



# Excessive Digitalization in Higher Educational Institutions and its Impact on Students' Psychology – A Survey

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## Abstract

In this era of Industry 5.0, technological shifts are affecting many industries, and the impact that excessive contemporary digitalization has had on the mindset of today's students is why this study subject is highly significant. The qualitative shifts in technology are the driving force behind the digitization of society. A new style of life in a digital environment and the development of generations who were born and studied in the environment are directly tied to the global trend toward the digitization of education. This trend is occurring all over the globe. The findings of this research were based on a survey that evaluated the effectiveness of digitalization in education. The survey was conducted at four Indian and Bangladesh higher education institutions comprising 125 students and 25 faculty members using a verified survey instrument. The poll was designed to identify and evaluate the most significant impacts of digitalization, which were determined based on an examination of recent research that has been conducted on digitized education. The questionnaire used a Likert scale, and respondents were asked to rate the significance of several aspects of digitalization on a scale from one to five. The study's originality lies in its effort to objectively evaluate the internal digitalization process and identify potential new avenues for research in Edtech. The study's findings, which take the students' psychology into account, can potentially change the educational system and progress higher education's digitization.

**Keywords:** Digitalization; LMS; LFH; Students Psychology; EdTech Innovation

## Introduction

The process of digitalization is expected to bring about significant changes in the economy and society of any setting to which it is applied [1]. These changes are going to have an impact on every aspect of an individual's life in both developed and developing nations. In general, digitalization is the process of changing the types of skills that are required of the working people and the youth of the globe to be able to participate effectively in a globalized contemporary economy [2]. It is altering how students learn in a classroom setting and the methods through which educational institutions impart knowledge to students [2]. In recent years, national, regional, and Higher Educational Institutions (HEIs) all over the globe have exhibited a continuous increase in the need for digitization of their operations. These higher education institutions worldwide are experiencing constant change to satisfy the demands, promote the learning-from-home (LFH) model, and meet the expectations of the societies in which they operate as well as the marketplaces in which they compete [2]. In this contemporary day, for HEIs to continue to be competitive and maintain their relevance, they need to build

the competencies that assist them in fitting the requirements of the digital age. As a result of the COVID-19 epidemic, universities, HEIs, governments, enterprises, and other institutions have begun to quickly shift their attention toward purchasing digital services, providing self-service education, and pushing to a digital mode of learning [3]. As a result of this, several previously existing trends have been improved to match the new trend. Because of this, student assistance, teaching, and research have all moved into forms that take place online. Due to a dearth of planning, these new forms necessitate different approaches, processes, and skill sets, and they frequently adjust the gears to accommodate excessive digitalization in education that negatively affects the student psyche. This tendency is highlighted in the sections below with a thorough survey and quantitative analysis.

