

Investigating Students' Perception, Continuous Intention to Use and Actual Use of m-learning by Applying Technology Acceptance Model

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ABSTRACT

The COVID-19 pandemic has created the largest disruption of education systems in the history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Emergence of covid 19 pandemic gave a boost to digitisation and online learning which is proved as a boon for the world. All this consequences gave born to online learning because social distancing had disturbed physical education. A learning system based on formalised teaching but with the help of electronic resources is known as m-learning, is a way of accessing learning content through mobile devices.

The objective of this research is to investigate the impact of perceived Usefulness, perceived Ease of Use and Technical Anxiety on students' Perception and Continuous intentions to use m-learning. By utilising convenient sampling technique, 162 respondents from universities were selected for the purpose of the current study. Descriptive research design is used. For the Data analysis purpose researcher has used IBM SPSS 20, IBM AMOS 22, and M.S. Excel.

The result of the study shows that perceived usefulness has no effect on the student's continuous intention of using m-learning, whereas technical anxiety and ease of use are significantly influenced student's Perception as well as their intention to use m-learning. The result of the revised model further revealed that student's continuous intention is highly affected directly from the predictor variable i.e. perceived usefulness, ease of use and technical anxiety.

Keywords: m-learning, Perceived usefulness, Ease of use, Technical Anxiety, Continuous Intention.

1.0 INTRODUCTION:

Mobile learning, also known as m-Learning, is defined as the need and ability to learn through virtual media, such as personal electronic gadgets, social interactions, and content. Devices that can be used for m-Learning include smartphones, tablets and digital notebooks. (Priscila, 2020) In the year 2020 entire world was struggling with COVID-19. Pandemic had created situation for social distancing since it was spreading so rapidly among human. For saving the lives of people and to stop COVID for further spreading in society strict decision had also taken by the governments of different countries. Government of India had also initially imposed lock down for 21 days, which created problem for society. Traditional education had also restricted due to social distancing. It was became difficult for the university to conduct classes in offline mode. After experiencing certain problem with the scenario learning from home in the sense of e-learning or m-learning has been started and which became truly productive in

those days. Thus COVID-19 gave m-learning as a boon to entire world.

The term “m-learning” has only been in existence since 1999 when the word was first utilized at a CBT systems seminar. Other words also began to spring up in search of an accurate description such as “online learning” and “virtual learning”. However, the principles behind m-learning have been well documented throughout history, and there is even evidence which suggests that early forms of m-learning existed as far back as the 19th century. The first online learning systems were really only set up to deliver information to students but as we entered the 70s online learning started to become more interactive. In Britain, the Open University was keen to take advantage of m-learning. Their system of education has always been primarily focused on learning at a distance. In the past, course materials were delivered by post and correspondence with tutors was via mail. With the internet, the Open University began to offer a wider range of interactive educational experiences as well as faster correspondence with students via email etc. (Talentms, n.d.)

1.1 Impact of COVID 19 on the perception of online education among Indian consumers: It has been found that most of the schools, colleges and B-schools including Universal Business School and many others have started online teaching and learning using a different online application to bridge the gap between teachers and students. Govt. of India is also allocating significant budget for the promotion of online education in India as students are not able to attend offline education due to lockdown. Due to that Govt. was able to close the major gap in the education sector without effecting the spared of COVID-19. COVID-19 has made the perception and attitude of Indian consumers more positive towards online education. (AnkitRaj Sarkar, 2020)

