Reimagining learning with technology

Building sustainable EdTech businesses in India

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Confederation of Indian Industry

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Context and methodology

This report assesses the challenges faced by EdTech in India and recommendations that can drive industry growth. EdTech refers to an area of technology focused on the development and application of tools (including software, hardware and media) to promote and facilitate learning across all levels of education.

The contents of this report focus on discussing the challenges and opportunities for EdTech firms, as well as the opportunities and diligence issues for prospective investors and infrastructure/ service players.

Our analysis of industry trends and challenges includes inputs from secondary research (trade press, industry reports and proprietary databases), subject matter experts and industry expert interviews.

The recommendations in this report are representative of the views of strategy and operations subject matter experts in PwC.

02

Executive summary

The Indian education system has been widely recognised for its intense focus on academics and continuous pursuit to drive students towards a successful journey of learning. However, the system continues to face critical challenges of increasing costs, limited opportunities for a large number of students to attain quality education and the inability of authorities/stakeholders to provide equity in education.

Educational technology or EdTech is expected to play a vital role in the Indian education system and grow at a compounded annual growth rate (CAGR) of approximately 30% to reach a market size of USD 10.4 billion by 2025.[1] This growth is being driven by learning and educational applications that focus on alternative channels of content delivery for K-12, higher education (HE), testing and reskilling. A software as a service (SaaS) based business model has enabled high return on investment (RoI) for EdTech players, thereby attracting investors to this sector.

Despite the success and the expected steep growth curve for Indian EdTech players, there are three major challenges they are likely to face – a crowded competitive landscape, open loop curriculum (a system in which students can undertake self-paced studying irrespective of their age) and a cap on the real, addressable market due to content and pricing.

To deal with these challenges, we expect EdTech players to seek and address white spaces that are found in EdTech offerings, business models and customer segments, and identify the technology to be leveraged. This can be driven through credentialisation (formalisation), artificial intelligence (AI)/virtual reality (VR) based closed loops and offering multilingual content and partnerships for learner financing. Ecosystem enablers can help technology in education to deliver better experiences through customised infrastructure solutions. Investors should continue investing in this space and supporting new business models that can help learning experiences reach those who previously had no access to education. The new National Education Policy (NEP), 2020, has put special emphasis on online and digital education. This will pave the way for EdTech to be increasingly integrated into India's education system and enable new and more cost-efficient methods of running educational programmes, content distribution and consumption.[2]

1 https://inc42.com/datalab/the-future-of-education-indian-startups-chase-10-bn-edtech-market/
2 https://www.mhrd.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

The future of learning may increasingly rely less on physical infrastructure and more on digitisation, thereby leading to technology driving affordability and equal access to quality education. Technology in education is also expected to gradually take the focus away from the grade-oriented input-output education system and build an independent system in conjunction with the traditional methods of learning, thus expanding the scope of opportunities for students.

As the Indian EdTech space continues to evolve, we expect firms to play a key role towards the country's development by resolving the challenges in the traditional Indian education system. Over the next decade, the widespread adoption of technology solutions will ensure that aspiring learners are provided with an equal learning opportunity and able to create a better future for themselves.

03

Understanding EdTech and its need in India

Education value chains are being disrupted by emerging technology businesses across the stack

The technology stack in education

Layers	Description and relevance to technology in education
Content	Content is defined as the learning material and is the backbone for delivering expected learning outcomes for users.
Application	Applications allow students, teachers and administrators to create, manage and deliver content. EdTech companies are developing applications that enable content in a structured manner to learn, interact, view and share with others at their convenience using webinars, video calls and live chat. Such applications also allow teachers to run live polls, quizzes and surveys, thereby encouraging students to interact and maintain classroom engagement.
Platform (operating system)	EdTech applications are hosted by various device-specific operating systems that are enabling seamless application experience for the learner.
Devices	Smartphones, tablets, laptops and desktops determine the efficacy of content delivery. There are many other EdTech tools such as VR headsets that provide enhanced experiences to students.
Servers/cloud	EdTech solutions can be hosted as cloud-based apps and websites that can be accessed by students and faculty from almost anywhere. Servers and cloud provide dedicated digital space and maintenance services to EdTech platforms to stay live 24 hours throughout the year.
Telco networks and hardware	Telecom operators help in better connectivity and lower latency to enable reach and enhance experience. Technology advancements like 5G are expected to aid the sector further.

Commercial EdTech in India comprises both software and hardware tools to enable the use of technology in education

EdTech and common applications in India

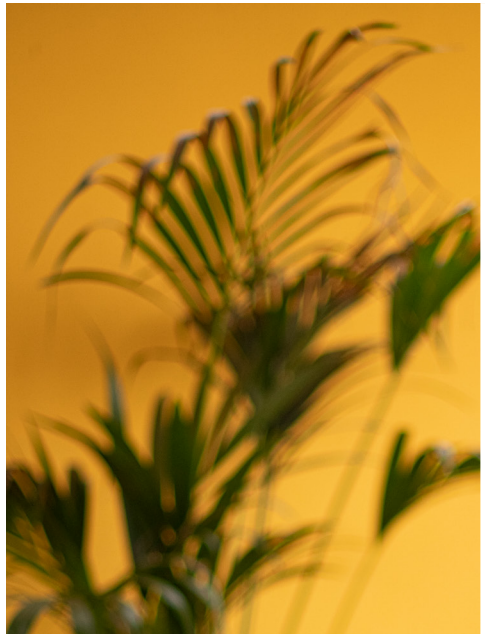
Software	Online learning (both app and web based)	Learning management system (LMS)	Networking and counselling portals
Hardware	Academic devices like smart boards	Delivery equipment (such as tablets)	

EdTech offerings in India are mostly focused across five major categories of educational content.

Technology in education segments by educational content

	Description	Key target segment
Primary and secondary education	Can be supplemental and enable to channel school learning	Primary and secondary schools and students
Test prep	Coaching in preparation of competitive exams	(Aspiring) HE students
HE	Digital alternatives and complements to higher education courses such as MCA and MBA	Graduate and postgraduate institutes and students
Reskilling and certification	Short-term courses (for three–six months) for skill upgradation/ certification that can help in career advancement	Working professionals and organisations
Language and casual learning	Typically includes language, music and casual learning courses	Students and working professionals

Source: PwC analysis

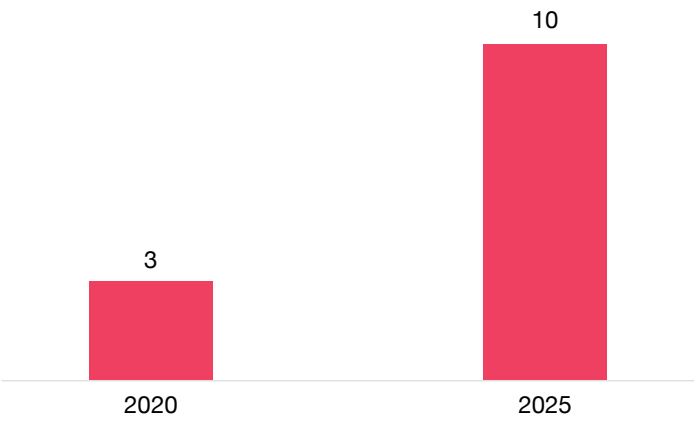


EdTech has the potential to help our education system address two long-standing issues – quality and cost

Challenges	How can technology in education help?
Quality of education for a future-ready workforce	**Customised learning for students from all walks:** Providing students with the right level of attention and personalisation has always been a challenge for the Indian education system due to the disparity in student-teacher ratios. AI-enabled platforms can help in identifying knowledge gaps, understanding how students learn and tailoring online courses as per the most effective learning pathway for each student. Fostering collaboration beyond the classroom and utilising interactive platforms or gamification are other benefits of integrating technology in the learning process. **Lifelong learning and professional development:** India is expected to have a population of 140 million college-going people by 2030. These people will have a significant role to play in shaping India's competitiveness in the global talent market.[3] However, given the emphasis on rote learning and lack of relevant digital skills, India's education system is facing challenges in preparing a job-ready workforce. While online professional courses and corporate training were already on the rise before the COVID-19 pandemic, we expect a surge in demand for learning new and advanced skills around digital, analytics, automation and cyber security from students and professionals across industries.
Increasing cost of education	**One size does not fit all:** In India, online education not only has the potential to lower barriers in terms of access to education but could also be an attractive option for value-conscious students and parents. EdTech platforms have the potential to offer flexible learning models at different price points that are suited for a student's socioeconomic background and specific needs.