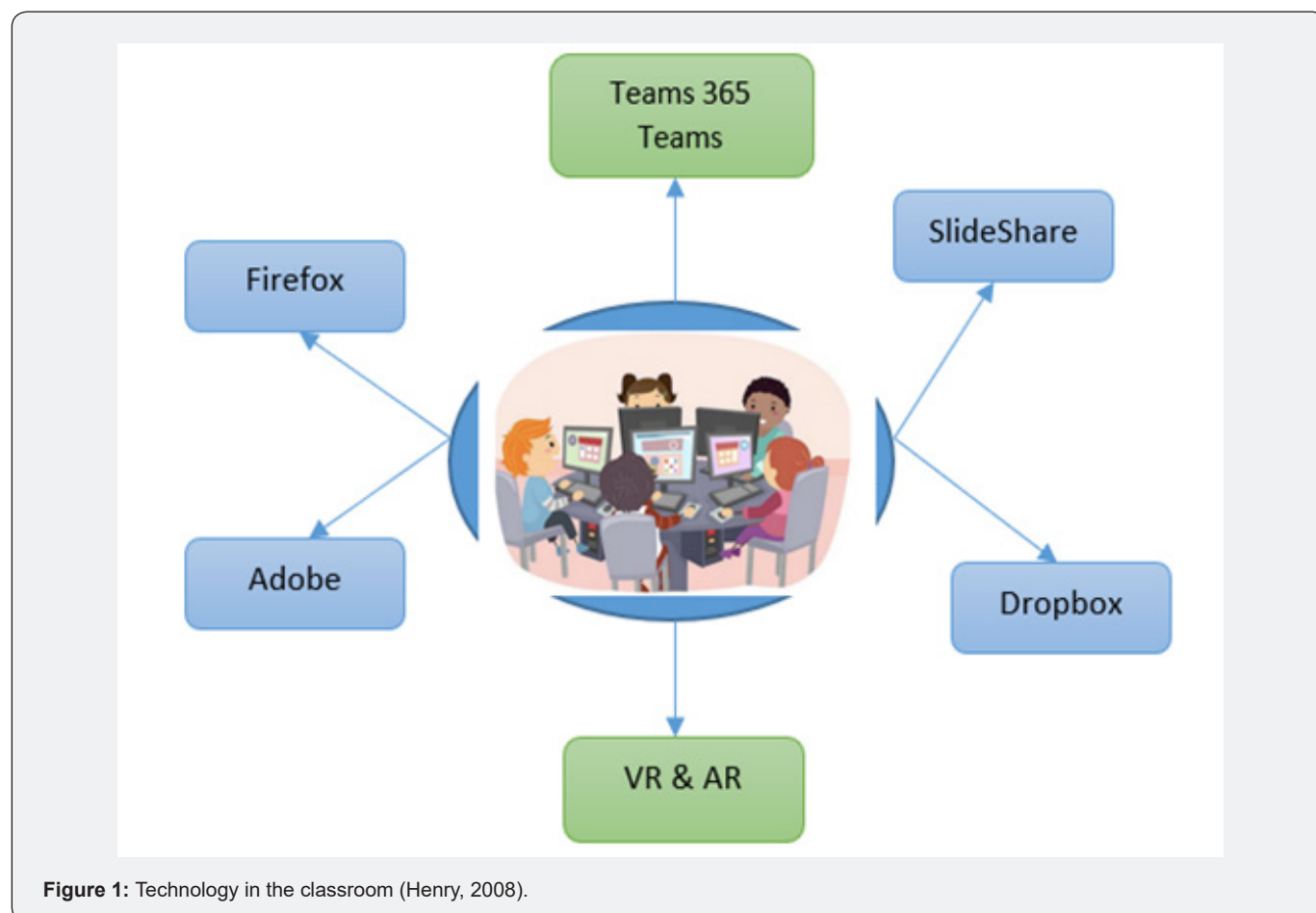
## Literature Review

### Incorporating Technology into the Classroom

This section discusses digitalization and human interaction. Our literature demonstrates two responses to digitalization or

digital transformation: one is happy and content, and the other is curious and afraid [4]. All firms work similarly. Higher education involves infrastructure and technology. Digital change necessitates universities to adapt [5]. Technology has been used for business, study, and leisure after the epidemic. Essential Cloud-based online lectures are transforming education. Virtual teaching, mentorship,

and student recruitment are possible today [6]. Online courses are available. Internet marketing increases university clientele. Due to digital disruption, multinationals are unable to adapt. Online universities compete. To entice students, universities invest in cutting-edge technology. Technology enhances graduates and the technology-driven collapse of top institutions [7] (Figure 1).



Technology-resistant schools fail. Major institutions should prioritize digitalization. Digital technology and channel simplicity are changing marketing techniques, according to Crittenden and colleagues [7]. Online course creation and dissemination need planning. Classroom Internet usage is vital. Higher education technology goes beyond the classroom. Technology-integrated classrooms engage students [8]. Business-customer connections targeted marketing, and the marketing mix employs AI, AR, blockchain, gamification, IoT, 3D printing, and other technologies. Robots assist customers. Universities and other higher institutions should prioritize such technologies to improve education and attract more students. Social media, data analytics, SEO, and e-commerce may indicate the future of digitalization. Students must be exposed to potentially disruptive, cutting-edge technology and, more significantly, profoundly implant conceptualization, inquiry, critical thinking, creativity, and integrative learning abilities to improve their future decision-making and human

traits [7]. College students today need to integrate if they want to thrive in the global learning and economy. Therefore, all school institutions must adopt new technology.

### Technology in Classroom

Higher education institutions should leverage digitalization applications to improve student learning. First and foremost, digitalized communication channels make material and knowledge available and independent of time and location. Advanced internet search engines allow students to learn anytime, anywhere. Cloud computing links learning management systems to exchange, disseminate, and preserve knowledge on a large scale, thanks to IoT. Thus, learning has improved due to digitalized technology. Education is also more accessible.

Sedelmaier & Landes (2019) found that new fully digitized apps can handle massive volumes of data, which boosts learning analytics at universities and institutions by allowing them to

collect, assess, and customize large amounts of data. Such analytics might track student behavior to provide individualized learning recommendations, media, etc. When working with students, colleges, and institutions must protect privacy and security. Micro-learning features provide information in little chunks and help Generation Y/Z pupils with short attention spans. Digital platforms make memorizing facts and important information simpler for kids. Technology and digital approaches provide new evaluation and testing options (Sedelmaier & Landes, 2019).

### The Impact of Technology on Educators

Educational technology lets teachers or educators teach remotely. Studies demonstrated that digitalization in distance education makes it harder to manage remote studies, and some instructors and students are dissatisfied with distance learning [9]. Digitalization and communication have changed client-business interactions and customer attitudes. Digital purchases boosted communication flexibility and efficiency and enabled the company to contact more consumers. Universities and colleges follow suit. Digitalization made information more accessible to customers and suppliers, encouraging people to research goods

and services before buying. Digitalization provides benefits but also raises provider competition [10]. Thus, universities and HEIs may improve customer communication by adopting suitable digital technology. They may advertise the university or HEI's acquired technology to increase consumer interest and student enrolment. According to previous research, the educational area expands ahead of the ICT infrastructure, and students and lecturers have their own devices for communication and information sharing [11]. This makes it easier for them to access information using digitalized technologies. Technologies enable distance education to be efficient in a post-pandemic era, but at the same time, the students in a rural setup feel the pressure of technology. In many African and Asian countries, due to a lack of proper mobile networks and communication, online learning is facing many challenges. The pressure on teachers in the digital mode is higher, and the new-age digital tools are not always user-friendly enough to fulfill the student's needs and meet the time (see (Figure 2)). A theoretical study is manageable through a tool-based education system, but when it comes to practical knowledge in engineering, medicine, or research studies, it always poses challenges to meeting educational quality and needs [12] (Figure 2).

