The impact of Edtech: strengths and opportunities

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Abstract.

The introduction of advanced digital technologies and digital transformation is fundamental for the economic growth and development of companies, states and society. Today, the traditional model of education is also undergoing changes as a result of the introduction of new digital technologies, digital methods and approaches to learning. The relevance of this study is due to the fact that digital transformation in the field of education is the most prominent example of qualitative transformation of life activities. The outcome of this digital transformation is the formation of a new sector of the digital economy called EdTech (Education Technology). The purpose of this study is to analyse the global EdTech market and to examine its strengths and development prospects. Research methods: theoretical approach, analysis, study of scientific literature, specification of conclusions, method of thinking, and visual interpretation of the results obtained. As part of this research, the authors have defined EdTech; examined the application of digital technologies in EdTech, and studied the impact of digital technologies on the development of EdTech. The authors also investigated the dynamics of venture capital investment in EdTech; researched EdTech leaders and identified key EdTech sectors.

1 Introduction

Digital technologies affect most production processes, and they are the basis for the economic growth and development of companies, states and society. Global digitalisation is a fundamental trend on which the competitiveness of states and companies depends. Studies show that the introduction of digital technologies leads to the transformation of existing business processes [13, 14] and promotes the adoption of new business models by companies [5].

The relevance of this study is conditioned by the fact that at present it is the digital transformation in the field of education that is the most noticeable example of qualitative transformation of life activities. Today, the familiar model of education is undergoing changes as a result of the introduction of new digital methods and approaches to learning. The basis of this transformation, resulting in the transition to digital learning, is the learners' expectations of technology, personalisation, and game-based learning.
The use of digital technologies in the educational process that contribute to the emergence of innovative pedagogical methods, new ways of presenting educational content and new communications in education is commonly defined as EdTech (Education Technology). EdTech is one of the most promising sectors of the economy because it is actively developing and its aim is to improve and optimise learning opportunities. EdTech aims to make the educational process more engaging, personalised and adapted for each learner.

2 Materials and methods

The study aims to analyse the global EdTech market and examine its strengths and future prospects. This study is based on analyses of the EdTech sector and research articles by scholars who study this topic. For example, various aspects of the introduction and use of EdTech are discussed in detail in scientific papers [1, 8, 9], which explore, among other things, the benefits of e-learning, the impact of digital technologies and teaching methods on the educational process. When writing the paper, the following research methods were used: theoretical approach, analysis, study of scientific literature, specification of conclusions, method of thinking and visual interpretation of the results obtained.

3 Results and discussion

The use of digital technologies in the educational process is commonly defined as EdTech. EdTech can also be defined as new digital devices for teaching and testing learners' knowledge.

Initially, EdTech was formed through the creation of informative websites and e-learning. In 2002, the first Open Educational Resources (OER) were created, followed by Learning Management Systems (LMS). In 2012, Massive Open Online Courses (MOOCs) became widespread. But EdTech got a major boost in 2020, when learners around the world were forced to switch to distance learning. It was the Covid-19 pandemic that led to institutions and learners turning to EdTech tools en masse. Thus, all EdTech related tools have seen a rapid evolution.

The main goal of EdTech is to optimise learning opportunities, to make the educational process more engaging, personalised and tailored to each learner. EdTech is one of the most promising sectors of the economy, as it is actively developing, primarily due to the use of digital technologies, which contribute to the emergence of innovative pedagogical methods, new ways of presenting educational content and new communications in education.

Currently, EdTech uses technologies such as, for example, adaptive learning and artificial intelligence to create personalised learning; virtual and augmented reality to get the opportunity to practice the studied material in a simulated environment; asynchronous learning, which promotes more engaged and mobile learning and allows for deeper data collection; gamification, which has a positive impact on motivation, engagement and learning efficiency.
Global digital spending is expected to reach 605 billion dollars in 2026, three times more than this 2021 figure.

According to forecast estimates, the application of artificial intelligence in education will show rapid growth every year, and by 2030, this figure will exceed 25 billion dollars. Contributing to this growth is the increased demand for learning analytics, which can make various predictions about the pace of learning, build a personalized learning algorithm, and help each learner in adaptation.

