

Education Technology (EDTECH): A Step towards Digitalization of the Indian Education System

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Abstract:- Education is one of the primary sectors focused on by the Government of India. It is a basic right as per Article 21-A in the Constitution of India and the government's responsibility to make sure everyone has a quality education. The COVID-19 pandemic had disrupted the Indian Education system. Education Institutions in India follow the traditional system of learning i.e., face-to-face lectures in the classroom. The unforeseen epidemic called Coronavirus (COVID-19) shook the entire world. This situation posed a challenge to the global education system and forced educators to shift to an online style of teaching. Numerous universities around the world have completely digitalized their operations understanding the dire need of this current situation. The educational institutions are adopting online mode of learning globally which has been initiated from the pandemic. Thus, the quality improvement of online teaching is pivotal at this stage. The concern isn't about whether online teaching styles can give quality education, it's rather how academic institutions will be suitable to borrow online learning in such a massive manner. The extremity of COVID-19 brought an unprecedented opportunity for the educational technology (Edtech) sector in India. The effort has been made in this paper to put some light on Education Technology (Edtech) as well as some major Edtech companies in India, Impact of COVID-19 on Indian Education System, SWOC analysis to bring out major strengths, weaknesses, opportunities and challenges prevailing in the education sector and also suggest how educational technologies turn this COVID-19 extremity, which has a major impact on the education sector in India, into openings to make a digital education system.

Keywords:- Educational Technology (Edtech), Covid-19, Digital Education System, Pandemic, Government, New Education Policy.

I. INTRODUCTION

“Engaging and Empowering Learning through Technology”

In developing countries like India, traditional learning methods were widely accepted before the emergence of COVID-19 pandemic. The epidemic has significantly disintegrated the growth of countries where cases of new coronavirus are reported. The World Health Organisation (WHO) proposed COVID-19 as an official name of the virus, an acronym of coronavirus disease 2019. World Health Organization declared COVID-19 as an epidemic on March 11, 2020. The WHO recommended keeping

social distance as the first preventive measures to stop spread of COVID-19, thus every country began the action lockdown to isolate the polluted people. Educational Institutions have been closed by the utmost of countries around the world. The whole education system is disintegrated by the epidemic COVID-19. In order to keep education running, educational institutions have had to quickly adapt to the situation. This has redounded an unknown drive to online learning. The education system across the world shift to an online mode of teaching-learning. Many universities around the world have completely digitalized their operations understanding the desired need of this current situation. Thus, the quality improvement of online tutoring literacy is pivotal at this stage. The concern isn't about whether online teaching-learning methods can give quality education, it's rather how academic institutions will be suitable to adopt online learning in such a massive manner.

The extremity of COVID-19 brought an unknown opportunity for the educational technology (Edtech) sector in India. New areas are anticipated to crop up, allowing Edtech to disrupt traditional education systems and imagine what students are learning in the 21st century. Formerly, it offers several innovative solutions in building competencies of critical thinking and creativity, or mind-sets such as grit and empathy through online coding or arts programmes, ensuring that education remains relevant with changing times. The issues of quality and applicability affect not only primary and secondary education but also higher education. Further, professional lives too are getting impacted due to automation. Here too, Edtech plays a pivotal role. It can insure job security by not only making advanced and specialized education more accessible (for people who couldn't pursue it in their formative years) but also grease over-skilling of working professionals. A large untapped request — coupled with burgeoning internet reach, mindfulness, and the digitization of primary education — yields a promising outlook for Edtech in India. Further outlooks for digitization, user growth, and increased funding are likely to be particularly aggressive. The findings clearly indicate that the education delivery landscape is set for rapid change, with online education offerings poised to disrupt the status quo by disrupting the traditional education landscape.