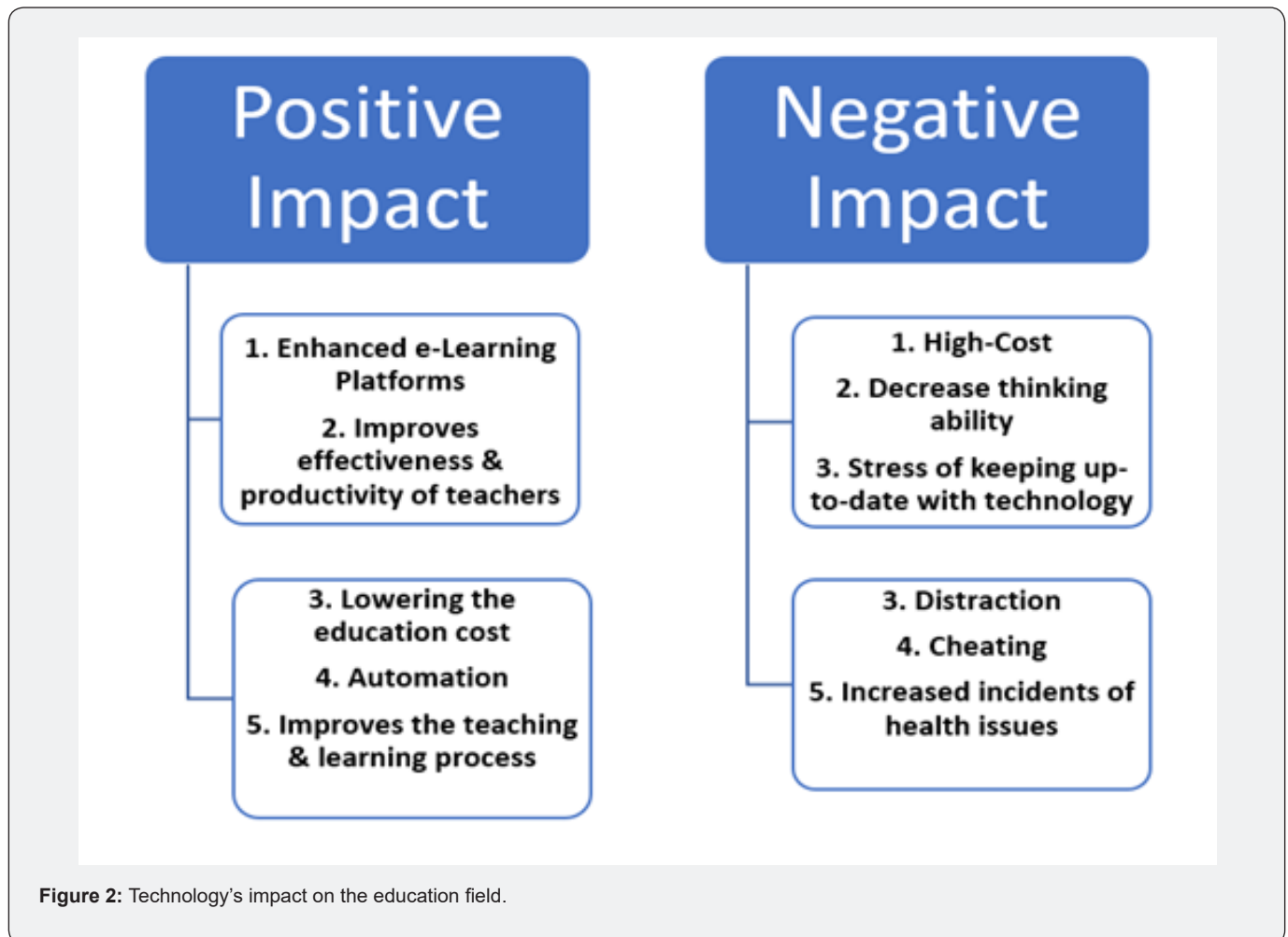


Figure 2: Technology's impact on the education field.

**Students’ increased reliance impacts student interactions, well-being, and growth on digital technology**

Previous research reveals that students feel alienated owing to a lack of contact, notably with professors, since they spend more time at home on computers. The epidemic has caused social separation, changing students’ requirements worldwide. Thus, instruction must be tailored to students’ requirements [13]. Teachers and mentors should consider the personal development of university students while considering digitalization as the university is a critical time in young people’s life [14]. Pre-pandemic students had to attend courses and be present, but now they may not. Digitalization requires a more realistic model that uses new and evolving technologies to increase social interaction within social distance restrictions [15]. Researchers also noted that digitization threatens social health by replacing face-to-face engagement with online communication, internet addiction, the danger of destructive information, and psychological issues [16]. Their research demonstrates that pupils are now separated into two groups: rapid learners who are adaptable to their surroundings and want to learn, and others who need more time to be ready for contemporary learning and want to learn. Due to new digitalized technologies that allow students and professors to connect across remote learning platforms, higher education must maintain its pre-pandemic form. Thus, students and professors

must be prepared for personal growth, self-management, and professional success [17].

