



# INTERNATIONAL RESEARCH JOURNAL OF HUMANITIES AND INTERDISCIPLINARY STUDIES

( Peer-reviewed, Refereed, Indexed & Open Access Journal )

DOI : 03.2021-11278686

ISSN : 2582-8568

IMPACT FACTOR : 5.71 (SJIF 2021)

## A Study on 'Students Perception towards Digitalization In Higher Education during Pandemic' With Reference To Bangalore District

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DOI No. **03.2021-11278686** DOI Link::<https://doi-ds.org/doi/10.24988237/IRJHISICPC210830>

### **ABSTRACT:**

*The Covid-19 pandemic has resulted in forceful/unexpected change globally. Almost all the sectors are affected and impacted heavily/badly due to this pandemic. The education sector also has a great impact, which led to the pedagogical change in education was merely due to this epidemic in terms of digitalization in education. This study is an attempt to know the impact of this drastic change in higher education with the perception of students.*

*The students are main stakeholders in any institution. Any unplanned and forceful execution in higher education will result in a greater impact on the mind of students. The survey is an attempt to know the impact of digitalization in higher education, challenges and the opportunities faced by them with regards to these sudden changes in the higher education witnessed in this pandemic. The detailed questionnaire was drafted and the responses were collected from 258 undergraduate students across Bangalore from different streams and standard statistical tools were used to draw the analysis. From the study it's found that the digitalization transformation in higher education is not free from cons. The students revealed that the unavailability of proper resources, lack of internet connectivity, and absent of proper e-tools for e learning is the major challenges faced by the students. The respondents also accepted that virtual learning has resulted in learning of new technical know-how.*

**Key words:** Pandemic, Digital Transformation, Pedagogy, E-tools in learning etc.

### **INTRODUCTION:**

Digitalization has become a need of the 21st century and the covid-19 pandemic is a driving force for the execution of this digitalization shift in all the areas of working. The unexpected extension of lockdowns and social factors of this epidemic has given rise to virtual business transactions for its continuation.

The digitalization in higher education was a milestone away in the country like India, but due

to this pedagogical shift has resulted in a drastic digital transformation even in higher education, which was not expected and planned in advance. To continue the uninterrupted deliberation in education, the urgent digital transformation has been rapidly implemented and genuine attempts are continuing to happen for further improvement to maintain the quality in education and to retain the interest of students in higher education.

The halls of higher education (virtual as well as brick & mortar) are stuffed in the hands of Key managerial Persons like chairmen, COO, Deans, Associate Deans, Assistant Deans, and Head of the departments & Associates people in the respective departments, many of whom are directly involved in the decision-making that impacts teaching and learning. This has impacted the students at a greater extent who are the main beneficiaries, their perception are neglected in this process of virtual transformation.

In India where the majority of the students are not familiarized and updated with the new tools of e-learning. This digital transformation is not an easy task and even not free from hindrances for them, which is a major reason for their rigidity to accept this virtual shift in higher education. The lack of government and institutions support is one of the reasons for the effective output of this digital shift in higher education where the major percentage of higher education institutions was run and undertaken by the government.

#### **Statement of the Problem:**

Historically, the Higher education sector was rigid in India. But now the pandemic is demanding the digitalization and innovative technology in the education sector which is expecting continuous change and uninterrupted improvement in the field of higher education. The students play a very important role in this process without their support the effective result cannot be possible in this virtual transformation. Some of the students strongly believed education quality will suffer due to this transformation. At the same time there is resistance from students to accept this change but the pandemic, growing demand and cutthroat competition in higher education in the 21st century insist this change and the students should play an important role in this pedagogy shift for required effective output.

#### **Objectives of the study:**

1. To study the impact of Digitalization in Higher Education, from the student's perception.
2. To analyse the challenges and opportunity testimonies by the students in the present scenario.
3. To evaluate Pedagogical Strategies adopted for effective digitized transformation in Higher Education System.
4. To provide the suggestions to overcome the challenges and hindrances faced in this process.

