

IMPACT OF COVID-19 ON BUSINESS MODEL INNOVATION AT EDTECH STARTUPS

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ABSTRACT

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Abstract <p>COVID-19 occurred at the end of 2019 and forced the world to change daily routines. Schools and offices were closed and needed to move to online mode, and parents stayed at home with children. Meanwhile, teachers faced difficult situations where they had to learn how to teach online and make sure that students stay focused. Educational technology (EdTech) aims to advance the learning results for students, foster individual approaches, and diminish teachers' burnout. Hence, EdTech (educational technology) startups ended up in an interesting situation because of the pandemic.</p> <p>The study aims to understand the impact of COVID-19 on business model innovation at EdTech startups. The business model is a relatively young concept, and researchers still cannot agree on one definition due to its complexity. Thus, the author asked EdTech startups how they describe it. The research questions for the study are the following. First, how did COVID-19 impact the EdTech industry? Second, what happened in BMI (business model innovation) due to COVID-19? The author did semi-structured interviews with 16 companies (two industry experts and 14 EdTech startups). The author analyzed data from the interviews with the thematic content analysis.</p> <p>The findings reveal that COVID-19 had both positive and negative impacts on EdTech startups. Due to the pandemic, there is no more need for EdTech startups to prove that educational technology is needed for schools. Second, teachers became more open to utilizing solutions in remote classrooms. Third, EdTech startups enhanced the user base and received valuable feedback from users – lastly, the industry experience rapid growth and interest from investors. As for negatives, potential and future sales discussions were put on hold or canceled. EdTech startups could not open new markets due to travel limitations. Overall, EdTech startups did not invent a new business model but rather innovated its elements.</p>	
Key words COVID-19, EdTech, Startups, Business Model, Business Model Innovation	
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1 INTRODUCTION

At the end of 2019, the world has faced the first outbreak of COVID-19 in China. A few months later, COVID-19 became a pandemic. As of November 2020, people still experience the effects of a pandemic on their everyday lives. Many countries placed lockdown in practice, where schools, universities, and companies were forced to move to remote work (Grech et al., 2020). According to UNESCO, 1,6 billion children needed to study from home. Undoubtedly, this tremendous change in our lives dramatically impacts the economy (Donthu & Gustafsson, 2020). Schools started to utilize online solutions to hold lessons online. Zoom, Google Meets, and Windows Teams have become the most popular programs for remote meetings. Students began to get information online, 59% participated in an online discussion, and 53% watched recorded videos (Becker et al., 2020). Facing the fact that schools move to remote education, EdTech (educational technology) startups took the COVID-19 crisis as an opportunity for business. EdTech industry grew by 15% in 2020 (Terrisse, 2020). It is an outstanding chance for educational technology ventures to increase their customer database or introduce the product to the market. In this paper, the author intends to study the impact of COVID-19 on the business model innovation at EdTech (educational technology) startups.

Humanity needs to learn more about EdTech startups due to the following reasons. First, in the light of Coronavirus, EdTech allowed continuing the teaching process. If people face some dramatic changes in the future, knowledge about EdTech will help to overcome uncertainty. Second, EdTech is still a new industry and interesting for investment opportunities. Learning more about EdTech startups could boost financials to the industry. If EdTech has a significant market value, it would have more players and facilitate competition. As a result, the educational sector will get accessible teaching tools. Moreover, the expansion of EdTech into schools would help people fight inequality and provide a tremendous change for children in poverty to change their lives.

Due to the novelty of COVID-19, the world has a request to comprehend how pandemics affected human lives. Researchers were urged to study the pandemic's impact from various perspectives; in 2020, scientific journals published special issues about COVID-19 and its influence in different areas. Regarding COVID-19 education, schools were forced to move to remote learning (Becker et al., 2020). Due to that, people must understand how educational technology may ease learning processes. Educational stakeholders should share their opinions on EdTech to ensure that developers create a valuable solution (Kaden, 2020). However, COVID-19 highlighted the need for discussion around equal education. During the pandemic, families with low income struggled to find laptops for their children. Moreover, children from rural areas do not have a reliable internet

connection and could not join online classes. Even though educational technology promotes equality, schools must ensure that students have access to the internet (Jacob et al., 2016).

The business model is a relatively young concept. Hence, all the work has been done in the 21st century and lacks theoretical development (Zott et al., 2011). Modern scholars show interest in researching firms that have various business models simultaneously. It is still unclear how BMD (business model diversification) corresponds to its accomplishments (Sohl et al., 2020). COVID-19 was a rapid and unexpected change. Hence, companies did not have much time to change their strategies and act on the spot. The level of the company's agility depends on many factors. For example, the area of operations and its size may affect the eagerness to shift dramatically. Therefore, there is a research gap on what agility and dynamic capabilities help companies to survive during a crisis (Seetharaman, 2020). As for the study's motivation, the author has a personal interest in the topic because of current employment at the EdTech startup (Sumo). The startup provides digital creative tools to boost creativity online. Sumo expressed the need to understand how COVID-19 influenced the business model in EdTech startups. Concerning the limitations of the study, these are the following. First, the author studies 14 EdTech startups at different stages (e.g., pre-seed and seed). Second, the study demonstrates how COVID-19 influenced business model innovation at EdTech startups. Thereby, the author focuses on business model definitions that are relevant for the EdTech industry.

1.1 Research questions

There are two research questions that the study aims to answer. First, how did COVID-19 impact the EdTech industry? To answer this question, the author examines the influence of the pandemic on the industry. It is crucial to define how EdTech adapted to changes due to COVID-19. To gain insight into the effect of COVID-19 on the EdTech industry, the author interviews xEDu and Education Alliance Finland. These companies help EdTech startups to enhance their strategy. By interviewing these companies, the author gets a deeper understanding of the industry and the expected trends, and how EdTech startups coped with the pandemic. The second question is what happened in business model innovation due to COVID-19 for EdTech startups. To respond to this question, the author interviews EdTech startup executives. It is worth mentioning that it is relevant for the study to look at the interviewees as a startup representation, not individuals. This scope allows comprehending how ventures dealt with COVID-19 and found differences and similarities in their approach. Hence, the research questions for the study are:

1. How did COVID-19 impact the EdTech industry?
 - a. How the worldwide sprint to remote education shaped EdTech?
2. What happened in BMI (business model innovation) due to COVID-19?
 - a. How EdTech startups' business model develop due to the sudden disruption in the market?

1.2 COVID-19

The study investigates the impact of COVID-19 on business model innovation at EdTech startups. Hence, the reader must know general information about COVID-19. Coronavirus (COVID-19) is a novel respiratory virus. It is a global pandemic that originated in Hubei province, China, at the end of 2019. Young people experience moderate illness, where senior people might face serious complications. Underlying medical conditions, such as chronic respiratory illness, diabetes, and compromised immune system, impact the virus's severity. Unfortunately, people with the mentioned chronic diseases may die from complications. As of January 2021, two million people have been killed, and 96 million people were diagnosed with COVID-19 worldwide, according to the official WHO (World Health Organization) statistics.

As a response to the virus, 85 countries and 42 U.S. states put mandatory social distancing into practice. Schools and companies transitioned to remote working modes, public gatherings were banned, and countries closed their borders. Compulsory isolation brought positive results in helping governments minimize the virus's spread (Qureshi, 2020). There is no doubt that COVID-19 changed the world tremendously, and many things became a new norm. For example, companies understood that there is no need for paying for big office spaces, and employees can fulfill their responsibilities from home. Online education showed its efficiency, and individuals figured out that they can do many things from their sofas' comfort.

Since the author examines the effect of COVID-19 on EdTech startups, it is vital to understand the change that Coronavirus did for education. Due to lockdowns, students participated in classes from home. Educators needed to shift to the online classroom mode. An efficient internet connection and student proactivity positively impact the learning process (Zheng et al., 2020). Regrettably, schools and teachers had a negative experience transitioning to an online environment for the following reasons. First, there were not enough resources that would support teachers in running online classrooms. Simply put, humanity has never needed to do a fast-online switch due to pandemics. It resulted that teachers and students did not know how to work with online tools. Moreover, there were not enough computers and laptops to have classes virtually. Second, internet connection is not convenient in all countries. Consequently, students did not have equal rights to education (Jæger & Blaabæk, 2020). Lastly, communication

between students and teachers worsened during social distancing. Individuals who experience study problems find themselves fragile, where online learning only deepens their educational progress. Moreover, it is difficult for students to concentrate in an online class when they can refocus on chatting with friends or watching videos instead of listening to the teacher (Oyedotun, 2020).

1.3 EdTech startups and business model

The main goal of the EdTech (educational technology) startups aim is to create solutions that facilitate the online learning environment in an engaging way (Kiran et al., 2020). EdTech startups want to give students equal learning opportunities and help educators apply technology in the class. Since COVID-19 forced online modes of communication to become popular, EdTech businesses found themselves in the right spot, where they had an outstanding opportunity to introduce the product to the market when there is a need, test it on a broad audience, and get customers' feedback. For this study, the author finds it necessary to define a business model in the context of EdTech startups. The business model does not have a straightforward definition, and people understand it in different ways. The simplest explanation of what a business model belongs to Michael Lewis (1999), that states in his book "The New, New Thing," "business model means how you planned to make money." EdTech businesses tend to change and add features to their product to match the customers' needs. It is a common trait for the EdTech business model (Kiran et al., 2020).

1.4 Structure of the study

The research has five main chapters. The first chapter is the introduction that explains the background of the study that includes the research gap, the author's motivation, and limitations. Following the study background, the author presents the research questions and sub-questions. Lastly, she describes the context for the study and its structure. The second chapter is the theoretical framework. The main goal of this chapter is to define the main concepts of the research. For this purpose, the author presents the literature review that includes previous findings on the topic. The chapter consists of three main parts. The first sub-chapter describes the business model and EdTech startups. The second sub-chapter explains business model innovation. Lastly, the author summarizes the theoretical framework.

In the third chapter, the author presents data and research methods. The chapter illustrates the qualitative approach, data collection criteria, data analysis, validity, and reliability. Moreover, she describes the case companies that were

interviewed for this study. The fourth chapter is findings. It summarizes the results from the interviews. The chapter goes deep into explaining data gathered from case companies. The last chapter is the conclusions for the study. In this chapter, the author presents theoretical and managerial implications, limitations and suggests areas for future research.

2 IMPACT OF CORONAVIRUS ON BUSINESS MODEL INNOVATION OF EDTECH STARTUPS

In this chapter, the author collects information on what we know about the topic by presenting the previous research and primary sources. The author defines business models and types. Furthermore, the chapter opens up EdTech startups' definition, their importance, discusses business models at EdTech startups, and why we need to know more about them. Additionally, the author presents business model innovation (BMI) and demonstrates the market disruptions that shaped it. After that, she tells how COVID-19 impacted business model innovation at EdTech startups. Lastly, there is a summary of the theoretical framework presented as a figure at the end of the chapter.

2.1 Business model

2.1.1 Defining business model

The business model is a relatively young concept. The researchers still cannot agree on a standard definition that would describe the business model (Amit & Zott, 2001; Ghaziani & Ventresca, 2005; Kiran et al., 2020). The business model's primary purpose is to help the company comprehend, describe, and predict how processes run (Osterwalder, 2004). The first description of business model happened in 1998 when it was explained as "an architecture of the product, service and information flow, including a description of various business actors and their roles; a description of the potential benefits for the various business actors; a description of the source of revenues" (Timmers, 1998).

Another definition of a business model is a translation of the logic, data, and other aspects that help a firm deliver the value proposition to the target audience. The business model also includes explanations of the firm's revenue streams and costs of the product (Teece, 2018). It is worth mentioning that the business model is not marketing or revenue streams alone. The business model is a holistic concept that unites all processes that a company does to satisfy its customers and gain values (Johnson, 2012). Business models also help firms to navigate through uncertainty. A good business model allows entrepreneurs to keep the focus on what matters. It is tremendously crucial for startups that frequently face changes and adapt fast to stay on the market (Autio et al., 2018). Since this study is around EdTech startups, it is vital to describe how the business model helps digital entrepreneurs deliver value.

First and foremost, the business model allows digital entrepreneurs to do sense-making and specification cycles for new opportunities. In other words, the business model helps startups to stay focused. Sense-making includes defining a new opportunity, creating the first minimum viable product (MVP), task prioritizing, and concretization. The specification cycle consists of valuating the unique chance, design experiments to test the idea, compare the concept to other products present on the market, and get feedback from testing the effect on the first customers. The business model lets digital entrepreneurs get direct rules and focus on the development rather than chasing every opportunity chaotically (Ghezzi, 2020).

Second, the business model allows technological startups to have a strategic focus on scarcity and personalization. Technological startups use the following ways to make customers purchase the product or service as soon as possible. First, they offer limited time for customers to buy their tools at a discount. For example, a startup X can offer a 50% discount if a person becomes a customer for 3 hours. Second, tech startups may push users to buy additional solutions with value. As for personalization, IT startups want to build personal connections with their users to ensure that they stay loyal for as long as possible and become advocates for their company. Also, personalized offers and other transactions help IT startups strengthen communication with the users (Koch, 2015). Overall, a business model helps any company improve its business performance, whether it is a startup or a corporation (Groesser & Jovy, 2016).

Lean business model Canvas

The lean business model aims to provide the business with a strategy where customers' needs and requirements are at the core (Balocco et al., 2018). The lean business model targets to get rid of unnecessary actions in the business process. The lean business model's primary purpose is to provide customers with what they need and want (Ghezzi, 2020). The lean business model Canvas is an excellent tool for entrepreneurs to eliminate garbage in their processes. The template provides a cohesive and actionable business plan. The most common template that companies use to understand their business model is Business Model Canvas. The author of Business Model Canvas is Alexander Osterwalder. He created the template in 2008 based on his earlier research experience (Frick & Ali, 2013). Business Model Canvas has nine blocks that illustrate crucial aspects for the company.

Internet expansion started a new era for doing business. Nowadays, it is possible to run a business online. Hence, companies needed to change their strategy to stay competitive. For that purpose, they needed, for example, to do e-commerce, have online marketing efforts, and make sure that their customers can reach out to them via social media channels or chatbots. Thus, the e-business model is a cohesive context that also includes new revenue streams, costs, marketing, and online strategy. In other words, the e-business model corresponds to how a venture does business online (Zott et al., 2011). Moreover, the e-business model reflects its communication with customers and suppliers (Brynjolfsson et al., 1998). In this study, the author looks at EdTech startups. It is given that educational technology happened during the Internet era. Hence, the framework for the e-business model is the main one for this research.

2.1.2 Types of e-business models

Due to the technological revolution and telecommunication becoming a popular source of interacting, business models evolved into e-business models (Magretta, 2002). The e-business model helps firms operate online to deliver value to their customers (Guo et al., 2017). Since EdTech startups work online, the concept of e-business models is relevant for the study's context. Figure 2 illustrates e-business models. E-business models have several types, and all of them require an Internet connection for doing business. E-business models are e-shops, e-procurement, e-auction, e-mall, the third-party marketplace, virtual communities, value chain service providers and integrators, collaborative platforms, and information brokers (Timmers, 1998). E-shops make it possible to purchase goods online and get delivery to the doorstep. Large enterprises use e-procurement to hold tendering and get better access to the potential stakeholders.