**Implications for Sustainable Institutional Governance and Digitalization from Enhanced Cyber Security to EdTech**

With the cultural and societal shift, modern educational practices that use digital technologies like computers, mobile devices, and the Internet are often seen as positive contributors to societal progress and adds value to boose modern Learning Management Systems (LMS) [18]. Nonetheless, authorities found this digitization to be unsettling because of hackers and malpractices via cybercrimes. Healthcare Education (HE) in emerging and underdeveloped nations of Asia from 2015 to 2021 was examined, and the impact of E-Government Development as a proxy for digitalization and corruption prevalence was examined. Cyber security measures’ moderator effect on E-government Development Index (EGDI), Corruption Prevalence Index (CRP), and HE was also assessed using a two-stage system GMM model. There was a considerable improvement in HE throughout Asia once control methods such as EGDI and CRP were implemented. There is a positive correlation between adopting robust and effective Cyber security measures and improving digitization and institutional processes in Asia, as well as an incremental influence on HE and ethical values.

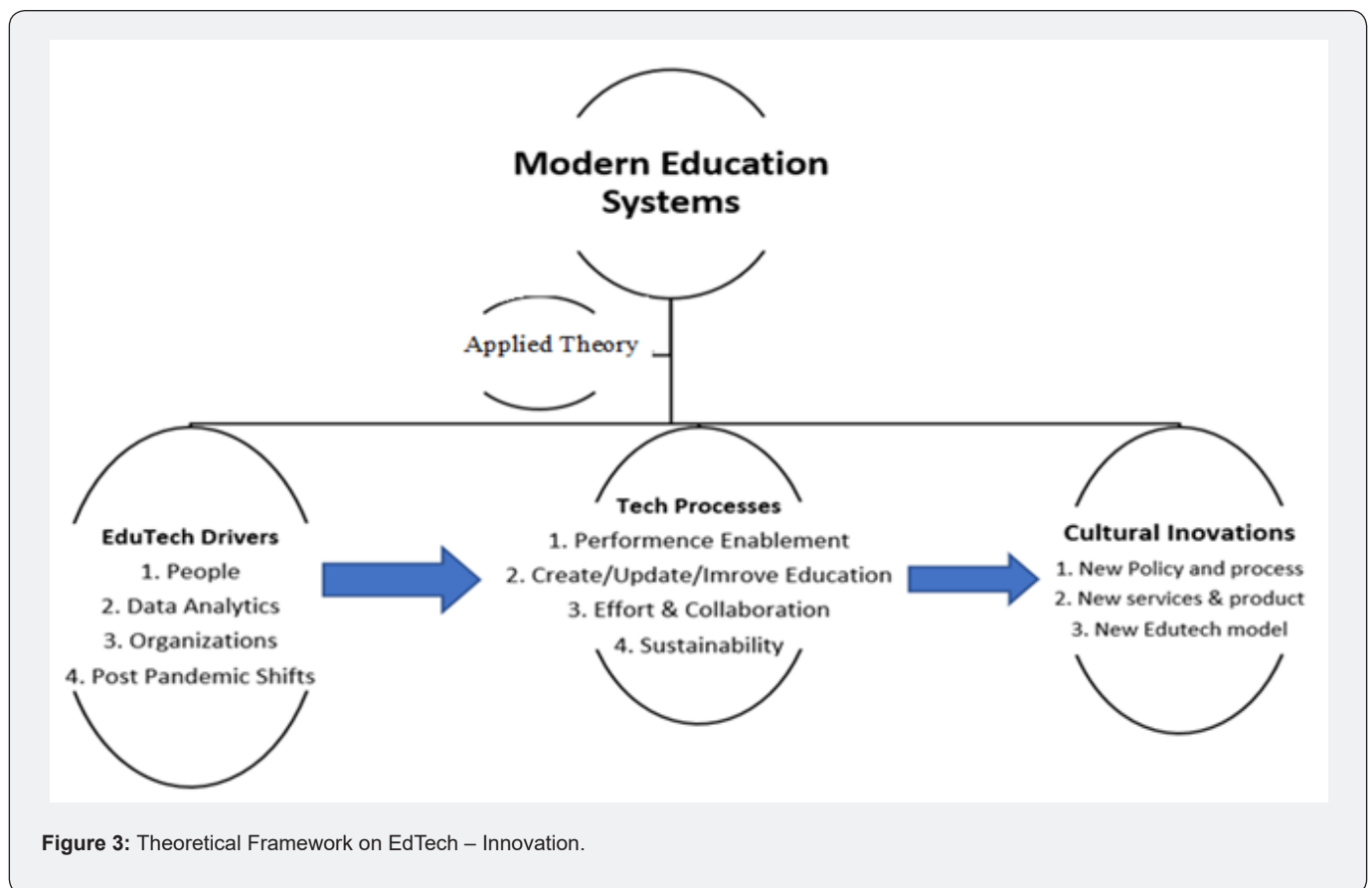


Figure 3: Theoretical Framework on EdTech – Innovation.

Like healthcare, engineering primary education systems are influenced by technology to a large extent (see (Figure 3)). By extensively using cutting-edge econometric estimates, the current research adds a fresh addition to the existing digitalization and public health services literature and empirical analysis. The research found that the digitization of healthcare and the management of institutional failure in Asia were greatly aided by implementing cybersecurity measures. Future policy choices and ethical principles may benefit from this study's analysis of how cyber security measures improve service quality and institutional quality in Asia's health sector (Figure 3).

