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Student Perception on Digital Transformation in Higher Education Institutes of Bengaluru City

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ABSTRACT

Advancement of youth across the world revolves around education and hence designated as top priority by internationally recognised sustainable goals. Education sector is integral in reshaping youth's future and providing competitive edge in global markets. Indian education industry worth $40 billion annually, with largest number of higher education institutes internationally is lucrative. As educational establishments adapt to rapidly evolving technologies, understanding students' interpretations of digital advancements is critical. With this perspective, a cross sectional survey was conducted among college going scholars ranging 18-22 years of age, to ascertain their perception towards the digitalisation in higher education institutes of Bengaluru. Questionnaire was administered to 150 randomly selected students pursuing education in Higher Education Institutes of Bengaluru. Findings indicated that though sixty-three percent of students preferred online queries about course details, only 44.7 percent of students made online inquiries. Offline inquiry were made by 33.1percent. 46 percent students rated online course information average. Though 84 percent preferred online document submissions only 65percent made online submissions. It is noteworthy document verifications for all were manual. Digital fee transactions were made by 58.7 percent while 41.3 percent used other modes of payment. Though 48.7% students sometimes had online classes, Ninety percent preferred hybrid mode for lectures. One tenth of sample reported that their colleges never used Learning management Systems (LMS). 17.3 percent of students did not prefer and 56 percent preferred LMS. Study highlighted that digitalisation has permeated in course inquiries, admission process, documentation, lectures and assessments.

Keywords: *Digital Transformation, Higher Education Institutes, College going students.*

1. INTRODUCTION

Education is bedrock to proliferation of lives of youth globally and has been acknowledged as pressing issue in globally agreed sustainable goals and World Program of Action for youth. It's the mainstay to effective participation of youth in processes of social, economic and political expansion. Higher Education (HE) is considered as all types of studies, training or research training at post secondary level provided by universities or other educational establishments that are approved as institutions of higher education by competent state authorities (Segura et al., 2020).

Education sector is integral in modelling the youth, reshaping them for future and provide a competitive edge in global markets. India beams with largest number of Higher Education Institutes (HEIs) in the world. The Annual Report by UGC (2018-19) records 573 universities and 35,539 colleges in the country in the year 2012. The numbers rocketed to 911 universities and 40,489 colleges by the end of the year 2019. The size of the Indian education market is $40 billion per year. Youth of today are realizing the importance of good education and understanding the benefits attached to education. Gross Enrolment Ratio (GER), in HE among the age group 18-23 years were accounted to 27.1% (which had increase from 19.4% in 2011 (AISHE report , 2020).

Technology has infiltrated into every aspect of human life. There is a shift in educational practice in today's constantly evolving digital and globalized systems. The internet, e-learning and digital communication are replacing conventional practices as an outcome of Globalisation, the knowledge outburst, communication revolution and digital technology. The recent innovations in digital technology encompass Artificial Intelligence, massive data, cloud computing, virtual and augmented reality. Digital revolution heralded the launch of information culture, which resulted in universal use of internet, smart phones, and digital communication technologies, transforming into potent tools for networking, communication and information exchange. Digital revolution facilitated swift world over access to information, resulting in the current

community being a knowledge society. The digital revolution is pivotal as it guarantees liberalization, privatization, and globalization. Rising educational demands have been gratified and transformed due to economical and prompt alternatives provided by digital technology. Digitalization has an extensive effect on higher learning by providing innovative teaching tools, information accessibility, potential for international collaboration and alternative avenues to academic advancement. Some instances on how technology has impacted HE includes e-learning, hybrid learning, massive online open courses (MOOCs), virtual universities, blogs, online platforms for knowledge and resources transfer, discussion forums, interactive boards, tele-conferencing, webinars, interactive classrooms, cloud computing, online research tools and learning (Durairaj et al., 2023).

Digital transformation (DT) has percolated into all facets of HEIs operations that include processes, places, formats and objectives of teaching, learning, researching and working. To stay in global competition and good strategic positioning, HEIs have heavily invested in digital infrastructure, leading to rise in use of digital media and technologies for teaching and learning, research, support services, administration and communication etc. DT framework has three standpoints: Technological, organisational, through generation of ground-breaking business prototypes and Social, as it influences all constituents of humanity. DT is merely not centered in technology but is deep rooted on innovations and inventiveness, both in business and in society, at large. In this context, distance learning tools, online social networking tools, MOOCs, sophisticated learning management systems (LMS) are models that bestows equitable academic prospects, content accessibilty and supporting lifelong learning. But, outcome here is far from reached. The change brought by DT is challenging to learners and teachers alike (Paunescuet al., 2022).

