



AN EMPIRICAL STUDY ON IMPACT OF INNOVATION & DIGITAL TRANSFORMATION IN HIGHER EDUCATION INSTITUTES

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ABSTRACT

In India, Higher educational institutes have traditionally depended on chalk and talk classroom method with restrictive curriculum design and assessment methods. fixed curricula, and conventional assessment methods. However, in digital century, Innovation of digital tools and its transformation like Virtual classrooms, blending learning, LMS, AI-enables teaching and learning tools etc. enhancing accessibility, allowing students from diverse geographical and socio-economic backgrounds to participate in higher education. Innovation in higher education extends beyond teaching and learning to include research, administration, and student support services. Technologies like big data analytics, cloud computing and automation help institutions improve operational efficiency, academic planning, and resource management. The objective of the study is to analyze the positive and negative impacts of Innovation and Digital Revolution in Higher education among the faculty members through survey Method. The research conducted by questioning 50 respondents and have used Independent samples t-test to check the opinion of male and female respondents is same of differ. The findings indicate that innovation and digital transformation are positively perceived by both groups, particularly in enhancing learning accessibility, self-learning opportunities, and institutional collaboration. In conclusion, innovation and digital transformation is essential for the sustainability and competitiveness of higher education institutions.

KEYWORDS: *Innovation, Global Collaboration, Digital Infrastructure, Digital Literacy, Social Interaction*

1.1 INTRODUCTION

In this Digital revolution century, there is the major changes has occurred in educational teaching system by way of Innovation and digital transformation tools have develop central to the growth and development of higher education institutes. Rapid advancements in technology, changing learner expectations, and the increasing demand for flexible and inclusive education have compelled universities and colleges to rethink traditional teaching, learning, and administrative practices. In this context, innovation refers to the adoption of new ideas, methods, and tools that improve educational quality, while digital transformation involves the strategic integration of digital technologies into all aspects of higher education.

The digital transformation in higher education in India is characterized by the integration of technology into various aspects of education. This includes the custom of digital tools for teaching, knowledge, administrative processes, as well as the use of AI, big data, and machine learning to enhance educational outcomes. The integration of these technologies aligns with the NEP 2020's vision for technology-enabled, learner-centric education.

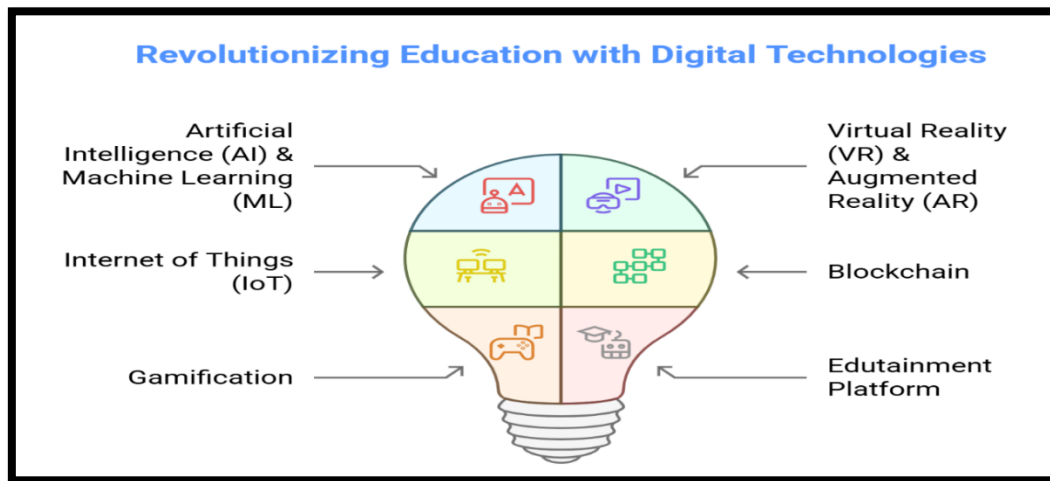
(www.educationtimes.com, 2026)

The major initiatives include Direct-to Home Channels, National Mission on Education through Information and communication technology, AI and Big Data, Digital platforms, State University efforts making strong foundation of Innovation and Digital Transformation. This article covers importance of Innovation and Digital transformation in Education, literatures review, objectives, data analyses, and major results and conclusion.