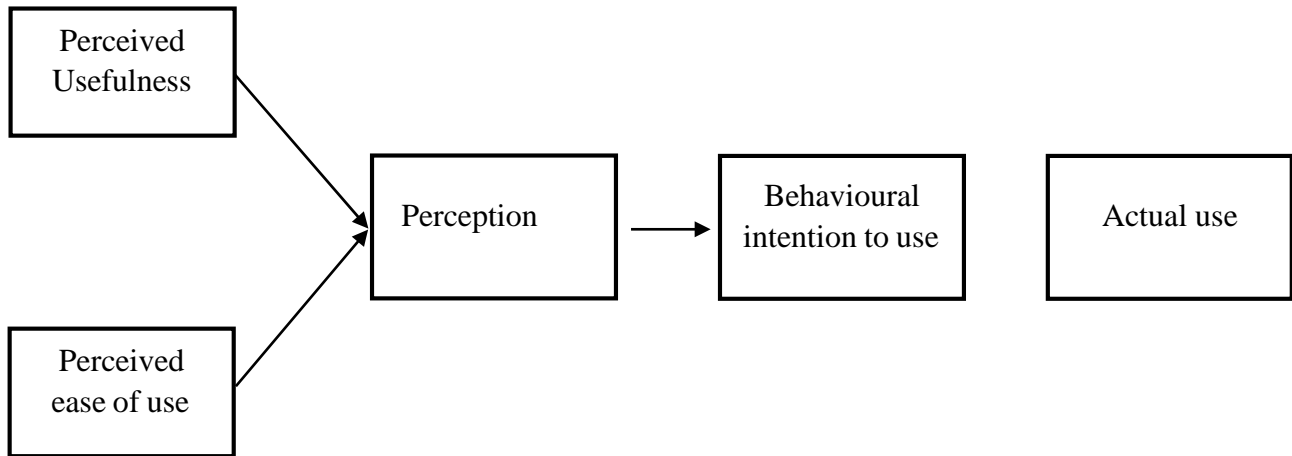
Many educational institutions have halted their physical teaching modelling once COVID-19 was labelled a pandemic. India experiences the same thing. The higher education institutions were given the go-ahead to continue their instruction using electronic media by the UGC (University Grand Commission) and AICTE (All India Council for Technical Education). The majority of institutions of higher education have switched to mobile-based learning. As a result, it is critical for educational institutions to integrate current technologies in order to provide students with a continuing education. Due to its omnipresent nature, mobile technology is one of the most extensively used online learning platforms (Sitar-Tăut, 2021).

No doubt we are all back to our normal routine nowadays but still COVID 19 has given utmost important idea to the Government, Higher Education, Universities and also to different organisation that how the e-learning can be utilized in such way that help to the upcoming generation. Further it has created numerous ideas into mind of businesses that how online mode of sharing knowledge i.e. m-learning or e-learning can be utilized for conducting their meeting in online mode. Further introduction of covid has been become a reason for learning online which has created compulsiveness in those days for the government and for higher education institute to use online learning. Due to compulsiveness in those days many online learning web browser has been developed by different institute or by the government which is really seen as the sight for growth in m-learning or online learning area. There are so many online learning application is available nowadays in which some of the popular are unacademy, BYJU'S etc. As the data showing after the covid the usage of such online learning website has been increase by more than double in last two year, which really shows the sign of online learning or m-learning growth.

1.2 Technology Acceptance Model

TAM model is originally developed by Davis. This model explain that users motivation can be affected by three major factors i.e. Perceived ease of use, Perceived usefulness, and attitude of using. Perceived

usefulness is define as the factors that people believed that if he or she used particular system it will be enhanced the performance. Perceived ease of use is define as the extent to which people thinks that using a particular system of technology are free from mentaleffect. Attitude of usage can be define as the belief of people towards using technology system. An attitude of usage is directly related to rejection and acceptance of particular system.



Source: (Davis, 1989)

Figure 1 Original TAM model of Davis 1989

2.0 LITERATURE REVIEW:

(Kinnari Thaker, 2021) According to result of the study perceived usefulness and attitude has strong significant influence on behavioural intention towards mobile learning. While the resultof the study also revealed that subjective norm and perceived ease of used do not significantlyaffect behavioural intention towards mobile learning. (Kadir Demir, 2018) The result of this study shows that m-learning has the positive impact on the achievement of the students. This study also emphasize that students and teachers both should focus on the e-learning as it is increase the overall achievement and motivation of the students. (Al-Adwan, 2018) Revealed that perceived enjoyment, social impact, self-management, and complexity are the primary elements influencing the adoption of mobile learning in Jordan. (M. Samir Abou El-Seoud 2014) According to his study better and effective utilisation of e-learning resources increase the overall motivation of the student. Further he stated that teachers need to develop and restructure their courses in a way that suits online requirements. It is very clear that such activities require more time and increase the workload. On the other hand, instructors and faculty members must honour, possess and master all technical achievements and new advancements offered by ELearning. (Al-Fahad, 2009) Result of the study revealed that mobilephone is seems to be most used devices for e-learning purpose. Further a researcher feel that it may be a concern in that case of presence of mobile phone or internet. Though as per the questionnaire the responses against availability of mobile phone was very positive. A researcher is also emphasize that mobile phone can also be used to enrich students learning environment by providing timely information.