## Methods

This study analyzed the many methodological techniques mentioned in the economic and educational literature, and we came up with a set of evaluation criteria that we think are the most in line with the study topic at hand, which is how the effects of too much digitalization in schools and universities affect students' mental health. The parameters were derived by examining the most recent empirical studies in this field and the subsequent refinement of relevant theoretical frameworks and methodological approaches. The research compared faculty and student opinions on the digitization process by surveying a statistically representative sample of representatives from universities and schools.

## Research Design

Essentially, research design refers to the setup and circumstances under which data is gathered and analyzed. Researchers typically use three distinct methods: inductive, deductive, or abductive. The application of theories is central to all of the methods. In quantitative studies, the deductive method is often used to examine hypotheses and assumptions derived from the existing literature. On the other hand, the inductive method aims to construct hypotheses using observed evidence. It allows for personal interpretation and experience, which is why it is often connected with qualitative research. When the deductive and inductive methods are used together, the abductive technique highlights the problem areas.

In the absence of numerical data, a qualitative methodology known as grounded theory (inductive approach) may be used to research a phenomenon or develop new ideas via the collection and analysis of empirical evidence. As a result of this justification, we've come to the conclusion that the inductive method is superior to the deductive method for the needs of our research. The inductive method allows us to zero in on the issue at hand via investigation; multiple models are used to build hypotheses from the study based on the actual evidence. Additional information and data for the study may be uncovered when the inductive method is used (Greener, 2008). Therefore, we can draw conclusions from our study using inductive research methods by monitoring student viewpoints and insights and establishing different assumptions

about the students' learning experience.

In this investigation, we will solely employ quantitative research methodologies since we feel that this approach will best enable us to comprehend students' breadth, depth, and perspective on digitalization in educational institutions such as schools and universities. In the quantitative study that we are doing, in addition to examining data and other materials, as well as cases, in order to provide answers to our questions, we are also going to conduct in-depth interviews with both students and instructors. We have decided to conduct in-depth interviews for two reasons: first, they have proven to be very helpful in the collection of quantitative data; and second, when conducting in-depth interviews, we are able to ask open-ended questions, which enables us to gain profound understanding of and investigate the student experiences that are associated with the utilization of digitalization in educational institutions such as schools and universities.

## Conceptual Framework

In continuation of the research literature outcomes, the researcher has determined the variables to be evaluated under the study. The study focuses on how excessive digitalization in schools and universities leads to psychological factors in students' performance. Affordability to digitalization by students and institutions, ICT awareness among students and instructors, and availability of infrastructure in schools and universities are the independent factors that have been considered for this research (see (Figure 4)).

The accessibility and use variables, both of which are moderate factors, are what ultimately end up being the cause and effect for the outcomes like psychological determinants among the students at the chosen universities and institutions that are the subject of this research.

## Participants

This investigation took place in India and Bangladesh. 125 students from various universities and 25 teachers participated in the survey utilized for this analysis. The research population consists of 18–24-year-olds enrolled in any full-time program and teachers in their thirties and forties. Five different departments and five educational institutions participated in this survey. Survey Hero was used as an online medium to collect the survey responses on the Likert scale. To get a clear image of how excessive technology has affected higher education in India and Bangladesh, a random sample of students and teachers from the participating institutions was chosen for the research. The sample attribute cannot be precisely determined; thus, we must rely on the whole population.