Standing position of Innovation and Digital Transformation in Education:

(KAMALAKANNAN, 2024) indicated the importance of Innovation and Digital Transformation in Education. They are: **Technological integration of students and teachers through effective Interaction and Engagement:** Digital transformation in education supports interaction between students and teachers and increases the level of engagement in Online class platforms. **Growing Access to Education:** Innovation and Digital Transformation disruptions down barriers of time and place, allowing students to benefit from digital learning resources regardless of their geographical location which leads to equality. **Promotion of Self-Learning Skills:** Innovation and Digital transformation promotes students' s for self-learning by providing various online tools. **Expanding the Opportunity of Education:** Innovation and Digital transformation brings the wider opportunity among students. **Developing Innovation Skills:** Innovation and Digital Transformation can inspire students to inculcate innovation skills by use of modern technologies.

Revolutionizing Education with Digital Technologies



Source: <https://www.squareboat.com/blog/digital-transformation-in-education>

Challenges for Implementation of Innovation and Digital Transformation

Technological issues: Investment and building digital infrastructure are a major issue for many schools and colleges.

Lack of Expertise: Huge amount of expertise in usage of modern technologies is needed, but there is shortage of teachers and educators.

Huge fund requirement: Continues investment require which will be difficult for many educational institutions.

Security and secrecy: Maintenance of Privacy and security is a major challenge.

Willing of the administration: Administration of institute to implement is the major concern as it involves investment and changes in policy.

Cultural mindset: Resistance to change and cultural mindset is the major hinderance to implement innovation and digital transformation. (www.dataversity.net, 2026)

1.2 REVIEW OF LITERATURES

(Kalyani, 2024) discusses concept of digital transformation in higher education institutions and highlights its significance in improving institutional efficiency and educational quality. According to her Digital transformation aims to enhance teaching–learning practices, increase student engagement, and restructure administrative activities. (Zhao Meiyu, 2024) has in-sighted about Digital Transformation of Higher Education in their article. They have used various literatures for their research. They have studied the characteristics of higher education, digital era and mode of management in supporting the digital transformation. The major finding of this article is that, it can see that digital information and transformation has huge impact on the university and teachers in higher education. (Rajasekaran S) 2023, highlighted the growing importance of digital libraries in their modern education due to rapid technological advancements and the increasing demand for electronic resources. For effective use of digital library in future scenario there

needs a Cultivating technological set-up, expanding the availability of digital content, and increasing awareness and training programs for students and faculties. (Shrivastava; Shrivastava) 2022 highlight the growing importance of digitalization and the integration of digital technologies has significantly influenced teaching–learning practices, administrative systems, and accessibility to academic resources. Digital tools such as cloud computing, Information and Communication Technology (ICT), Learning Management Systems (LMS), artificial intelligence, and virtual learning platforms have enabled institutions to deliver education in a more interactive, flexible, and student-centered manner. (Vladislav Kaputa, 2022) examine digital transformation in higher education as a driver of socially oriented innovation and enhancement of digital education. The study concludes that digital in higher education not only enhances teaching and learning processes but also contributes to social innovation by expanding educational access, promoting knowledge sharing, and preparing students for the rapidly evolving digital economy.

1.3 NEED FOR THE STUDY

Implementation of digital technology is the major challenges for any educational institute, so we need to understand the its impact after implementation. After reviewing many literatures and various materials, most of the literatures covers only the benefit, importance, challenges of digital technology in higher education, but very few literatures studied on the effect of digital knowledge on higher education. Hence, the effort is made to study on this area.

1.4 OBJECTIVES OF THE STUDY

- 1) To study the positive and negative impact of innovation and digital transformation in higher education
- 2) To study the innovation and digital transformation challenges and opportunities in higher education.