The current surge in the commercial EdTech industry was expected to help the sector grow by five times over the past three years and COVID-19 may only accelerate this

The India EdTech market (in USD billion for 2020–25)



Source: PwC analysis and Inc42

The EdTech market in India was worth approximately USD 3 billion in 2020 and is projected to grow at a CAGR of approximately 30% (2020–25) to become worth approximately USD 10 billion by 2025. Schooling (primary, secondary and higher secondary) and technical skilling are the fastest-growing segments due to a large addressable market (271 million school-going children and 22 million white-collar workers),[4] a defined scope of syllabus, the emphasis on high scores and high competitiveness in examinations across the country.

3 UK India Business Council, Beyond the Top 200 – Effective International Collaboration for Indian Higher Education
4 https://inc42.com/datalab/the-future-of-education-indian-startups-chase-10-bn-edtech-market/

This surge in EdTech will be further supported by fundamental drivers that enable the sector's demand to grow

Growth drivers

Growth driver	2020–25 (CAGR)	Explanation
Young and growing student population	**2%**	India's demography is defined by its youth – 41% of the country's 1.3 billion population consists of individuals below the age of 18 years. The total number of K–12 and HE students is expected to increase from 310 million in 2020 to 320–325 million[5] by 2025.
Disposable income	**5%**	An increase in consumer disposable income is likely to improve the willingness of customers, especially in quintile 5, to spend on academic activities and leisure courses.
Lower cost of data	**Estimated to reduce by 10–15%**	The cost of data in India is the lowest in the world – approximately INR 19[6] (USD 0.26) per GB a month, compared to USD 12.37 in the US. Enabled by the rapid reduction in the cost of internet services, the total number of internet users is likely to reach one billion in FY24 from 560 million in FY19.[7]
Lower cost of handheld gadgets	**Estimated to reduce by 15–20%**	Improvement in technology has reduced the cost of a smartphone sold in India. The total number of smartphone users in India are likely to double[8] by 2025 from 500 million in 2020.[9]

The demand for EdTech is also expected to soar due to our education-focused values, supply-side growth and Government initiatives

Reskilling needs: With the working-age population in India making up for 54.1%[10] of the total population, working professionals and job seekers seek to enhance their skills via online advancement courses to stay in touch with growing developments in technology.

Government impetus: The Digital India initiative and the Government's growing contribution towards technological advancements have further encouraged the adoption of technology in education. The Government of India (GoI) launched the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) initiative to encourage colleges to offer online courses in rural areas. The GoI aims to raise the current gross enrolment ratio (GER) in schools to 50% by 2030 and this can be achieved through digital modes of delivery. The Ministry for Human Resource Development (MHRD) released the National Education Policy (NEP), 2020, which is likely to further drive adoption of technology in education.

5 PwC analysis based on the NEP, 2020
6 https://www.cable.co.uk/
7 https://www.moneycontrol.com/news/technology/india-2nd-largest-internet-consumer-social-media-online-shopping-preferred-activities-4831741.html
8 https://www.zeebiz.com/technology/news-india-to-have-500-mn-additional-smartphone-users-by-2025-5g-subscriptions-to-top-26-bn-globally-ericsson-114768
9 https://gadgets.ndtv.com/mobiles/news/over-500-million-indians-now-use-smartphones-77-percent-of-who-are-online-techarc-2172219
10 https://censusindia.gov.in/census_and_you/age_structure_and_marital_status.aspx

COVID-19 has provided an unexpected impetus to EdTech

The impact of COVID-19 on the student journey in India and the potential technology in education has to resolve these challenges

Student journey	Challenges posed by COVID-19	Impact	Potential EdTech solutions	Examples
Admission	Students are unable to complete admission procedures in institutions that require them to be physically present for the process.	Several universities have been forced to delay their admission procedures.[11]	EdTech can enable admissions from home by digitising the application and fee collection processes of universities.	Admission24 – an EdTech start-up, assisted more than 50,000 educational institutions to set up automated admission processes.[12]
Content aggregation	Due to limitations on physical movement, many students are unable to purchase books and/or other learning aids.	Examinations have been delayed and classes have been shut for over 320 million[13] students in India due to the COVID-19 crisis.	Online content can replace the need for physical books and lectures through digitised books and pre-recorded video lectures.	Schools are providing some EdTech players with their learning modules to be converted into trackable online content. Many digital publishing companies in India are already building a digital strategy to make the content accessible through digital channels.
Content delivery	The inability to attend schools, colleges and coaching classes has challenged the traditional methods of education delivery.		EdTech can help students by assisting schools and teachers to conduct live classes, hold meetings and interactions, and share academic content.	Over a million students attended live classes conducted by online tutoring platform Vedantu.[14] Many schools and teachers developed their own way of creating and imparting content through innovative makeshift EdTech models.
Examination	Students are unable to go to test centres or schools to appear for their board exams.	Board, entrance and professional degree exams (e.g. chartered accountancy) have been postponed.[15]	EdTech firms can potentially collaborate with educational institutions to conduct objective assessment tests through online platforms.	The Law School Admission Test (LSAT) was held online for the first time.[16]

11 https://www.jagranjosh.com/news/universities-colleges-in-bihar-postpone-admission-process-due-to-covid-9-lockdown-get-details-153545
12 https://www.dqindia.com/edtech-startups-helping-education-industry-amidst-covid-19/
13 https://en.unesco.org/news/promoting-digital-education-equity
14 https://www.educationworld.in/vedantus-online-learning-usage-soars-during-lockdown/
15 https://www.ndtv.com/education/icai-exam-icai-ca-exams-postponed-to-july-august-2222189#:~:text=New%20Delhi%3A,July%2029%20to%20August%2016.
16 https://www.ndtv.com/education/lsat-india-2021-result-announced-list-of-21-toppers-released

The crisis has disrupted the functioning of most schools and colleges in the country, and may have a prolonged impact, particularly on young learners in their formative years of learning. Parents have found it challenging to home-school their children due to the lack of experience and inadequate/no resources. Most schools have limited infrastructure to support online education.

Many educational institutions have started adopting digital methods/channels for their operations and deploying EdTech for applications, including admissions, online lecture delivery and providing access to e-books to support remote learning.

While the technology interventions may have been challenging for institutes and students, the forced adoption due to COVID-19 is likely to have helped them overcome barriers in their mindsets that may have hindered the penetration of EdTech in the past.

Educational institutions have also probably become more aware of EdTech solutions and how investing in technology may be more efficient for growth than spending on traditional infrastructure. Further, as technology also facilitates low-cost increase in reach, institutions may find innovative ways to leverage technology in schools.