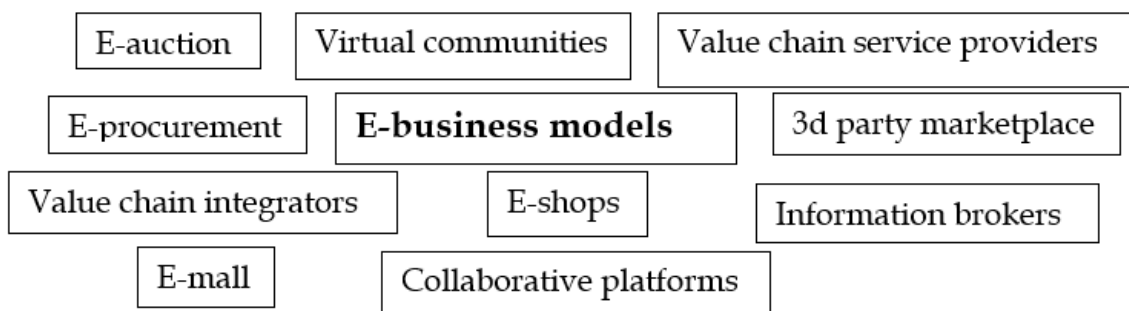


Figure 2. E-business models (Timmers, 1998).

E-auction is an online version of a traditional auction. The primary advantage of it is that participants can join from different parts of the globe, and facilitators can sell the goods for a fair price. E-mall is an online mall where other stores place their interests. For example, ASOS and Zalando are e-malls. The third

marketplace is appealing for ventures that do not want to deal with digital things and prefer to outsource a company that would manage their operations online.

Virtual community unites people who like the same company and products. Virtual communities save money for the company in marketing efforts because community members become loyal company advocates on their social media platforms. Value chain service providers are stakeholders that help a business to do their business online and provide additional value to the customers. For example, it could be a website's hosting company. Value chain integrators combine stakeholders from the service providers to create data transition and enhance value delivery. Collaboration platforms help businesses to improve a specific area in their operations. For instance, it could be an online solution for developing internal communication at the company available by subscription. Information brokers and trust services help companies to make sense out of gathered information. A good example of trust services is an American company HelloSign that allows users to sign legally binding documents online.

Regarding modern concepts, IoT (the Internet of Things) and mobile applications are the most widespread ways for e-companies to reach their customers. The Internet of Things (IoT) stands for efficient communication among people via mobile devices through Internet (Khalil et al., 2021). For example, the smartphone is the top device that is used for online communication. Mobile applications make it easier to share data and access various tools depending on the task just by using a machine. For instance, mobile applications could be used to play, create a route to work, calculate the number of steps per day, or pay bills via online banking. IoT and mobile applications are a powerful combination in changing the world.

Because IoT became a norm in our lives, companies take it as an opportunity to create e-products and increase revenue. Banks improve online services and make sure that customers can make transactions from their mobile application. Grocery stores develop food delivery services so that customers could save time on traveling to the physical store and get what they need via mobile app. Overall, companies do their best to provide additional value to their customers via online solutions. Moreover, many firms operate entirely online and offer technical services to their customers. SaaS companies (Software as a Service) are new firms that utilize the SaaS business model to provide technological tools to customers at a price.

2.1.3 EdTech startups definitions

To understand the meaning of EdTech startups, the author finds it essential to understand each term separately. There are two terms in EdTech startups that the author defines. The first definition is EdTech (educational technology). The second one is a startup. EdTech stands for educational technology that helps educators and students to make the learning process more engaging and enhance learning outcomes. Students and teachers both welcome technology use in the classroom (Ruggiero & Mong, 2015). Teaching is a dynamic process that should

adapt to significant changes to prepare competent professionals for the labor market. The technological revolution and the Internet era made computers accessible for everyone. The educational industry is not an exception. EdTech companies revolutionized the industry (Kiran et al., 2020). EdTech is the usage of technology in the classroom. Even though EdTech solutions facilitate a better learning environment by improving students' focus and engagement, the lack of resources and availability of technological products in public schools negatively influence the utilization of EdTech (Santos, 2021).

Scholars find it difficult to describe the definition for startups due to the various context that the term is used. Nowadays, people consider startups as an alternative to old-school firms, where a group of individuals shares the same idea and can work in own pace (McRobbie, 2002). Moreover, the working style of startups is different from traditional companies. It is low-hierarchy; employees make decisions collectively and fast (Cockayne, 2016). As for the scientific concept, the researchers define startups in the following ways. First, the startup is an early-stage firm that has limited experience, time, and resources. Moreover, the startup faces pressure from investors and other stakeholders interested in the idea (Crowne, 2002). Second, startups are young organizations that seek scalable, repeatable, and profitable business models (Blank & Dorf, 2020). Based on EdTech and startups' above definitions, an EdTech startup is a small venture that works in a constantly changing environment and creates educational technology. EdTech startups are oriented towards educational institutions (Ruggiero & Mong, 2015). Their target audience is teachers, students, and other professionals involved in the learning process. EdTech startups operate entirely online and look for new ways to improve teaching.

2.1.4 EdTech startups and their importance

History of EdTech

Educational Technology (EdTech) has roots where the first humans started to paint on walls and explain their peers. In the 1920s, S. L. Pressey created a motorized schooling machine that aimed to help teachers in the classroom to assess, grade students, and replace the teacher (Surma & Kirschner, 2020). Figure 3 demonstrates the first educational technology for schools.

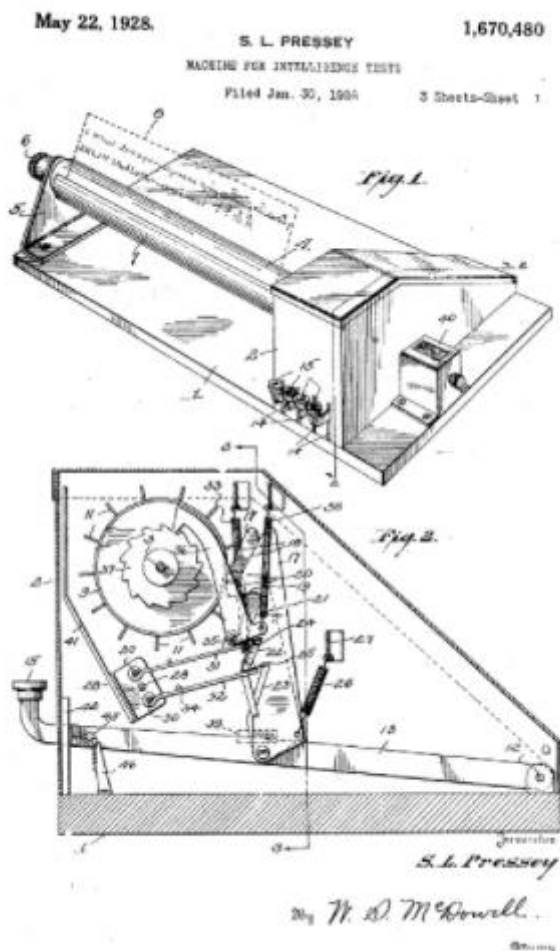


Figure 3. S.L. Pressey Teaching Machine (Watters, 2015)

S. L. Pressey presented the demo of the teaching machine at the American Psychological Association Meeting in 1926. He received a patent in 1928 (Watters, 2015). In 1954 B.F. Skinner experimented with the schooling machines and developed Skinner's teaching machines that demonstrated visual materials to students and assisted them in the learning process (Skinner, 1954). Figure 4 presents the improved version of the teaching machine.

There is no doubt that B.F. Skinner contributed to educational technology by improving the existing teaching machines. Moreover, B.F. Skinner is famous for his influence on behaviorism. He considered that all human actions are the outcomes of acclimatizing (Malone, 1975). In the 1980s, people decided to simulate the teaching process with artificial intelligence (AI). Initially, they started with teaching primary mathematics. This experience was not successful due to several reasons. First, it was challenging for the machines to predict the learning pace of each student. Second, engines could not calculate when students will pass or fail the tests (Bates, 2014). Nowadays, EdTech targets to provide students and educators with adaptive learning that suits various needs. Technological revolution and internet expansion tremendously made EdTech companies come up with innovative ways for learning environments. Modern classrooms utilize

computers, tablets, educational software, and online communities to educate, evaluate, and share the outcomes.

June 13, 1961

B. F. SKINNER

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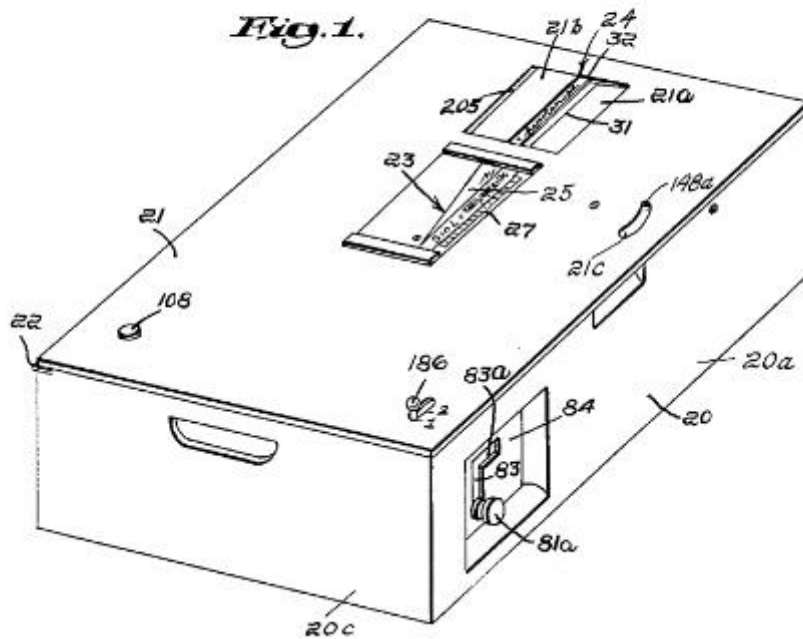


Figure 4. B.F. Skinner's Teaching Machine (Watters, 2015)

Educational Technology (EdTech) currently helps students and teachers ease the learning process with technological advancements. It is a big challenge for educators to make students stay focused for an extended period (Kiran et al., 2020). There is clear evidence that EdTech facilitates better learning opportunities for students. For instance, EdTech is efficient in early mathematics education (Verbruggen et al., 2021). The study shows that students experience better concentration and understanding of mathematics with EdTech and a teacher. It is also important to highlight that a teacher's role is vital since students need support in the learning process (Verbruggen et al., 2021).

Market leaders and competition

The EdTech industry grows fast. This year (November 2020), it has already increased by 15% (Terrisse, 2020). Since it is a booming industry, many entrepreneurs see EdTech as an excellent opportunity for their venture. Based on that, EdTech has an enormous number of startups. According to AngelList, the

world's largest startup community, the EdTech industry consists of 1930 startups and offers 1129 jobs. The EdTech market leaders are VIPkid, 17zuoye, Byju's, Yuanfudao, Udemy, Age of Learning, iTutor Group, Udacity, Coursera, and HuJiang. These companies managed to make the best out of the COVID-19 crisis and increase their revenue (Lynch, 2020).

Table 1 presents the top ten EdTech companies in the world. The vast majority locates in China. Since China is the most powerful educational system globally, it could be why Chinese EdTech companies are booming in the COVID-19 time. China has 260 million students and more than 15 million teachers (OECD, 2014). Chinese value education positively and want children to thrive in the future. That is why with the COVID-19 crisis, online platforms for tutoring and online teaching boomed there. Students face challenging college entrance exams, and it also adds to why Chinese EdTech companies are thriving. Chinese VCs spent \$49 billion in 2019 on EdTech, and the industry has more significant investments than, for example, in the US (Fannin, 2020).

Table 1. 10 Top EdTech Companies (Lynch, 2020).

Company	Estimated Valuation	About	Founded	Location
VIPkid	\$1.5 billion	Connects Chinese students and English native teachers remotely.	2013	Beijing
17zuoye	\$1 billion	Online learning platform for K-12 students	2011	Shanghai
Byju's	\$8 billion	Personalized learning for K-12 students	2011	Bangalore
Yuanfudao	\$1 billion	Live courses and tutoring	2012	Beijing
Udemy	\$2 billion	Learning platform for students, teachers, companies, and governments to gain new skills	2009	San Francisco, the US
Age of Learning	\$1 billion	Online curriculums form pre-K students	2007	Glendale, the US
iTutor Group	\$1 billion	Personalized learning online	1998	Taipei

Udacity	\$1 billion	Online lessons in AI, machine learning, and robotics	2011	Mountain View, the US
Coursera	\$1 billion	Lectures from universities online	2012	Mountain View, the US
Hujiang	\$1 billion	Platform for professionals	2001	Shanghai, China

Competition in the EdTech industry is fierce. Currently, there are 15 000 EdTech companies worldwide. There are estimates that \$50B invested in these companies to make them thrive (Waxman, 2019). These businesses operate in the following areas. First and foremost, EdTech companies create learning content to help educators to do curricula online and have around \$4.5B. Second, managing institutional activity. This category allows educators and students to organize the educational process. EdTech companies that work on developing tools to organize institutional activity attract around \$7B. The third category of EdTech companies allows students to find new study opportunities by enrolling in online courses or joining a program overseas.

These types of EdTech companies draw \$7.5B. Fourth, EdTech companies facilitate better learning opportunities by providing students with new learning platforms. They have \$4.3B in funding. The next category helps educators to make K-12 education more innovative by improving online interaction and creating platforms for efficient communication with students. These companies reach \$3.1B funding. The last category is career development platforms with \$7B in investments (Waxman, 2019). EdTech as an industry is highly interested in potential investors. Since that, EdTech companies need to constantly think about the added value they provide to the users and how they can change their business model to face competition.

Importance of EdTech

EdTech startups focus on making education more accessible and fun for educators and students. These ventures serve learners in different age groups, ranging from kindergartens to university-level students (Chen et al., 2020). EdTech makes it possible for educational organizations to continue the learning process remotely. Moreover, with the intelligent use of EdTech solutions, teachers can have an individual approach to the students. Additionally, EdTech allows the student to understand technology better from the early stages and in the future be a competent professional that has the necessary knowledge for a chosen career. EdTech startups successfully address the common trends in education. The most popular educational concept is STEM (Science, Technology, Engineering, and Mathematics) (Honey et al., 2014). Due to the rapid technological growth

globally, education also experienced broad penetration of technology (Hu et al., 2020).

2.1.5 EdTech startups and business model

Since EdTech companies operate online and are highly dependent on technology, the business model definition for this context is the e-business model. The e-business model helps firms work online to deliver value to their customers (Guo et al., 2017). EdTech startups have features of other startups (e.g., seek for scalability and repeatable profitability). The difference for EdTech is to focus on educational organizations. EdTech startups operate online due to technological usage and dependence on the Internet; EdTech startups use SaaS, freemium, and bundling business models.