II. OBJECTIVES

- To emphasize the impact of COVID-19 on the Indian Education System
- To understand the concept of Edtech in the India scenario
- To identify digital initiatives taken by the government in Indian Education System
- To analyse the opportunities and challenges of Edtech in India through SWOC analysis

III. RESEARCH METHODOLOGY

The research study is descriptive in nature. The study attempts to examine the how COVID-19 pandemic impacted the Indian Education System, the growth of educational technology and major Edtech companies in India, various initiatives are taken by the government of India to boost digital education and strength, weakness, opportunities, and challenges of Edtech in India. The data for this study was extracted from various secondary sources such as websites of various Edtech companies, publications of various magazines and various research papers related to the study.

IV. IMPACT OF COVID-19 ON THE INDIAN EDUCATION SYSTEM

The country is facing the worst problem of the novel coronavirus (COVID-19) pandemic. The World Health Organisation declared that the outbreak of the pandemic has spread to more than 190 countries around the world. The country is under a complete lockdown of all the socio-economic activities and movements of people to protect human beings from the community spread of coronavirus. All the sectors including educational institutions closed and there is uncertainty about when the education sector will reopen. Due to the close down of educational institutes, it is estimated to affect around 600 million learners across the world and more than 285 million learners in India (Goyal, 2020 and ET Government.com, 2020). To overcome the situation in the education sector, there is a need for an immediate solution. COVID-19 has brought out a drastic change in the educational system not only in India but rather the entire world. Universities and schools across India as well as around the Globe have moved to virtual classes suspending physical classrooms.

V. POSITIVE IMPACT ON THE EDUCATION SYSTEM

The India Education System got the opportunity for transforming from a traditional to a new era. The following points may be considered positive impacts.

- **Increase the use of the digital form of learning material:** Students choose digital form of learning material for study because they cannot acquire hard copies of learning material due to the lockdown in COVID-19.
- **Move towards Hybrid Learning:** COVID-19 has accelerated the use of digital technologies to deliver education. Educational institutions shifted towards the hybrid mode of learning. It encouraged all educators and learners to become more technology savvy.

- **Increase the use of Learning Management Systems:** Learning management systems are increasingly being used by educational institutions. It generated huge opportunity for companies developing and enhancing learning management systems for educational institutions.
- **Development in collaborative work:** An opportunity of collaborative teaching and learning has arisen. Collaborations amongst faculty/teachers from around the world can also take place in order to gain from one another.
- **Rise in digital meetings:** The pandemic has significantly increased digital meeting options such as teleconferencing, virtual meetings, webinars, and e-conferencing.
- **Enhanced Digital Literacy:** The pandemic situation motivated people to use and learn digital technology and resulting in increasing digital literacy.
- **Increase the use of electronic media for information sharing:** Learning materials are easily shared among students, and related questions are answered via e-mail, SMS, phone calls, and various social media platforms including Facebook and WhatsApp.
- **World-wide interaction:** Educators and learners are having the opportunity to interact with peers from all over the world. Learners adapted to a global community.
- **Efficient time management:** Students can better manage their time in online education during pandemics.
- **Demand for Open and Distance Learning (ODL):** During the pandemic situation most of the students chose ODL mode as it encourages self-learning providing opportunities to learn from various resources as well as customized learning as per their requirement.

VI. NEGATIVE IMPACT OF COVID-19 ON EDUCATION

The outbreak of COVID-19 has resulted in several negative impacts on education sector. It has many negative impacts on education and some of them are listed below:

- **Educational activity effected:** Due to COVID-19 pandemic educational institutions suspended their classes and postponed the exams. It also affected admission process. Due to the continuation of the lockdown, the kids lost nearly three months of the full academic year of 2020-21, further deteriorating the status of continuity in education, and the students would face many challenges in restarting schooling after such a long break.
- **Impact on employment:** Almost all of the hiring was delayed because of COVID-19. Companies delaying the on boarding of students may also have an impact on student placements. It is anticipated that this pandemic would result in higher unemployment rates. Due to the current circumstances, there are no recruitment in the government sector in India, and recent graduates worry that they may lose their jobs in the private sector. The unemployment rate was estimated by the Centre for Monitoring Indian Economy to be 8.4% in mid-March but soared up to 23% in early April and 30.9% in urban areas (Educationas). When unemployment rises, schooling eventually declines as people prioritise survival over learning.