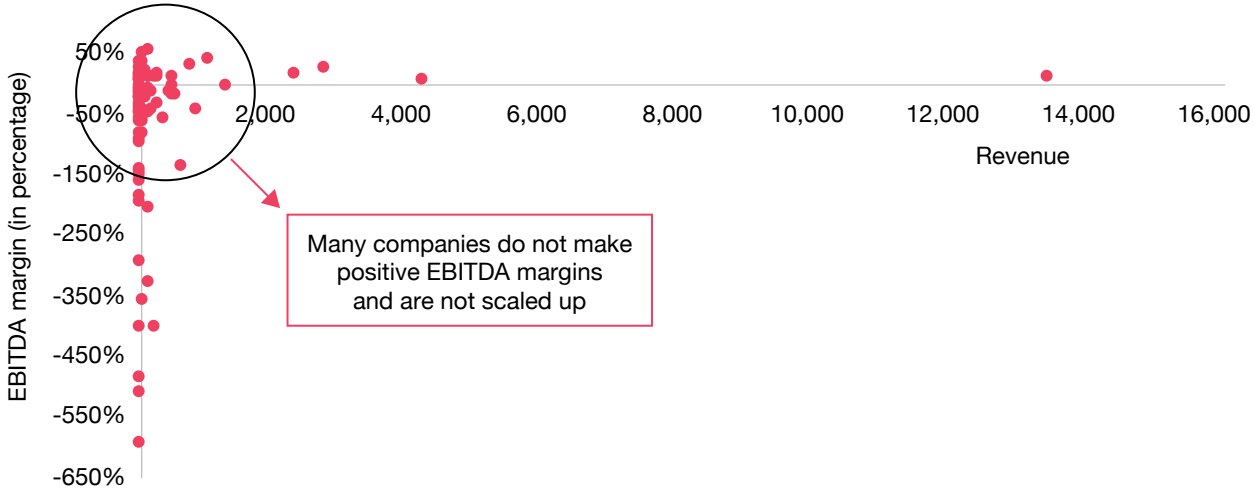
04

Challenges faced by EdTech in India

Many EdTech players in India are struggling to scale up profitably

The Indian EdTech market is highly competitive and overcrowded, and functions within a limited space. Of the 4,500 start-ups operational in the sector, only a select few have been successful in scaling operations and achieving positive earnings before interest, taxes, depreciation, and amortisation (EBITDA) margin.

Revenue and EBITDA margin of select EdTech start-ups (in INR million for FY19)



Source: PwC analysis of data from various financial databases

Note: The top six companies by revenue (>INR 1 billion) are Byju's, a publishing house, Next Education, MT Educare, Simplilearn and Career Point. Of these, Career Point and a publishing house have a lower EdTech contribution as their core businesses are offline. The sample comprises companies with a sizeable revenue share and recorded investments over the past three years as tracked by financial databases.

As observed, the companies are facing challenges across both the axes – in scaling up as well as staying profitable. We will soon discover that these may be linked for most of the companies in the sector as we deep dive into each of these axes.

4.1. Scaling up

Most EdTech start-ups are focused on the same K-12 and test-prep segment of the market, leading to higher competition which is made fierce due to the lack of differentiation

At present, India has nearly 4,500 EdTech startups.[17] With a majority of EdTech companies focusing on K-12, competitive exams and lifelong learning in the business-to-consumer (B2C) segment, there is an increasing need for players to differentiate. Lack of differentiation not only dilutes the brand presence for users but also negatively impacts profitability and opportunity to scale the business.

To evaluate the focus (and differentiation based on targeted customers and platforms) of EdTech players in India, we analysed reported financials of 127 sample EdTech players in India. This sample of 127 players comprises companies with a sizeable revenue share and recorded investments over the past three years as tracked by the financial databases.

Crowded EdTech landscape (illustrative)[18]

Type of end user →

Platform type ↑	Pre-K	K-12	Phase change – school to college	HE	Phase change – college to job	Corporates/ lifelong learning	Total
B2B	3	13	4	5		5	30
B2B2C		2		4		7	13
Marketplaces, aggregators	1	4	3	2	3		12
B2C	5	14	17	5	15	16	72
Total	9	32	23	16	18	29	127

Lowest number of players — Highest number of players

Source: PwC analysis of data from financial databases[19]

We observe that 72 of the 127 players have developed a B2C platform. Students in the K–12 and HE segments are targeted by 71 (32+23+16) of these 127 players. Many of these offer services around coaching and test-prep which may lead to a narrowly focused Indian EdTech players' ecosystem.

17 https://inc42.com/features/the-past-present-and-future-of-edtech-startups/#:~:text=According%20to%20DataLabs%20by%20Inc42,total%20funding%20in%20edtech%20startups.
18 Sample based on screener from financial databases, 86 of which had financials available for FY19. The total for the figure is 127 since some start-ups cater to multiple segments.
19 The colour coding for total is based on either the type of end user/platform type

Given the focus segments, most EdTech offerings in India limit themselves to addressing the needs of quintile 5 of the Indian income ladder

Indian population pyramid

	Sample EdTech spend as % of annual household disposable Income[20]	Smartphone spend as % of annual individual disposable income[21]	Smartphone spend as % of annual individual disposable income[22]	Sample job profiles	Typical education requirements	Preferred languages
Quintile 5	2.0%	8%	0.17%	Business executives, bankers, doctors, lawyers, professional services employers	Postgraduation or graduation, optional reskilling	English, Hindi
Quintile 4	3.5%	17%	0.35%	Administrative staff, front desk executives	Graduation, optional reskilling	Hindi, English and vernacular languages
Quintile 3	4.7%	25%	0.50%	Midsize shop owners, mechanics, tailors, barbers, gig-economy workers	K–12	Hindi or vernacular languages
Quintile 2	5.7%	35%	0.70%	Small shop owners and self-employed individuals, domestic helps, postal delivery executives	K–12 or no formal education required	Vernacular languages or Hindi
Quintile 1	7.7%	54%	1.10%	Ragpickers, sweepers, construction workers	No formal education required	Vernacular languages or Hindi

Source: PwC analysis of data from ICE360

Many test-prep consumers belong to quintile 5 where the requirements are to supplement the traditional value chain and invest in their ward's future by supporting their HE. While the behaviour may also be true for quintiles 4,3,2 and 1, the needs for these go beyond traditional test-prep as learners seek outcome-oriented education that can enable employment. They also look for test-prep that is made more accessible through various customisations such as vernacular languages and affordable pricing modes.

Affordability decreases with the declining income curve. The penetration of English is lower and educational requirements at the bottom are different than that at the top. As affordability, needs and access are different at the top of the pyramid compared to the rest of India, EdTech firms need to customise and contextualise their business operations for quintiles 4, 3, 2 and 1 to scale beyond quintile 5.

This reality has to be weighed against the potential frequently cited by the size of the student population in India and the expected demographic dividend it offers for investors in EdTech.

20 EdTech spend assumed to be INR 10,000 (average ticket size for primary and secondary school supplementary education)
21 Average smartphone spend in India was INR 11,263
22 Cost of 1 GB data per month assumed to be INR 19

Technology in education can only complement but cannot compete with the traditional education system

1. **Lack of credentials:** With the working-age population in India making up for 54.1% of the total population,[23] most jobs still demand an educational degree recognised by a designated board/authority. Since most EdTech players lack recognition from such designated authorities, they are unable to award a formally recognised degree and hence limit themselves to a complementary role instead of acting as end-to-end educational service providers.
2. **Open-ended curriculum, lacking personal attention and enforcing learner discipline:** Technology solutions in education face the challenge to definitively address the learning needs of children due to the absence of face-to-face/physical interaction with teachers and other students. Additionally, technology solutions sold today are primarily consumed by parent-motivated actions, which can sometimes cause lower pedagogical effectiveness (especially in primary and secondary segments) because of their inability to enforce learner discipline. As most EdTech players offer open-ended education with limited feedback, parents may prefer offline education over their online counterparts.
3. **Forming partnerships:** EdTech is a fragmented industry where start-ups have been trying to create new models in what has been predominantly a stronghold for academic institutions. Scaling up will remain a challenge without the right winning partnerships with the Government, universities and colleges, technology companies, not-for-profits, etc.