SaaS (Software as a Service)

SaaS (Software as a Service) is a software delivery and licensing model available for users by subscription (Saltan & Smolander, 2021). SaaS is a popular style for doing business for IT companies due to the following reasons. First, SaaS allows cost reduction vital for startups who have not found scalable and repeatable models yet. Second, SaaS facilitates constant innovation, where users get direct access to the latest improvements that the startup has made. SaaS is appropriate both for small and large enterprises. The main benefit of SaaS is that customers or companies pay only for what they require. Regarding the company's benefit, the SaaS model allows them to update the products, keep prices at low prices, and provide users with what they need. Concerning disadvantages, the SaaS business model has the following. First and foremost, SaaS businesses store customer's data online (Rostami et al., 2014). Hence, security is a big issue. Clients who prioritize security might prefer another solution over SaaS. Second, companies that use SaaS ventures find it challenging to align with governmental regulations (Aung, 2014). Third, if customers experience disruptions in Internet connection, it is challenging for them to use products by SaaS businesses (Abdalla & Varol, 2019). Overall, SaaS offers startups operational and innovational benefits (Loukis, 2019). Effective SaaS structure, in the end, creates a success story. For example, Netflix offers subscriptions to its service, where people can watch movies, series, T.V. shows legally at an affordable price. SaaS includes freemium and bundle business models.

Freemium business model

Freemium business model is the most popular business model for online companies. The word "Freemium" comes from "Free" and "Premium." It means that users receive some product features for free and require to pay more for additional features (Sato, 2019). A great example of freemium models in video

games, where users can download the game for free and need to make in-app purchases to update the character (Hamari et al., 2020). It is worth mentioning that App Store revenue gets 95% from freemium applications. The Freemium model is the most successful one during our time (C. Anderson, 2010).

The logic behind the freemium business model is based on value delivery. For companies that utilize this model, there are two types of customers: non-paying and paying users. The non-paying users receive a limited value proposition from the product. They can grasp the tool, whereas paying users to get value proposition delivered entirely (Dooley, 2015). It is possible both ways for the non-paying user to become a premium one. Companies aim to have as many paying users as possible. For this purpose, they market their product in various channels and offer discounts to activate the user base. At first, it may seem that free users do not bring any value to the company. It is a false statement. Free users are also active users. Meaning, the larger the number of active users, the more prominent company's valuation. A company's valuation is an excellent metric for potential investors to assess its financial risks and probability of succeeding (Holm & Günzel, 2017).

To sum up, the freemium business model is essential for IT companies for several reasons. First, free users create an extensive user base that helps the company attract investments and be popular on the market. Second, the company gets a chance to check new product updates on the free users and make sure that premium ones receive the best solution. Third, the freemium model allows attracting many users in a short time. During the COVID-19 crisis, EdTech startups offered a free subscription for their services. As a result, educators had a great opportunity to test out innovative tools for their classrooms. The main challenge for EdTech companies now is to transition schools from free to premium users. Since schools do not have big budgets, they hop on and hop off from one solution to another. It is a challenging time for EdTech companies.

Bundling business model

It may seem that bundling is a new concept, but the researchers defined bundling in the 20th century. Bundling allows a company to enable a seller to obtain value from offered goods by permitting price discrimination (Schmalensee, 1984). With Internet exposure, the bundling business model became an element for SaaS pricing policy, incorporating customer co-creation by providing bundle deals (selling multiple products simultaneously) (Randhawa et al., 2020). The bundling business model's main idea is to provide a set of products at a lower price than if a customer would purchase them separately. The Internet has affected bundling in various ways. First, users interact online and share opinions about products. Second, fast search engines help potential customers to find what they want in seconds. Third, the Internet provides a rich choice of goods. It is more challenging for companies to compete than ever before. Great bundling deals facilitate growth in sales and customer database (Bakos & Brynjolfsson, 2000).

Successful examples of bundling business models are the following. First, McDonald's offers Happy Meals for children. Parents can choose dishes for Happy Meal and buy a toy from McDonald's seasonal collection. Second, Xbox, a videogame console, has pre-installed games. It helps users to enjoy Xbox right away and find new favorite games. Overall, a bundling business model is a valuable strategy for companies with more than one product to offer for the market. It is essential to have quality goods or services in a bundle. The bundle price should be lower than if a customer would purchase the products individually.

The business model for an EdTech startup

EdTech startups build their business models around educators, students, and parents. They need to make sure that the solution serves the primary purpose of EdTech to provide a technological solution that would help ease the learning process and make students engaged and focused. Since it is crucial for EdTech startups to meet all user groups' needs, they use the following business models based on the SaaS, Freemium, and Bundling business models (Arora, 2021). Figure 5 demonstrates the business models for EdTech startups.

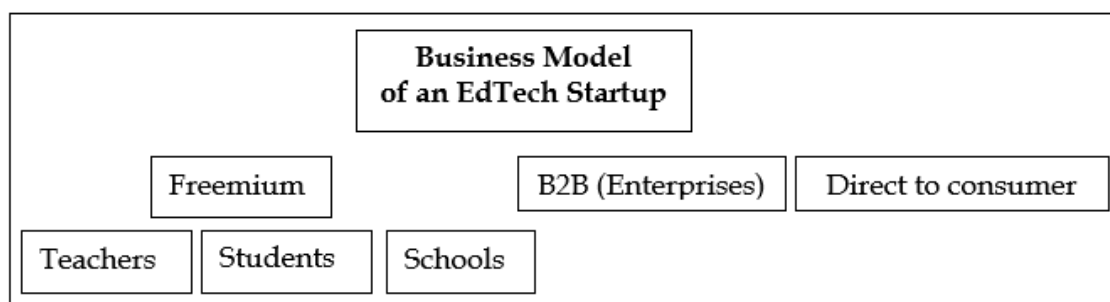


Figure 5. Business Models for an EdTech Startup (Arora, 2021).

The first business model is Freemium for teachers. EdTech startups use it to attract teachers to use their classroom tools by providing free access to teachers. The second one is Freemium for students. The business model allows students to use the Free and requires payment after a trial period or additional functions. For example, LinguaLeo, a language learning platform, is available for students at no cost with limited functionality. If a student wants to have access to additional features, they should pay for the Premium access. The third business model that EdTech startups choose is Freemium for schools. For example, EdTech startups may offer their tool for free to schools in suburban areas or countries that suffered from natural disasters. Usually, it creates a great story that the venture may use in marketing and attract a loyal audience. Forth, EdTech startups sell their solution to enterprises. It is a financially effective business model because companies are wealthier than schools. For instance, TakeLessons, the US EdTech startup, offers students from schools, governments, corporations, and the military to find

professional tutors to improve skills. The last business model is direct to consumer. In this case, the consumer is the parents. EdTech startups, by providing free tools for schools and students, also reach parents because they are the vital stakeholders for EdTech startups.

2.2 Business model innovation

2.2.1 Defining business model innovation

Researchers define business model innovation (BMI) in multiple ways. First, business model innovation takes place when 1) a company adapts new activities that have not been done before, 2) a company innovatively connects these actions, 3) a company adjusts the participants that do the story (Zott et al., 2011). Second, business model innovation is a novel way to create and deliver value to customers. It is a synergy of new and old aspects that may involve a product, value delivery, and other characteristics (Björkdahl & Holmén, 2013).

Business model innovation (BMI) is crucial for companies in the current world. The ample evidence of business model importance is McDonald's, fast food restaurants, that changed the dining industry once and forever in the 1950s. The company managed to create an innovative approach for feeding people (Beqiri, 2014). Globalization, better access to education, and open borders force entrepreneurs to develop creative ideas to stay competitive in the market (Loon et al., 2020). The modern world pushes companies to create new approaches and look outside of the box to find opportunities (Hamel & Breen, 2007). Due to technological expansion, companies should concentrate on competitive advantages rather than create a new product (Beqiri, 2014). As a result, customers have a variety of options. For example, DriveNow is a pioneer in providing accessible transportation for people to hire. Currently, Bolt, Grab, and Enuu are the main competitors for the company. To stay on top of the competition, DriveNow needs to work on business model innovation continuously.

The factors that influence BMI are following. First, changes in the workforce. Nowadays, people tend to switch to freelance jobs because it allows them to control time and be independent. Thereby, companies have access to potential employees from the whole globe and have a chance to choose the one that is the best fit (De Stefano, 2016). Businesses need to stay attractive for job seekers, and it influences business model innovation. Second, founders also impact business model innovation gratefully. The constant search for new business opportunities, decision-making styles, system thinking, and market search helps founders innovate. The research shows that in companies with high business model innovation, founders seek business insights from other industries (Snihur & Zott, 2020). Consequently, they could create a solution that combines multiple segments. As for external factors, market disruptions influence business model innovation. The

sub-chapter below discusses how the world economic crisis in 2008 and the Russian Financial Crisis in 2014 and COVID-19 affected business model innovation.

2.2.2 Market disruptions and BMI

As discussed in the above chapter, business model innovation (BMI) occurs when the market experiences significant shocks. COVID-19 is not the first and not the last surprise that shaped the global economy. Even though COVID-19 is a novel virus and people did not face similar modern history restrictions, businesses have an unprecedented chance to utilize knowledge from the past market disruptions and other industries in venture activities. However, COVID-19 is a favorable market change for the EdTech industry because the target audience (e.g., teachers and students) needed to switch to online learning. In this sub-chapter, the author looks at the global financial crisis (2008) on macro and micro levels. Additionally, she tells how the Russian Financial Crisis (2014) influenced the Russian startup ecosystem.

Negative market disruptions and BMI

Financial crisis 2008

The financial crisis of 2008 is also widely known as the global financial crisis (GFC), happened in the U.S. with massive risk-taking by banks and harming financial institutions all over the world. The GFC's climax was the bankruptcy of Lehman Brothers Holdings Inc., a global financial services company established in 1947 (Acharya et al., 2009). In 2008 Lehman Brothers Inc. had over 25,000 employees worldwide, and its bankruptcy was the largest, with \$639 billion in assets and \$613 billion in debt due to the mortgage bubble crash (Beccar-Varela et al., 2017). There is no doubt that the global financial crisis affected companies tremendously. The most severe impact was bankruptcy. Financial companies suffered the most from the global financial crisis. Other industries were not an exception. For example, General Motors, a US-based multinational vehicle corporation, filed for bankruptcy. The U.S. government saved the company from getting out of business, and Treasury Department owns a 32% stake (Goolsbee & Krueger, 2015).

To understand the impact of the global financial crisis (GFC) on business model innovation (BMI), looking at the housing companies is beneficial. The Taiwanese housing industry experienced a substantial depressing influence on housing prices. The reason for that was that only affluent customers could afford to buy housing, and due to the GFC, their finances decreased (Kang & Liu, 2014). Consequently, the Taiwanese government lowered interest rates for accommodation and calmed the stock market. Local real estate companies started to focus on delivering additional value to customers by launching user-friendly websites where people could find affordable housing. Taiwanese real estate companies

began to focus more on people with average income. For example, HouseFun is a Taiwanese website that allows people to find a new home online. The company was founded in 2009, right after the global financial crisis.

It is worth mentioning that the global financial crisis (GFC) has negatively influenced investments in Europe (Archibugi et al., 2013). Investors were not willing to put their money into companies that offered innovative products. Due to the GFC, companies had a hard time finding external funding. Thereby, companies needed to finance their ideas internally and change the business model to attract new customers and ensure investments. Global Financial Crisis (GFC) influenced startups in the following ways. First, startups needed to shift marketing objectives to address customer needs. GFC made startups change pricing strategy and offer affordable products to the customers rather than invest in quality products at a high cost. Furthermore, startups adopted a marketing mix to reach out to potential customers and maintain relations with the existing ones (Anghel et al., 2013). Second, proactivity at startups positively influences overall business performance because of these reasons. Proactivity helps startups improve creativity and find room for innovative solutions and cut costs with new approaches in times of financial crisis (Meutia et al., 2018). Third, startups are more likely to survive during the situation than at the growth stage. Since startups tend to think out of the box, GFC forced them to identify new opportunities to stay on the market and cope with difficult times. As a result, startups find themselves in a more comfortable situation when a crisis happens (Virginia et al., 2016). Fourth, GFC startups dropped their investments substantially. Investments rely more on external rather than internal assets. Nevertheless, during and after the global financial crisis (2008), borrowing money from banks was crucial for startups (Zubair et al., 2020). To sum up, the global financial crisis shaped the startup ecosystem considerably. Startups that adapt fast and have a proactive team more likely to find new opportunities during an emergency. New ventures must use various channels to translate their message to the potential audience.

Russian Financial Crisis 2014

Another market disruption that changed the startup ecosystem in Russia and CIS (Commonwealth of Independent States) happened in 2014. Russian Financial Crisis, also known as Russian Ruble Depreciation, took place at the end of 2014 (Rodionov, 2015). The main reason for this unfortunate event was declining oil and gas export due to the political landscape caused partially by Crimea becoming a part of Russia (Van de Graaf & Colgan, 2017). Consequently, prices for foreign products and services skyrocketed for Russians. Companies could not afford to purchase from overseas. Due to the Ukrainian crisis, Russia faced sanctions from the European Union and the USA. The primary point for these sanctions was to show Russia that the Western world disagrees with Crimea not being a part of Ukraine anymore. As a response, the Russian government-enforced sanctions on Western companies and officials (Bagheri & Akbarpour, 2016).

Thereby, businesses lost international stakeholders, and customers could not buy exported goods at the store.

Regardless of the overall negative impact of sanctions, Russian companies found themselves in an exciting situation. First, weak Ruble made price advantages for Russian companies. Second, Russian businesses got a great chance to market "Made in Russia" and get new customers because of political context and propaganda. Third, the government addressed its interest to companies to exchange Western products for domestic goods. To manage the new environment, Russian companies needed to apply business model innovation (BMI). For instance, Stalogistic, Moscow-based, international logistics company did BMI in the following ways. First, the company understood the value of purchasing and calculating currency in advance. Stalogistic was forced to learn how to hedge. Due to Ruble depreciation, Stalogistic lost millions of dollars. Second, Stalogistic asked their clients to pay in the local currency to avoid future financial risks. Thereby, the company became more popular with Russian companies because of the new pricing policy (Evmenenko, 2020).

Overall, sanctions harmed Russian's economy for several reasons. First, the country is no longer attractive to foreign investments. In other words, banks have lower access to international money. It is challenging for businesses to attract investments and get loans. Second, Russia faces central capital outflow as of political instability. Third, the fall in oil prices leads to lower GDP (Gurvich & Prilepskiy, 2015). Concerning the impact of the crisis on the micro-level, the Russian startup ecosystem experienced several effects. First, foreign investors do not want to give local startups money due to high risks and unstable political situations. The main issue for foreign investors is Russian currency depreciation (Urbanovsky, 2015). Second, Russian firms tend to use aggressive strategies during crisis times. In other words, they want to improve the productivity level of ideas and investments. This proactive approach and businesses that follow the concept tend to value innovation and focus on introducing new products and revolutionizing the current ones. The aggressive strategy's primary goal is to provide customers with additional value at the time of crisis and maintain strong relationships with them after the turbulent time (Anokhin et al., 2021).

Third, startups that operate in fintech and agricultural industries will grow regardless of the political climate and foreign investments. Russian government strongly supports the idea of replacing overseas products with local ones. Hence, the government invests money into companies that operate in Russia. Moreover, AI (Artificial Intelligence) is an exciting sector for Russia since it wants to be competitive in the international landscape in terms of technology. Overall, Russian startups experience ups and downs after the Russian financial crisis in 2014. Due to a lack of foreign investments and challenging political situations, many startup founders and people who work in the industry move abroad for stability. Hence, startups that can find an opportunity to thrive are willing to cooperate with the Russian government and get investments from corporations.

