards Technology (3 items). All these items were rated on a 5-point Likert Scale of Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, and Strongly Disagree. Upon Factor Analysis, all these items were identified to be representing the representative factors they were intended to. The result of the factor analysis is provided in Appendix A. It was observed by Tabachnick and Fidell (2007) that when the sample size is more than 300, any factor with rotator loading of 0.32 and above shall be considered as statistically meaningful for inclusion in the analysis. Since, in this study the sample size is 6361, the factor loading of all items were found to be appropriate for inclusion in the study. In order to test the reliability of the data collected, Cronbach's Alpha Test was performed on all items. It was found that the reliability score of these 12 items is .813 which established the reliability of the data in this study.

### 4. Findings

#### 4.1. Correlation

A correlation analysis was performed with the variables under this study and the result is as given in Table 2. It has been observed that apart from the significant positive relationship ( $p < .01$ ) between the Level of Students and the Ease of Use of technology ( $r = 3.2$ ), the relationship among the research variables (Ease of Use, Usefulness, and Attitude towards Technology) were found to be significantly positive with  $r$  ranging from .37 to .5.

Table 2. Correlation analysis.

Variables	Level of students	Ease of use	Usefulness	Attitude towards technology
Ease of use	0.316**			
Usefulness	-0.031*	0.502**		
Attitude towards technology	0.003	0.366**	0.502**	
Location of the school	-0.067**	0.030*	0.054**	-0.004

Note: \*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

However, the location of school (Rural/Urban) has been observed to be significant in its relationship with other research variables with negligible correlation. In order to understand the causal relationship between the dependent and independent variables, a linear regression analysis was carried out to gain further insight.

#### 4.2. Linear Regression Analysis

We then performed a linear regression analysis on a research model wherein Attitude towards Technology as outcome variable and the Ease of Use, Usefulness, Level of Students, and the Location of the Schools as independent variables. The model proposed above showed high significance ( $p < .001$ ) as given in Table 3.

Table 3. Regression analysis.

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	0.198	0.060	—	3.281	0.001
Level of students	-0.021	0.006	-0.040	-3.418	0.001
Ease of use	0.204	0.016	0.170	12.661	0.000
Usefulness	0.578	0.018	0.417	32.748	0.000
Location of the school	-0.065	0.020	-0.034	-3.181	0.001

Note: Dependent variable: Attitude towards technology.

It has been identified through the regression analysis that all the independent variables in this study such as Level of Students, Ease of Use of Technology, Usefulness of Technology, and the Location of the School were significantly predicting the dependent variable i.e., the Attitude towards Technology. It is identified that there is a negative predictability on the part of variables such as the Level of Students and the Location of the School. As far as the Level of Students is concerned, it is observed from the regression analysis that a favorable Attitude Towards Technology is more visible among the parents of students who are of lower levels of study as compared to those who are at a slightly higher level of study. Also, it is strikingly visible that the parents of the student from the rural area schools possessed a positive Attitude towards Technology as compared to their counterparts in the urban areas. However, what is significant in predicting the Attitude towards Technology is the perception of Usefulness among parents. It is observed in this study that the more parents found the Usage of Technology towards the e-learning process of their wards, the higher they tend to adopt the technology by exhibiting a positive Attitude towards Technology. At the same time, the perception of Ease of Use of Technology also significantly predicted the perception of Attitude towards Technology.

## 5. Discussions

### 5.1. Conclusions

Both the correlation and regression analyses carried out in this study revealed significant relationships among the research variables such as Ease of Use of technology, Usefulness of the technology, and Attitude towards the Technology. Apart from these relationships, we also postulated that there would be a more proactive approach on the part of the parents of students hailing from urban areas in adopting technology as a means for the remote learning of their children based on the previous literature that there would be more infrastructural facilities available in the urban areas that prompt a positive approach to technology. However, in this study, we observed that the parents of students hailing from the rural areas of the country were found to be positive about adopting technology as part of their daily life for e-learning facilities for their children. This contradicting finding might be the result of the attitude of the general population of India, especially in the rural area where technology often dons the symbol of pride in the recent past. As identified by Pal, Lakshmanan, and Toyama (2009) parents from even the rural areas of India enthusiastically invest in the procurement of necessary computer systems for their children because they consider it a matter of social ascendancy. This study was conducted on parents of Indian origin located in different parts of the Sultanate of Oman. It has been proved in this study that  $H1$  which proposed that parents of students hailing from urban areas will hold better attitudes towards technology-assisted learning for their wards than the parents of students hailing from rural areas is not supported in this study. In light of the above discussion, it is reasonable to believe that those parents whose children are studying in the rural area of the host country would show extraordinary enthusiasm to prove that they are as tech-savvy as anybody else.