While COVID-19 has accelerated the integration of technology in education by changing mindsets, much needs to be done to retain the interest and bridge any digital gaps

The nationwide lockdown implemented in March 2020 and subsequent temporary shutdown of educational institutions have brought EdTech to the forefront of education. Technology platforms in education moved to capitalise on the growth wave right from the first week of the lockdown, resulting in an unprecedented spike in user registrations and time spent on online learning platforms. The top 35 EdTech firms witnessed a 37%[24] increase in daily user traffic in the first 28 days of the lockdown, attracting 4.6 million visits per day as compared to 3.4 million visits per day between April 2019 and February 2020.

	Reported growth[25]	Reported metric	Reported current period	Reported base period
Vedantu	80%	Revenue	May 2020	April 2020
Board Infinity	30%	Revenue	April and May 2020	March 2020
Unacademy	247%	Tests taken	April 2020	March 2020
Byju's	30%	Average session time	During the lockdown	Pre lockdown

- Due to the sudden increase in demand, firms are investing in technology, people and marketing to capitalise on this growth. Funds were raised by 14 technology players in education between 1 March 2020 and 4 May 2020[26].
- However, after schools and workplaces reopen, student retention could be a potential challenge for these platforms.
- Students, specifically from the bottom three quintiles may be digitally disadvantaged as compared to those in quintile 5, hence, creating a digital gap which may further result in lower retention.

23 Office of the Registrar General & Census Commissioner, India
24 PwC analysis of data from SimilarWeb
25 https://inc42.com/features/edtech-startups-look-for-permanence-beyond-the-covid-19-lockdown-boom/
26 https://www.businessinsider.in/business/startups/news/14-indian-edtech-startups-raised-funds-amid-the-covid-19-pandemic/articleshow/75667869.cms

4.2. The pathway to profitability

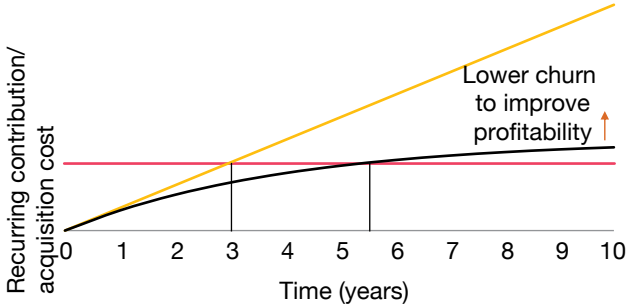
Most EdTech start-ups in India have low profitability due to the lack of reach

EdTech start-ups are finding it challenging to realise profits due to:

1. **Low user base and customer stickiness:** Due to lack of differentiation, availability of free content and low switching costs, most platforms find it difficult to stop users, particularly paid users, from migrating. Most EdTech start-ups have been unable to stay relevant in the minds of users, which leads to product failure. This impacts the margins of the firm (due to high acquisition costs) and reduces the chances of start-ups to receive adequate funding.
2. **Inability to determine the right price of products:** Most EdTech start-ups fail to price their offerings correctly. While conversion of an active user to a paid user may be a challenge if a product/service is overpriced, a lower price point may imply that a particular product is of lower quality. In either case, the platform risks losing users.
3. **High customer acquisition cost (CAC):** Due to varying and high-ticket prices ranging from INR 5,000 to over INR 100,000 (for professional courses), platforms engage in heavy digital and offline marketing as well as physical selling techniques, leading to high acquisition costs. During the initial growth years, platforms are known to spend 200–400%[27] of operational revenue on advertising and marketing. While the expense may reduce to 40–50% post achieving the desired scale of growth, marketing costs are one of the highest costs besides platform and content development. Further, some players also maintain large sales teams who act as physical touchpoints for them to engage with parents and students to convert them into paying customers.
4. **Lack of diversification:** Most EdTech platforms operate within the same overcrowded space targeting K-12 and test prep content delivery, targeting the same share of customers without exploring the latent needs of other customers
5. **Lack of differentiation:** As the platforms operate in the limited products/solutions market with similar offerings, they leave little room for differentiation on value proposition. Thus, there is an inefficient and ineffective user engagement, often resulting in product failure.

Most EdTech companies have a fixed customer acquisition cost, and a higher customer churn rate not only lowers profitability but also increases the time to profitability. Thus, it is imperative for companies to strike a balance between the monetisation model, scaling and customer retention to ensure sustainability and profitability of the business.

Typical SaaS-like profitability with customer churn



— Total customer acquisition cost

— Contribution margin with churn

— Recurring contribution without churn

Note: Illustrated, not based on actual data

In case such EdTech companies keep emerging and competing without differentiation, consolidation may be imminent, leading to the creation of large EdTech firms that scale up to make the unit economics work. As of 2020, the Indian EdTech space witnessed 13 buyouts.[28] Scaled up players such as Byju's and Unacademy have acquired start-ups such as Whitehat Jr, PrepLadder and Kreatryx.

27 Based on recent annual reports of platforms such as Vedantu, WhiteHat Jr, Unacademy and Byju's

28 https://www.livemint.com/companies/start-ups/edtech-companies-see-record-buyouts-this-year-11598230083137.html

05

Gearing up for the future

India offers opportunities for EdTech players to scale up profitably despite the presence of various problems. The near future may see consolidation in the sector and lead to the emergence of a few scaled-up players. However, long-term growth opportunities for EdTech players far exceed the narrow landscape present in India today. Opportunities specifically exist to transform the legacy parts of the conventional education value chain as well as penetrate beyond quintile 5 to tap into the vast domestic market.

Success in a market like India will make domestic players resilient. It won't be surprising to see Indian-origin EdTech companies become some of the leading players in global markets. They have already thrived by tackling user-adoption challenges across a diverse population. Globalisation, subject to local regulations, will be the next horizon for EdTech.

Through a long-term strategy, the full potential of EdTech can be unearthed for companies, investors and policymakers, creating avenues for sustainable growth, wealth generation and societal transformation.