Positive market disruption and BMI

COVID-19

It is vital to comprehend how the global pandemic influenced education to understand its impact on EdTech startups. At the very beginning of COVID-19 in 2020, humanity did not have enough information. After the virus spread worldwide and WHO (World Health Organization) claimed that COVID-19 is a pandemic, governments started to put lockdowns into place to minimize the risks of spread and help health systems. One of the methods to prevent the spreading was to move students to the remote mode of studies. As a result of such rapid change, school leadership started to incorporate a technological solution to help students and teachers to cope with COVID-19. It is evident that the world of education has changed, and old practices will no longer be applicable. Teachers and school leadership will become more technologically advanced in the future. COVID-19 demonstrated the need to be a risk manager who can apply change management practices during the school leadership pandemic. The main goal for school leadership is to have students at the core and utilize agile methods to address potential challenges (Harris & Jones, 2020).

EdTech companies gained an outstanding opportunity to introduce their tools to educators who found themselves in a challenging situation, where they needed to replan their lessons and hold them online. Remote study mode was especially difficult for teachers from rural areas where educators do not have access to a stable Internet. Regarding students, with the online school, they got an opportunity to have more control over their timetable. They could choose the most appropriate time to do homework and have a chance to have hobbies. Teachers and students benefited from online studies because students got a more individual approach due to technological solutions and teachers have various tools for assessment (Kaden, 2020).

Concerning the financial challenges, many families did not have an opportunity to purchase a device for their children. Many libraries and schools asked for help from the local communities to help the families in need. The study shows that 22% of families in the U.S. experienced financial difficulties buying necessary goods for remote studies (Becker et al., 2020). Moreover, COVID-19 harms mental health. Parents complain that they face additional responsibilities and need to help with homework for the families with pre-school and school-age children. It is difficult for parents to have multiple hats simultaneously: a parent, a teacher, and an employee. This negative influence leads to burnouts (Rudolph et al., 2020). Since EdTech startups operate in education and help with remote learning, it is evident that COVID-19 has a positive effect on the industry. The potential cost of the industry is \$167 billion by 2021 (Chebib, 2020). EdTech helps not only schools but also provides education to everyone who has an internet connection. This fact could lead to equal rights for education in the future. The

only needed component for EdTech solutions would be a stable Internet connection. Besides, mobile internet, tablets, and laptops would help EdTech fasten granting equal education rights (Jacob et al., 2016). Laptops and tablets would minimize the gender gap in education in orthodox communities, where girls do not need to go to school. Also, mobile devices will help students with disabilities to join the classes and get access to education.

EdTech helped students from all over the globe to cope with the pandemic and continue their studies. For example, during the COVID-19 crisis in Indonesia, Ruangguru offered a platform where students could join classes remotely. Seventeen million students used the Ruangguru solution, and 92% of users enhanced academic performance (Fattah & Sujono, 2020). To make sure that EdTech facilitates education efficiently, the stakeholders need to communicate. Educators, parents, and students must address their concerns, needs and share feedback on EdTech solutions to help startups do business model innovation. Also, teachers should have access to technical training to get assistance with a potential EdTech solution. Moreover, an EdTech startup needs to provide educators and students with efficient online support. EdTech companies should establish partnerships with governments, NGOs, and other organizations to create and promote the service. For instance, UNESCO has a Global Education Coalition that helps to respond to remote education challenges. Mobile operators could help EdTech companies with introducing stable Internet to rural areas (GSMA, 2020).

2.2.3 Business model innovation at a startup vs. company

Business model innovation occurs in various functions depending on the business' size, industry, market, and plans. Based on that, a startup's business model innovation would differ from a business model innovation in an established company (Pollack, 2013). Regarding the common differences, these are the following. First, startups focus on short-term growth. They must become scalable and get first customers. Big companies tend to concentrate on the long period and create a strategy based on that. Second, since finding the first customers is vital for the new venture, the founders focus on sales more than other business activities. At the early-stage startup, business model innovation happens around defining the product and its value.

Concerning the later stages, business model innovation at a startup strengthens the traction and finds different paths to get it as efficient as possible. At this stage, a startup has a customer database and needs constant communication to understand their need. Also, startups might already have partnerships and are more attractive to potential stakeholders at this stage. Regarding the established companies, they have an affluent customer base and reliable stakeholders. Based on that, the main concern for them is to hold the market share and be competitive. To do that, companies need to be innovative. They may come up

with new means of communication with their customers. Moreover, the company could launch a new product to the market that would spark interest and attract new stakeholders.

2.3 Summary

The literature review is a basis for the empirical part of the paper. The author defined vital concepts and discussed the impact of market disruptions on business model innovation. The central notions for this study are the following. The first one is the business model. The researchers still have not agreed on a single definition. Hence, for this paper, the author defines a business model as a holistic concept that unites all processes that a company does to satisfy their customers and gain values (Johnson, 2012).

The second aspect is EdTech startups. Since the study aims to discover the impact of COVID-19 on business model innovation at EdTech startups, defining it was worthwhile. EdTech stands for educational technology that helps educators and students to make the learning process more fun. Students and teachers both welcome technology use in the classroom (Ruggiero & Mong, 2015). Educational Technology (EdTech) helps students and teachers to ease the learning process with technological advancements. It is a big challenge for educators to make students stay focused for an extended period (Kiran et al., 2020). Since EdTech startup uses SaaS business model, the author defines it and presents freemium and bundling business models popular among IT companies and startups. SaaS (Software as a Service) is a licensing-based business model. Typically, software companies utilize this approach because it is relatively easy for startups and allows getting the revenue as fast as possible. SaaS offers startups operational and innovational benefits (Loukis, 2019).

The freemium model allows customers to use a service or product for free for a certain amount of time and become happy with the product. The Freemium model is a customer-centric approach. If a user is satisfied with his/her experience, he/she will be more likely to prolong the Freemium subscription. As for the bundling business model, it is helpful for companies that sell more than one product or feature. For instance, Adobe Creative Suite is a fantastic example. The company has various products under the Suite, and the users can buy them as a bundle or as separate products, depending on their needs. The third concept is business model innovation (BMI). However, as with the business model, there are various definitions, and the researchers cannot have a single description. Thus, the author describes BMI as a synergy of new and old aspects that may involve a product, value delivery, and other characteristics (Björkdahl & Holmén, 2013). Figure 6 demonstrates the summary of key definitions in the literature review.

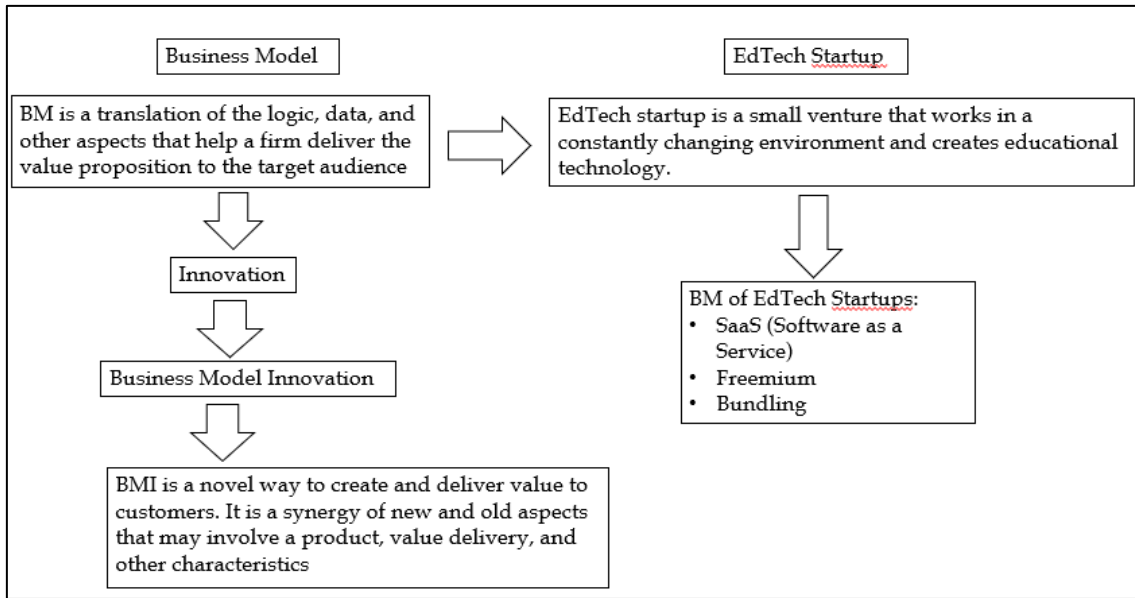


Figure 6. Summary of Definitions (Björkdahl & Holmén, 2013; Teece, 2018).

Figure 7 illustrates the summary for the theoretical framework of the study. The model includes the most vital theoretical aspects for the research. Figure 7 demonstrates the summary of the theoretical framework. The business model innovation appears when a company needs to find a new approach to deliver additional customers' values. Market disruptions are great triggers for such change. COVID-19 is not the only market disruption that happened in human history. Previously, Global Financial Crisis (GFC) in 2008 and the Russian Financial Crisis in 2014 shook the world's economy and impacted BMI. However, COVID-19 had a somewhat positive impact on business model innovation at EdTech startups.

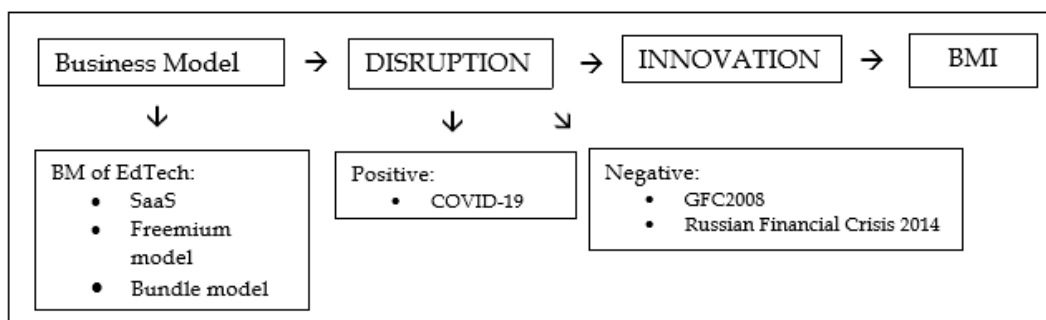


Figure 7. Theoretical Framework Summary.

3 DATA AND RESEARCH METHOD

The primary goal of this chapter is to present the approaches and methods of the research. The author introduces qualitative research, where describes the reasons for choosing it for the study. Second, the researcher writes about the criteria for data collection and explains them. Third, the author presents the ventures that participated in the interviews for the study. After that, she describes how gathered information from the interviews was analyzed. The chapter finishes with validity and reliability.

3.1 Qualitative research

Qualitative research derives from sociology and anthropology. It is the most common way of empirical research in psychology. Scholars use qualitative research in many disciplines ranging from psychology to business studies (Chiang et al., 2015). Qualitative research typically consists of interviews with individuals to get insight into the subject. It usually focuses on the quality of the information that interviewees share with the author (Ryan et al., 2007). Qualitative research may include various information: experiences, case studies, interviews, visual texts. Interviews are the most popular way to collect qualitative data. There are six types of qualitative research: phenomenological, ethnographic, grounded theory, case study, historical model, and narrative model (Leonard, 2019). The phenomenological method focuses on one's experience and feelings during the event. It is typical for this method to do observations, interviews, and surveys to collect data. Companies utilize the phenomenological research method to find the most efficient communication method by sales representatives with potential clients. The ethnographic model engages topics in a culture that is unaccustomed to them. Enterprises use this model to test new products or features before presenting them to the market. The grounded theory method analyzes the reasons why certain things happened that way. Companies apply this method when they need to measure customer satisfaction. The case study model allows understanding the action on a deep level. It is helpful for businesses when they want to introduce a product to potential partners or buyers. The historical model looks at the past and aims to comprehend the present and predict the future. Enterprises may benefit from this model if they want to launch a new campaign and use the previous ones to predict the outcomes. The narrative model happens across long intervals of time and assembles data as it transpires.

Qualitative research has its strengths and weaknesses: the strengths, ability to deliver comprehensive information, various methods to collect data, and cost-efficiency. Regarding weaknesses, it is not easy to generalize findings to a significant population, challenging to do data analysis, and data collection takes

a long time. Overall, qualitative research answers questions with words, not numbers.

The interview is the most popular way to gather qualitative research data (Knox & Burkard, 2009). There are four types of interviews: structured, semi-structured, unstructured, and informal (Cohen, 2006). Semi-structured and unstructured interviews are favorable by the researchers (Holloway & Wheeler, 2002). Structured interviews have a list of questions, and the interviewer asks all of them. The researchers use structured interviews when there is a need for precise focus. There is no need for structured interviews to training the interviewer, and it can be used for many participants (Cohen, 2006). Semi-structured interviews occur when a researcher has only a chance to talk with the interviewee and conducts multiple interviews for the study. A semi-structured interview has a list of questions, but the interviewer always has a right to ask additional questions or exclude some depending on the discussion (Cohen, 2006). Unstructured interviews do not have a prepared list of questions and instead go with the interviewer and interviewee flow. The interviewer has a plan in mind and scheduled time with an interviewee for a discussion. It is useful when a researcher understands the subject and yet wants to keep the mind open for other opinions (Cohen, 2006). Informal interviews happen when the researcher has little literature review and looks for more interest areas (Cohen, 2006).

The author chose semi-structured interviews due to the following reasons. First, the author wanted to get honest thoughts from the members of the EdTech community. Second, she aimed to gather open-ended data. Third, the researcher sought to explore personal experiences. The primary purpose of the semi-structured interviews is to answer “what” and “how” questions (Eriksson & Kovalainen, 2008). The author plans to find answers to the research questions with semi-structured interviews. It is a suitable way for the study because the researcher has experience in the EdTech field and can ask additional questions during the interviews. Moreover, EdTech ventures that participated in the research are in different startup stages. Hence, the interviewees have various experiences with the pandemic and its impact. Semi-structured interviews allow the author to dig deeper into fascinating topics and avoid irrelevant questions depending on the conversation flow.

3.2 Data collection criteria

Since the author aims to understand the impact of COVID-19 on business model innovation at EdTech startups, semi-structured interviews are the most convenient approach to gathering information on the subject. To arrange semi-structured interviews, the author considered two categories of interviewees:

- 1) Industry experts (organizations that help the field of EdTech to thrive and have first-hand experience)
- 2) EdTech startups – ventures that provide educational technology to students, families, and institutions.

Regarding criteria to choose industry experts, it was crucial for the author that the company had international experience, helped EdTech startups, and was active in the ecosystem. Based on these characteristics, the author chose the following companies: Education Alliance Finland (EAF), TEACH Mag, and xEdu. As for EdTech startups, there were several data collection criteria. First, the venture should provide solutions for remote learning. Second, EdTech startup should be younger than 11 years. Concerning the venture's location, it did not matter due to the EdTech industry's online operations. Regarding the size, the startup should have no more than 110 employees.