1.5 RESEARCH METHODOLOGY

This article is descriptive research which defines the opinion of respondents regarding positive and negative impact of Innovation and Digital transformation in Higher Education. The sample size is 50 and the respondents are randomly selected when we visited the colleges for survey. A designed questionnaire has prepared using Liker Scale. Hypothesis has formulated and tested through independent samples t-test.

Hypothesis testing

Hypothesis-1 & 2: There is statistically no difference among selected variables as per the opinion about positive and negative impact of innovation and digital transformation in higher education.

1.6 ANALYSIS AND INTERPRETATION

1.6.1 Demographic Profile

Table No.1.6.1: Demographic Profile of the respondents

Parameters	Factors	Gender		F
		Male	Female	
Program in which they teach	BA	9	4	13
	BCom	5	4	09
	BBA	6	3	09
	BCA	1	4	05
	BSC	4	3	07
	PUC	4	3	07
	TOTAL	29	21	50
Area	Urban	12	22	34
	Rural	08	08	16
	TOTAL	20	30	50
Marital Status	Married	30	16	46
	Unmarried	02	02	04
	TOTAL	32	18	50
Types	Permanent	8	04	12
	Guest Faculty	23	15	38
	TOTAL	31	19	50

(Source: Survey Data)

Above Table No.1 describes the demographic profile of 50 respondents who are chosen as sample size. The demographic profile shows that the majority of respondents are male faculty members (31) compared to female faculty members (19). Most respondents teach in the BA program (13), followed by BCom and BBA (9 each). A significant proportion of respondents belong to urban areas (34) compared to rural areas (16). Regarding marital status, most of the respondents are married (46). In terms of employment type, most respondents are guest faculty (38), while 12 are permanent faculty members.

1.6.2 Positive Impact about Innovation and Digital Transformation

Table No.1.6.2: Positive Impact about Innovation and Digital Transformation

Sl. No	Statement	Strongly Agree	Agree	NAD	Dis Agree	Strongly Disagree	Total	Total Score	Avg. Weighted Score
1	Digital platforms and AI facilitate students for self-learning	13	26	7	4	0	50	198	0.23
2	Technological enable learning is more accessible to diverse students	27	16	5	1	1	50	217	0.25
3	Digital technology and tools support in administrative process- reducing paper work and enhancing communication	32	8	7	2	1	50	218	0.26

4	Digital infrastructure facilitates global partnership among researchers and provides access to vast digital library	30	10	7	2	1	50	216	0.25
		102	60	26	9	3			

(Source: Survey Data)

SA-5,A-4,NAD-3,DA-2,SDA-1

Above table depicts the opinion of respondents regarding positive impact of Innovation and Digital transformation in college institutes. The majority of respondents strongly agree or agree with the statements regarding the assistances of digital technology in education. Administrative efficiency and global research access received the highest weighted scores (218). Opinion about Digital platforms and AI facilitate students for self-learning Students and faculty perceive with the lowest weighted score (198).

1.6.3 Negative Impact about Innovation and Digital Transformation

Table No.1.6.3: Opinion about Negative Impact on Innovation and Digital Transformation

Sl. No	Statement	Strongly Agree	Agree	NAD	Dis Agree	Strongly Disagree	Total	Total Score	Avg. Weighted Score
1	A huge gap between Digital technology and underprivileged ones, creating disproportions	7	31	5	5	2	50	186	0.24
2	Digital tools lead to lower attention and increased psychological health issues	12	29	5	4	0	50	199	0.25
3	Technological driven learning reducing human interaction and hampering social and emotional development facilities	20	25	3	2	0	50	213	0.27
4	There is inefficient use of technology due to significant gap in digital literacy	3	35	6	6	0	50	185	0.24

(Source: Survey Data)

SA-5,A-4,NAD-3,DA-2,SDA-1

Table No.1.6.3 shows the opinion of respondents regarding negative impact of Innovation and Digital revolution in Higher Education. Most number of the respondents has agreed upon on the statement Technological driven learning reducing human interaction and hampering social and emotional development facilities with the highest weighted score (213). The least number of them agreed on the statement There is inefficient use of technology due to significant gap in digital literacy with lowest weighted score (185).