White spaces exist in the vast EdTech ecosystem, as observed globally

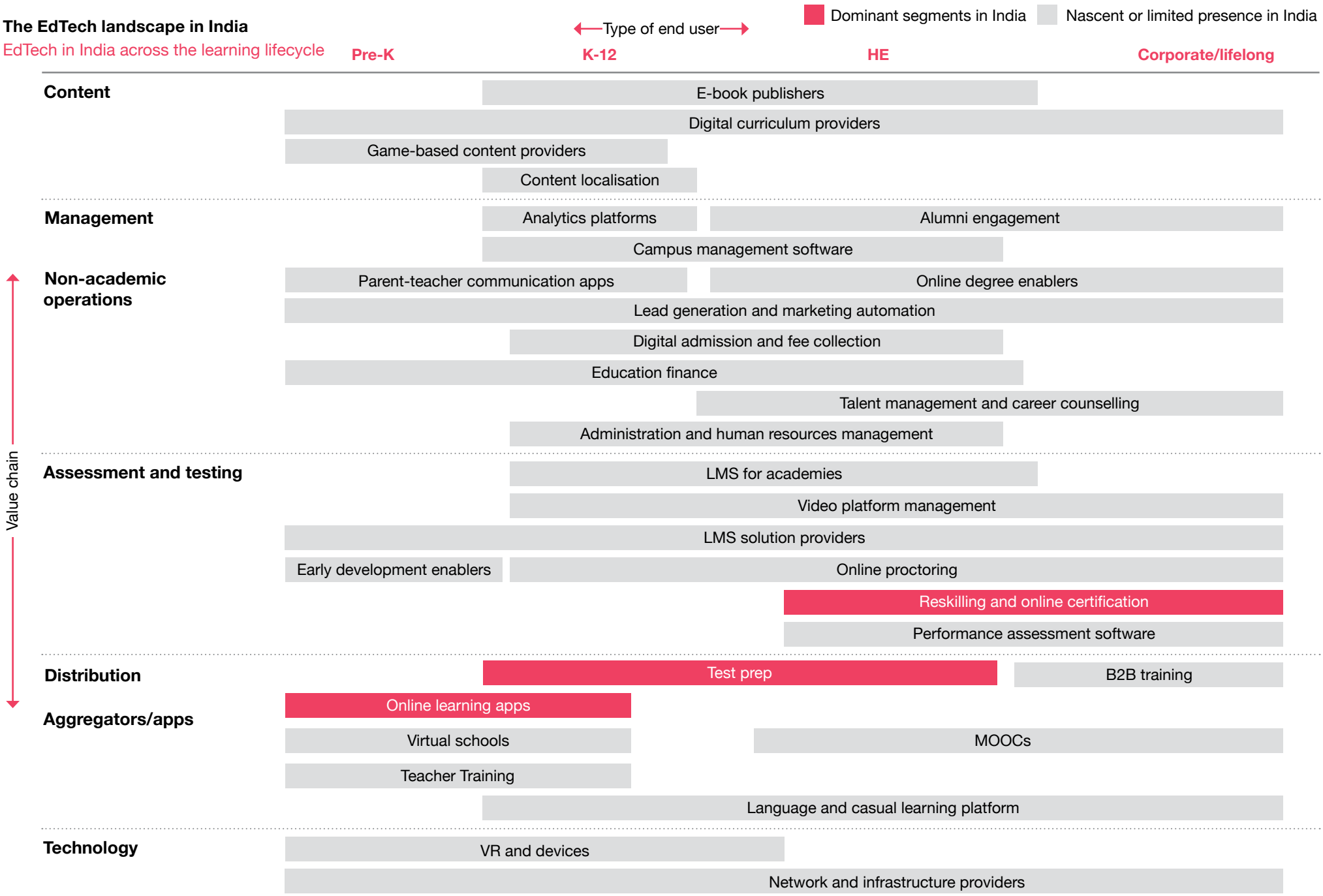
While the Indian education system has evolved over the years, it continues to be an exam-oriented one, leading to the societal pressure of performing well in competitive exams. The necessity to perform well in intense competitive exams and inconsistent levels of K-12 education prompted the mushrooming of private coaching institutes. The earliest emergence of EdTech and the advantages of cost and convenience provided by it have helped in the growth of the online test preparation space in India. However, for a long period of time, this has disrupted the ancillary coaching/test-prep segment and not core education value chain.

Apart from online test prep material, K–12 learning apps and online certification portals are gaining popularity as they look to fill the void of quality teaching and skill development initiatives in schools and training institutes.

However, based on our analysis, we can think of no less than 25 business models that technology can enable across the education value chain. Of these, we expect only three to be dominant in India.

The EdTech landscape in India

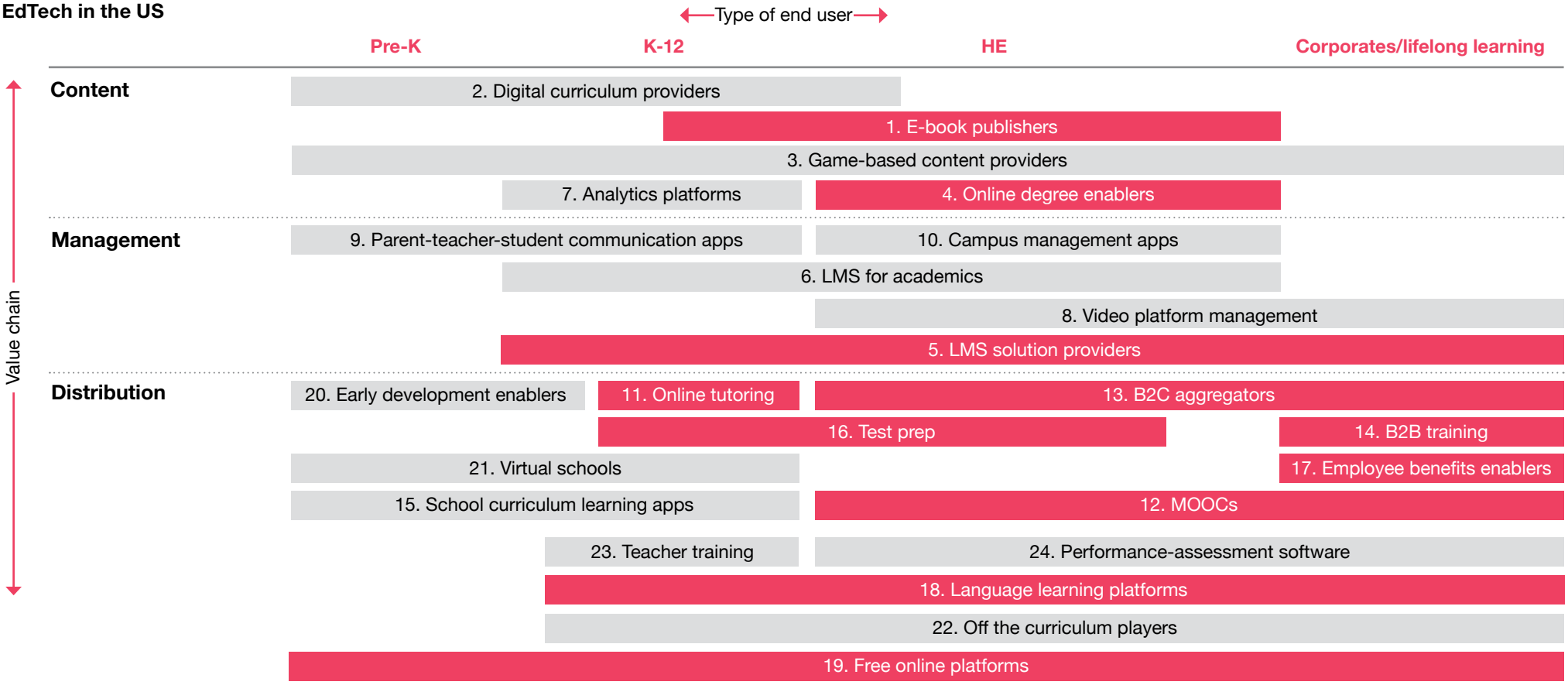
EdTech in India across the learning lifecycle



Source: PwC analysis

In developed markets such as the US, EdTech has grown in multiple directions – from LMS to distribution platforms such as e-learning apps, massive open online courses (MOOCs) and online certification. Technology is increasingly being used in schools across the US to provide students access to transformative learning opportunities.