The next step after deciding on what businesses to interview with, the author got in touch with them via LinkedIn and arranged interviews in Zoom. Due to the pandemic (February - March 2021), all the interviews were online. The author scheduled meetings from 22 February until 15 March 2021. At the beginning of the interview, the author got verbal permission from the participants to record the interview. According to the Jyväskylä University GDPR Guidelines, the author is the only person who has access to the voice recordings and uses them for data processing purposes. After the interviews have been conducted, the author transcribed them. This step allows to analyze and compare the answers. Based on the interviews' analysis results, the author concludes with a conclusion for the paper. The framework of the interviews is available in Appendix 1 and 2.

3.2.1 Case companies

To answer the study's research questions, the author first interviewed three companies with the industry's insights and daily operations with EdTech startups and teachers. Table 2 presents these companies in a nutshell. TEACH Magazine is the oldest company, founded in 1993 in Toronto, and allows teachers to get vital information for their job. During the pandemic, TEACH Mag introduced EdTech solution through their platform and made the transition to remote studies a tad easier for educators.

Table 2. EdTech Industry Experts.

Company	Participant's Title	Founded	Location	About
EAF	CEO	2015	Helsinki, Finland	EAF certifies learning solutions by the local or international curriculum.
TEACH Mag	Owner, Publisher, and Editor	1993	Toronto, Ontario	TEACH Mag provides K-12 educators with relevant information and tools to support them in daily job.
xEdu	Program Manager	2015	Helsinki, Finland	Accelerator for EdTech startups and develops EdTech ecosystem.

Education Alliance Finland and xEdu are both Finnish companies that operate in EdTech. Education Alliance Finland was founded in 2015. It certifies learning solutions. Education Alliance Finland operates internationally and compares the startup's product against the local curriculum. Moreover, the company provides EdTech startups with rigorous feedback on their solution and their alignment with the national curriculum. Education Alliance Finland also measures usability and grants certification for EdTech ventures that passed the criteria. Overall, certification from Education Alliance Finland boosts positive purchasing behavior and interest from potential investors. As for xEdu, it is a Finnish EdTech accelerator that was founded in 2015. The company creates accelerator programs for EdTech startups, helping them build networks and necessary training (e.g., sales workshops). Additionally, xEdu assists EdTech startups with business, program, and market developments. xEdu actively builds the EdTech ecosystem both locally and internationally. In Finland, xEdu facilitates EdTech Finland Association.

After the interviews with the industry's experts, the author talked with 14 EdTech startups. Table 3 illustrates EdTech startups that participated in the study. The vast majority of the startups are in Finland. The author had interviews with C-level executives who have insights into the business model and take part in its innovation. Most of the startup stages are at the seed stage, and only a few are at

the pre-seed and series A/B. The figure below summarizes EdTech startups that participated in the study. The first startup to interview was Skillgrower, a Finnish EdTech startup located in Espoo and received investments at the beginning of 2020. Skillgrower is a math learning application that has everything that students and teachers need. It is a user-friendly solution to improve study results in mathematics. When using Skillgrower, teachers cannot check homework manually because it does it and tracks learning progress.

Mightier was the second EdTech startup that the author had interviewed. Mightier was established in 2016 in Boston, the US. The idea is to provide support for children to navigate big emotions. Mightier allows kids to find confidence. Now, the venture works with insurance companies and does not charge the end-users. The next EdTech startup was Kindiedays. Kindiedays is a Finnish EdTech business founded in 2015 that eases daily routines, communication, documenting learning progress at kindergartens via cloud-based solution. Currently, Kindiedays is present in 18 countries. Annie Advisor is a Finnish EdTech startup that was launched in October 2020. The venture aims to prevent school dropouts via an intelligent chatbot. Annie Advisor started as a project at Rapina. Next, GraphoGame is the most popular product by Grapho Game, an educational game company. GraphoGame is a Finland-based literacy distribution company since 2017.

Table 3. EdTech Startups.

Startup	About	Founded	Size (employees)	Location	Funding Round	Interviewee's Title
Annie Advisor	Chatbot to provide help for potential school dropout	October 2020	6	Helsinki, Finland	Pre-seed	CEO
Eduuten	Digital learning math platform	2017	13	Turku, Finland	Seed	CEO
Globish Academia	English learning platform	2014	100	Bangkok, Thailand	Series A	Co-Founder, CTO
Grapho-Game	Literacy tools	2017	8	Turku, Finland	Seed	Director of BD

Kide Sci- ence	Early- educa- tion na- ture learning online tools	2017	21	Hel- sinki, Finland	Seed Round	CGO
Kindiedays	Cloud- based platform for daily routines manage- ment in kinder- gartens	2015	5	Hel- sinki, Finland	Seed	CEO
Lingo Jr	Foreign lan- guage learning platform for kids	2021	10	Jaipur, India	Pre-seed	CEO
Mafy Oy	Math and nat- ural sci- ence learning platform	2011	22	Hel- sinki, Finland	Seed	COO
Makers Empire	Learn- ing solu- tion for 3D learning at schools	2013	22	Ade- laide, Aus- tralia	Series B	Director of Learn- ing
Mightier	Online solu- tions to cope with emo- tions for kids	2016	44	Boston, the USA	Series A	Co- Founder, VP of Tech

New Nordic School	The solution that provides learning materials for all students	2017	22	Espoo, Finland	Seed	Co-Founder, Head of Edu
Skillgrower	Math learning and teaching platform for K-9 students	2020	4	Espoo, Finland	Seed	CEO
Tinyapp	Digital toolset for collaboration with families	2016	5	Helsinki, Finland	Seed	CEO

Mafy Oy provides learning materials in mathematics and natural sciences for students and university applicants. Mafy Oy locates in Helsinki and has been in business since 2010, but the user base is not extensive. Hence, Mafy Oy counts itself as a startup. Eduten is a Finland-based EdTech startup since 2017. Eduten is a digital learning solution for mathematics. Eduten helps to improve learning results with mathematics and fun content. Lingo Jr is an Indian pre-seed EdTech startup. The venture aims to become the most comprehensive online foreign language platform in India. Kide Science is a cloud-based platform to connect preschool-age children and science. Kide Science wants to make natural science exciting and fun for children using play-based solutions, storytelling, and dramatic arts. Kide Science provides teachers with lesson plans for STEM teaching. The venture is based in Finland and was founded in 2017. Globish Academia is a Thailand-based online English learning platform. Globish Academia was founded in 2014 and currently at series A funding. The business uses conversational English in various situations to make learning fun and appealing to the modern world.

Tinyapp is a digital toolset for kindergarten teachers to facilitate efficient communication between parents and teachers. Tinyapp assesses the learning activities, creates plans, and manages documentation. Tinyapp is a Finland-based EdTech startup at the scaling phase. The venture was founded in 2016 during the xEdu accelerator program. New Nordic School is a Finnish EdTech startup at the seed stage. The business was established in 2017. Nordic Business School is an

online school for kindergarten and K-12 students. The venture can provide curriculum and services to run the school remotely. Nordic Business School aims to empower students to broaden their horizons and find the passion for thriving in the future. The last EdTech startup to interview was Makers Empire from Australia. The startup was established in 2013; the startup is at the B funding stage. Makers Empire creates the easiest-to-use 3D design and 3D printing program for K-8 students. Now, over one million students in 40 countries utilize their solution. Overall, the author gathered various EdTech companies that helped find the answers to the research questions.

3.3 Data analysis

The author chose the qualitative research method to get the result of the study. The method includes a massive amount of information provided by words. Hence, she analyzed data with the thematic content analysis. Thematic content analysis is a way to understand qualitative data (Anderson, 1997). The first step is creating notes and transcripts after the interviews. It is crucial for the results of the study to read them to understand the main topics. The author used Otter.ai, software for automatic transcription. As a result, 135 pages of transcription were created. After that, she utilized MAXQDA 2020 software for analyzing qualitative data. With the software, the author familiarized herself with the data and coded the texts. After the coding process, the researcher created categories based on the research questions. With this step, it is easy to interpret the results of the study. This step helps to create a cohesive picture of the interviews. When analyzing interviews, the author answered the following questions for herself (Steinberg & Cannella, 2012). First, what was happening? Second, how was it happening? Lastly, what were the aims? The last step is to interpret the data analysis as study findings. In the figures below, the author presents categories created by the thematic content analysis.

Table 4 presents the main categories in the study. They are the following. First, "About the business," where companies and startups would explain what they do and how many years in operations. Second, "Impact of the pandemic on EdTech startups," industry's experts and EdTech startups evaluate how COVID-19 affected business. Most respondents found a positive impact on EdTech startups and the industry, shown in the most considerable number of codes in the interviews (87). Nevertheless, interviewees faced some challenges (43), where they would reflect on the difficult situation because of COVID-19.

Table 4. Categories.

Category	Times used (365)
About the business	30
Impact of the pandemic on EdTech startups	179
Definition of BM	15
Business Model Innovation (BMI)	120
Main lessons	8
Advice for EdTech startups	13

The third main category is “Definition of BM,” where respondents, in their own words, described what does business model means to their company. The author asked the question due to the ongoing discussion in academia on what a business model is and the variety of definitions. The fourth category is “Business Model Innovation,” which is the second used category with 120 codes. According to the respondents, EdTech startups needed to pivot (110) and utilize the free-
 premium business model (46) to stay on the market and respond to the rapid changes.

The last main categories are “Main lessons” and “Advice for EdTech startups.” All interviewers found their lessons for their venture because of the pandemic. As for EdTech startups' advice, industry experts were the ones that gave suggestions on how ventures could thrive in the new norm. Overall, categories correspond to the study’s interest in the impact of COVID-19 on business model innovation at EdTech startups. Hence, Table 5 and Table 6 present the most popular categories: “Impact of the pandemic on EdTech startups” and “BM.”

Table 5. Category. Impact of the pandemic on EdTech startups.

Category. Impact of the pandemic on EdTech startups	Times used (179)
Impact of the pandemic on EdTech startups	3
Challenges	43
Opportunity	87
Startups that lost	6

Table 6. Business Model Innovation.

Category / BMI	Times used (120)
Pivoting	110
Freemium	46
No new BM	1
BMI	3

3.4 Reliability and validity

Reliability and validity are crucial for the study because they demonstrate that the study results are precise (Anderson, 1997). Reliability shows that the research would lead to the same results if the researcher repeated the number of times. However, Lincoln & Guba (1985) proposed an alternative called “trustworthiness,” which is the most common way to evaluate the qualitative study results. Trustworthiness consists of four qualities: confirmability, credibility, dependability, and transferability (Lincoln & Guba, 1985). Confirmability demonstrates the degree to which the same results would appear if made by other researchers. Credibility is vital to evaluate the trustworthiness of the study. It is asking the researcher to ensure that the findings and matching with reality and are truthful. Dependability allows other researchers to repeat the study and forces the author to record all the steps accurately. Transferability is the aspect, where the findings could be used in other occasions. Due to the fact that this is a qualitative study, it is important to note that transferability is applicable to test the results in other environments (Eriksson & Kovalainen, 2008).

To measure trustworthiness, the author evaluates credibility, transferability, dependability, and confirmability for the study. The research is credible due to the following reasons. First and foremost, for the theoretical framework, the author mainly used articles from academic journals (e.g., ScienceDirect as a platform to find articles) and the industry’s leading websites. The articles were published in respected journals (e.g., SAGE Journals) and written by professionals with doctoral degrees in the discipline. Additionally, these articles targeted other researchers and professors. Secondly, the author has a genuine interest in the EdTech ecosystem due to an EdTech startup's involvement. Hence, she has the best interest at heart to comprehend the pandemic's impact on business model innovation at EdTech startups. The study was undertaken to learn how EdTech startups dealt with COVID-19 to adapt their business to the changes. Third, the research is funded by the EdTech startup, where the author is currently working, and it may have affected the objectivity of the research. Forth, the author collected data through semi-structured interviews with the industry’s experts and EdTech startups. It allowed her to dig deeper into the industry and find everyday struggles and opportunities for EdTech startups. Since the author conducted 16 interviews, she has reached saturation point, where all the interviewees were providing similar answers. The saturation point signifies that the author collected enough information for the research.

Regarding transferability, the findings could be applicable in other settings. Unfortunately, the author cannot assess the transferability of the findings. Only the readers could define whether the findings could be relevant in other environments. Concerning dependability, it is difficult for the author to review the study’s dependability because it requires another researcher to do an inquiry audit. Relating to confirmability, the findings are confirmable. Since the author interviewed 16 businesses and used similar questions, it is evident that the findings

could be the same in similar research. Moreover, the author conducted interviews with C-level people, and they have the best knowledge of the topic. Because most enterprises were Finnish, it is worth mentioning that Finnish culture is individualistic and practices straightforwardness in the answers rather than sugarcoating. During the interviews, the author had discussions on the ups and downs during the pandemic. The interviewees were willing to share their experiences. Hence, the researcher concludes that the study is trustworthy.

4 FINDINGS

In this chapter, the author illustrates the results of the empirical part. She provides the answers from the interviewees in topics and summarizes the chapter with figures. After data analysis, the author came up with the following themes for the findings. The first theme is the impact of COVID-19 on EdTech startups. In this theme, she describes the challenges, opportunities that startups faced during the pandemic and describes EdTech startups that thrived and failed because of COVID-19. The second theme is the definition of the business model by the businesses. The author concluded that there is no common definition that the scholars follow based on the theoretical framework. There are ongoing discussions in the scientific world to define a business model as a term. Thereby, she asked the interview participants to explain what the business model means to them, third, how business model innovation happened at EdTech startups due to COVID-19.

4.1 Impact of COVID-19 on EdTech startups

First and foremost, the pandemic changed the world upside down. Talking about the educational sector, COVID-19 forced schools to shut down. Hence, educators, students, and parents found themselves in a new situation that has never happened before. It is the first time in human history when schools are not working correctly for such a long period in the whole world (March 2021). Based on that, teachers were forced to find digital solutions that would support the learning process. EdTech businesses got an outstanding chance of either introducing their product to the market, expanding the existing user base, and testing tools, and developing them based on the feedback. All respondents agree that COVID-19 ultimately altered the whole industry and educational sector.

I think it certainly was a shot of adrenaline for educational technologies in general. (Mightier)

It just made everything clear. It was a big accelerator. (xEdu)

COVID-19 increased the demand for online learning and remote teaching, which is one of our cornerstones products we have currently on our lineup. There is more demand for need for those online-based, tech-based solutions for learning. (Mafy Oy)

Moreover, everyone understood the tremendous need for digital educational tools within a short time. Interviewees note that it became a lot easier to start the initial discussions with schools because now everyone understands the

importance of online learning. The pandemic highlighted the vitality of digital education solutions. Thus, EdTech as an industry became familiar to people. Teachers, students, and parents comprehended the value of an excellent digital tool and experienced how EdTech solutions improve the remote learning experience. Without EdTech tools, teachers would need to give lectures via online communication platforms (e.g., Zoom) and not interact with students effectively. Additionally, without EdTech, students would lose focus faster during the classes, and the learning progress would decline. As a result, it is easier for EdTech startups to present their solutions to schools and parents.