In addition, the dynamics of venture capital investment in the EdTech industry is also growing annually. For example, venture investments in EdTech in 2020 doubled compared to 2018 and totalled $16 billion; in 2021, venture investments in EdTech exceeded $20 billion. This figure is 40 times higher than the amount invested in 2010.
Studying the distribution of venture capital investment by world region, it is important to note that in 2020, 63% of all global venture capital investment in EdTech came from China. China is also the largest market for EdTech. Looking at other countries, the US accounted for 15% of global EdTech venture capital investment, India 14% and Europe 5%.

However, since 2021, the major players in education technology have already focused their investments in other markets. For example, EdTech investments in India have grown from $0.2 billion in 2016 to $3.8 billion in 2021. The Indian EdTech market is growing every year and is projected to reach $10.4 billion by 2025. In 2022, the figure is estimated at $2.8 billion, suggesting a projected growth rate of 3.7 times.

At the same time, venture capital investment in EdTech in the Chinese market has dropped sharply to $2.7 billion. The reason for this is the sweeping reforms announced by the Chinese authorities for the education technology and services sector. These reforms prohibit companies engaged in teaching school curriculum from making profits and also impose restrictions on their capital raising. The government's measures are designed to reduce the cost of tutoring, thereby creating a level playing field. Such developments raise concerns about the future of the EdTech sector in China, as evidenced by the almost four-fold drop in venture capital investment in that country in 2021, as well as the sharp decline in the capitalisation of Chinese companies (e.g. TAL Education Group, New Oriental Education & Technology Group and Gaotu Techedu Inc.). Despite this, Asia Pacific is the largest market in the education technology industry, with China and India being the leading markets in the region.
Traditionally, depending on the end user, the following segments of the EdTech industry have been identified: Pre-K, K-12, Post-Secondary, Corporate and Lifelong learning. The figure below shows how the share of venture capital investment was distributed across each of these sectors. As can be seen from the figure, the most promising EdTech sector at the moment is Pre-K and Corporate.

The global EdTech market is projected to reach $404 billion in 2025. This figure translates to a compound annual growth rate of 16.3% from 2019 to 2025. Also, experts estimate that the global EdTech industry will reach $410.2 billion in 2026 at a compound annual growth rate of 16.0%. The growth rate in this sector of the digital economy is comparable to that of developed industries.
The following indicator can also characterise the development of the EdTech industry: the number of companies called "unicorns", i.e., the number of private companies with a market valuation of more than $1 billion or more. The number has been increasing each year; the largest increase in the number of unicorn companies was seen after the Covid-19 pandemic. The largest number of unicorn companies are located in the United States, China and India.

Fig. 8. Number of new "unicorn" companies

The cumulative number of global EdTech unicorns is 30 companies with a combined value of over $89 billion. To date, the largest unicorns are located in India and the US, with India's ByJu ($22 billion) being the top EdTech unicorn.

Fig. 9. Number of new "unicorn" companies

It is also possible to trace the year in which these companies became "unicorns". This graph proves that the Covid-19 pandemic gave impetus to the development of companies that operate in this sector of the digital economy.

ByJu’s (India)
There are many players in the global EdTech market. The trend of mergers and acquisitions is a relevant characteristic of this sector, driven by the need to achieve economies of scale and increase efficiency. In addition, these deals are aimed at improving the content available on platforms, entering new markets, or to realise a vertical integration strategy. The graph below shows how M&A deals are increasing in this segment of the digital economy. The number of M&A deals in 2021 is double the number of M&A deals in 2020.

4 Conclusions

Thus, the objective of this study to analyse the global EdTech market and to study its strengths and development prospects has been achieved. The authors also conclude that through the use of digital technologies, various educational organisations (get the opportunity to rethink the entire learning process and increase their competitiveness). EdTech should not be seen as a threat to traditional learning, as digital technologies act as drivers for further development and improvement of the entire educational process. The main goal of the digital transformation that is taking place in education is the formation of new models of work for
educational institutions and organisations, as well as the maximum personalisation of the educational process, and the achievement of the best educational results through the use of digital technologies. The most important thing is the readiness of educational organisations and states to implement digital technologies and new learning models in the educational process.

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