EdTech in the US



Source: PwC analysis

USD 1 billion+ enterprise value

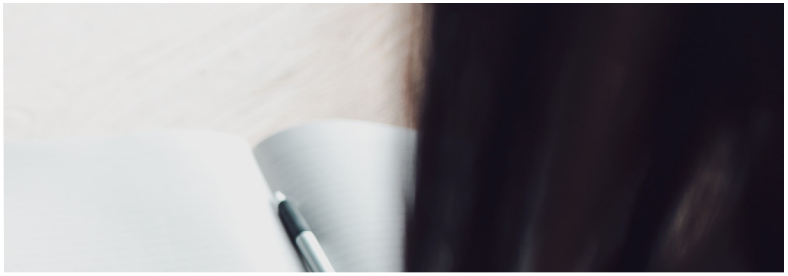
While quintile 5 is attractive, a significant value still lies at the bottom of the pyramid

Quintile 5 houses most buyers for the test-prep segment. However, quintiles 1–4 hold a significant opportunity for EdTech and are waiting to be tapped into.

Affordability of education (2019–2020)

	Percentage of total households	Annual disposable income per household (in INR)	Expenditure on education (as a % of annual income)
Quintile 5	25%	~492,800	8.8%
Quintile 4	22%	~282,000	7.0%
Quintile 3	20%	~210,250	6.6%
Quintile 2	18%	~173,000	6.3%
Quintile 1	15%	~128,100	5.7%

Source: PwC analysis of data from NABARD, NSSO statistical reports and ICE360 survey (2016)



5.1. Imperatives for EdTech players

Imperative 1 – scale up and survive

Scaling up has traditionally required operational excellence or strategic pivots. Depending on the addressable markets, it may become imperative for many EdTech firms to look beyond operational push to scale up and seek new pivots. Firms seeking to expand existing offerings may benefit by reaching out to quintiles 4,3,2 and 1.

With 87% of the Indian population living in tier-2 cities and beyond, technology players in education can attain a large-scale presence in these underpenetrated cities. However, they need to customise their current offerings (product and pricing) to successfully enter these markets.

Strategies for scaling up

Strategy	What can technology players in education do?	Examples
Increase affordability	Develop affordability-based pricing models, EMI-based payments for longer-duration (>one month) courses.	Vedantu looks to boost its active user base in tier 2+ cities by lowering the average price of their live tutoring classes.[29]
Charge customers when they can pay	Apply 'pay when you earn' and 'pay when you earn more' models in pricing.	Pesto Tech allows students to pay for a training bootcamp after they get a job.[30]
Help customers finance	Partner with financial institutions to offer learner financing or provide captive financing options.	Byju's has tied up with ICICI Bank to offer EMI payments for its courses.[31]
Develop relevant courses for all	Leverage exposure of learners in tier 2,3 cities and towns to develop more relevant and personalised content; set up offline distribution channels (if required) in smaller cities, towns and districts.	An EdTech player provides personalised quality learning programmes for students in tier 2 cities and generates over 50% of its revenue from the tier 2 segment.[32]
Multilingual expansion	Develop content or translations to vernacular and local languages.	Entri, an app for job aspirants, expanded from Malayalam to include Telugu, Tamil, Kannada and Hindi.[33]
Government collaboration	Collaborate with the Central or state governments to provide/service students in public schools.	STEPapp collaborated with the Government of Tamil Nadu to enhance the performance of approximately one million students in school and competitive exams.
Export of products/services	Players can cater to markets beyond India, where EdTech is seeing exponential growth.	TalentEdge is currently targeting global markets such as North America, the Middle East, South Africa and the Asia-Pacific region.[34]

29 https://m.economictimes.com/small-biz/startups/newsbuzz/edtech-startup-vedantu-secures-42m-from-tiger-global-westbridge-cap/articleshow/70903147.cms
30 https://yourstory.com/2019/03/edtech-startup-pesto-siliconvalley-engineers-bc0lzefsjn
31 https://www.icicibank.com/offers/byju-offer.page
32 https://coursewareworld.com/toppr-tapping-tier-2-cities-with-its-personalized-learning-modules/#:~:text=Toppr%20has%20succeeded%20in%20taking,states%20and%20over%2025%20cities.
33 https://m.economictimes.com/small-biz/startups/newsbuzz/kerala-startup-entri-eyeing-5-million-users-in-12-months/articleshow/73928751.cms
34 https://economictimes.indiatimes.com/industry/services/education/edtech-companies-byjus-talentedge-spread-wings-at-home-abroad/articleshow/68473857.cms

Imperative 2 – innovate to integrate

The personalisation of learning with one-to-one delivery of lectures, real-time interactive communication and customised learning support will enable technology players in education to ensure user retention and long-term user growth while delivering better learning outcomes for learners across all age groups.

Strategies for competing with traditional educational channels

Strategy	What can technology players in education do?	Examples
AI-/ML-driven closed loops	Leverage new-age technologies to personalise content by making it interactive and adaptive.	A UK-based company has developed an AI-based platform that offers students personalised math classes as well as helps with their homework assignments.
Manpowered closed loops	Enable students to connect online with live teaching sessions and become a part of interactive virtual classes which can be enabled through AI.	Lido Learning helps students from classes 5–9 connect online with teachers who offer live math and science tutorials.
AR/VR	Integrate AR and VR tools, and platforms with online learning to offer better experience and deliver practical and physical aspects of learning which cannot be delivered in a traditional, offline setup of classrooms.	Neo Bear uses AR to develop toys and mobile apps that help children between ages 2–7 years to learn words and languages.

Imperative 3 – enable learner outcomes

The Indian education system currently functions on the close link between education and employment opportunities. Today, the system may not enable all learners attain job skills. Hence, learners look to acquire skills beyond what they would learn in a traditional learning environment. Enabling this outcome by offering readily marketable skills while elevating financing challenges will make EdTech players successful.

Strategies for competing with traditional educational channels

Strategy	What can technology players in education do?	Examples
Partner with hiring companies	Partner with firms that can potentially offer jobs to leaners who complete their education from EdTech platforms.	Immediately after graduation, MountBlue offers paid internship to students who work with a high-growth start-up referred to by MountBlue. It has partnered with start-ups that can offer roles to learners joining MountBlue.[35]

35 https://www.geektrust.in/blog/2019/10/11/startups-2-0-work-mountblue/

Imperative 4 – diversify into adjacent segments

Diversification can be enabled by innovative business models that broaden the horizon of play, new customer segments, products, go-to-market plans as well as local and global collaborations. We have discussed and compared the landscape in India to identify white spaces that can help EdTech players diversify and grow.

A sample list of other attractive segments in technology for education

Name of the segment	Examples
Study notes and tutoring	Three unicorn start-ups in the US – Course Hero, Quizlet and Chegg[36] – have provided students with concise and relevant study notes that are accessible 24x7. They also connect students with tutors on a real-time basis in case they need to clear doubts.
MOOCs	Two EdTech unicorns[37] based in the US – Udemy and Coursera – are open online course platforms that provide a wide array of courses, enabling students to choose and learn from courses of their choice.
Examinations	As many organisations and institutes move to online examinations, technology players supporting such examinations will come into play. This will also enable examinations to become flexible and adaptive. The US has seen the emergence of large players such as ETS and Pearson.

36 https://www.crunchbase.com/organization/chegg
37 https://www.holoniq.com/edtech-unicorns/

5.2. Imperatives for ecosystem enablers

EdTech players can realise their full potential and aim for faster scale-ups with the support of ecosystem players, particularly technology players. These players can enable the development of EdTech platforms through upcoming use cases of AI/ML/VR to target the right set of students and also customise such use cases as per developing user requirements.