## Review of Literature:

### 1. Claudiu Coman<sup>1</sup>, Carmen Stanciu<sup>2</sup> and Maria Cristina<sup>3</sup>(December 2020):

This study discussed how Romanian Universities managed to impart education during the pandemic in November 2020, as in a very short span the universities had to execute the online teaching & learning with perception to the students based on semi-structured questionnaires. The data was collected from 762 students from 2 largest Romanian universities. The result of the research revealed that as per the perception of students, Higher Education Institutions in Romania were not prepared for virtual learning. The benefits of digitized learning were not as per the expectation, The quality of education which seems to deteriorate in this process was the major drawback and became more protuberant. The technical issues & lack of skills in faculty & students became a major issue for the successful deliberation of quality education through this digital transformation. The university students and teachers are not pre planned for sudden shifts. Another issue of concern in this process was the hierarchy of problems that arise in online learning change in the context of crises caused by the pandemic teaching style improperly adapted to the online environment. The last place was assigned to the student's teacher interaction during online teaching.

### 2. Sonia<sup>1</sup> and Dr Raja Kumar<sup>2</sup> (November 2020):

This study was an attempt to know the perception of students towards digitalization of education in the areas of e-teaching, e-evaluation and e-examination. For this a survey was conducted to check the level of satisfaction among the students. The data was collected through Google form with the help of structured questionnaires from different colleges who are offering undergraduate and postgraduate courses from 300 students, in which 48% were female and 52% were male students. The study results reveal that there is a need to enhance the education sector through implementing technology which is a need of 21<sup>st</sup> century outside countries like India. The lack of resources in terms of internet, laptops and improper training was the reason for dissatisfaction with digitized education. The main challenge was the security, students feel anxious of using the digitized platform for online class. The infrastructure and additional cost are some of the issues which had addressed in this study. The study also discussed about the positive aspects of digitalisation in education that how the online assessment can save time and made the students techno friendly.

### 3. Marion Handel<sup>1</sup>, Melanie Stephen<sup>2</sup>, and Michael Glaser Zikuda<sup>3</sup> (October 2020):

The research highlights that the pandemic has affected all sectors of society including Higher Education Institutions. The 1826 sample collected from students' of Germany reveals that students are ready for remote learning whereas the technology equipment availability leads to



Socio emotional factors that are stress related to emotion like worries, tension and overload due to lack of physical interface, as it will be a barrier for overall development of the students. The twenty minutes survey on students' readiness of digitized education was done by collecting the details about digital skills, digital equipment availability and e-learning tools etc. To judge the socio emotional perception of students six point likert scale were applied. The study concludes that almost 56% of the students have used online tools and the statistical test like correlation was conducted. Finally only a few incidences of loneliness stress were reported. The study deals with only the desired expectation from digital learning from students' perception rather than experienced on digital learning.

**4. Ratneshwary Rasiah<sup>1</sup>, Harapjit Kaur<sup>2</sup> and Vinita Gupan<sup>3</sup> (November 2020):**

The study focused on perception of students regarding online experience. The authors revealed that the students were satisfied with online learning experience and whatever the problems faced during this process was addressed through ground theory by executing textual thematic quality analysis of their reflective response. Some of the concerns students had in the virtual learning were related to technological drawbacks such as poor internet connection and personal concern about academic ability of time management skills among themselves. The research was conducted between May to July 2020 involving the university students across three private higher education institutions in the state of Selangor in Malaysia from post graduate and undergraduate students. The data collected was fully related to student qualitative and quantitative perception of the effectiveness of the fully virtual environment in enhancing their learning experience and competencies through self-administered questionnaires based on five point likert scale totally fourteen items were adapted from the validated survey customs. The students provided positive feedback on academic continuity that the lesson did not stop in the pandemic. Students gave a fresh insight into how effective online lessons could be if delivered well by integrating technology into the curriculum through flexible and scaffold online resources.

**Research Methodology:**

The objective of the research for this study includes exploration and description. The descriptive research design is used in this study. Primary data is collected with the help of the structured questionnaire from 258 students. The reliability test showed cronbach alpha value is 0.87 which clearly states that the questionnaire is valid and reliable. The data collected is organised, classified and analysed using a wide range of appropriate statistical tools like mean and standard deviation, correlation and t test, anova.

### Research Instrumentation:

The questionnaire of the survey consists of 3 parts. The first part aims to find out the personal information of students. The second part aims to find out the Impact of digitalization in higher education with students' perception during a pandemic. The third part discusses the challenges and strategies adopted for this digitalization shift in Higher Education.

### Sample Selection:

There are around 893 higher education institutions in Bangalore urban alone (Source: <https://www.thehindu.com/news/cities/bangalore/bengaluru-has-the-highest-number-of-colleges-in-the-country/article24648141.ece>). The data for the total number of institutions is available, the population is considered infinite and the samples are selected on an infinite basis.