It has helped the customers understand that technology is necessary in the changing world. The feedback from some customers said that they are refusing to use technology. We also heard in the beginning when the change started to happen from our customers that there are features that they are resigning if they must use technology daily to support the children's learning. Well, then, those teachers that had that feeling they resigned, but very soon, they would have realized that it is the only way forward to also change if they want to remain in the education sector. So, it (COVID-19) has left a stamp, and it is a positive stamp because there is so much that has taken technology can add and bring to the education, and it has been just that kind of a bit of a slow change maybe in certain countries or within a certain group that even education and we should think about lifelong learning. There have been some perhaps fears related to education that now have needed to be overcome. So, in that sense, the positive change for us, for sure, and exactly for educational technology. (Kindiedays)

The teachers were forced so quickly to switch to distance learning that they switched to the easiest possible ways of writing it, which in many cases means that they pretty much continue doing what they do, which means lecturing. There is no longer needed to prove to teachers and schools and people in general that EdTech is needed. We do not need those slides anymore. Now everybody understands it. Furthermore, everybody understands the importance of EdTech. Likewise, that part is now for startups to set aside; they do not need to prove that, hey, this is a good idea to do this digitally. We cannot continue with only physical education, but there must be a combination of physical and online. We are not fully virtual. We are not against that. We really think that physical is also important. Digital needs to enhance and help with physical education. (xEdu)

Blessing in disguise for the tech industry, people are a lot more open to online learning. (Makers Empire)

When COVID-19 hit, and there was a countrywide shutdown, it basically meant that all the teachers were now suddenly looking for digital tools to take their classes and teaching online. And they realized that, especially with learning math, as the common way of taking a photo of your textbook and send it to me, that was just like a horrible nightmare for the teacher to keep on track of what

the students are doing. The pandemic also increased demand for digital products, and people were able to kind of like teachers could get familiar with digital products. (SkillGrower)

There are these kinds of forward-looking schools that are saying that this is not going to end quickly. And this, children need to be able to get it that there has to be school, even if that situation is prolonged. And they really think that, okay, we need to find new ways to conduct the school to conduct a location, conduct lessons and exercises, and so on. And some, some part of the schools around the world in many different countries were starting to look for tools like, like, like ours, for example. (Eduten)

Second, faster future for EdTech and rapid market growth. Because everyone understood the significance of EdTech, the market is growing faster than ever before. COVID-19 accelerated growth because the industry attracts more investments, and new ventures enter the market. Companies that help EdTech startups build networks, improve products, and accelerate are crucial for its growth. For example, Education Alliance Finland and xEdu play a big part in the ecosystem by developing products and opening new markets. The other exciting aspect that respondents were mentioning is that the future for EdTech happens faster than anticipated.

I see this industry growing a lot. Thanks to networks, whether it would be networks that are connecting startups to investors but often networks of startups that all have united for some common purpose, education helps people learn. (...) I have seen more competitors be more active in this sort of literacy app marketplace that we're in. Because it is a really important time to offer educational services online. And which is, in essence, is EdTech. (GraphoGames)

I will say what was predicted to happen in 2030 is happening right now. (GlobishAcademia)

It will speed up the process of getting digital into the educational sector in Finland. Regardless of COVID-19, or even, especially with COVID-19, the investments that flow into EdTech are growing like 100%. I think it has, for the last ten years or so; it has grown the investments into the EdTech sector. So, that is a good sign. And with more investments, it means better products, and eventually, digital products will be so much better than textbooks that people will make the switch. (SkillGrower)

I think it (EdTech) is on a huge, very rapid rise because people need the technology to implement education; they have needed to rely on technology. (New Nordic School)

Lastly, people will continue using digital tools for educational needs. COVID-19 showed the paramount need for online solutions in people's lives. Especially when it comes to education, students need to continue the learning process regardless of external factors that may disrupt classes in person. Since many countries have closed schools for a particular time or use hybrid teaching, it is evident that online tools will become a norm for education.

I think there is no question that e-learning and online learning is always now going to be part of education. (TEACH Magazine)

4.1.1 Opportunities

Formed that people understood the value of digital solutions in education during the pandemic, it opened several opportunities for EdTech startups. First, teachers are more open to utilizing digital tools for their classes. All startups told the author that it is easier to present the solution to the teachers. Additionally, they want to learn more about the tool and give feedback on their product experiences.

Higher levels of engagement, higher response levels because teachers are out there, looking for information, looking for content, and looking for resources. Higher levels of response and engagement than we had said during pre-COVID-19 (TEACH Magazine)

Second, parents of pre-school and school-aged children comprehended the importance of education. It became apparent with the pandemic that education needs to adapt to the changing environment. COVID-19 made everyone understand that educational technology does help with overcoming uncertainty. Respondents underlined the need for schools to correspond to the current time and help children with their education. They also mentioned that some schools, more than the other, are ready to move to digital. It is an opportunity for EdTech startups to present their online solutions effectively to schools and parents.

Some municipalities and teachers, and schools are, are mentally more prepared for digital solutions as part or as a part or as thoroughly as their teaching solution. So that is a positive sign that it was a nice boost in the right direction for market mentality. (SkillGrower)

I would say online learning and accelerated remote learning opportunities and development, especially the development side; I think I have seen more competitors be more active in this sort of literacy app marketplace that we locate because it is a significant time to offer educational services online. Furthermore, which is, in essence, EdTech. (GraphoGames)

The third opportunity for EdTech startups due to the pandemic is significant investments due to the industry's popularity because of COVID-19. Money gives startups a chance to create a world-class product that serves the needs and provides value for the customers.

Everybody wants to put their Penny everybody wants to get a slice of the market. Moreover, that has bought so that basically, the pros are obviously you get them money pumped into the market. And that gives as an entrepreneur gives you an opportunity to build a world-class product, which can be accessed by global students. (Lingo Jr)

The next possibility for EdTech startups is the potential consolidation of technological giants to create a holistic educational platform for students. They could buy EdTech startups and utilize their solution for their needs. Lastly, COVID-19 gave an excellent option for EdTech startups to get feedback on their products. Since the educational sector started to utilize EdTech tools more than ever before, EdTech startups had gathered valuable comments on the user experience and would develop features based on them.

4.1.2 Challenges

Even though COVID-19 brought opportunities for EdTech startups, it is crucial to mention that some challenges occurred. First, the virus is novel, and at the beginning of the pandemic, nobody could predict the future. Hence, EdTech startups were insecure about the upcoming events. Not only EdTech startups experienced insecurities but everyone in the world. Schools were not an exception. Governments forced the school to close and move to remote mode. Since there are no students in classes, educators foresee budget cuts now and subsequent years that negatively affect EdTech startups' sales. Second, all respondents reported that ongoing sales discussions, partnerships paused, and potential projects shut down.

Insecurity in the beginning, and they are challenged to predict what will happen next week or what will happen next month? Will the schools be closed? Will this course be open? Will people buy products? Will people get scared and sort of go back to do very traditional conservative stuff. (Education Alliance Finland)

Public schools are sort of concerned about enrolment and having kids in the building versus out of the building and how to how to sort of handle that. Closing that means taxes go tax revenues go down, which often means that the following year or two years later, their education budgets are cut. (Kide Science)

The negatives have been that a lot of our projects that were that we are ready to kick off last year just stopped. Many things in the pipeline just stopped

because nobody knew what was going to happen. Furthermore, in fact, as late as this morning, we had a project in Country X. That was two weeks ago; it was all going back. You know, we were going to start school in Month Y, and now Country X has taken a turn for the worse. And this morning, they said now we need to pause again because we do not know what is going to happen. (...) We have not been able to open up to new markets, like one of the ones that we have applied to us were thinking of was XX, and obviously that then just shut down. (New Nordic School)

We had many different sales discussions and pilots ongoing in many countries. All of those shut down immediately, in the couple, just a couple of weeks. When we went into the summer, we started finding that many of our partners around the world were saying that even the schools are closed, and the situation is very difficult. Our existing commercial discussion leads and opportunities died overnight. (Eduten)

The first thing that we found when COVID-19 hit was that those big enterprise partnerships were put on hold. So, we had a few of those with different education departments of ministries of education. And we just had to put those discussions on hold, there was one with the Department for Education in X., And it was almost up to sign off, but everybody got a bit nervous, and budgets got redirected. So those big deals were not canceled but put on hold for us. So that was a big initial impact. (Makers Empire)

In our target market, kindergartens were closed or closed in early 2020. So, that meant that any kind of ideas for investing in technologies that the centers had in January and still February 2020. They were completely put on hold because they got new demands or for different things that they have to focus on or rather to focus on survival than developing. (Kindiedays)

Sales were frozen for the whole spring. (SkillGrower)

Third, teachers are overwhelmed with an immense amount of work and requests from EdTech startups to look at their solutions. Most interviewees mentioned that they felt tiredness from teachers to hear from another startup to test the tool in class. Next, EdTech startups found it challenging to figure out how to manage remote teams, sell and onboard customers online, and fight with the white noise in the industry. Everyone thinks that their solution is excellent.

It is an arduous, very stressful, tremendous amount of work required to develop or create resources and develop lessons and lesson plans on the fly without much support, preparation, or prep time. So, I think many teachers struggled; I think they found pandemic very stressful (TEACH Magazine)

I think it was challenging to compete with all the white noise that we felt. We had a product that could be useful for teachers, but so did everybody else. And there was a lot out there. Our customers, our teachers, are the ones that pay the money, students are our users, but teachers are our customers. They were just totally overwhelmed by all the pressures and challenges put on them to have to teach from home suddenly. So, getting our message to them that did not add to that overload and getting the message out that this could help. It was not easy to navigate that (Makers Empire)

The main challenges have been the remote work. And that is in two senses. One is that I have not seen my colleagues for months. So, when I started, for example, in April, my onboarding was remotely, and then I met them a couple of times in the spring and one time in autumn, and after that, I have not seen them. So, it is weird. It is kind of difficult to maintain a normal group sense of culture. (...) We have to now sell and onboard our customers remotely. It is different, but it is not that hard. But it is a challenge for us in terms of our own. (Annie Advisor)

Lastly, many EdTech startups had fixed costs, for example, rented office spaces that they needed to close. Thereby, they faced challenges with losing money by paying the rent and other additional costs associated with the office space. Even though it is a challenge for EdTech startups, it is still a good learning opportunity to keep fixed costs as low as possible.

Most of the entrepreneurs, if they are well funded, they also have a fixed expense, fixed costs associated with their business. I think that is where we see a lot of startups struggling with this survival and not kind of able to draw that into the variable expenses. (Lingo Jr)

4.1.3 Winning and losing EdTech startups

During COVID-19, some EdTech startups won, and others lost. It is vital to illustrate the features of startups that succeeded and failed for learning purposes. First, startups that won during the pandemic were the ones that managed to make a fast switch from offline to the online environment. For example, Kide Science shifted to remote environments and provided lesson plans through virtual classrooms. Before the pandemic, the venture used to create lesson plans for offline classes. Second, startups that increased user base by creating various messages and offers to the target audience. By increasing the user base, these startups managed to get feedback, create, and develop features. For instance, Makers Empire extended the trial period for new users as a sign of support for the educational community and got valuable comments from them.

Third, EdTech ventures that were successful before the pandemic knew how to market, reach customers, and had strong relations with partners continued their growth. These EdTech startups managed to stay in the market and use the momentum as a prospect for growth. Strong business background, customer

and market understanding helped them to thrive during the pandemic. Fourth, EdTech solutions that provided integrations with the existing and popular tools gained even more users. Teachers were using Zoom and other platforms to organize classrooms. Hence, it was easier for educational technology to have an integrate with these platforms. Overall, EdTech startups that adjusted quickly and developed their solutions according to the customers' needs won new users and increased sales during COVID-19.

If they manage to switch online, then they most likely succeeded. KideScience is a good example. I mean, they had the face-to-face presentations and the group meetings with kids, and now they just managed to move, and they did it quickly; they just entirely moved it online and created that visibility. So that is one thing that changed obviously from physical to online digital. (xEdu)

Companies became more aware of the importance of having their solution integrated to existing platforms schools are using, whether it be Microsoft, Zoom or Google Classroom, or some other platforms then naturally, tweaking your solution to work and possibly distance learning purposes. (Education Alliance Finland)

As long as they were relatively easy to adapt to what teachers are doing, I think, you know, they also benefited. (TEACH Mag)

Concerning the startups that lost during the pandemic, the main reason for their failure is the early stage. Typically, these startups would not know their target audience, reach them, and have no sales experience. COVID-19 is a highlighter for solutions that did not work. Most luckily, a tool that was not underdeveloped would make the venture run out of business. Lastly, EdTech startups that provided customers with physical products found it difficult to survive during the pandemic. Premature EdTech startups were not able to cope with competition because of rapid market growth due to COVID-19. They were not ready for the sudden change and not prepared for rising demand. However, these startups got an excellent chance to test their product and get feedback from the users. They should look at COVID-19 as a learning curve for their venture. To sum up, EdTech startups that did not have a ready product or did not know the target audience and reached them were placed in a dangerous situation by the pandemic. Only time will tell if they could utilize lessons from COVID-19 and dominate the market in the future.

New startups are the ones that pretty much lost during COVID-19. Because the teachers just simply would not have time and resources to try something super new and super innovative and maybe not even ready products. So, they would not have time and wish to try anything like that anymore, which they could have possibly been doing before. So, the ones that were just starting out and not quite ready and having an experience. Those solutions that had just

launched the solution or did not have it ready or did not have established relationships with more prominent clients, and so on. Did they find it harder to sort of provide something utterly new to schools that Hey, would you like to use my solution as well? (xEdu)

4.2 Business model definition

The author found out that scholars have various definitions for a business model in the study's theoretical framework. Up until this day, there is no standard meaning of it. Hence, the author showed interest in asking what EdTech startups' business model means to them. It is worth mentioning that all startups have the same aspects stated for the business model. Figure 8 illustrates how EdTech startups define the business model. The order may be different, but there was always a product, target audience, how to reach potential users, and how to make money. Being profitable and delivering a product to the target audience are the cornerstones for EdTech startups. Typically, the definition would be in the form of questions that help businesses to build a business model.



Figure 8. How do EdTech startups define BM?

The business model is how customers access our product and how we make money from our product. So, who buys it? How much do they pay for it? How often do they pay for it? And how do we deliver that product for them? We have got a product; we know people want to buy it. What do we have in place that gets that product to the customers? And how do we get to make money from it? (Makers Empire)

What do we define? What is our product? And how do we offer that to what kind of customers and how do they pay for it? (Eduten)

GraphoGames suggested another fascinating way to describe the business model. For them, the business model assists in creating strategy and tasks around it. Thus, the business model at GraphoGames leads them in business activities.

The business model to me is a construct that organizes our efforts. So, in business, you can organize employees' work by several hours and tasks. However, at a higher level, you can set the organizational strategy around a business model, essentially defining our work. If we are a B2C company, we are going to be working on making sure that people can find our app in the app store more than we are going to be working on finding the clients that we need to sell this to, because B2C, we want to sell to individuals, B2O, we are going to sell to organizations. Moreover, a lot more work must be put into each client. The business model is this sort of higher organizational principle that guides us. (GraphoGames)

4.2.1 Business model innovation (BMI)

Considering that the interviews' participants described the business model as a concept that helps companies identify the product, target audience, marketing, and revenue streams, business model innovation happened in these categories. Business model innovation happened in all aspects of the business model; as for the product, EdTech startups needed to adjust them due to COVID-19. They consider that the product should have online integrations with existing and popular tools. For example, during the pandemic, teachers hold their classes in Zoom. Thus, it is beneficial for an EdTech startup to offer a product that is integrated with Zoom. Second, since schools already have a study curriculum in place, the product must relate to it to address the learning goals. Third, the solution must be flexible to the learning progress. Thereby, educators have a huge request for dynamic content and flexibility. The educational tool should ease remote learning and adapt fast to study requirements and students' needs.