- **Educators and learners are not prepared for online education:** Not all educators and learners were ready for this sudden change from face-to-face learning to online learning. Some teachers delivered lectures on video platforms such as Zoom, Google Meet etc. which are not real online learning platforms.
- **Decrease global employment opportunity:** Due to the limits imposed by COVID-19, some students may lose their careers in other countries. Many Indians may have returned home after losing work overseas as a result of COVID-19, and fresh students who are about to enter the job market may have trouble finding acceptable employment. Many students who have already been hired through university interviews may be unable to start work due to the lockdown. Indians who have been working abroad may lose their jobs. Recent graduates in India are also concerned about employment offers being withdrawn from corporate sectors because of movement restrictions in the present pandemic crisis.
- **Loss of nutrition due to school closure:** Mid-day meals is a Government of India school meal programme that aims to give better nutritional food to school-age children across the country. School closures have major consequences for pupils' daily nourishment because mid-day meal programmes have been temporarily suspended. Various studies have found that mid-day meals are also an essential role in increased school enrollment.
- **Access to digital world:** Online teaching and learning may cause a digital divide among students because many students may not be able to purchase computers, laptops, or supporting mobile phones for their homes and many may have limited or no access to the internet. According to various reports, the lockdown has severely hurt India's underprivileged pupils because the majority of them are unable to study online learning. Thus, the use of online teaching and learning during the COVID-19 pandemic may widen the divide between the urban and rural poor and the rich.
- **Access to global education:** The higher education industry has been severely impacted by the pandemic. Many Indian students who are enrolled in numerous universities abroad, particularly in the worst-affected countries, are now leaving those countries, and if the situation remains, the demand for international higher education may eventually fall significantly.
- **Delay in the fees of Payment of Schools and Colleges:** The majority of parents will be unemployed during this shutdown, making it possible that they won't be able to cover the tuition during that time period, which could have an impact on private institutes.

VII. EDTECH (EDUCATIONAL TECHNOLOGY) IN INDIA

Edtech or Educational Technology is simply the use of Information Technology tools to create learning experience. These tools comprise of hardware, software, and educational theory that work in tandem in order to produce educational outcomes. The major players in the Edtech space like Byju's and Unacademy conduct their classes much in the same way that many of these YouTube channels do. There is generally an instructor or a voice guiding the lesson by using images or illustrations, or in the case of more technical subjects like mathematics we see the teachers writing and explaining problems on the screen like they would on a whiteboard in a classroom. With the kind of technology available today, the scope of teaching online is larger than it has ever been. Innovation in the space is likely to be a key driver of growth for companies trying to forge ahead. Byju's (\$545 million) and Unacademy (\$150 million) raised the most money in 2020. Byju's is now the most valuable Edtech company in the world, boasting a valuation of nearly \$23 billion as on 7 July 2022 (<https://startuptalky.com>). The National Education Policy (NEP) approved in July 2020 contains special focus on online education and remote learning in India. The policy takes into account the events of the pandemic and as such has made recommendations for how schools and colleges ought to deal with the remote enrolment of students. Broadly, the policy promotes alternative modes of education and aims to move away from the traditional exam-based approach. Edtech firms have an opportunity here to capitalise on as many schools and colleges lack the resources to actually provide online learning. They can enter into public-private BCL India | www.bclindia.in partnerships and come up with solutions to help make the government's vision a reality. To improve the literacy rate in past years India has made many efforts. However, in both the K12 (class 1 to 12) and Post-K12 market, accessibility and affordability to quality education remain significant barriers in unlocking the youth's potential. The K12 Edtech industry is anticipated to reach \$1.7 billion by 2022, while the Post-K12 Edtech market will reach \$1.8 billion, representing increases of 6.3 and 3.7 times, respectively, over 2019 (<https://thestartuplab.in>). In India, the use of digital products is helping to democratise education, close access gaps to high-quality education, and address major student pain points. In 2020, the Indian Edtech market was estimated to be worth \$2.8 billion. This is expected to alter dramatically by 2025, when the Edtech sector is expected to be worth \$10.4 billion.