### VARIABLES OF THE STUDY:

In the current study the researcher has identified the impact of digitalization in higher education as an independent variable and challenges and opportunities in digital process, pedagogical strategies as dependent variable. The researcher has found the students perception towards digitalization in Higher Education is specifically with regard to students in Bangalore city only.

### LIMITATIONS OF THE STUDY:

The study is restricted to higher education students in Bangalore city only and may not be applicable to other areas. The opinion of the students is based on the primary source of data only.

### ANALYSIS AND INTERPRETATION:

The analysis is carried out to know Students' perception towards digitalization in Higher Education. The measure of central tendency, T test & Anova, and correlation has been used to draw the results from studying the variables and the analysis for the same is as follows;

**Table 1.1 Mean & Standard Deviation of Impact of Digitalization on Higher Education during pandemic from student perception**

Measuring Variables	Mean	S. D
Quality of education is deteriorating due to digitalization in the pandemic	3.98	.990
Digitalization results in loss of interest among the students in education	4.05	.916
Digitalization in education results in additional cost to the students	3.95	.989
Students are stressed and strained due to the digitalization in education	4.16	.937
Students have less leisure time compared to pre-pandemic due to digitalization	4.00	.990

Source: Primary Data

From the mean scores of the Table 1.1 it is clear that the Students are stressed and strained due to the digitalization in education, is the main factor with a mean value of 4.16 and a standard deviation of 0.937, followed by Digitalization results in loss of interest among the students in

education with a mean of 4.05 and a standard deviation of 0.916. The least factor considered was digitalization in education results in additional cost to the students which has mean value of 3.95 and standard deviation of 0.989. This indicates that students are stressed and strained in this digital transformation process which is a major issue to be addressed.

**Table 1.2 Mean & Standard Deviation of challenges & opportunities in digitalization of Higher Education in this Pandemic**

Measuring Variables	Mean	S D
Unavailability of resources are the main hindrances in online education	4.38	.866
Digitalization in Education result in learning new technologies	3.89	.984
Online assessment is not effective as it gives roof to malpractices	3.81	1.057
Virtual education is not suitable for all the subjects	4.19	.880
Students have a great platform to boost their confidence in e- learning	3.60	.986

Source: Primary Data

Using the mean scores of the student in Table 1.2, it is clear that Unavailability of proper resources is a hurdle for digital class, is the main challenge faced by students, with mean value of 4.38 and a standard deviation of 0.866, followed by Virtual education is not suitable for all the subjects with a mean of 4.19 and a standard deviation of 0.880. The least factor considered was students have a great platform to boost their confidence in e- learning with a mean value of 3.60 and standard deviation of 0.986. So it is observed that unavailability of required resources is a main issue in this transformation & also it is quite difficult for all the students to make arrangements of costly electronic gadgets which are required for e-learning from their end.

**Table 1.3 Mean & Standard Deviation for Pedagogical Strategies adopted for effective digitized transformation of students in Higher Education System**

Measuring Variables	Mean	S D
Hands on training must be provided to the students to get familiarized with digitalization tools	3.99	.813
Virtual learning must be supported with required resources	4.12	.755
Institutions must bring out some strategies to retain the interest among students.	4.26	.764
Curriculum should be redesigned to facilitate effective virtual learning	4.13	.773
Online assessment and evaluation must be scrutinized and designed in customized manner at the Institutional level	3.99	.841

Source: Primary Data



As per Table 1.3, clearly indicate that the institution must bring out some strategies to retain the interest among students with mean value of 4.26 and standard deviation 0.764, followed by the variable curriculum should be redesigned to facilitate effective virtual learning with a mean score of 4.13 and standard deviation of 0.773 and the virtual learning must be supported with required resources with a mean value of 4.12 and standard deviation 0.755. Whereas the least variable is hands on training must be provided to the students to get familiarized with digitalization tools with the mean value of 3.99 and standard deviation 0.813 and online assessment and evaluation must be scrutinized and designed in a customized manner at the Institutional level with a mean value 3.99 and standard deviation of 0.841. Because retaining the students' interest in online education was the major challenge faced during this digital transformation process demanded by the pandemic for which institutions must plan certain strategies to overcome this issue.

