Chapter 12
Study of the Impact of Emerging Technologies Across the Value Chain Function of Educational Technology (EdTech) Firms

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ABSTRACT

Narrative technology has been a prominent feature in educational value creation. Rapid penetration of internet and better digital infrastructure resulted in adoption of emerging technologies in education sector. As business of EdTech platforms soared up, the purpose of this research was to understand the impact of emerging technologies like big data analytics, cloud-based technologies, blockchain, machine learning, artificial intelligence, augmented reality, and virtual reality on various stages of EdTech value chain. This involved content creation, content distribution, and learning plus management system. A secondary data base case study analysis was carried out of EdTech firms in India. The value factors such as cost, accessibility, ease of use, and updated content came out as main attributes impacting acceptance of EdTech platforms. The mentioned emerging technologies impacted the content creation, delivery, evaluation, and feedback stages which resulted in improved performance across these value factors with lesser associated total costs.

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INTRODUCTION

The introduction of computer-based technology into education could be dated back to as early as 1960s (Haran, 2015). In the past, educational system was only confined to simplistic classrooms with blackboards and quarterly tests to assess students' progress (Mortimore *et al.,* 1988). However, over the years the scenario had changed with the various technologies in the field of education (Bigum & Kenway, 2005). Rapid advancement in technology had provided teachers with the chance to become more collaborative and expand the learning to outside the classroom (Muttappallymyalil *et al.,* 2016). New age emerging technologies technologies such as cloud computing, augmented reality, artificial intelligence (AI), and gamification among others had contributed to make educational experience more engaging and comprehensive (Choudhary, 2020). The widespread availability of low-cost computers, high-capacity networks, and mobile devices had made education technology accessible and affordable across geographies (Dhawan, 2020). The educational institutes all over the world had to be physically closed due to COVID-19 pandemic (Nicola *et al.,* 2020). As a result, the educational ecosystem underwent digital transformations to continue teaching through digital online platforms (Esposito & Principi, 2020). There had been a rapid growth of Educational Technology (Edu Tech) firms prior to the reality of COVID-19, with investments in global EdTech exceeding US$18.66 billion in the 2019 (Li *et al.,* 2020). However, the events of COVID-19 accelerated the space of EduTech firms as most businesses had to be undertaken remotely (Bhattacharyya & Thakre, 2021). This was because of the substantial increase in educational technology users because of the COVID-19 pandemic had given a boost to the sector across the world (Adedoyin & Soykan, 2020).

Global education and training expenditure was expected grow to $ 7.3 trillion by 2025 (Holon IQ, 2021). This would impact the EdTech sector which would grow to $350 billion by 2025 (Li *et al.,* 2020). A staggering two billion more learners would look for attaining education. (Wittgenstein Centre, 2020). This would put a high pressure on the existing educational infrastructure. Digital spend globally on education and training was pegged at $227B that being mere 3.6% of the total expenditure (Holon IQ, 2020). The technologies which would drive the expenditure in global education included AR/VR, AI, robotics, and blockchain (Brothers, 2019). Technologies applied also needed to be humanistic (Bhattacharyya, 2020). Countries such as USA, China, and India were leading the charts in venture capital in EdTech sector in last decade (Holon IQ, 2021). In Indian context, the COVID-19 pandemic brought a golden era for EdTech start-ups (Kamath, 2021). Experts were of view that national education policy 2020 (NEP, 2020) would help EdTech business to grow exponentially (Banerjee, 2020). Market reports forecasted the sector to grow from $117 billion in year 2020 to $225 billion by year 2025 (PGA Labs and IVCA, 2020). Ventures such as Byju's, Unacademy, Vedantu among others were leading the country towards the era of digital learning (Prakash, 2020).

One must note that in the present-day context, technology had been playing a major role in imparting education at various levels (Schmid *et al., 2014*). This combined with the rapid growth forecasted in the EdTech sector made it imperative to understand the value chain (Porter, 1985) of technology based educational products and services offered by EdTech firms. The literature review undertaken by the authors had indicated that there was limited literature available that provided an integrated perspective regarding the deployment of various emerging technologies in the value chain of EdTech firms. The authors undertook this research with the aim to understand the value chain of EdTech sector firms in a holistic manner. The authors created a value chain-based perspective and understood how emerging technologies (like Big data analytics, Cloud-based technologies, block chain, machine learning, artificial