Impact of COVID-19 on Business Model Innovation at EdTech Startups

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Abstract

Purpose: 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. Educational technology (EdTech) aims to advance the learning results for students, foster individual approaches, and diminish teachers' burnout. The study aims to understand the impact of COVID-19 on business model innovation (BMI) at EdTech startups. Modern scholars show interest in researching firms that have various business models simultaneously. It is still unclear how business model diversification corresponds to its accomplishments. 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. The study sheds light on the research gap on how agility and dynamic capabilities help companies to survive during crisis.

Approach: The data was collected by reviewing the existing literature and conducting 17 semi-structured in-depth interviews with 14 EdTech startups and three industry's experts. To analyze qualitative data, the researchers utilized content analysis and MAXQDA 2020 software in which data was coded into 14 categories to find answers to the research questions

Results: There is no doubt that COVID-19 compelled the educational industry to utilize digital tools more actively than ever before. As a result, COVID-19 forced the EdTech industry to grow faster than expected. 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. 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.

Implications: The study is beneficial for EdTech startups in the following ways. First, it allows them understanding how other startups from the same industry coped with the pandemic. 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. Concerning uncertain time as COVID-19 in the future, EdTech startups must always believe in their product and understand the target audience.

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. Many countries placed lockdown in practice, where schools, universities, and companies were forced to move to remote work (Grech, Grech and Borg Myatt, 2020). According to UNESCO, 1,6 billion children needed to study from home. Students began to get information online, 59% participated in an online discussion, and 53% watched recorded videos (Becker *et al.*, 2020). Due to the novelty of COVID-19, the world has a request to comprehend how pandemics affected human lives. 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. 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 authors intend to study the impact of COVID-19 on the business model innovation at EdTech (educational technology) startups.

The business model is a relatively young concept. Hence, all the work has been done in the 21st century and lacks theoretical development (Zott, Amit and Massa, 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, Vroom and McCann, 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). To understand the impact of COVID-19 on the business model innovation at EdTech startups, the authors have several questions:

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?

The article has the following structure. First, the authors present the objectives of the study and explain its relevance. The second chapter illustrates the theoretical background of the study. In this chapter the authors define business model and business model innovation. Third, the authors present the qualitative research method and how data analysis was done. The fourth chapter demonstrates the findings. Lastly, the authors discuss theoretical and managerial implications.

2 Theoretical background

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 and Zott, 2001; Ghaziani and 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). 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).

Since this study is around EdTech startups, it is vital to describe how the business model helps digital entrepreneurs deliver value. First, 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 technology startups to have a strategic focus on scarcity and personalization. As for personalization, 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 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 and Jovy, 2016).

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 corresponds to how a venture does business online (Zott, Amit and Massa, 2011). Moreover, the e-business model reflects its communication with customers and suppliers (Brynjolfsson, Hitt and Yang, 1998). In this study, the authors are interested in 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 model

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. 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).

Regarding modern concepts, IoT (the Internet of Things) and mobile applications are the most widespread ways for e-companies to reach their customers. IoT stands for efficient communication among people via mobile devices through Internet (Khalil *et al.*, 2021). 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. 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 startup definitions

To understand the meaning of EdTech startups, the authors find it essential to define each term separately. 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 and Mong, 2015). 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.

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). Based on EdTech and startup 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 and 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

The EdTech industry grows fast. In year 2020 it 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. Table 1. 10 Top EdTech Companies (Lynch, 2020)Table 1 presents the top ten EdTech companies in the world. The vast majority locates in China. Since China is one of 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). 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).

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

Company	Estimated Valuation	About	Founded	Location
VIPkid	$1.5 billion	Connects Chinese students and Eng-lish native teach-ers 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,	2009	San Francisco, the US

		compa-nies, and govern-ments to gain new skills		
Age of Learning	$1 billion	Online curricu-lums form pre-K students	2007	Glendale, the US
iTutor Group	$1 billion	Personalized learning online	1998	Taipei

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, Pearson and Schweingruber, 2014). Due to the rapid technological growth globally, education also experienced broad penetration of technology (Hu, Yeh and Chen, 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 typically 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 and 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, SaaS businesses store customer's data online (Rostami, Akbari and Javan, 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 and 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

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 1 demonstrates the business models for EdTech startups.
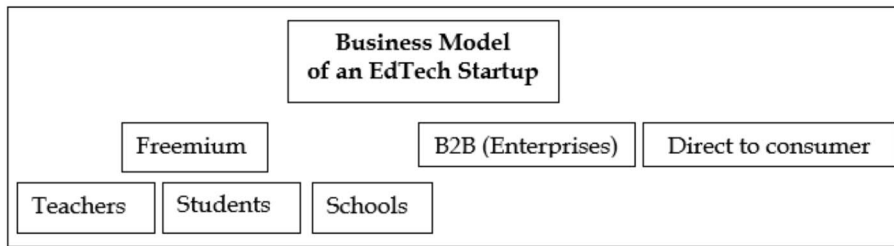
Figure 1. Business Models for an EdTech startup (Arora, 2021).

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 it for 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 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, Amit and Massa, 2011). It is a synergy of new and old aspects that may involve a product, value delivery, and other characteristics (Björkdahl and 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 1950's. 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, Otaye-Ebede and Stewart, 2020). The modern world pushes companies to create new approaches and look outside of the box to find opportunities (Hamel and 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.