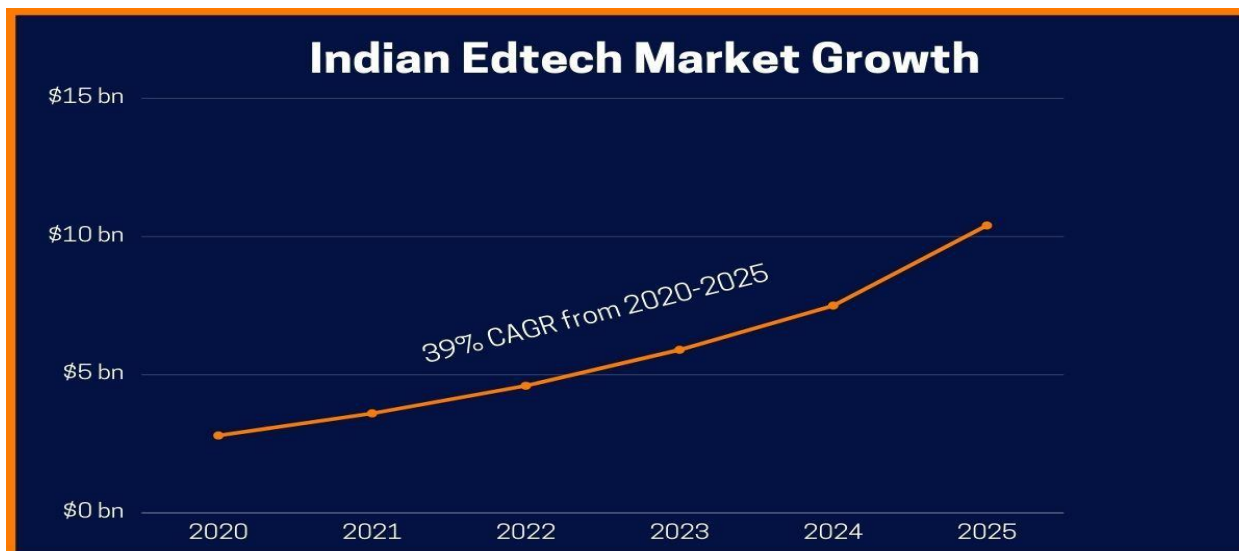


Fig. 1: Source: <https://startuptalky.com>

Edtech Companies	Founded	Founder	Headquarter	Parent Organization
Byju's	2011	Byju Raveendra and Divya Gokulnath	Bangalore, Karnataka	Think and Learn Private Ltd
Unacademy	2015	Gaurav Munjal, Hemesh Singh and Roman Saini	Bangalore, Karnataka	Sorting Hat Technologies Private Limited
Eruditus	2010	Chaitanya Kalipatnapu and Ashwin Damera	Mumbai, Maharashtra	Eruditus Executive Education
upGrad	2015	Mayank Kumar, Ronnie Screwvala, Ravijot Chugh, and Phalgun Kompalli	Mumbai, Maharashtra	UpGrad Education Pvt. Ltd
Vedantu	2011	Vamsi Krishna, Pulkit Jain, Anand Prakash and Saurabh Saxena	Bangalore, Karnataka	Vedantu Innovations Private Limited