#### **HYPOTHESIS:**

1. There is no significant difference between demographic factors and Impact of Digitalization on Higher Education during pandemic from students' perception.
2. There is no significant difference between demographic factors and challenges & opportunities in the process of digitization in Higher Education from students' perception.
3. There is no significant difference between demographic factors and pedagogical strategies adopted for effective digitalization in higher education

Using Table 1.1, 1.2 and 1.3 all factors of digital transformation in Higher education with student perspective are analysed using mean & standard deviation. In order to understand the relationship between Overall all transformation process of digitization in Higher Education in the view of students in this pandemic with the demographic factors, all the hypotheses were tested using t tests and Anova and the results are in Table 1. 4.

**Table 1.4 Demographic factors with respect to Impact of digitalization in Higher Education, Challenges & Opportunities in virtual transformation & Pedagogical Strategies adopted for effective digitalization in Higher Education with the perception of students.**

<b>Demographic factors</b>	<b>Impact of Digitalization in Higher Education</b>	<b>Challenges &amp; Opportunities in the digital transformation in Higher Education</b>	<b>Pedagogical Strategies for effective digital transformation in Higher Education</b>
<b>GENDER</b>			
<b>T value</b>	1.283	3.345	1.672
<b>P Value</b>	0.059	>0.000**	0.010**
<b>Inference</b>	<b>Accepted</b>	<b>Rejected</b>	<b>Rejected</b>

<b>COURSE</b>			
<b>F value</b>	1.322	0.717	3.168
<b>P Value</b>	0.262	0.581	0.015*
<b>Inference</b>	<b>Accepted</b>	<b>Accepted</b>	<b>Rejected</b>
<b>NATURE OF INSTITUTION STUDYING</b>			
<b>F value</b>	3.196	6.148	1.744
<b>P Value</b>	0.014*	>0.000**	0.141
<b>Inference</b>	<b>Rejected</b>	<b>Rejected</b>	<b>Accepted</b>
<b>FAMILY INCOME</b>			
<b>f value</b>	5.563	2.585	3.286
<b>P value</b>	0.004**	0.077	0.039*
<b>Inference</b>	<b>Rejected</b>	<b>Accepted</b>	<b>Rejected</b>
<b>FIRST GENERATION GRADUATES</b>			
<b>T value</b>	1.347	0.792	0.298
<b>P value</b>	0.041*	0.133	0.712
<b>Inference</b>	<b>Rejected</b>	<b>Accepted</b>	<b>Accepted</b>

Source: Primary Data

Note: 1. \* denotes significant at 5% level

2. \*\* denotes significant at 1% level

Table 1.4 shows that P value is less than 0.05 considering the Impact of Digitalization in Higher Education and with demographic factors Nature of institution studying, Family Income and First generation graduates. Hence there is significant difference between Nature of institution, Family income and First Generation students' with reference to Impact of Digitalization in Higher education with perception of students. Therefore hypothesis there is no significant difference between demographic factors and Impact of digitalization in Higher Education is accepted only considering Gender & Course of the students. As many of the young students are not having required technical knowledge as they are first generation graduates in their family and most of the Higher Education Institution are not providing any technical assistance to facilitate e-learning among students.

Table 1.4 further projects that P value is less than 0.05 considering challenges & opportunities with demographic factor Gender and nature of institution studying. Hence there is significant difference between Gender and the nature of institution studying with reference to challenges & opportunities faced in digital transformation of Higher Education with student perception. Therefore there is no sufficient evidence to reject hypothesis with regards to all the other



demographic factors and challenges & opportunities. As the youngsters are impacted more, they are facing more challenges which result in lack of interest in online education mainly due to lack of support from the institutions which is the main concern in the transformation process.

Likewise, Table 1.4 exhibits that P value is less than 0.05 considering pedagogical strategies adopted for effective digital transformation in higher education with the demographic factors Gender, Course, and Family Income of college students. Hence there is significant difference between gender, course, and family income of college students with respect to strategies adopted for effective digital transformation in Higher Education.

Which indicate gender, course and family income should be considered while executing the strategies in this digital transformation of Higher education. The nature of the institution has a greater impact on this transformation process. The required support from the colleges help the student to be more flexible in adopting new techniques and boost their confidence in implementation of ICT in the e-learning process.

**BIVARIATE CORRELATION:**

H<sub>0</sub>: There is no significant correlation between the variables of digitalization in Higher Education during the pandemic with the students' perception.

**Table 1.5 Karl Pearson Correlation Coefficient between Factors of Digitalization in Higher Education during pandemic with the perspective of students'.**

Factors	Impact of Digitalization in Higher Education	Challenges & Opportunities in the digital transformation of Higher Education	Pedagogical Strategies for effective digital transformation in Higher Education
Impact of Digitalization in Higher Education	1	.573**	.522**
Challenges & Opportunities in the digital transformation of Higher Education		1	.636**
Pedagogical Strategies for effective digital transformation in Higher Education			1

\* signify Correlation is significant at the 0.05 level.