Strategies for competing with traditional educational channels

Ecosystem segment	What can the ecosystem do?	Examples
Cloud players	Players like Microsoft Azure and Google Cloud ensure seamless updates in course content, immersive learning experiences and delivery to multiple classrooms at the same time. They are also facilitating enriched and immersive learning experiences.	Amazon Polly has provided its platform to enGuru,[38] which has launched an app that teaches English for employability purposes and offers voice support in Indian accents on non-Android devices.
IT service providers	IT service providers can enable smooth maintenance and uptime for digital learning services and help in developing an admission management system for institutions to conduct online examinations.	DevOps services by an IT service provider in India has helped in building customised applications to implement learning technology solutions. The company has also developed AI/ML platforms Nia and EdgeVerve to drive automation and transformation across learning and administrative processes in HE.
Telecom players	Telecom players can also become a part of the EdTech ecosystem by enabling the stack and participating as a stakeholder.	Reliance Jio plans to launch training programmes.[39] Further, Jio has proposed Jio Mixed Reality Glasses[40] that can enable VR in EdTech.
Content creators and aggregators	Content creators can develop educational content while aggregators can participate as delivery mediums.	YouTube has a separate section that aggregates videos on multiple subjects under YouTube Learning.[41]
IT hardware	Hardware companies can create products customised for student learning, focusing on specially abled students and providing them equal access and opportunities to learning.	Byju's offers customised tablets to its users. These tablets come with pre-loaded classroom videos and study material for students to use. The tablets also allow online access to Byju's All India Test Series.[42]

38 https://www.livemint.com/companies/people/how-amazon-web-service-edstart-is-powering-indian-edtech-startups-1568615485609.html
39 https://economictimes.indiatimes.com/industry/services/education/now-jio-to-bring-educational-programmes-eyes-long-term-revenue/articleshow/64772493.cms?from=mdr
40 https://www.indiatoday.in/technology/features/story/jio-glass-everything-to-know-about-jio-s-mixed-reality-glasses-1700910-2020-07-15
41 https://www.youtube.com/education
42 https://www.42gears.com/case-studies/byjus-lockdown-student-devices/#:~:text=Byju's%20offers%20Lenovo%20tablets%20with,to%20All%20India%20Test%20Series.&text=Several%20studies%20have%20deducted%20that,learning%20purposes%20increase%20student%20engagement

5.3. Imperatives for investors

It is imperative for investors to identify the right target with a specific emphasis on the revenue and monetisation model, customer acquisition costs and user engagement to gain returns from the sector.

Imperative 1 – find the right target

Potential segments of interest

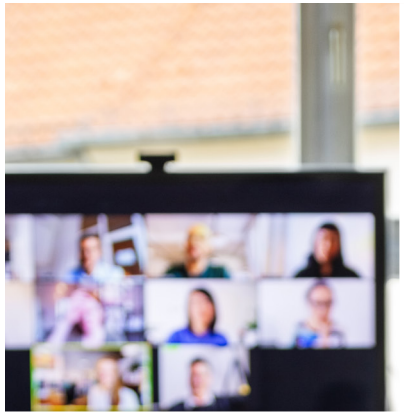
EdTech segment	Reasons for interest
Large scaled-up players	EdTech players should distribute their large, fixed human and technology costs over a large base of users to become profitable. Byju's is the largest EdTech start-up in India in terms of revenue and one of the few pure-play EdTech players to be profitable. Hence, it has attracted 56% of the funding received by EdTech players in India from 2014.
Players focusing on quintiles 2, 3 and 4	Reaching a larger part of the population would require EdTech firms to innovate and offer the same quality of content and experience to speakers of multiple languages. This would require further investments and investors have shown their keen interest to invest in this space. More people in India identify with Hindi, Bengali, Marathi, Telugu and Tamil as their first language.[43] Doubtnut – a vernacular language based EdTech start-up raised USD 15 million in January 2020.[44]
Players in emerging global segments	MOOC providers in the US have been able to scale their offerings as they offer a full course experience free of charge, attracting learners to their platforms. In addition to attracting potential learners, they have developed a successful monetisation model where they provide value-added services like study notes, doubt-clearing sessions and tutoring to help generate recurring revenue.
Players with technology differentiation	Personalised learning is one of the key services offered by EdTech players. Leveraging big data, AI, ML or AR to drive interactive and adaptive learning recommendations for each student can provide unique learning experiences for them. This can improve the retention rate of EdTech players and enable better conversion of free users into paid users.
Players with strong tie-ups	An ecosystem of partnerships can serve as a clear differentiator of an EdTech platform's offerings. For example, tying up with leading institutions/corporates to provide learning services allows EdTech players to target a ready base of candidates (lead sharing model) while enabling them to offer credentialised certifications and degrees.
Players with technology to support initiatives of the NEP, 2020	Companies enabling initiatives such as adaptive testing and AI tools, as discussed in the NEP, 2020, may grow as the policy is implemented.

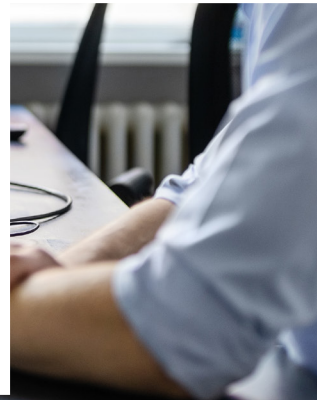
43 https://www.livemint.com/news/india/in-india-who-speaks-in-english-and-where-1557814101428.html
44 https://www.livemint.com/companies/start-ups/tencent-leads-15-mn-series-a-funding-in-education-platform-doubtnut-11580468618651.html

Imperative 2 – diligence

Investors need to delve deeper into the following aspects of a technology firm's business model before deciding to invest:

1. **Size of the addressable market:** Investors need to assess the true addressable market and scalability potential of an EdTech player due to heterogeneity in income, geography and languages.
2. **Revenue and monetisation model:** A potential investee needs to have a clear monetisation plan and rationale, which should be backed by a compelling value proposition and convenience in terms of purchasing a licensed version or upgrading.
3. **Rate of user acquisition and customer acquisition cost (CAC):** High user acquisition costs can cause failure in scaling up and should be a key monitorable area for EdTech firms. As EdTech offerings are high-ticket items (test prep costs range from approximately INR 5,000 to INR 50,000), companies often deploy physical selling techniques, leading to high cost of sales. The keywords used in the digital advertisements of EdTech firms are common and target similar segments, making the sector a highly competitive one. A higher CAC is incurred by the technology players as they reach out to more potential customers.
4. **User engagement – retention rate and session time:** Owing to the transactional nature of EdTech offerings, outcome delivery must be ensured over the medium-to-long term. EdTech players are increasingly focusing on showing new user growth to raise funds and that is limiting industry success. With approximately only 10% of learners retained over a 30-day period,[45] most EdTech start-ups have failed to stay relevant in the user's mind, which leads to product failure.
5. **Fixed costs and rate of cash burn:** A fixed-cost structure can have a large impact on the break-even of an EdTech player. The break-even can be delayed despite the player operating an addressable market, leaving no scope for an entity to become profitable. Along with achieving scale, low expenditure on technology and people ensures a longer survival.
6. **Data and risk management operations:** In today's world of increasing cybercrimes, data and related risk management operations have become areas of concern for organisations. Reviewing data security, employee authorisation and data encryption practices will save EdTech firms from any reputational damage.





45 https://inc42.com/resources/post-corona-how-edtech-will-alter-the-approach-to-online/

06

The future of EdTech

Technology in education can help India unlock its demographic dividend, provided scale-up is enabled

Education is key to unlocking the benefits of India's demographic dividend. The cost and reach of education for all are issues that can be addressed by adopting technology. Further, the COVID-19 pandemic has already highlighted the need for technology in the Indian education system.