2.1 Research Gap:

Covid 19 has created need for using electronic devices for learning from home. After reviewingdifferent research paper and articles it is observed that few pieces of research has been done onm-learning by using

TAM model of Davis. This research paper also applied the TAM model but it’s extended by adding “Technical Anxiety” as an independent variable.

3.0 RESEARCH METHODOLOGY:

The entire study is descriptive in nature and looks at cause-and-effect relationships using the TAM (technology acceptance model). TAM consists of many variables, such as perceived usefulness and perceived ease of use, that are used to measure technology adoption and perception. Along with technical concern, the various TAM variables will be considered as influencing factors. The data are gathered using a non-probability convenient sampling strategy. The information was gathered via a structured questionnaire from 162 postgraduate students using a TAM scale that had been constructed.

3.1 Objective of the Study:

- To comprehend students' perceptions and Continuous intentions about the utilisation of m-learning
- To study an influence of perceived usefulness and ease of use on m-learning
- To examine the impact of technical anxiety on students continuous intention to use m-learning

3.2 Hypotheses of the study:

- H01: Perceived usefulness, perceived ease of use and Technical anxiety has an association with the Perception of Students’ using m-learning.
- H02: Perception of students do not have an influence on Continuous intention to use of m-learning
- H03: Continuous intention to use m-learning do not have an effect on the Actual use of m-learning
- H04: Perceived usefulness, Ease of use and Technical anxiety do not have an impact on continuous intention to use m-learning.

3.3 Types of data:

Primary data were gathered from post-graduate students utilizing standardized questionnaires for the study's objectives.

3.4 Types of sampling method:

For the purpose of collection of the data convenience sampling technique has been used by the researcher.

3.5 Sample size:

For the purpose of the study 162 responses were collected from the post graduate students.

3.6 Tools and technique:

For the purpose of analysis of the data IBM SPSS 20, IBM Amos 22, M.S. Excel has been used by the researcher to perform various analysis.

3.7 Proposed Model

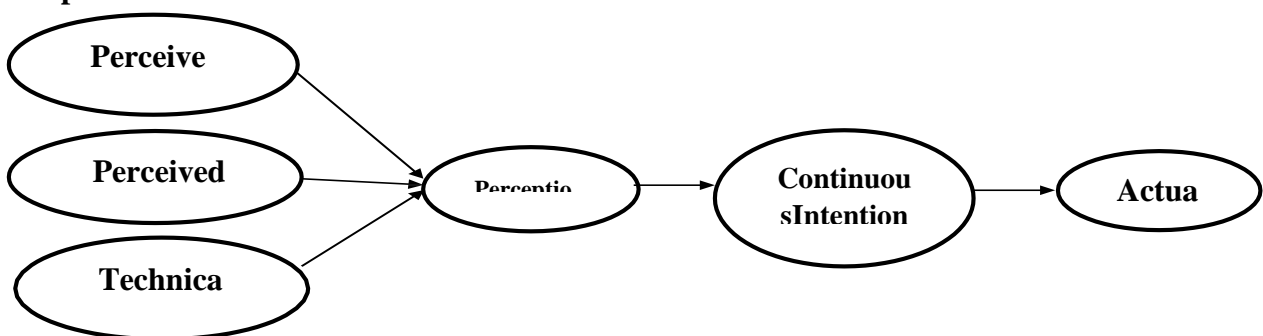


Figure 2. Proposed Model

Researcher has proposed the above model by addition of the Technical Anxiety as an Independent variable.

4.0 Data Analysis and Interpretation:

This Section of research Paper particularly deals with analysis and interpretation of the data which is done by the researcher by using different software like SPSS 26, Amos 22, and Excel.

4.1 Profile of respondents:

Table no. 01

Respondents Profile				
		Residential area		Total
		Rural	Urban	
Gender	Male	54	24	78
	Female	57	27	84
Total		111	51	162

4.2 Structural Equation Modelling (SEM)

SEM is a statistical method for determining the complex relationship between observed and unabsorbed variable (Latent Variable) it's a powerful technique that allows researchers to examine the causal relationships and interactions among variables in a hypothesized model. SEM is commonly used in various fields such as psychology, sociology, economics, and othersocial sciences, as well as in certain areas of natural sciences.