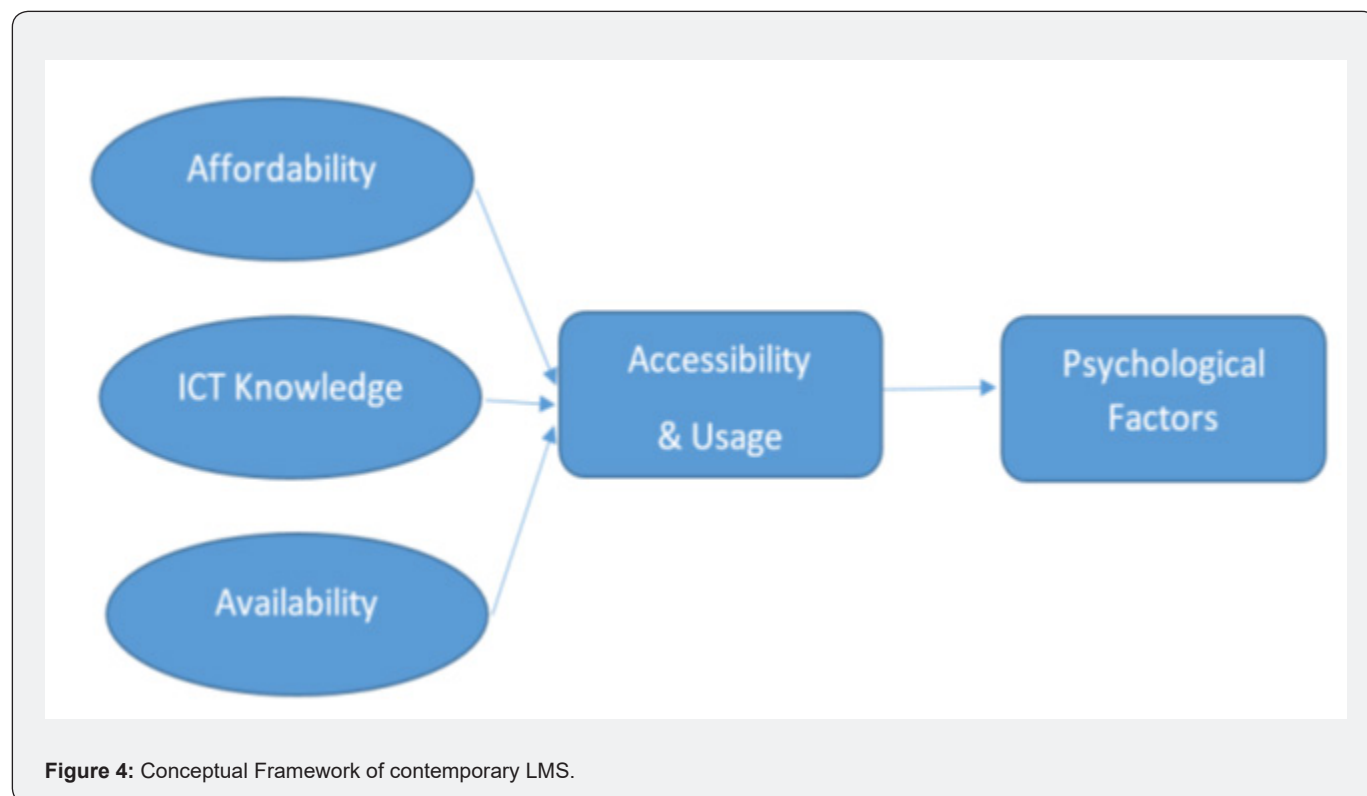
## Data analysis

On a Likert scale ranging from 1 to 5, with 1 representing the most negative evaluation or total disagreement with the



statement, and 5 representing the most positive assessment or total agreement with the statement, the participants were asked to rate each questionnaire item. The survey findings were subjected to statistical analysis, during which time the average value of each component and the standard deviation were determined.

The deviation was analyzed to understand how spread apart the respondents' views were about the topic. In order to investigate the possibility of a connection between the two sets of questionnaires were computed for every pair of questions on both the student and the instructor surveys.



### Statistical processing

The survey results were subjected to statistical processing and analytical investigation using SPSS Statistics tool, and the findings were represented graphically using Microsoft Excel 2016. The percentages of the responses, the standard deviation for each response, and the Pearson correlation coefficients between each set of responses were all able to be calculated after the poll results were processed. The results of the study that showed a statistically significant connection were highlighted.

### Ethical issues

Ethical considerations are critical for any research analysis and data gathering for the trust and legitimacy of the study findings [18]. Invitations to participate in the study were sent to the teachers and students and mailed out to the university's different departments to solicit their participation. The study's confidentiality was never in any way jeopardized. In exchange for agreeing to engage in the research, each subject received a special identification that would simplify the processing of their form. Because of this, we did not directly have access to any individually

identifying information about the subjects, but we were certain that they had met all of the criteria for the sample.

### Limitations

The study looks at some of the popular and reputed educational institutions in India and claims to have credible findings. The researchers, however, need further information from other colleges in other areas and a sample representing a wide range of socioeconomic and racial/ethnic backgrounds. Additionally, the study does not consider gender differences or student assessments from India, both of which might be explored in future studies. It was never confirmed, prior to gathering the survey responses, whether the institution supports or what proportion of students are digitalized to modernize their educational system. Also, this study was conducted taking into consideration only the students and faculty members of higher education institutes.

### Results

Means and standard deviations of the statements are used to illustrate the study's results (mean and std. dev.). Table 1 displays

the results of a study of the existing condition as stated in the statements. By and large, the changed learning mean values show that there are no negative effects from the new methods on the pupils. However, they must emphasize an institution's consistent, evolving technical curriculum. The significance of new services is highlighted, and the pupils acknowledge the benefit of digital support. However, they fail to highlight the need to digitize service processes in general. This claim has a very large standard deviation. Learners in these new, technologically enhanced classes emphasize the importance of being receptive to novel pedagogical approaches. Many people feel like the culture of learning needs to be improved.

have arisen directly from the spread of digital technologies. But the average shows that there's always a need for additional workers in this industry. While most students acknowledge the university's digital advancements, only some feel the institution has a coherent digital strategy. Data control inquiries are the least often asked ones that are answered affirmatively. In contrast, it has the highest standard deviation. The results show that there is a great deal of mystery around the data. To sum up, the increasing openness is happening without the children's knowledge. The other two trust claims show that students' candour has no influence on their engagement with digital tools for education. The greatest quality analyzed is the public's faith in the academy (Figure 5).