We sort of went through and made sure that as many of our lesson plans and activities were remote, education-friendly as possible. It was offline. It was either in a school setting, or what we call a hobby set, but kind of like an after-school activity, or a science club that a parent might take a child to, after school or on the weekends, something like that, but it was always done offline, the child ever and still does not interact with our platform. (Kide Science)

Whether it is e-learning or online learning within a school and in a classroom, whether it is from home or combining all those things, I think there are a huge interest and a need for curriculum-connected content. (TEACH Mag)

Next, the EdTech solution should aim to be a global one. It is challenging for teachers to find tools that would help them due to variety. Additionally, teachers need to utilize a combination of tools to reach the study goals. Hence,

EdTech startups should adjust their products for the global market by having a solution that suits many countries. There are multiple benefits to creating a global solution: an international user base, immense revenue streams, and helping to make the world a better place. With the stress that teachers faced when moved to remote learning, EdTech startups need customer support.

There are no single tools that can address the real needs of the remote school, for example. So, schools are forced to use various tools to mix and match a set of different tasks. (Eduten)

Some companies noticed that there is a need for improved support or enhanced support for educators. I saw that some of these companies notice that now it is the excellent momentum to sort of push the company to their clients or corporates to put all their learning materials to be in digital form, and giving them all support they need to do that (Education Alliance Finland)

We even held several workshops, where we explained to international teachers how Finnish teachers are coping with the school closures and leveraging technology to help them do that. (Eduten)

Even though schools moved to remote lessons and probably the best practices will stay in the future, interview respondents mentioned that education always requires a human presence. Thereby, hybrid learning that combines offline and online activities, where a teacher guides student will stay with schools. New Nordic School has utilized the hybrid school before the pandemic, and it showed great benefit in helping the educational field to overcome uncertainty.

We have been very fortunate because we had this hybrid school in our plans; even before COVID hit, people realized it is needed. So, it has gained us much support to the crew to take that hybrid school forward. (New Nordic School)

The next category in the business model is the target audience. During the pandemic, EdTech startups discovered that parents experienced terrible times with adjusting to home-schooling. Adults needed to fulfill their work responsibilities, take care of the house, children, and additionally make sure that they study and do homework. It was a nightmare, especially for families with small children who did not want to focus on lessons and considered staying at home as a holiday. Hence, EdTech startups figured out that parents are the new target audience for them. Moreover, during COVID-19, they understood the value of schools and became active in childhood education.

Parents have seen that taking care of and educating children at home is challenging, especially when you must work yourself at the same time. So, the kind of respect and value of early childhood education is seen. (TinyApp)

Parents also struggle as well, trying to manage everything trying to manage a household, certainly with young kids trying to manage their workflow, sometimes with their spouse, figuring out how their kids would deal with all this as well. (TEACH Magazine)

Since parents became a target audience and schools switched to remote mode, EdTech startups needed to alter their marketing efforts to stay up to date. The most popular thing that EdTech startups did was to adapt their messaging with parents and schools. EdTech startups aimed to show schools and parents that they are here for them and want to make remote schooling as easy and as interactive for children as possible. Another way to reach parents was to adapt the solution for them. In the interview with Kide Science, the author found out that the venture created another solution for parents, including parents and children's scientific activities at home.

We quickly pivoted our communication, not the product, but the communication, to emphasize the benefits of remote data and remote learning. (Eduten)

We made a version of the platform available to parents directly. It is a minor subscription service where they could essentially buy access to the same or very similar sort of slightly modified science activities to do at home. (Kide Science)

The following method to achieve the target audience during the pandemic was offering prolonged trials. It allowed users to get to know the product and make sure that they purchase the right one for their organization. Moreover, since teachers and parents became more active in finding and utilizing educational technology, EdTech startups noticed a rising demand for trials. The most impressive one was from Makers Empire, where they got an 800% increase in trial requests.

What we did notice was a significant increase in people wanting to start a trial with Makers Empire. Moreover, because our program is a digital learning tool, and it is aimed at primary school students, we were ideal to use during the COVID pandemic. We noticed an 800% increase in people signing up for trials and prolonged them for three months. We also put our time and energy into developing resources to go with that. So almost immediately, we worked around the clock for a little while to put together learning at home course. (Makers Empire)

Regarding the revenue streams, EdTech startups kept using SaaS (Software as a Service) model, where they would sell subscriptions and sell them per month or per year, student, or class. For that reason, an online sales model was put in place and brought significant benefits for the ventures.

So, we had, luckily, come up with an online sales model already before. So, we were not relying on flying and flying around the world or participating in numerous exhibitions and especially not meeting customers face to face. We had to come up with a model also that we could ask for a digital solution and help the centers to remain open. So, we came up with options for blended learning that is fit for work in the kindergarten that has to have doors closed; they are still able to connect with the families and share activities and follow the children's learning from a distance. Our idea of selling online, in that sense, became more friendly for the customers because they were not able to expect that we go to shake their hands five times before we have a sealed deal. (Kindiedays)

COVID-19 sparked EdTech startups to apply Freemium to provide their solution or some free features for a specific time. This approach initiated considerable discussion within the community. Some EdTech startups did not see the reason to do so and either tried for a short time and switched back to charging users or did not use Freemium at all. The primary concern of using Freemium was that people would not commit if the solution were for free. It was noticeable in the Asian market, where individuals value education and consider it something that should not be offered for free.

We already charged from the first pilot. Furthermore, there are two reasons. One is that we have fixed fees in terms of delivering our product. So, we deliver SMS messages, which we pay for the unit to deliver a really like free service, and our expenses will rise, nonetheless. The second part is that I have done free pilots in the past in the B2B EdTech market, and usually, you notice in the customer's commitment that they have not paid for the service. If we want them to try and devalue the investment properly, they must pay something already from the start. (Annie Advisor)

For the educational product people, without missing anything, they not only invest their money, but they also must invest their time, right? So, money is time for the EdTech product, and then you get the result. So, they do not commit; they have not put their money yet. If they have not put their money yet, then they cannot commit that harm to us. By using an EdTech solution, some results must be shown. People cannot be able to speak English more confidently and fluently through data free trial classes. So, therefore, we do not have free trial classes. However, what we can provide to our students or our prospect is a free consultation, free language assessment service, something like that. You can consider it a free trial, but we call it a consultation or assessment in how we call it. (Globish Academia)

On the contrary, other members of the industry saw value behind using Freemium. Their main reasons to offer Freemium were the following. The first is to increase the user base, and then later, some of them would become paying

customers. Second, EdTech startups got a chance to receive feedback from many users and develop the product. Third, offering a solution for free for some time was used as a branding opportunity. Everyone was talking about remote education, and there was a massive request for solutions that could help adjust to the new reality. Lastly, some EdTech startups saw Freemium as a prospect to support the educational community during the pandemic.

We want to make it possible to get that training and sort of for teachers to improve even if they cannot necessarily afford what is not a cheap product by any imagination stretch. You know, offering it at a point where teachers and schools that can pay will receive a significant benefit to them in their school by signing a paycheck. From a more business perspective wise, the other side is that we also know that teachers who use our product like to see excellent outcomes or better outcomes from their students and are motivated to pay for it if they have the means. (Kide Science)

For our product, it has never been the primary way of getting customers. So, it was more like we just wanted; we wanted to support the industry and the education field to be a part of that. (TinyApp)

4.3 Summary

There is no doubt that COVID-19 compelled the educational industry to utilize digital tools more actively than ever before. Educators, students, and parents understood the value of educational technology. EdTech startups do not need to explain why their tools are beneficial. At this moment, everyone understands that EdTech is the future for education that came faster than expected. Figure 9 demonstrates the opportunities and challenges that EdTech startups faced because of the pandemic. Regarding opportunities for EdTech startups, they are the following. First, teachers became more open to utilizing online solutions in their classes. It resulted in a boosted curiosity from teachers to analyze the market and find the most appealing tools. Additionally, teachers are willing to give feedback on the products. Second, parents understood the value of education. Previously, schools took care of children when parents are at work. During the pandemic, children stayed at home, and parents saw how the right EdTech solution helps children to focus and achieve learning goals. Finally, EdTech as an industry is growing fast because of COVID-19. Investors support many projects, and EdTech attracts much money to create and develop products. As a result, there would be better products in EdTech, and the industry will attract top-notch talents.

Concerning challenges that EdTech startups struggled with, there are several. First and foremost, nobody knew the long-term effects of COVID-19. Hence, EdTech startups battled with uncertainty. Uncertainty led to stress, and there was

no chance to calculate the business future. Second, COVID-19 hit private schools and forced them to close. Thereby, some private school owners shut down their business. By these means, ongoing sales discussions were put on hold, and new deals were shut down. Third, teachers dealt with too much pressure. EdTech startups bombarded them with advertisements for their tools. It resulted that at some point, teachers were not willing to talk to EdTech startups. Lastly, remote work management was not easy for everyone. Startups like to be with their colleagues in the same room to brainstorm. Unfortunately, due to COVID-19, it was not possible. Additionally, businesses had to sell and onboard their customers online. It is challenging for some startups because it is always easier to communicate in person, especially when it comes to business.

EdTech startups that thrived during the pandemic had already a proven product; they knew their target audience, how to market and sell to them. Hence, these startups increased their user base, received feedback, and developed the product. These startups just continued their growth and have a bright future. EdTech startups that failed were not ready with their product, lacked customer understanding and sales experience. These businesses were in the early stages, where everything was yet to be discovered. Thereby, these startups could not compete with the established companies run out of business.

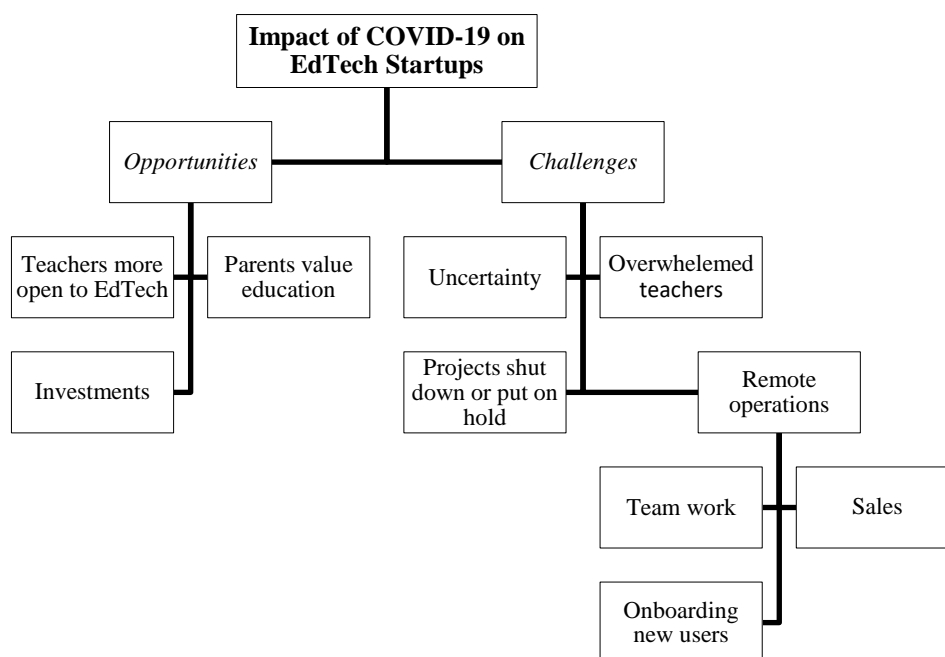


Figure 9. Impact of COVID-19 on EdTech startups.

EdTech startups have a mutual understanding that the business model consists of the following elements for business model definition. The first one is the product. What are they offering? Why are they offering? What features does their product have? The next one is the target audience. What do they need? To whom do we sell our product? Who are they? Who are they not? The third element is marketing. How do we reach our target audience? What channels do they

use to discover products? How do you communicate with them? The last component is revenue. How do we make money? How much do we charge? As for business model innovation during the pandemic, Figure 10 illustrates it. EdTech startups did not come up with a new business model but innovated their parts. EdTech startups adapted their products to remote and dynamic learning, included integrations with popular platforms and enhanced customer support. Concerning the target audience, parents started to play a more significant role in education. Hence, EdTech startups started to offer plans for them. EdTech startups emphasized their messaging on the benefits of remote education and usability of the products at home regarding marketing efforts. Lastly, EdTech startups offered prolonged trials to increase awareness about the product in the target audience. During COVID-19, EdTech startups did not invent a new business model. They were still using SaaS (Software as a Service) model and charged their users for a particular time.

Thereby, EdTech startups did not transform their revenue streams. However, some of them offered their solution for free for a longer time as a branding prospect, get a more significant user base, and receive feedback. EdTech startups do not unanimously agree that giving the product for free is a good thing. Some startups think EdTech should have used the pandemic and forced remote schooling as a momentum for the whole industry and charge users for products. Others tried to utilize Freemium and understood that it is not for them because the paying users do not cover the unit costs. Overall, EdTech startups followed their path when it comes to Freemium. Only time will tell whether using Freemium led to financial growth.

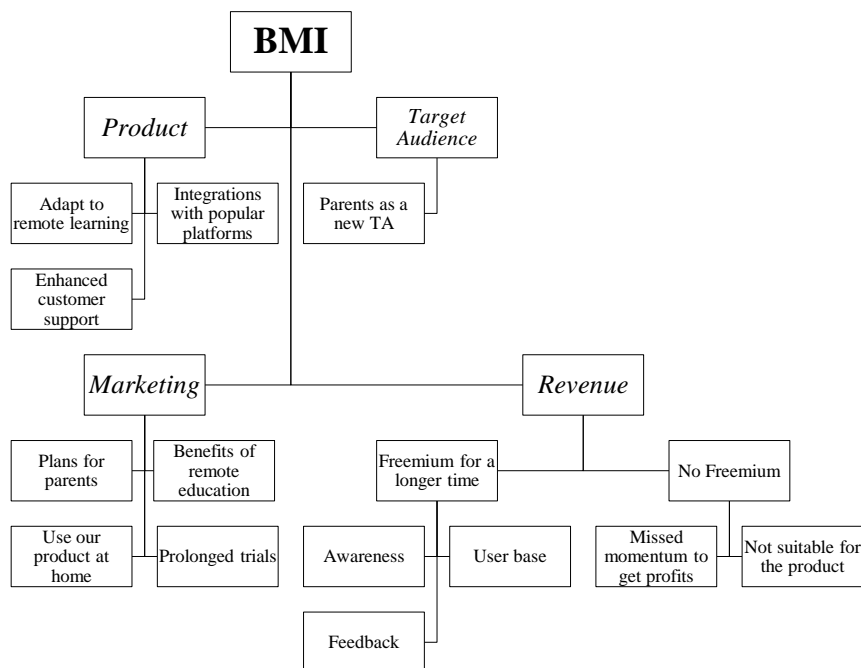


Figure 10. Business Model Innovation (BMI) at EdTech startups due to COVID-19.

Finally, based on the interviews with EdTech startups and the industry's experts, the author collected advice that should help them. First and foremost, COVID-19 was a great chance to revisit the business model and discover new opportunities. By revisiting it, EdTech startups made some alterations and should practice it in the future. Second, being flexible in terms of business operations helps EdTech startups to stay competitive in the market.