Another assumption that was made in this study is that parents of students of higher primary classes will show a better attitude towards the use of technology for the education of their wards than the parents of students of lower primary classes. However, the findings of this study do not support this proposition ( $H2$ ) as it found that the parents of younger children are more likely to possess a positive attitude towards the adoption of technology than those parents whose children are in higher-level classes of the primary level. In this research, the parents of students from Kindergarten to Class IV (aged between 4 years to 9 years) were the respondents. As identified by Dias et al. (2016) while young children use digital technologies, the parents generally play the role of controllers. This could be of high intensity when children are naïve in the use of

technology. At this juncture, the parents will be more playful with the technology as same as their children. The probable reason for a more positive outlook of younger parents towards technology in this study is that they are also eager as their kids in using technology for educational purposes.

It has also been found in this study that both the Ease of Use of the technology and the Usefulness of the technology were highly predictive of the Attitude towards the technology. In other words, the perception of Ease of Use and Usefulness were positively predicting the Attitude of the respondents towards acceptance and utilization of technology in future. We postulated in this study that the Usefulness of technology would be more predictive of the Attitude towards technology because, among the current generation of parents who are more or less conversant with technological changes happening around the world, it might not be the Ease of Use that would be compelling them to adopt technology but its Usefulness. In this study, the respondents being parents are found to be more committed to developing the computer-related skills of their children from a young age itself and were expected to adopt any technology that supports the capabilities of their children. Therefore, the assertion that the Usefulness of Technology would be more predictive of the Attitude towards Technology is supported in this study (H3).

### 5.2. Implications

From this study, it has been identified that there is no much influence of the location of the school i.e., Urban or Rural as far as the harnessing of technology is concerned. The fact that current generation of parents is already tech-savvy to a great extent that they would prefer their children to be technically competent to take on any challenge. Under these circumstances, it would be the responsibility of the schools irrespective of the location to provide appropriate opportunities for the students to enhance their computer-related skills by providing quality education to them. The technical allegiance of the parents is also visible in this study from the fact that even the parents of 4 years old kid also possess a positive attitude towards using technology for enhancing the knowledge and skill of their children. Therefore, schools need to adopt a highly comprehensive approach of involving all parents irrespective of the level of students while making policies towards using digital technology for enhancing the learning environment.

Another implication from this study is the revelation that the Usefulness of the technology is quite important in the field of education when it comes to a matter of remote learning process. The parent fraternity needs to be convinced about the outcome of the usage of specific technologies for delivering online sessions by the school. It is, therefore, apparent from this study that taking parents into confidence to ensure their acceptance of the specific technology which the school would be using for remote teaching irrespective of the level of students and the location of the school. In other words, parents do play the role of decision makers as far as the technology acceptance is concerned with respect to primary level students.

## 6. Future Research

The current study involved only those parents whose children are studying in the primary level of education. In order to understand the Technology Acceptance Model in depth regarding remote learning, it would be ideal to involve parents of students belonging to higher levels of secondary education.

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**Appendix A. Factor analysis.**

<b>Component matrix<sup>a</sup></b>			
<b>Component</b>	<b>1</b>	<b>2</b>	<b>3</b>
Ease of use – 1 My child has sufficient equipment and facilities to participate in online classes	0.576		
Ease of use – 2 My child has sufficient computer knowledge and IT skills to manage the online classes	0.605		
Ease of use – 3 My child has become more proficient in technical handling of devices.	0.671		
Ease of use – 4 My child is provided with detailed guidelines about the online classes	0.574		
Usefulness – 1 My child has sufficient internet speed to attend the online classes		0.505	
Usefulness – 2 My child has facility to ask questions or clear doubts during online classes		0.631	
Usefulness – 3 My child is getting distracted by others		0.353	
Usefulness – 4 My child is happy while learning online.		0.612	
Usefulness – 5 My child has become more curious and attentive while attending online classes		0.671	
Attitude towards Technology – 1 Appropriate feedback is provided to my child by the teachers regarding his or her performance.			0.680
Attitude towards Technology – 2 Contents of online classes are suitable for the development of my child.			0.685
Attitude towards Technology – 3 You like your child to participate in online classes even after pandemic is over			0.368

**Note:** Extraction method: Principal component analysis<sup>a</sup>.  
a. 3 components extracted.