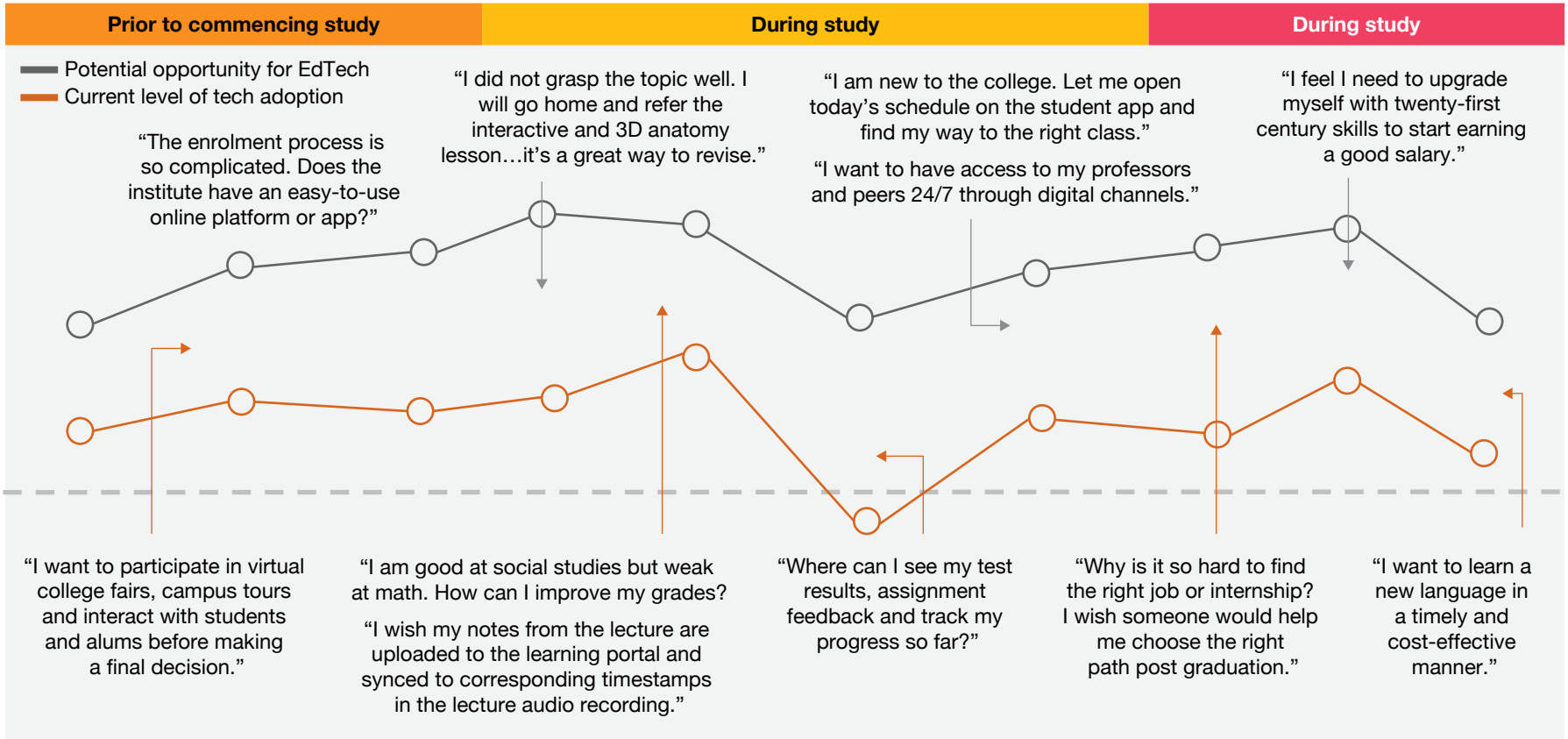
At present, technology in education, in India, focuses on content delivery, but other support functions such as admissions and content management are also expected to be enabled by EdTech soon. However, many EdTech firms in India operate on a SaaS-like model, thereby making scale-up critical for their success.

To ensure success in scaling up, technology firms in India need to look beyond the top two quintiles, innovate to differentiate and diversify into adjacencies. This will also strengthen the potential for ecosystem enablers such as telecom service providers and infrastructure providers and attract investors. The Government has already demonstrated its intent to enable the education sector through technology via the NEP, 2020.

A student's journey can be customised better and made more skill oriented with the help of technology

Potential of technology in education across the student journey

Illustrative student journey



Play for technology-based interventions	Prospective	Recruitment	Admission	Classroom learning	Self study/ tutoring	Tests and exams	Campus life	Graduation and employment	Admission	Casual learning
K–12	✓	✓	✓	✓	✓	✓				✓
HE	✓	✓	✓	✓	✓	✓	✓	✓		✓
Professional learning	✓	✓	✓		✓	✓			✓	✓

Evolving student expectations

Engaging

- Use of digital channels, online counselling, virtual campus tours and social networks to drive engagement with prospects, especially in remote cities
- Ensure a transparent and seamless enrolment process for all – parents, students and staff
- Make it easy to decide the right programme based on a student's aptitude (e.g. alternative online assessment, psychometric tools)

Interactive and personalised

- Study with interactive content, replacing the traditional textbook model
- Blended models of learning through seamless offline-online integration
- Leveraging technology to customise curriculum based on student preference
- Flexibility of languages based on socioeconomic background
- Test knowledge in 'real' life scenarios using AR-powered virtual labs

Connected and on demand

- Access to learning to be 'always on'– mobile, collaborative, borderless and self-paced
- Push mock tests via LMS to provide results in real-time and link back to chapters that allow students to quickly bridge the knowledge gap
- Facilitate peer-to-peer collaboration via online access to student and faculty communities
- On-campus apps to offer 'contactless' experience, byte-sized information, digital payments and student assistance

Career oriented

- Provide the right skills to make students job ready
- Tailored curriculum based on student needs and career alignment
- Ability to enrol for massive open online course (MOOCs) and receive certifications with top universities
- Online collaboration, research tools and discussions with industry experts integrated into the teaching methods

Source: PwC analysis of data from internal research

EdTech companies are experimenting with technology and some of their envisioned ideas can soon transition to reality:

1. AR and VR

EdTech companies can provide students with an immersive learning experience with the help of VR and AR. Such technologies can help students better understand subjects like geography and biology as these technologies are able to ensure an interactive learning experience.

2. AI and ML

AI paired with ML can identify studying patterns and individual strengths and weaknesses, as each learner has a different method and pace of learning. AI and ML can help in providing more personalised content while delivering better learning outcomes.

3. Smartboards

Students/teachers can understand new concepts faster and better when they use a smartboard. Smartboards allow visual representations of concepts discussed in class and help learners understand such concepts better.

4. Standardised assessments

Assessments in the future can become more standardised and adaptive for learners. These assessments may not be individual oriented (like board examinations today) but can be spread across multiple checkpoints and linked to monitoring systems to provide teachers and parents real-time and continuous feedback.

The emergence of EdTech players in India offers opportunities for investors and ecosystem players as well, provided they make the right choices

Strategically investing at an appropriate time while EdTech companies are growing can result in successes for both companies and their investors. The recent exit of investors from global and Indian EdTech companies demonstrate the potential of growth and returns in the sector.

An online learning platform was acquired by Par Syndicate (business angel network established by the venture capital (VC) firm Par Equity) in 2012. In five years, the platform paid a dividend delivering a pre-tax return of over 140%. In 2018, the platform was acquired by PE-backed MBO, delivering over a 75x[46] return (pre-tax basis) for Par Syndicate.

While most investments in India seem to be concentrated on select EdTech segments, identifying the next unicorn producing segments will be the key factor.

Ecosystem players across the technology stack stand a chance to benefit significantly too as EdTech eventually scales up and grows the ecosystems along with it.

46 https://www.parequity.com/news/news/ics-learn-delivers-75-x-investment-return-five-years-investors

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society, through advisory and consultative processes.

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