Learning must be viewed as self directed process than a covert event where students reciprocate to parents, teachers or means of instruction passively. Hence, facilitators should foster conducive environment that harness students' inquisitiveness for learning and nurture self-directed learning. Research by Zhang et al., (2022) on the critical elements influencing college student's willingness in mandatory blended learning environments to utilise e-learning system as per SEM analysis among 287 participants illustrates that intention behaviour of acceptance and use of e-learning system is affected positively by facilitating factors, system quality and social influence.

DT is a priority in HE, and is explored as significant and purposeful restructuring of corporate operations and organisations, processes, capacities and frameworks that maximise transformation of a technology mix's changes and possibilities and its hastened influence on society (Benavides et al., 2020). DT in HE is more than just technology. The objective is to embrace novel methods of working to obtain deliverables that are user centric in face of changing technology competition, user need and behaviour (Seres et al., 2018). Indian Education system has expanded phenomenally with industrial revolution 4.0. India is in top ten countries in industrial and technological capacity, because of the significant manpower and tools contributed in HE. As educational institutions continue to navigate the digital landscape, it is essential to incorporate student perspectives to ensure that the implementation of digital technologies aligns with their needs and preferences. The study was taken up with following objectives:

1. To understand the digital transformation process adopted in HEIs.
2. The preference of students towards digital transformation in HEIs.

B. Methodology

Cross sectional study was undertaken to interpret perception of students on the digital transformation in Higher Education Institutes (HEIs) in Bengaluru. Instrument employed for the survey technique was a structured Questionnaire. 150 students in the range of 18-22 years of age, pursuing higher education (HE) were chosen by simple random sampling technique. The first part of the questionnaire included questions on student's demographic profile like age, gender, nativity, year of study, course taken. The next part focussed on questions with respect to digitalisation in their HEIs like Admission process, course enquiry, document submission, verification, fee payment, attendance updation, learning modes, usage of learning management systems (LMS) and their preferences with respect to same. The findings were entered, coded, tabulated and subjected to statistical analysis in MS EXCEL. The findings are discussed in following section.

C. Results and Discussion

The consolidated data is analysed and discussed further. The first part of the study reports the socio demographic profile of the subjects. The perception of students about the digital transformation is discussed in the second part of the study.

2. SOCIO DEMOGRAPHIC PROFILE

Socio demographic information is important to understand the general characteristics of the sample. The variables included gender, age in years, year of study, course undertaken by students, program and their place of residence. The demographic profile of the college students is portrayed in the Table I.

VARIABLES	Age Group (in Years)								χ^2 Test
	18-19yrs		20-21yrs		22-23yrs		TOTAL		
Gender	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Females	21	14	51	34	26	17.3	98	65.3	
Males	9	6	28	18.7	15	10	52	34.7	0.3*
Total	30	20	79	52.7	41	27.3	150	100	
Course									
Sciences	3	2	31	20.7	41	27.3	75	50	
Humanities	21	14	19	12.7	0	0	40	26.7	
Commerce	6	4	29	19.3	0	0	35	23.3	**80**
Total	30	20	79	52.7	41	27.3	150	100	
Year of Study									
1st Year	25	16.7	1	0.7	16	10.6	42	28	
2ndYear	5	3.3	45	30	24	16	74	49.3	
3rdYear	0	0	33	22	1	0.7	34	22.7	**89.8**
Total	30	20	79	52.7	41	27.3	150	100	
Program									
Under Graduate	30	20	79	52.7	1	0.7	110	73.3	
Post Graduate	0	0	0	0	40	26.6	40	26.7	**145**
Total	30	20	79	52.7	41	27.3	150	100	
Place of Residence									
Rural	11	7.33	16	10.7	20	13.3	47	31.3	
Urban	19	12.7	63	42	21	14	103	68.7	**10.7**
Total	30	20	79	22.7	41	27.3	150	100	
* Significant at 5% level									

Table 1: Socio demographic Profile of the sample.