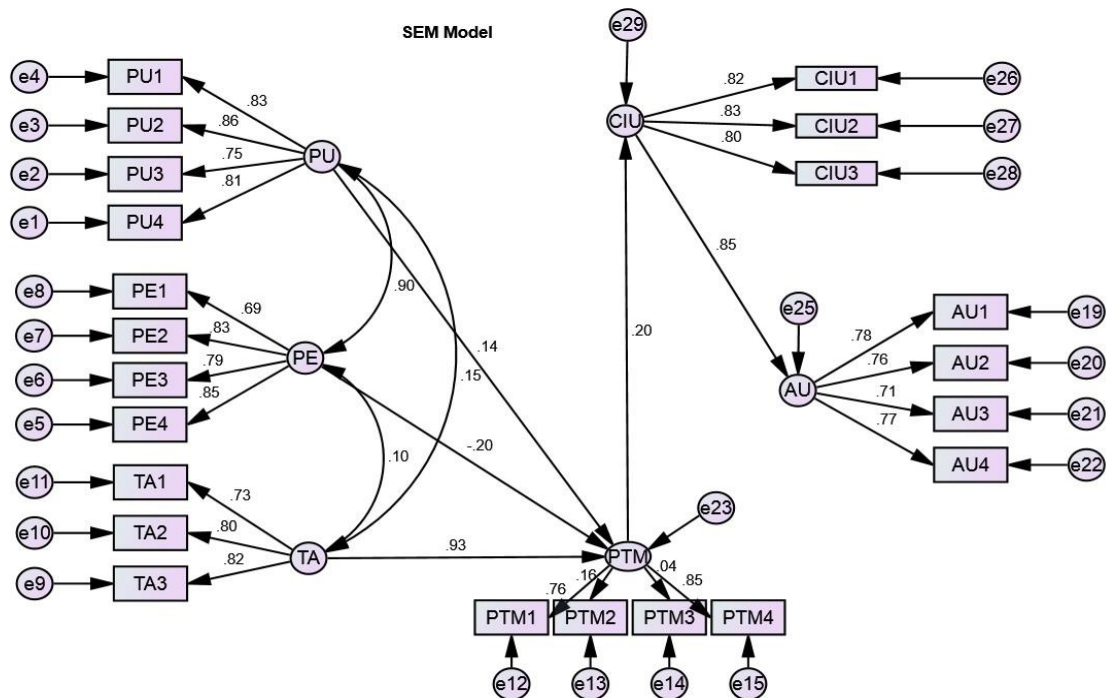


Figure: 03 Structural Equation Modelling

4.3 Reliability and Validity Test:

Table no. 02

Construct	Cronbach's alpha	Composite Reliability	AVE	Square root of AVE
PU	0.867	0.87	0.63	0.79
PE	0.855	0.86	0.60	0.78
TA	0.820	0.83	0.61	0.78
PTM	0.565	0.54	0.33	0.57
CIU	0.856	0.86	0.67	0.82
AU	0.843	0.84	0.57	0.76

Note: AVE-

Table no 2 demonstrates that the Cronbach's alpha for all items Except PTM is >0.7, indicating the scale's acceptance level which shows internal consistency. Convergent validity is assessed using Average Variance Extracted (AVE). The AVE indicates how much of the indicators' variance can be explained by the latent unobserved variable. As the Table showing AVE value for all the construct is above 0.50 which claim the power of latent variable in explanation in the indicators variable. The values of the square root of AVE for all latent constructs were higher than the inter correlation of latent variables.

4.4 Model fit:

Table no. 03 Goodness of fit measures

Goodness of Fit Measures	χ^2/df	GFI	NFI	CFI	TLI	RMSEA
Measurement Model	2.491	0.806	0.796	0.864	0.838	0.96
Structural Model	3.056	0.743	0.738	0.804	0.777	.12

Note: χ^2/d =Relative Chi-square; GFI=Goodness of Fit Index; NFI=Normed fixed index; CFI=Comparative fit index; TLI=Tucker-Lewis Index; RMSEA=Root mean squared error of approximation;

Table no 3 shows the goodness of fit for the structural equation model. As showing in the above table all the value of parameter are closed to the threshold limit which is shows the fitness of model for the given study. There is some problem in RMSEA as the value is marginally away from its threshold limit but it can be acceptable as the other parameter is good fit with model dimension.