Table 2: MAJOR EDUCATION TECHNOLOGY (EDTECH) COMPANIES IN INDIA

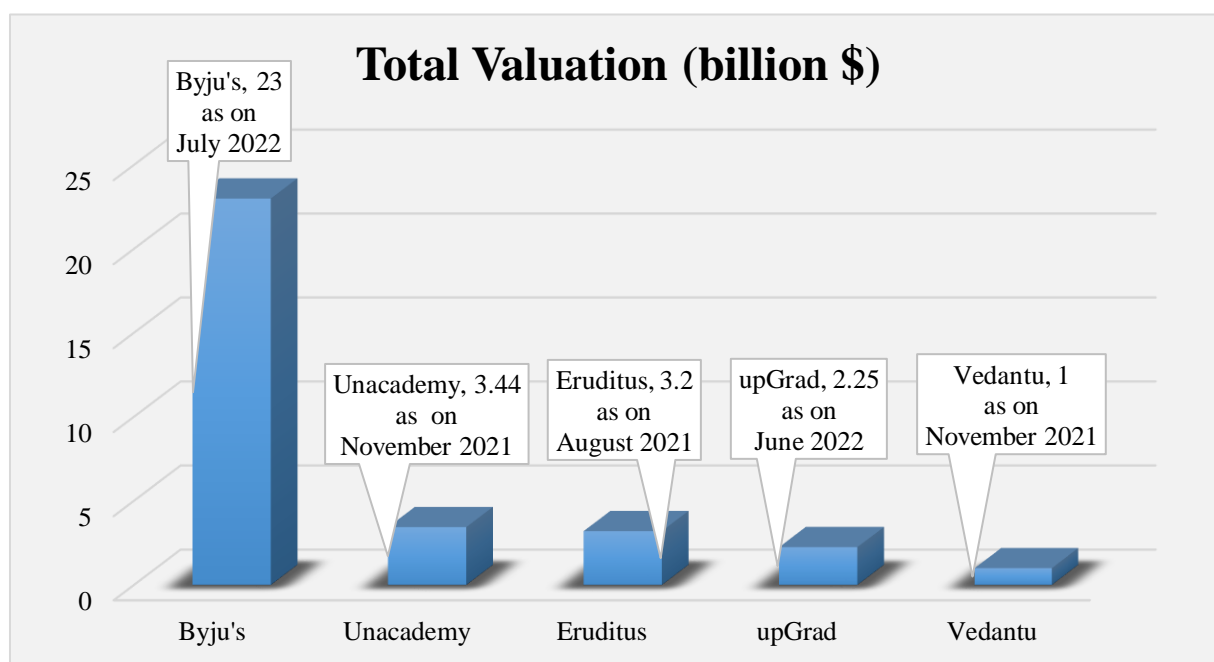


Fig. 2: Total Valuation of major Edtech Companies in India

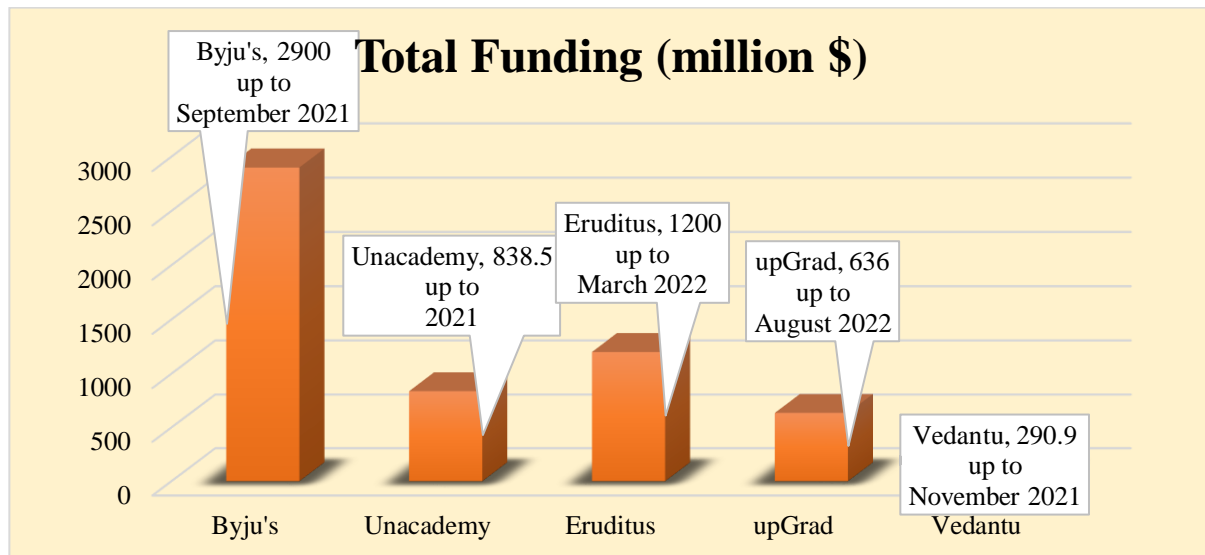


Fig. 3: Total Funding of major Edtech Companies in India

- BYJU'S:** The Bangalore-based Educational Technology platform BYJU's was started in the year 2011. **"Think and Learn Pvt Ltd"** is the parent company of BYJU's. The main objective of this Edtech company is to provide online coaching through video lectures for the students of class 1 to class 12 as well as for competitive exams such as NEET, CAT, IIT-JEE, GRE and GMAT. BYJU's launched its learning app in the year 2015 which is used by more than 15 million students and has 9 lakhs paid subscribers all over the world. The **founder of BYJU's Classes** is Byju Raveendran, and the slogan of the company is **"Fall in love with learning"**.

As of February 2022, Byjus's planning to focus on the Byjus's Tuition Center (BTC) by investing up to \$200 million. It is currently working in 80 centers in 23 cities and is planning to reach to 500 centres across 200 cities by the end of 2022.

- Unacademy:** The name Unacademy [Un (Not) - Academy] states that this learning platform differs from the conventional methods of education, unlike an institution or academy which is accessible to everyone. Unacademy is an educational technology platform which provides learning and teaching both easy with its educational videos and lectures and prepares class 6 to class 12 students for their board exams and also competitive exams like IIT-JEE, UPSC, SSC, Banking exams, Gate and More. It was started in the year 2010 with videos streaming on YouTube, but it officially launched in the year 2015. It achieved more than 10,000 educators and over 13 million users since it has been founded. As on April 28, 2022 unacademy crossed 800K subscribers shared by its founder Gaurav Munjal which was 650K as on September 9, 2021 tweeted by unacademy COO Vivek Sinha. **"India's largest learning platform"** is the tagline of the company.
- Eruditus:** Chaitanya Kalipatnapu and Ashwin Damera created Eruditus in 2010. Eruditus Executive Education and its online division Emeritus collaborate with top-tier universities in the United States, Europe, Latin America, India, and China to provide world-class business and professional education to a global audience. Eruditus has collaborated with over 50 universities, including MIT,