A brief insight on the demographic profile of sample pursuing higher education in Bengaluru city is provided in Table-1. Data indicated the mean age of the students studied in years was 19.5. Females constituted to 65.3% while 34.7% males. Statistical analysis using Chi Square test estimated significant differences between the gender at 95% level of significance. Different programs pursued were Sciences (50%) humanities (26.7%), and Commerce (23.3%). The data subjected for statistical test using Chi Square indicates the difference in the courses undertaken between the age group was significant at 5% level.

Nearly half of the participants (49.3%) were in 2nd year of enrolment in university. While 28% were in their 1st year and 22.7

percent in the 3rd year of their graduation. Predominantly, there were undergraduates (73.3%) in various years of the program, while 26.7 percent were pursuing post-graduation studies. The statistical reports show significant differences in classes and programs ($p<0.05$). The study also indicated that 31.3% of the students hailed from rural areas while 103 of them hailed from urban areas (68.7%).

3. DIGITAL TRANSFORMATION ADOPTED IN ADMISSION RELATED PROCESS.

The ways by which various admission processes were carried out in the HEIs by the respondents was gathered. The preferences with respect to the admission process were also responded by the students. The collated data is summarised in **Table-2**.

Admission Related Process	Online		Offline		Both	
	N	%	N	%	N	%
Enquires About Course details	67	44.7	47	31.3	36	24
Preference for campus and course details.	95	63.3	21	14	34	22.7
Document Submission During Admission	98	65.3	42	28	-	-
Preference for Document Submission	127	84.7	23	15.3	-	-
Document Verification for admission	-	-	150	100	-	-
Tuition Fee Payment	88	58.7	62	41.3	-	-
Preference for Fee Payment	72	48	53	35.3	25	16.7

Table -2: Digitalisation in Admission process

The data regarding admission process indicates that enquires about the institution and the course indicates that students enquires to opt for their higher education were made via virtual mode by 44.7%. But 63.3% preferred online enquires. While 31.3% of the students made manual enquires within the campus less than a quarter did both online and physical enquires. The students who preferred offline enquires were 14% and who preferred both type of enquires were 22.7%.

Document submissions during the admission process were done in online mode by 65.3% of the candidates, while 84.7% preferred online mode. Manual submissions were made by 28% of the respondents, though only 15.3% preferred it this way. It is important to note that 100% applicant's document verification were done manually.

The Tuition fees were paid through digital mode by 58.7% while 41.3% used other means of tuition fee payment. 48% of the students preferred digital payment while 35.3% preferred other electronic media. 16.7% did not have any specific choices.

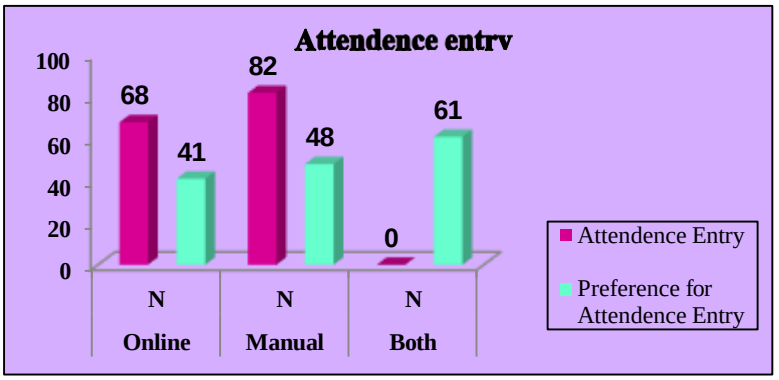

Fig-1: Attendence entry process and preference for attendance Entry

The attendance entry updation of 68 students (45% of sample) were done online, while for 82 students (54.7%) it was offline. 41students preferred digital attendance entry, 48 preferred manual entry and 61 students preferred both.