4.5 Result Inferred from SEM analysis:

Table no. 04 SEM Assessment

Hypothesis	Regression Path	estimate	S.E	C.R	P-Value	Decision
H1	PU -> PTM	.138	.202	.686	.495	Not Supported
H2	PE ->PTM	.208	.202	-1.031	.303	Not Supported
H3	TA ->PTM	.950	.099	9.564	***	Supported
H4	PTM ->CIU	.193	0.87	2.228	0.26	Supported
H5	CIU ->AU	.799	0.88	9.108	***	Supported

Note: *** Indicate Value is <.001

As depicted in the table no 4 (H1) there is no association between Perceived Usefulness (PU) and

Perception towards m-learning (PTM) as the p- value is > 0.05 (S.E 0.202, C.R 0.686), (H2)there is also no association is found between Perceived Ease of Use (PE) and Perception towards m-learning (PTM) (P-Value .303, S.E .202, C.R .495), (H03) As the result shows there is negative association between Technical Anxiety (TA) and Perception towards using m-learning (PTM) (P-value .000, S.E, .099, C.R 9.564) H4 There is Moderate Positive relationship between Perception towards m-learning (PTM) and Coetaneous intention (CIU) to use m-learning by students (p-Value 0.26, C.R 2.228, S.E .87,) (H5) There is Positive association between Students continuous intention (CIU) to use m-learning and Actual Use (p-value .000, S.E .088, C.R 9.108)

4.6 Fornell & Larcker, 1981

Table no. 05 Fornell & Larcker 1981

Construct	PU	PE	TA	PTM	CIU	AU
PU	0.79					
PE	0.883	0.78				
TA	0.145	0.086	0.78			
PTM	0.055	-0.042	0.93	0.57		
CIU	0.675	0.74	0.228	0.18	0.81	
AU	0.733	0.78	0.202	0.243	0.851	0.75

Fornell and larcker (1981) suggest that AVE should be greater than the variance between the construct and other construct in the model. As Depicted from the above table AVE Value i.e. Average Variance extracted in majority of the constructs is fine and suit with fornell and larcker criterion.

4.7 Revised Model (SEM)

Revised Proposed Model (SEM)

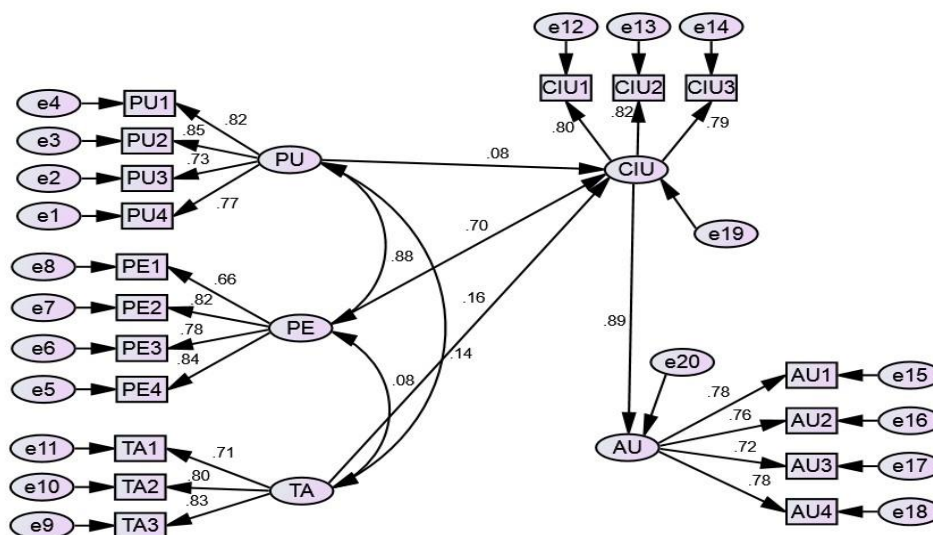


Figure: 04 Revised Model

4.8 Result of Proposed Model

Table no. 06 SEM Assessment

Hypothesis	Regression Path	Estimate	S.E	C.R	P-Value	Decision
H1	PU -> CIU	.091	.206	.440	.660	Not Supported
H2	PE- >CIU	0.705	.201	3.513	***	Supported
H3	TA->CIU	.141	.061	2.318	.020	Supported
H4	CIU->AU	.805	.091	9.428	***	Supported