Columbia, Harvard, Cambridge, INSEAD, Wharton, UC Berkeley, INCAE, IIT, IIM, NUS, and HKUST, to educate over 250,000 students from 80 countries. Many courses are available in multiple languages, including Spanish, Portuguese, and Mandarin. It has more than 1400 employees and offices in large cities. In the \$280 billion worldwide professional education market, Eruditus is a global leader.

- UpGrad:** The upGrad learning platform was founded in 2015 by Ronnie Screwvala, Mayank Kumar, Phalgun Kompalli, and Ravijot Chugh. UpGrad offers graduation and post-graduate programmes to help people upgrade their lives and careers. It offers online courses like MBA, Data Science, IT Courses, Machine Learning, Digital Marketing, Software, Blockchain, Insurance-related courses etc. It provides a structured educational programme at each stage of a person's career, from college to getting employed. In fiscal year 2019-20, upGrad formed a partnership with two of India's biggest IT services firms, Infosys and Wipro. These are multi-year contracts with a high repeat aspect. As a result, the company has developed a strong position in the enterprise ecosystem. According to co-founder and chairman Ronnie Screwvala, upGrad's platform has crossed the 2 million learner mark on August 30, 2021, making it the largest online platform for higher education in the country. The Economic Times awarded the company the 'Best Education Brands' and the company was named one of the "Top 25" on LinkedIn in 2018. In 2019, IMAI named the company the 'Best Tech for Education.'
- Vedantu:** Vedantu is the leading Edtech start-up in India in the online tutoring domain. The name 'Vedantu' is a combination of the words 'Veda' and 'Tantu.' Because 'Veda' means knowledge and 'Tantu' means network, thus, Vedantu functions as a network of wisdom. It provides personalised tutoring for kids in grades 6 to 12, with highly trained teachers. The platform's effective, personalised teaching approaches use two-way audio, video, and white-boarding technologies to improve learning results through live student-teacher interactions. The Bengaluru-based Edtech company prepares students for competitive examinations as well as co-curricular modules. The cooperative sessions keep students actively

engaged as the lecture goes on, which is lacking in recorded video lectures and classroom education. Therefore, it uses the tagline “Live Online Tutoring”. Vedantu provides video sessions that accommodate even low internet connections. It appears to be the best online educational service provider in the K-12 market, thanks to its robust learning management tools and holistic teaching strategy.