\*\* signify Correlation is significant at the 0.01 level.

Source: Primary Data

The correlation coefficient between Impact of digitalization in Higher Education on students and Challenges & opportunities in digitalization of education is 0.573 which indicate 57.3 percentage positive relationships between impact of digitalization in Higher Education on students' and challenges & opportunities and it is highly significant so null hypothesis is rejected.

The Karl Pearson coefficient of correlation between impact of digitalization in Higher Education in this pandemic on students' and pedagogical strategies for effective digitalization in education process is 0.522, which indicate 52.2 percentage positive whereas correlation coefficient between challenges & opportunities and pedagogical strategies for effective digital transformation in Higher Education in this pandemic is 0.636 which shows 63.6 percentage positive relations between these variables and it is highly significant so null hypothesis is rejected.

Therefore all the variables of this study are highly correlated with each other. So therefore the total variables with regard to impact of digitalization in Higher Education during pandemic with perception of students are highly significant with each other's which indicates that students are facing lots of issues in this transformation with regard to resources, time management, technical knowledge, lack of interest and so on which is to be addressed for the effective results of this virtual shift in Higher Education during this pandemic.

### Findings:

1. The study found that 66% of the respondents are female, 44% are from commerce courses, 69% of the student respondents belong to the Autonomous institution, 82% of the respondents' family income are less than 3 lakh and 65% of the students are first generation graduates.
2. From the study it is observed that majority of the students agrees that they are stressed and strained due to the digitalization in education during this pandemic which result in lack of interest among them, it is also found that the unavailability of resources are the main hindrances in online education from the perspective of student, the student strongly agrees that institution must bring out some strategies to retain the interest among students and redesigned their curriculum which facilitate the virtual education .
3. Gender and course play an important role in influencing strategies adopted for affective digital transformation in this pandemic from the students' perspective whereas nature of institution discrimination exists with reference to the impact of digitalization on higher education and challenges & opportunities for effective digital transformation.

4. The demographic factor family income is highly influenced with the impact of digitalization in higher education towards perception of students' and the pedagogical strategies adopted for effective digital transformation. The impact of digitalization on higher education is greatly influenced by the demographic factor of family education (first generation graduates) in this process.
5. The study reveals that all the variables that include impact of digitalization on higher education, Challenges & opportunities in the virtual process in higher education and pedagogical strategies adopted for effective digital transformation are having direct positive relationships between each other which facilitate the easy and effective result of this digitalization shift in higher education.

#### **Suggestions:**

1. The time to time support from the higher education institution is needed to the students for effective digitalization in higher education during this pandemic and also proper planning and assistance in terms of training and other required resources should be provided by the institutions for witnessing the effective and best outcome from this process.
2. The effective strategies should be formulated by the Higher Education Institution to retain the interest of the students' in the virtual learning process to motivate the students and facilitate implementation of the new e-tools in Higher Education.
3. The institution must consider new customised digitized tools for the assessment of students and provide the platform for interface during remote learning to boost up their confidence.
4. The Blended learning concept can be used for the subjects where complete digitalization cannot be possible for deliberating the content effectively and selection of effective customised e-platforms for delivering of the content would be planned by the faculty to overcome this issue.
5. The study is restricted to only higher education institutions of Bangalore under graduate students' further research can be done to know the transformation of digitalization of education in schools and corporate in this pandemic, other organised & unorganised sector, and work life balance & so on.

#### **Conclusion:**

Higher Education Institutions have been facing challenges in the environment due to this pandemic for continuous deliberation of lessons and to stay competitive. The colleges and universities need to leverage their resources and act proactively to face these challenges. The perception of students in this digitized process would help the institutions to recognize its current position, identify gaps and prepare for improvement.



Many institutions of Higher Education are looking positive and mapping the operational strategies to meet current and future challenges for achieving the desired result from this digital transformation process. They are also looking at e-learning as a way to cope with the rapid pace of change in technology, the educational environment, and society at large. The higher education institution should play an essential role in this transformation of the students. At the same time students must be tech savvy to confront the changes demanded by this pandemic in terms of digitalization without compromising in the quality of their contribution, they must aware of his or her role for which they should be dynamic enough to accept the changes demanded by the institution for effective digital transformation in Higher Education.

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