Note: *** Indicate Value is <.001

As the result of the Proposed Model Showing there is no Association between Perceived Usefulness and Continuous Intention to use m –learning (P- Value .660, Estimate .091), further Perceived Ease of Use(PE) Significantly influenced Students Continuous intention (CIU) for using m-learning (P-value <.001, Estimate- 0.705, S.E .201, C.R 3.513),Additionally technical anxiety(TA) also shows significant impact on students intention for using m-learning(P-value .020 Estimate .141, S.E-.061, C.R 2.318) There is strong positive influence of studentscontinuous intention for using m-learning on their actual usage (p-value <.001, estimate .805,S.E .091, C.R 9.428)

5.0 Findings of the Study:

- Findings of the study shows that Perceived usefulness has no influenced on the students’ Perception on using m-learning.
- As the result showing perceived ease of use and technical anxiety has significant influenced on the students’ attitude as well as their intention to use m-learning. This finding is consistence with the finding of (Akmal, 2017)
- Students Perception towards using mobile learning is strongly influenced their continuous intention as well as actual use of m-learning significantly. This finding is consistence with finding of (Vaghela, 2021)
- Revising model shows that perceived usefulness, ease of use and technical anxiety have more direct influence on students’ continuous intention to use m-learning.
- Revised model revealed that when it comes to m-learning there is no impact of Perception of using m-learning on students’ intention to use m-learning, which means there is negligible role Perception in their behavioural intention of using m-learning
- Aggregate result of the study show that students have positive perception towards usageof electronics devices for m-learning.

Authors Observation: Perceived usefulness remained insignificant throughout the study, it may be due to the consequences of COVID-19 Pandemic, as we all know there was compulsion in using online resources for conducting online webinar for smooth running of academic activity. As the result even m-learning is not more useful as compare to tradition method of learning many of us has used online resources with compulsion maybe the reason for insignificant of Perceived useful in the study.

6.0 Conclusion:

The purpose of the study was to examine the influence of Perceived Usefulness, Ease of Use and Technical Anxiety on student overall intention, Perception and Actual Use of m-learning.As the result

showing it can be conclude that except perceived usefulness all the remaining variable has the influence on dependent variable (Perception towards using m-learning, Continuous intention, and Actual Used). Online learning has become very popular since introduction of covid, and it is widely accepted by students' and teachers among the world. The present study has shown that students' has positive perception towards online learning. This study has included Technical anxiety, which is simply means of fear of using technology. In this study researcher use technical anxiety as an independent variable which is tested and result shown that it has significant influence on the students' attitude and continuous intention of using m-learning.

The entire world are moving towards digitisation so rapidly and that it's become necessity for every individual to stay updated with advanced technology. One of the finest example of growing digitisation is the online learning, which almost become important for all the nation around the world. The result of the study also shows that students' has positive responses towards using online learning. By keeping in mind university should start making the course work that are suitable for the online learning platform.

7.0 Limitation and future Scope:

- Every research study has its own limitation and obviously this research study also has some limitation and future scope.
- For reaching at conclusion a researcher has collected 162 responses which may not enough to get into the exact picture of the title under study.
- Further area selected under the study is limited so that result of this study may not beneficial to other location around.
- This study can be improved in future by taking wide geographical area with large sample size so that arrived result become more beneficial.
- By adding more variable into existing TAM model more effective result as well as adding of new knowledge into existing can be done

8.0 Marketing Implication

- The present study will be useful for EdTech companies to promote and to frame new strategies regarding online learning.
- This study also provide assistance to managers to transform their face to face meeting and lectures program into online mode.

9.0 Suggestions:

For Universities:

- Improvement in infrastructure available at university level to make e-learning resourcing adoption among students.
- Arrangement for seminar/webinar specifically covering utilisation of m-learning and functioning of e-resources.
- Development of one uniform application which can be access by all the institution and departments affiliated to that particular university.
- Spreading Awareness regarding different technology i.e. "how to use" to minimize technical Anxiety among students.
- Encouragement of digital literacy among students.