4. PERCEPTION ON THE INFORMATION RECEIVED THROUGH DIGITAL MODE

The students rated the quality of the information received through online institutional websites and the data reciprocated is shown in **Table-3.**

Rate the Quality of information received through online.	Poor	%	Average	%	Above Average	%	Good	%	Very good	%
Requirements about the course	2	1.3	69	46	32	21.3	26	17.3	21	14
Details about different subjects to study	21	14	21	14	13	8.7	83	55.3	12	8
Course credits	14	9.3	78	52	26	17.3	18	12	14	9.3
Syllabus	11	7.3	27	18	23	15.3	73	48.7	16	11
Marks allocation	17	11	11	7.3	31	20.7	84	56	7	4.7
Faculty Profile	6	4	26	17	37	24.7	73	48.7	8	5.3
Campus facilities	13	8.7	17	11	26	17.3	76	50.7	18	12
Extracurricular activities	8	5.3	73	49	33	22	24	16	12	8

Table-3: Ratings about the quality of information received through online.

Table-3. consolidates the perception of students with respect to information received online. 46% rated the information about the requirements of the course as Average, 17.3% rated it good and 14% Very good. The virtual information on different subjects to study was rated poor by 14% of sample, 14% rated average, good by 55.3% and 8% rated it very good. Half of the respondents rated the course credits average, 17.3 % above average, 12% good and 9.3% very good. Information on Marks allocation was rated poor by 11%, average by 31%, good by 56% of students and very good by 4.7% of sample.

Information on Faculty profile was rated “good” by 48.7% of sample. Details on campus facilities was rated good by 50.7% and very good by 12% of respondents. Information on extra-curricular activities was rated good by 16%, and average by 49% of sample.

5. DIGITALISATION AND PREFERENCES IN EDUCATION DELIVERY METHOD

Online learning involves interactions that are mediated through the use of digital technology, is an increasingly prevalent form of learning (Gezani, 2024) . In 2018, a quarter of surveyed higher education institutions reported that over half their courses were online, and a growing number reported that a majority of all courses offered were fully online or blended. Further, learning through social media has been increasing with around half the world’s population reported to be using social media (Greenhow et al., 2022).

To understand the degree of digitalisation in teaching styles, respondents were asked on how the frequencies of lecture based classes, online and blended classes that they attended during their HE. The results are elaborated in **Table-4**.

Education delivery Methods		Never	Rarely	Sometimes	Mostly	Always
Lecture based classes	**N**	0	0	0	94	56
	%	0	0	0	62.7	37.3
Online Classes	**N**	11	51	73	8	7

	%	7.3	34	48.7	5.3	4.7
Hybrid Mode of Teaching	**N**	17	16	41	42	34
	%	11.3	10.7	27.3	28	22.7

Table-4.: Education Delivery Methods

The effect of Covid pandemic caused the migration of education delivery modes from conventional lecture based modes to online and hybrid modes. Yet 62.7% of the students still responded that they attended lecture based teaching mostly and 37.3% of them had lecture based classes always. 7.3% of the students never attended online classes, 34% rarely, 48.7% sometimes.5.3% and 4.7% of candidates attended online sessions mostly and always respectively. Hybrid mode of teaching practices were responded by always by 22.7%, mostly by 28% of students, sometimes by 27.3%, rarely by 10.7% and never by 11.3% of sample.

The preferences with respect to methods of education delivery is pointed in **Table-5** and **Figure-2.**

Preference for Education Delivery Methods		**Always**	**Sometimes**	**Never**
Online Lectures	**N**	12	110	28
	%	8.0	73.3	18.7
Classroom Lecture	**N**	86	53	11
	%	57.3	35.3	7.3
Hybrid Modes of teaching	**N**	135	13	2
	%	90.0	8.7	1.3

Table-5: Preference for education delivery mode

The data collated in Table-5, clearly indicates that the preference for Always Online classes was reported by 8% of the respondents, while 73.3% preferred it sometimes and 18.7% never preferred it. Classroom lectures were always preferred by 57.3%, sometimes by 35.3% of the students, while 7.3% never preferred classroom lectures. **Figure-2.** highlights that 90% of sample preferred hybrid modes of teaching.