VIII. GOVERNMENT INITIATIVES FOR BOOSTING DIGITAL EDUCATION

Over the past ten years, numerous measures have been made to improve India's digital ecosystem, which has acted as a catalyst for the Edtech industry. Some of them are mentioned below:

A. DIKSHA

In order to give students, teachers, and parents compelling curriculum-based learning materials, in 2017, the government started DIKSHA (Digital Infrastructure for Knowledge Sharing), a national platform for school education. The platform, which supports more than 18 Indian languages, has been embraced by states and UTs.

B. PM eVIDYA

In 2020 PM eVIDYA program was launched to promote and develop digital education in India and to make e-learning more accessible for Indian students and teachers. The scheme reportedly helped 25 crore students by bringing together all online and digital education-related activities. The program creates original digital content for blind or deaf students and also provides QR-coded digital textbooks and radio/podcasts to students in classes one through twelve via the DIKSHA portal.

C. SWAYAM

In order to provide all citizens, especially those from poor backgrounds, with an integrated platform for online courses at reasonable prices, Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) was developed by the government in 2017. Massive Open Online Courses (MOOCs) are available through the site to provide students (from Class 9-12 through Undergraduates and Postgraduates) with high-quality learning in various topics.

D. SWAYAM PRABHA

SWAYAM PRABHA, a network of 34 DTH (Direct-to-Home) channels that broadcast educational programming 24 hours a day, was launched in 2017. Daily, the channels broadcast the best material five times in a day for at least four hours so that students can choose a convenient time.

E. E-PATHSHALA

The government launched the e-Pathshala portal in 2015. It is a resource hub for educational flipbooks, audiobooks, films, and other media. The portal's materials, which are available in Indian languages such as Hindi, English, and Urdu, may be accessed via mobile devices such as cell phones, laptops, desktop computers, and tablets.

F. NISHTHA

The National Initiative for School Heads and Teachers' Holistic Advancement (NISHTHA) – Phase II was introduced in Financial Year 21 at the secondary level in order to create modules for online education. According to the Union Budget 2021-22, the NISHTHA program would train 5.6 million teachers in FY22.

G. NATIONAL EDUCATION POLICY 2020

National Education Policy 2020 emphasizes digitalization in addition to the use of technology in education. It also highlights the use of Edtech to promote education, especially in rural areas.

This was done initially to deliver high-quality education to all sections of the country, especially Tier 2 and Tier 3 towns and villages.

H. THE NATIONAL DIGITAL EDUCATIONAL ARCHITECTURE

The Indian government established the National Digital Educational Architecture (NDEAR) in the Union Budget 2021-22 to construct digital infrastructure and assist educational planning activities. The NDEAR aims to establish a one-of-a-kind educational ecosystem architecture to advance the nation's digital infrastructure while also ensuring the autonomy of all stakeholders, particularly states and UTs.

I. NATIONAL KNOWLEDGE NETWORK

The NKN was designed as a high-capacity, low-latency network to connect all knowledge-creating enterprises, including IITs, IIMs, universities, research laboratories, and other e-governance institutions, up to the district level. It was designed to encourage collaborative learning and the development of a complete knowledge base. This network is actual and operational. However, only a few institutions effectively employ it owing to a lack of expertise, accessible resources, budget, and technological know-how.