Students mostly believe that new employment opportunities

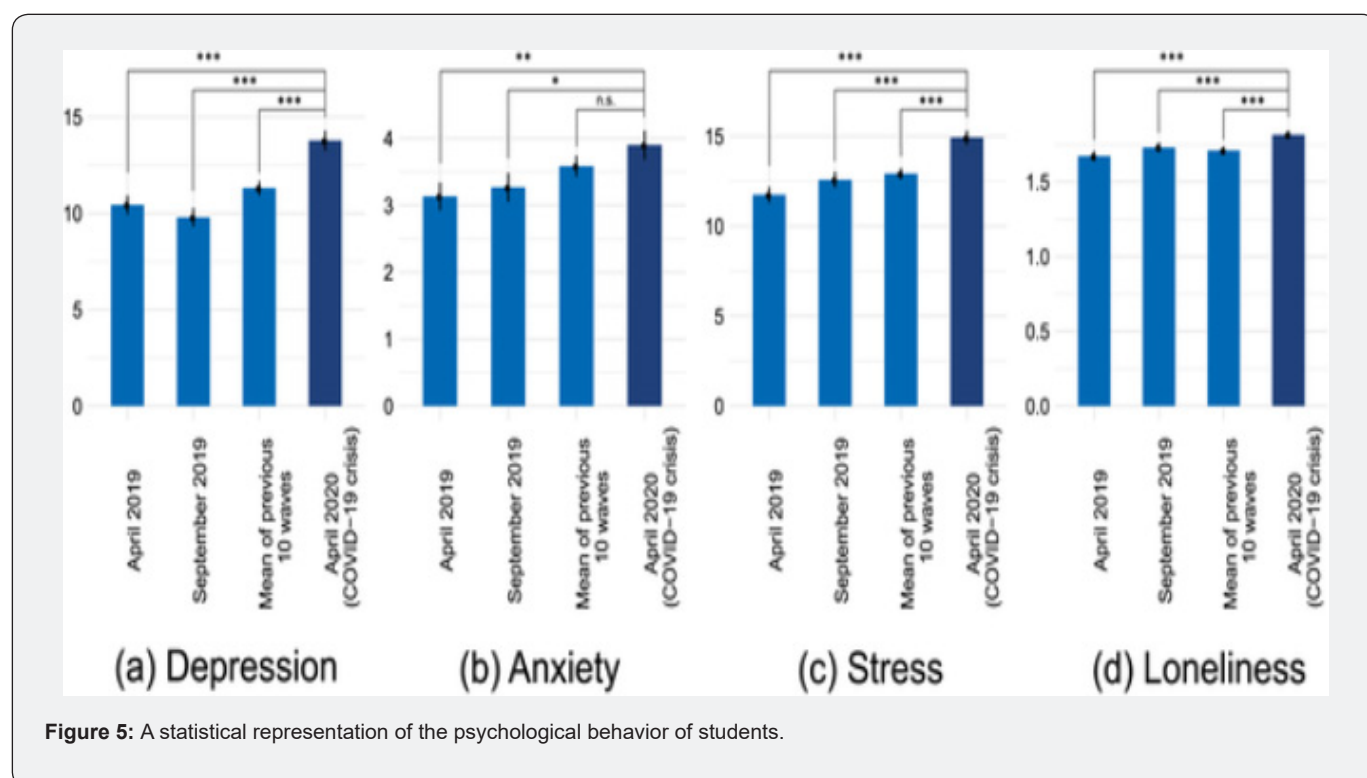


Figure 5: A statistical representation of the psychological behavior of students.

To evaluate whether or not the two groups can be compared, we analyzed the changes that have occurred in the mental health trajectories of the cohorts over the last two years. It displays the mean trajectories and 95% confidence intervals of several mental health measures for those waves that were examined simultaneously in relation to the progression of the research. These waves were evaluated at intervals spaced every two waves. In the majority of waves, the two cohorts did not substantially vary from one another (i.e., their 95% confidence intervals overlapped most of the time). Only in terms of stress does it seem that there is a difference: the cohort from the prior year appears to be more stressed in general. The patterns seem to be converging over time, which may be an indication of study-related and seasonal variables that have an effect on both cohorts. However, it would appear that

feelings of depression, stress, and loneliness (but not anxiety) at the time of the COVID-19 crisis worsened above the general trend. Additionally, it would appear that the co-studying out degree decreases more than the general trend, but the interaction out degree decreases less. However, these differences do not meet the criteria for statistical significance, as shown by the fact that the confidence intervals overlap.

In summary, the students have the opinion that the technical assistance has been enhanced, and they acknowledge the advantages of the newly implemented learning culture. According to the results of our investigation, digitalization is connected to modernist and reflective learning settings. The use of digital technology in education is generally seen as a progressive and

open-minded movement. In addition, most respondents had a positive opinion of the institution. On the other hand, the frameworks for digital services have room for improvement. The

idea still needs to be clarified to everyone involved. In addition, the staff members could be able to commence the process of digitalizing the services and the instruction.