No matter how old your company or how experienced you are, you must always unlearn, relearn, and keep the adventurous spirit ready for the new adventure. Ready for the chance and prepare for the worst. For any uncertainty that would be there. (Globish Academia)

EdTech startups just have to look for the opportunities that are available to them that as a result of this extraordinary time that we're living through. that possibility of opportunity and looking for those opportunities and seeing how whatever it is you do can match some of the needs that happened to be out there and of course, and the need is, it is significant. I mean, it's huge, but again, it has to be something that's also easily recognizable as advancing curriculum goals and outcomes within the school environment, whatever that looks like, and how whatever that means, which will be different from company to company, depending on what it is that they do. (TEACH Mag)

Third, EdTech startups should respond to the customers' needs efficiently. Forth, it is not necessary to rent an office and have meetings in person. Most of the things can be done remotely. Next, the solution should always be visible to potential customers and have value for them. Hence, understanding customers is crucial for EdTech startups. Lastly, they must always focus on the product and remember why they do what they do.

Even if the customers had a phase where they were not buying, you still must be visible and show that you know the situation so that once the customers are again ready to buy, they remember you and hopefully also followed your journey through the assignment. Furthermore, they are ready to pick you when they are ready to reinvest. (Kindiedays)

Even if it might look like COVID-19 allowed some companies to get quick wins. In the longer term, there are no quick wins. You still need to build the business case so that you will have loyal customers continuing the use of your solution and only continue if they find it very valuable. So, you need to be able to provide that value year after year to your clients. Furthermore, in EdTech, it does take a long time to have loyal customers. However, once you have loyal customers, they stay loyal forever. (Education Alliance Finland)

5 CONCLUSION

COVID-19 occurred in December 2019 in China (Chebib, 2020). Nobody could have predicted that the entire world would change in various ways: closed borders, restaurants, businesses, remote education, and work to avoid the virus's spread. Thus, schools needed to organize lessons online. Teachers, parents, and students were not ready. It was a massive pressure for them (Zheng et al., 2020). Luckily, in the 21st century, Internet exposure allowed students to continue education with educational technology. For that reason, the author aimed for the study to understand the impact of COVID-19 on business model innovation at EdTech startups. The objective was to understand how EdTech startups dealt with the pandemic and how it reflected their business model. Besides, the study aimed to understand how EdTech startups define business models for their ventures.

The theoretical part is a literature review that consists of relevant topics for the research's topic. Consequently, it comprises 1) business model, 2) business model innovation, 3) summary. These three chapters demonstrate all the relevant information gathered from other studies and represent this study's basis. It is the last chapter that completes the research and links the previous chapters. The author connects findings with the theoretical framework to answer the research questions. Additionally, this chapter includes the study's limitations and suggests potential topics for future research.

5.1 Theoretical implications

First, the author found the answers to the research questions by interviewing EdTech startups and industry experts. The participants were willing to share their experiences with COVID-19 and its impact on business model innovation. The topic of the study sounded attractive to the interviewees. That is why it was relatively easy to arrange interviews. As the study aimed to comprehend how the pandemic affected business model innovation at EdTech startups, the author concludes that the target was achieved. Furthermore, due to the novelty of COVID-19, the study contributes to the business model innovation literature.

Before answering the research questions, the study needs to update the theoretical framework summary presented in Figure 7. The framework was done based on a literature review. The framework describes that the business model at EdTech startups is SaaS (Software as a Service) and uses the Freemium and Bundle model. When disruption happens to the business (either positive or negative), innovation occurs. In other words, business model innovation happens due to interruption in the market that leads to business improvement or disturbance. After the interviews, the framework looks similar with few changes. Figure 11

presents the updated business model innovation framework. EdTech startups did not invent a new business model. They still use SaaS (Software as a Service) as a basis and charge users per specific time. Business model innovation (BMI) occurred in all segments of a business model. First, EdTech startups adjusted their product to respond to the needs. Typically, they would make sure that the product is entirely online and has the necessary remote education features. For example, they could add integration with Zoom to make it more accessible for the teachers to have online classrooms. Second, parents became a new target audience. They started to be active in children's education and want to have a say on what technologies to use during the learning process. Hence, EdTech startups launched pricing plans for parents. Third, startups emphasized marketing efforts on the advantages of remote learning and accessibility of their tools. Lastly, some EdTech startups utilized Freemium as a new revenue model to get a broader user base and feedback. To sum up, the empirical framework reflects the theoretical framework with additional perspectives.

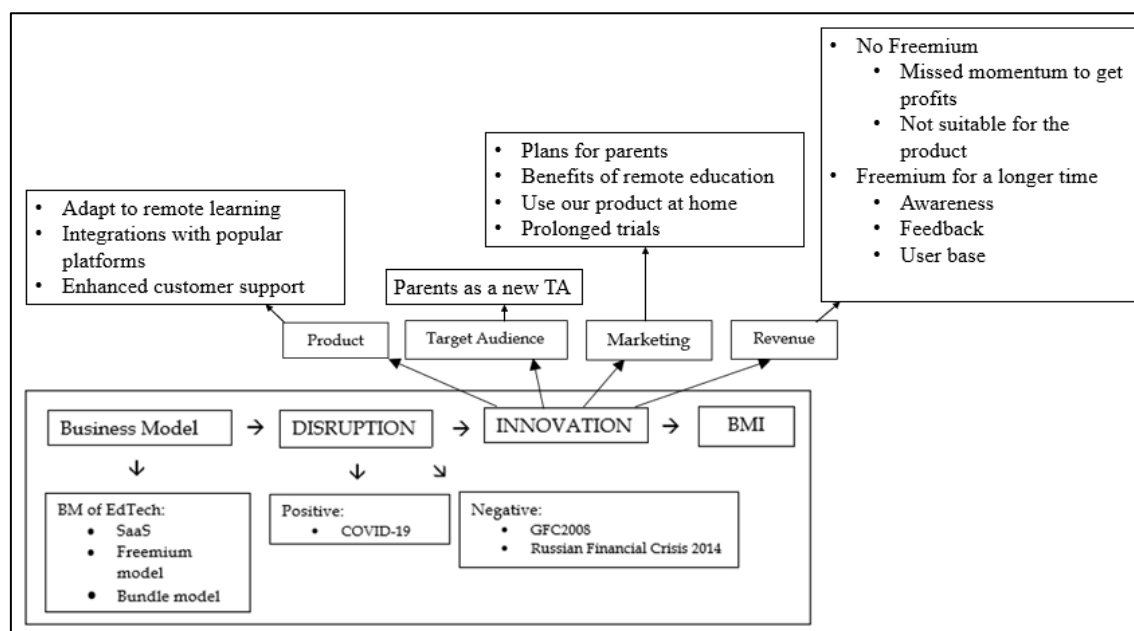


Figure 11. BMI Framework.

RQ1: How did COVID-19 impact the EdTech industry?

The literature review mentioned that applying educational technology in the classroom is desirable for students and teachers (Ruggiero & Mong, 2015). Based on the interviews, the author experienced that not all schools equally willing to utilize technology for educational purposes. Some schools simply do not have the budget for that, and others preferred to use old-school modes (e.g., blackboard and notebooks). Due to COVID-19, schools suddenly moved to a remote environment, where teachers needed to hold lessons online. In practice, it

meant that making students focused for an extended period is an enormous challenge (Kiran et al., 2020). Hence, both educators and parents understood the value of online technology. It is a game-changer for EdTech startups. They do not need to prove to schools why technology helps in the learning process. Second, parents became more aware of the educational processes. They help their children with homework and consequently have a say in choosing educational technology. Thus, EdTech startups got an active user base for developing their solutions. Third, the EdTech industry received attention from the outside world because everyone talked about online education and how to make it easy for teachers, students, and parents. As a result, investors started to pump more money than before into EdTech startups. Overall, the industry grows faster than expected because of COVID-19.

COVID-19 had a relatively positive impact on the EdTech industry. First, schools understood the benefits of educational technology in remote teaching. Therefore, EdTech startups got an outstanding prospect to increase the user base, receive feedback, and develop educational requirements. Second, EdTech accelerated its growth because of investments, outside interest, and new players. In conclusion, COVID-19 was an adrenalin shot for startups as it has underlined competitive solutions with value and destroyed products without it.

Considering the challenges that COVID-19 brought for EdTech startups, the most common one is uncertainty. Nobody knows what will happen in the future and when students can return safely back to school. Additionally, schools experience budget cuts, and it results in the inability to purchase educational technology. Therefore, EdTech startups experienced that ongoing and future projects are either put on hold or canceled until the better times. Lastly, EdTech startups need to do their internal and external operations online. The most difficult is to do sales and onboarding remotely for EdTech startups.

RQ2: What happened in BMI (business model innovation) due to COVID-19?

The author mentioned various definitions for the business model (Ghaziani & Ventresca, 2005; Kiran et al., 2020). Findings indicate that EdTech startups define the business model similarly. The business model, in a nutshell, is how they make profits by providing a valuable product to the target audience. It supports that the business model helps the venture to understand its objective and how it makes money (Teece, 2018; Timmers, 1998). Therefore, the categories are the product, target audience, marketing, and revenue streams.

COVID-19 did not make EdTech startups invent a new business model, although it innovated its elements. The primary modernization was finding parents as a target audience and provide them with subscription plans. Second, EdTech startups explained in their messaging to the target audience the benefits of remote education and their tools at home. As for the product, EdTech startups

aim to provide users with a flexible tool for hybrid learning that has integrations with popular platforms and has available customer support.

Regarding business model innovation due to COVID-19, EdTech startups did not invent a new business model. They continued using the Software as a Service (SaaS) model to offer startups operational and innovational benefits (Loukis, 2019). However, EdTech startups shifted the components of the business model. The main alteration happened in discovering parents as a new target audience and offer pricing plans for them. Second, EdTech startups accentuated their marketing efforts on the advantages of remote education and usability of the products at home. Lastly, EdTech startups focus on adjustability to hybrid learning environments, integrations with the existing platforms, and customer support for teachers and parents. As for the pricing plan, most EdTech startups provided their solution for free for a longer time than usual to support the educational community, increase awareness of the tool, and boost the user base. Some EdTech startups did not continue with Freemium because they considered that it does not give back with enough Premium users and people want to pay for EdTech as a sign of commitment.

5.2 Managerial implications

The study is beneficial for EdTech startups in the following ways. First, it allows them understanding how other 14 startups from the same field coped with the pandemic and comprehend that they are not alone. Second, the study makes it possible for EdTech startups to start internal discussions on revisiting the business model and think about what should be changed. For instance, it could be possible that they discover that parents should be a new target audience. Lastly, EdTech startups could learn that product and market understanding is vital for every company. It is possible to do things remotely and define revenue streams at the later stages, but EdTech startups must define the product and who the target customers are. Moreover, EdTech startups must believe in their solution and explain to others why it is so. Based on the research, there are several suggestions for the EdTech industry. First and foremost, EdTech is a relatively small industry. Hence, the role of the companies that provide networking opportunities and build the ecosystem is crucial. It would be beneficial for all EdTech startups to have even more events to share their experiences after COVID-19. Understanding that they are not alone in the boat helps the whole community. Second, instead of competing against each other, EdTech startups, as a whole industry, should aim to provide technology for schools and revolutionize learning processes once and for all.

Concerning possible uncertain time as COVID-19 in the future, EdTech startups should do the following things to thrive during that time. First, they

must always believe in their product and understand the target audience. It may sound basic, but many startups lack these things. Eventually, these ventures run out of business. Second, it is helpful to have a business understanding before the crisis and have a loyal audience. A business understanding allows firms to find new opportunities during uncertainty, and a loyal audience will keep purchasing solutions because they trust the company. Lastly, EdTech startups should be agile and respond fast to the changing environments. Flexibility helps businesses to act fast, be innovative in finding solutions, and thrive in the market. In other words, to become the winners, EdTech startups should have a proven product, clear target audience and marketing efforts, decent experience in the field.

5.3 Limitations and suggestions for future research

The research has several limitations. First, the study utilizes the qualitative research method. The author did semi-structured interviews with 16 businesses to gather empirical data. Most interviewees represented Finnish EdTech startups. Thus, the research results cannot be transferable to the international scale even though EdTech startups from Australia and Thailand participated in the research. Hence, the impact of COVID-19 on business model innovation at EdTech startup cannot be generalized to other EdTech startups. Second, the author interviewed C-level people who, in some cases, were co-founders. Thereby, there is no guarantee that there was no bias on the pandemic's effects on their ventures. Third, the author had limited time to research due to the graduation timeline. Thereby, it may have an impact on the results of the study. It would be possible that if the research is done for a longer time, the findings could be different. Lastly, the novelty of COVID-19 and lack of up-to-date resources on its impact on business influenced the literature review. The study's theoretical basis is the most recent studies that have been published because of the popularity of the topics around pandemic.

As for suggestions for future research, these are the following. Due to COVID-19, EdTech startups offered free trials for an extended time due to various reasons (e.g., branding opportunity). Therefore, it would be interesting for the scholars to research the influence of Freemium that EdTech startups provided to the users during the pandemic on financial growth. How did they transfer "Free" users into paying customers? Second, most interviewees were males. It seems important to study factors of gender inequality in C-level positions at EdTech startups. Third, the long-lasting impact of remote work on EdTech startups' efficiency. Due to the pandemic, they moved to work from home. Thereby, it is beneficial to assess whether it was a positive or negative change for EdTech startups. Lastly, during COVID-19, families who have children with disabilities faced a difficult time. They did not get enough support, according to the interviewee. Hence, it would be crucial to research EdTech startups' effect after the pandemic on learning progress on children with disabilities.

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APPENDIX 1: INTERVIEW QUESTIONS WITH THE EXPERTS

Semi-structured interview questions for xEdu and Education Alliance Finland

NOTES:

Date:

Interviewee:

1. GDPR agreement
2. Introduction
 - a. Company
 - b. Title
 - c. How many years are you with the company?
3. What does your company do?
4. How do you help EdTech startups?
5. How did COVID-19 influence EdTech startups?
 - a. Common trends
 - b. Ups and downs
 - c. Future forecast
6. How do you understand the business model?
 - a. How business model change because of COVID-19?
 - b. Are there any other business models that EdTech startups started to utilize?
7. What are the main lessons that EdTech startups learned from the COVID-19 experience?
8. What is your advice for an EdTech startup for the new norm?

APPENDIX 2: INTERVIEW QUESTIONS FOR STARTUPS

Semi-structured interview questions for EdTech startups

NOTES:

Date:

Interviewee:

1. GDPR agreement
2. Introduction
 - a. Startup
 - b. Title
 - c. For how long do you work with this startup?
3. What does your startup do?
4. How did COVID-19 influence your startup?
 - a. Where does the EdTech industry going?
5. How do you understand the business model?
6. What were the most significant challenges during COVID-19 for your startup?
 - a. Have you used the Freemium business model?
 - b. What is your strategic thinking behind utilizing Freemium?
 - c. How will you proceed with it?
 - d. How will you turn your Free users into paying customers?
7. Have any other market disruptions shaped the business model for your company?
 - a. Is this experience relevant to the current changes?
 - b. How do you respond to the changes?
8. What are the main lessons your startup learned because of COVID-19?