For Governments:

- Providing adequate grant to universities specifically for digital infrastructure development and 24/7 internet connectivity.
- Fostering collaboration and partnership between universities and technology companies.
- Conducting different research for finding impact of m-learning on education

References:

1. Akmal. (2017). Influence of Perceived Usefulness and ease of Use on students continuous intention in learning online.
2. Ankit Raj Sarkar, A. K. (2020). A study of Perception and Attitude of Indian consumer towards online education. *International Journal of Creative Research thought*, 8(6), 345-359.
3. Al-Adwan, A. S.-M. (2018). Modeling students' readiness to adopt mobile learning in higher education: an empirical study. *International Review of Research in Open and Distributed Learning*, 19(1).
4. Al-FAHAD, D. F. (2009). Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia. *The Turkish Online Journal of Educational Technology – TOJET* April 2009, 8(2).
5. Alkhawaja, M. I. (n.d.). Technology Anxiety and its Impact on E-Learning System Actual Use in Jordan Public Universities during the Coronavirus Disease Pandemic. *European Journal of Educational Research*, 10(4).
6. Almasri, A. K. (2014). The influence on mobile learning based on technology acceptance model (TAM), mobile readiness (MR) and perceived interaction (PI) for higher education students. *International Journal of Technical Research and Applications*, 2(1), 05-11.
7. Bonera, M. (2011). The propensity of e-commerce usage: The influencing variables. *Management Research Review*.
8. Chaka, J. G. (n.d.). Students' perceptions and readiness towards mobile learning in colleges of education: a Nigerian perspective. *South African Journal of Education*, 37(1), 1-12.
9. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q*, 13(3), 319-340.
10. Kadir DEMIR, E. A. (2018). The effect of mobile learning applications on students' academic achievement and attitude towards mobile learning. *Malaysian Online Journal of Educational Technology*, 6(2).
11. Kerttuli Koivisto, M. M. (n.d.). Extending the Technology Acceptance Model with Personal Innovativeness and Technology Readiness: A Comparison of Three Models.
12. Kinnari Thaker, P. S. (2021). Students' perceptions towards mobile learning during COVID-19. *International Journal of Library Information Network*, 6(2).
13. M. Samir Abou El-Seoud 1, I. A.-E. (n.d.). E-Learning and Students' Motivation. *International Association of Online Engineering*, 20-26.
14. Nuri Abdalla, S. (2019). Extend of TAM Model with Technology anxiety and Self-Efficacy to Accept Course websites at University Canada West. *International Journal of Information Technology and Language Studies*, 03(02), 1-7.
15. Priscila. (2020). Retrieved from easy lms.com: <https://www.easy-lms.com/knowledge-center/lms-center/mobile-learning/item10388>

16. Saroia, A. I. (2019). Investigating university students' intention to use mobile learning management systems in Sweden. . *Innovations in Education and Teaching International*, 569-589.
17. Sitar-Tăut, D. A. (2021). Mobile learning acceptance in social distancing during the COVID- 19 outbreak: The mediation effect of hedonic motivation. *Human Behavior and Emerging*, 3(3), 366-378.
18. Syahida Mohtar, N. J. (2022). Mobile learning: research context, methodologies and future works towards middle-aged adults –a systematic literature review. *Multimedia Tools and Applications*. doi:10.1007/s11042-022-13698-y
19. *Talentms*. (n.d.). Retrieved from www.talentlms.com: <https://www.talentlms.com/elearning/history-of-elearning>
20. Tayan, B. M. (2017). Students and teachers' perceptions into the viability of mobile technology implementation to support language learning for first year business students in a Middle Eastern university. *International Journal of Education and Literacy Studies*,, 74-83.
21. Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*,, 11(4), 342-365.

List of Abbreviation

SR No.	Construct	Explanation
1	PU	Perceived Usefulness
2	PE	Perceived Ease of Use
3	TA	Technical Anxiety
4	PTM	Perception Towards m-learning
5	CIU	Continuous Intention to Use
6	AU	Actual Use
7	TAM	Technology Acceptance Model