**Table 1:** Mean and Standard Deviation towards effect of Digitalization on students' Psychology.

S. No	Variables	Mean	Std. Dev.	Inference
1	This change in the structure of the course has negatively impacted my ability to learn.	4.06	4.011	Low Deviation
2	I don't understand how the digital learning platform's technical assistance improves the educational experience.	3.89	3.057	Low Deviation
3	Current methods of instruction and student support is still in effect at my institution.	4.04	3.019	High Deviation
4	To help me with my studies, my school offers me access to various online databases.	3.41	2.891	High Deviation
5	It seems like a lot of the administrative work within the university has been moved online.	3.91	3.066	High Deviation
6	Digitalization has not altered the traditional university approach to education.	4.11	4.014	Low Deviation
7	There is a continuous cycle of learning and improvement regarding the university's digital transformation capabilities.	4.27	3.951	Low Deviation
8	The faculty at my university are generally receptive to novel approaches to classroom instruction.	4.35	3.013	High Deviation
9	There are now digitalization-focused jobs and research projects available at the university.	4.28	3.789	High Deviation
10	My perception is that there are not enough tools available on the online learning platform	4.52	3.091	High Deviation
11	My school has made strides towards digitalization.	4.43	3.942	High Deviation
12	The administration fully backs the school's push into the digital age.	4.24	3.838	Low Deviation
13	I believe I am in charge of what information is collected and stored about me.	4.87	4.154	High Deviation
14	My trust in the university's capacity to protect the information I make available while utilizing the platform is unshakeable.	4.65	3.988	High Deviation
15	Despite the instructor's ability to see all of my data, I am fine with utilizing digital learning to further my education.	3.89	4.018	Low Deviation

## Discussion

Following the data analysis, we will discuss the students' first suggestions for future improvement. Each of the proposed solutions is adapted to meet the needs of a particular stakeholder group, such as the institution's management, the administration, the lecturers, and the students. The management of the institution plays an essential role in the process of formulating a digitalization strategy. It is essential to have institutional support, to be innovative, and to be open to change (Reid, 2014).

The organization's leadership should significantly promote digitalization-related initiatives and academic programs. Students have demanded that the university create guidelines for the use of digital media in classroom instruction and that educators be incentivized to adapt their pedagogical practices in response to this demand. As a kind of aid, universities must provide financial funding to develop new prospects for digital workers. Many students believe that the digitization of academic services and instruction is necessary for the continued and accelerated development of efficient learning management systems at the



administrative level. The capacity to interact with the content, the provision of chat-based forums, the availability of all content without the need for a continuous internet connection, and compatibility with any and all end devices were the aspects that were emphasized. Students would also want to see an increase in the number of computer labs available to them so that they do not need to bring their own electronic devices.

It is essential to make the most of all the possibilities that technology provides, and not simply the availability of online services. It is essential to find a way to get over the lack of support from institutions (Porter & Graham, 2016). Students maintain that their professors need to live up to their full potential at this time. In order for educational institutions to be successful in overcoming these challenges, they will need to build service centers that help instructors in the process of digitizing courses and transforming them into blended learning environments. Learners and instructors should have easy access to personnel with adequate technical support training. As a direct consequence of this, educators are given the freedom to concentrate on the subject matter rather than the medium. In the long term, a fruitful exchange will result in well-trained staff who clearly emphasize media competence and content production, which will increase the media richness at institutions. The findings of the current study indicate that there is a greater propensity among lecturers to make the transition to digitalized versions of their classes and seminars. However, digitalization calls for a substantial extra amount of work, which can be beyond the lecturers' capabilities in terms of their time and expertise. Even if professors are willing to investigate more digitalized methods of teaching, their hesitation in doing so may be caused, at least in part, by a lack of knowledge as well as a great deal of uncertainty over how to incorporate digital media into classes appropriately. As a direct consequence of this, pupils have the misconception that resource bundling is obligatory. It is important to connect the digital architecture of individual departments and the whole institution. The outcomes of this research suggest that educators are more inclined to make the switch to digitally delivered classes and seminars. Digitization, however, requires a significant extra effort that may go beyond the lecturers' capabilities regarding their time and knowledge. Even if professors are open to experimenting with more digitalized modes of education, their reluctance to do so may be due to a lack of knowledge and uncertainty over how to incorporate digital media into classes correctly. Because of this, pupils believe that resource bundling is essential. Connecting digital structures on a departmental or even a university level is something that has to be done. With the assistance of the service locations that were previously outlined, storage facilities may be dismantled.

### Conclusion

The generalization of domestic research that has been dedicated to the topic of the digitalization of higher education

enables us to conclude about the generality and importance of the problem, both from the viewpoint of the application of technologies and their scientific and theoretical conceptualization, i.e., a suitable mix of classroom, customized, and remote learning, the use of digital technologies in line with the objective of the lesson, etc. Some additional insights that this study revealed about the digitalized LMS system surprised the researchers. They are listed underneath.

The studies on the digitalization of education are relatively varied and typically contain a political element (they describe events surrounding the introduction of digital technologies in education), a regulatory aspect (the study of regulatory legislative acts and legal documents controlling the digitalization process in the nation), a technical and psychological aspect (the teacher's readiness to be educated to generate and implement digital educational content), and an axiological aspect (the teacher's willingness to develop and implement digital educational content). In addition, these studies generally have an axiological feature. The integration of digital technology into the teaching process was given a relatively poor rating by students as well as by instructors (3.41 and 3.89, respectively). At the same time, the effect of digitization on scholastic achievement received an above-average rating. Students were observed to assess the teacher's engagement in the digital world, its usability, and its favorable impact on student motivation differently than did instructors. The degree to which teachers and students concur or dispute the idea that digitalization has improved students' thinking abilities is another source of debate. As a result, digitalization in higher education frequently represents students' positive attitudes toward the choices accessible and expectations for future technological advancement. This study undoubtedly gave sufficient detail to improve education and speed up the digitization of higher education, expanding the pool of skilled workers accessible in the digital economy.

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