<p><u>STRENGTHS:</u></p> <p>a) Cost-efficient b) Flexible learning c) Effective learning d) Personalized learning e) Accessibility to an inaccessible market f) Scale and integrity g) Industry-academia interaction h) Skill development i) Brings better coordination and governance and j) Easy to collect feedback and analysis</p>	<p><u>WEAKNESSES:</u></p> <p>a) Edtech cannot be a substitute for traditional education b) Commodification of education c) Distraction by students and they are always tempted to use devices for procrastination d) Lack of transparency and critical inputs from teachers e) Students are not intrinsically motivated and no proper feedback mechanism f) Possible dilution in the quality of offering g) Privacy and security of data issues h) Cultural mind set Indian education system is continued to be an examination oriented and i) Customer mind-sets- Clients are looking for value addition to the existing services</p>
<p><u>OPPORTUNITIES:</u></p> <p>a) Digital Communication b) Adaptive Learning c) Personalized Learning d) Content-hungry Urban population: Improved internet connectivity e) Job opportunities for tech-savvy people and gig or freelance jobs f) Government support for digital transformation in the education sector and g) Corporate Training Programmes and Management Development Programmes</p>	<p><u>CHALLENGES:</u></p> <p>a) IPR issues b) Digital readiness c) Non-availability of robust IT connectivity in non-urban areas d) Facing stiff competition e) Less profit margin f) Regulatory bodies in the higher education sector are not supportive of collaboration with universities g) Misalignment in approach- Global vs local h) Crowded Edtech landscape: focusing only on K12 of Test-Preparation segments i) Absence of retaining and differentiation of the customers j) High acquisition cost of customers due to increased advertisement and marketing expenditure and k) Investment landscape: Investors are a specialist or generalist venture capitalists.</p>

Table 2: STRENGTH, WEAKNESS, OPPORTUNITIES AND CHALLENGE (SWOC) ANALYSIS OF EDTECH

IX. LIMITATIONS OF THE STUDY

- The present study is totally based on secondary data which is available on various websites and research papers of related studies.
- Most Edtech companies did not disclose their Annual statement and thus recent and relevant data of few companies was not available for analysis.
- Time constraints.
- Scope of study is limited to only 5 Edtech companies which are selected on the basis of convenient.

X. CONCLUSION AND SUGGESTIONS

India's Edtech eco-system is expanding as a result of four factors: (a) the country's young population; (b) parents' rising disposable money; (c) falling internet data prices, and (d) the availability of low-cost handheld learning gadgets. From 500 million in 2020, smartphone users are anticipated to more than double by 2025. Edtech start-ups have made headway in the ancillary coaching and test preparation sectors, but they haven't been able to enter the core value chain of education. Digital technology can be utilised to

enhance rather than replace traditional instruction in the educational system. The truth must be considered when Edtech companies design their products. The Covid-19 pandemic has improved the use of digital technology in the education sector, but Edtech companies still need to work hard to keep stakeholders interested. Fresh products and ongoing innovation may be able to do this. Student retention may be a challenge for Edtech platforms once the pandemic is over, schools and institutions reopen, and life goes back to normal. Among the problems faced by Edtech start-ups are their small clientele, difficulty determining the best price for goods, lack of diversification, lack of product distinction, and expensive customer acquisition costs. Start-ups need to use a variety of strategies to succeed in the crowded Edtech market. It's crucial to expand into adjacent markets, innovate, integrate, facilitate learner outcomes, and scale up. Edtech firms must heavily integrate augmented reality (AR) and virtual reality (VR) to improve user experiences and deliver tangible learning components that cannot be delivered in a traditional, offline class environment. To prepare students for future professional positions, Edtech startups must focus on learning new digital skills. For

a company to be sustainable over the long term, diversification in the nearby Edtech market is another option. There are prosperous start-ups that offer study materials and tutoring to students. Another option to enter the higher education and corporate learning industries is through MOOCs. For higher education institutions, forming strategic alliances with Edtech companies must happen now or never. In order to achieve growth and goals, the program's quality of offers has been slightly improved rather than lowered. According to Sikandar and Rahman (2020), the future of learning will depend more on digital space than on physical infrastructure, and Edtech can enhance GER by serving as an enabler. Edtech is anticipated to serve as a catalyst, supporting institutions in enhancing their offerings and satisfying the needs of young people who are hungry for education.

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