The result indicates that the digital technology offers many benefits to remove the gap of digital inequality, digital literacy gaps etc. Stable combination of technology with human interaction and inclusive access is essential for effective educational outcomes.

Table No.1.6.4: View of Male and Female respondents about the Positive Impact of Innovation and Digital transformation in Higher Education

Hypothesis Testing-1:

- H_0 ----- View of Male and Female respondents' opinion towards Positive Impact of Innovation and Digital transformation in Higher Education is same
- H_a ---- View of Male and Female respondents' opinion towards Positive Impact of Innovation and Digital transformation in Higher Education is different.

Independent Samples T-Test

		<i>Statistic</i>	<i>Df</i>	<i>p</i>	<i>Mean difference</i>	<i>SE difference</i>		<i>Effect Size</i>
B	Student's t	0.568	48.0	0.573	1.10	1.93	<i>Cohen's d</i>	0.172

<i>Group Descriptives</i>						
	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>SE</i>
B	FEMALE	16	50.6	53.0	6.13	1.53
	MALE	34	49.5	52.0	6.47	1.11

Analysis & Interpretation

The calculated p value is 0.573 , which is more than the critical significant value (0.05) at the chosen significance level, which indicates that the difference between the two groups is not statistically significant. View of male and female respondents in their opinions regarding the positive impact of innovation and digital transformation in higher education is same.

Table No.1.6.5: View of Male and Female respondents about the Negative Impact of Innovation and Digital transformation in Higher Education

Hypothesis Testing-2

- H_0 ----- View of Male and Female respondents' opinion towards Negative Impact of Innovation and Digital transformation in Higher Education is same
- H_a ---- View of Male and Female respondents' opinion towards Negative Impact of Innovation and Digital transformation in Higher Education is different.

Independent Samples T-Test								
		Statistic	df	P	Mean difference	SE difference		Effect Size
Negative Impact	Student's t	-0.647	48.0	0.521	-1.11	1.72	Cohen's d	-0.196

Group Descriptives						
	Group	N	Mean	Median	SD	SE
C	FEMALE	16	49.1	52.0	6.49	1.62
	MALE	34	50.2	52.0	5.27	0.904

Analysis & Interpretation

In order to know the if there is a difference between male and female respondents regarding their opinions towards Negative Impact of Innovation and Digital transformation in Higher Education Independent t-test was conducted. P value = 0 .521 which is more than significant value is 0.05. Hence, there is not much difference between male and female respondents in their opinions.

Both the demographic groups i.e. Men and women have a similar opinion on the negative impact of Innovation and Digital transformation such as digital divide, mental health concerns, reduced human interaction, and lack of digital literacy.

1.7 RESULTS

The major finding of the study is as follows:

- **Positive impact:** Digital technology in education. Administrative efficiency and global research access is being regarded as highest positive impact of Innovation and Technology in education.

- **Negative impact:** Technological driven learning reducing human interaction and hampering social and emotional development facilities is being viewed has highest negative impact of Innovation and Technology in education.
- Both the demographic groups i.e. Men and women have a similar opinion on both the positive and negative impact of Innovation and Digital transformation in higher education.

1.8 CONCLUSION

Modern educational system is being going through lot of challenges, difficulties and issues, such as, Adoption of New educational policies, managing Alpha-Gen Z generation students, usage of modern teaching -tools, methodology and techniques and competitive atmosphere. To cope up with these, Innovation and Digital transformation in higher education is become inevitable. Implementation of these, has both positive impact (self-learning, acceptability, reducing paper work and access to vast digital library) and negative impact (huge gap, mental health issues, reducing human interaction, gap of digital literacy). To conclude, educational institutes have to inculcate innovation and digital technology in a holistic and balanced approach with traditional teaching methods by overcoming all the negative impacts.

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