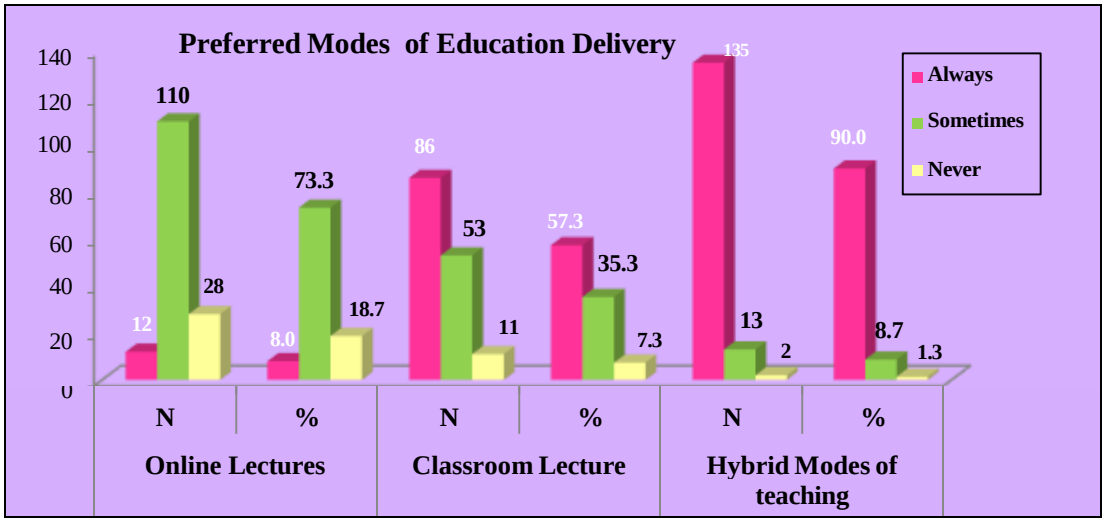

Figure-2: Preferred modes of Education Delivery methods

6. USAGE OF LEARNING MANAGEMENT SYSTEMS (LMS) AND THE PREFERENCES FOR LMS.

Usage of Learning management systems (LMS) like Google Classroom, Moodle, Blackboard, Microsoft Teams etc. in HEIs where students pursued their education and the responses with respect to their preferences are compiled in **Table-6.**

Learning Management Systems in HEIs		**Never**	**Rarely**	**Sometimes**	**Mostly**	**Always**
Use of Learning Management Systems in HEIs.	**N**	14	19	84	26	7
	%	9.3	12.7	56.0	17.3	4.7
Preference of students on use of LMS.	**N**	26	0	13	12	84
	%	17.3	0	8.7	8	56

Table-6. Use of LMS in HEIs and the Preference of students on use of LMS.

The data pertaining to use of LMS in HEIs depicts that 9.3% students never used LMS in their HEIs, 12.7% have used rarely, 56% sometimes, 26% mostly and 4.7% always. The preferences indicated that 56% would always prefer to use LMS, 8% mostly, 8.7% sometimes and 17.3% would never prefer to use LMS. The students also expressed that the facilities that were provided through LMS included peer interaction, accessibility of content, assignment submission and grading, quizzes and tests. 49.4% of the sample had experienced using Artificial Intelligence (AI) for university examinations, but 21.3% never preferred to use AI for assessments.

7. CONCLUSION

Cross sectional survey was undertaken to understand perception of students on digital transformation in Higher Education Institutes (HEIs) of Bengaluru City. Structured Questionnaire was employed among 150 students selected based on simple random sampling in the age range of 18-22 years pursuing higher education (HE). Study highlighted that digitalisation has permeated in course inquiries, admission process, documentation, lectures and assessments. Findings indicated that 63% of students preferred online enquiries about course details. 46% students rated online course information average. Majority preferred online document submissions only 65% of students made online submissions. It is noteworthy that 100% document verifications were manual. A little more than half of the respondents made digital fee transactions while 72% preferred online mode. Attendance entries of nearly half the students were online though they had no specific preferences. Survey pointed that 48.7% of students sometimes had online classes. 90% students prefer hybrid mode for lectures. One tenth of sample reported that their colleges never used Learning management Systems (LMS).17.3% of students did not prefer and 56% preferred LMS and 21.3% never preferred AI for assessments. Technologies have been crucial in educational endeavours by serving as sole arena for instructional design, delivery and assessment platforms. In Higher Education sector, Digital Transformation entail's lot more than introducing technology. In the era of changing learner's wants and behaviours, the use of creative strategies must be the objective to provide user centric services.

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