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 and Zott, 2020). Consequently, they could create a solution that combines multiple segments. As for external factors, market disruptions influence business model innovation.

2.2.2 Market disruption 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 authors look at the global financial crisis (2008) on macro and micro levels. Additionally, they describe how the Russian Financial Crisis (2014) influenced the Russian startup ecosystem.

Negative market disruptions and BMI

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. 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 and 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.

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, Constantinescu and Căeseu, 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, Ismail and Ummi, 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, Revuelto-Taboada and Ribeiro-Soriano, 2016). Forth, 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, Kabir and Huang, 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.

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 and Colgan, 2017).

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 co-operate with the Russian government and get investments from corporations.

Positive market disruption and BMI

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 2019, 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. 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 ad-dress potential challenges (Harris and 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).

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 and Sujono, 2020). To make sure that EdTech facilitates education efficiently, the stakeholders need to communicate. Educators, parents, and students must address their concerns, need 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).

2.3 Summary

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 authors define 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. 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 authors define it as 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). Figure 2 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.
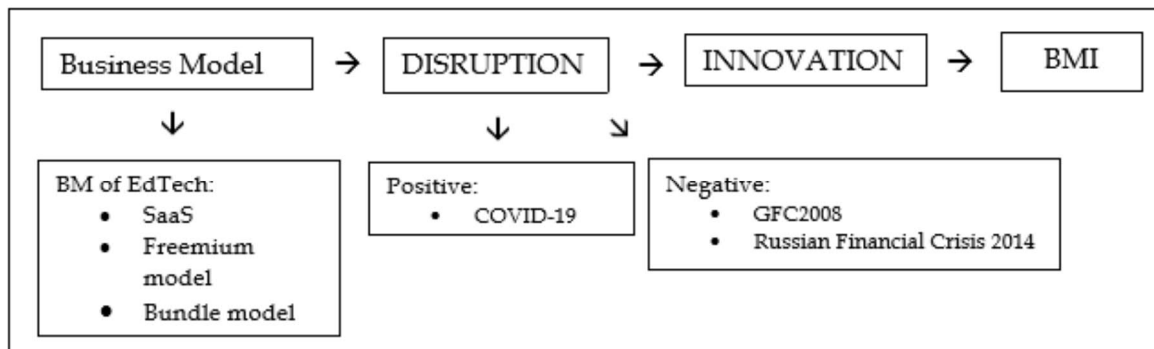
Figure 2. Theoretical Framework

3 Research method and data

3.1 Qualitative research

The author chose semi-structured interviews due to the following reasons. First, the authors wanted to get honest thoughts from the members of the EdTech community. Second, they 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 and Kovalainen, 2008). The authors find answers to the research questions with semi-structured interviews. It is a suitable way for the study because one of the researchers 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 to dig deeper into fascinating topics and avoid irrelevant questions depending on the conversation flow.

To answer the research questions, the author first interviewed three companies with the industry's insights and daily operations with EdTech startups and teachers. These companies are Education Alliance Finland, TEACH Magazine, and xEDU. Regarding criteria to choose industry experts, it was crucial that the company had international experience, helped EdTech startups, and was active in the ecosystem. After the interviews with the industry's experts, the author talked with 14 EdTech startups. These startups are Annie Advisor, Eduten, Globish Academia, GraphoGame, Kide Science, Kindiedays, Lingo Jr, Mafy Oy, Makers Empire, Mightier, New Nordic School, Skillgrower, and Tinyapp. The startups are based in Finland, Canada, the US, Thailand, India and Australia. The authors 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.

3.2 Data analysis

Data was analyzed with the thematic content analysis (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 authors used Otter.ai, software for automatic transcription. As a result, 135 pages of transcription were created. After that, MAXQDA 2020 software was used for coding the data. 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 authors answered the following questions (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. The main coding categories were 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. The third main category is "Definition of BM", where respondents, in their own words, described what does business model means to their company. The authors 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 freemium 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".

4 Findings

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)

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. Lastly, people will continue using digital tools for educational needs. COVID-19 showed the paramount need for online solutions in people's lives.

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 on 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. 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. 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.

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. Second, all respondents re-ported that ongoing sales discussions, partnerships paused, and potential projects shut down.

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. 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.

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. 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. 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. 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.

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 high-lighter 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 pan-demic. Only time will tell if they could utilize lessons from COVID-19 and dominate the market in the future.

4.2 Business model definition

The author found out that scholars have various definitions for a business model in the study's theoretical framework. 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. The order may be different, but there was always a product, target audience, how to reach potential users, and how to make money. Typically, the definition would be in the form of questions that help businesses to build a business model. Figure 3 illustrates how EdTech startups describe the business model.

Figure 3. How do EdTech startups define BM?

4.2.1 Business model innovation

Considering that the interviewees 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. 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. Even though schools moved to remote lessons and probably the best practices will stay in the future, interview respondents mentioned that education al-ways 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.

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. 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. 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. 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.

COVID-19 sparkled 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. 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. 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.

4.3 Conclusions

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 4 demonstrates opportunities and challenges that EdTech startups faced due to COVID-19. As for opportunities, teachers are more open to utilize EdTech solutions with students, parents started to value education and became a new target group. Moreover, the industry attracts more investments because of global lockdowns and online learning modes. Concerning the challenges, uncertainty, overwhelmed teachers, on hold projects and sales, and remote operations negatively affect EdTech ventures.
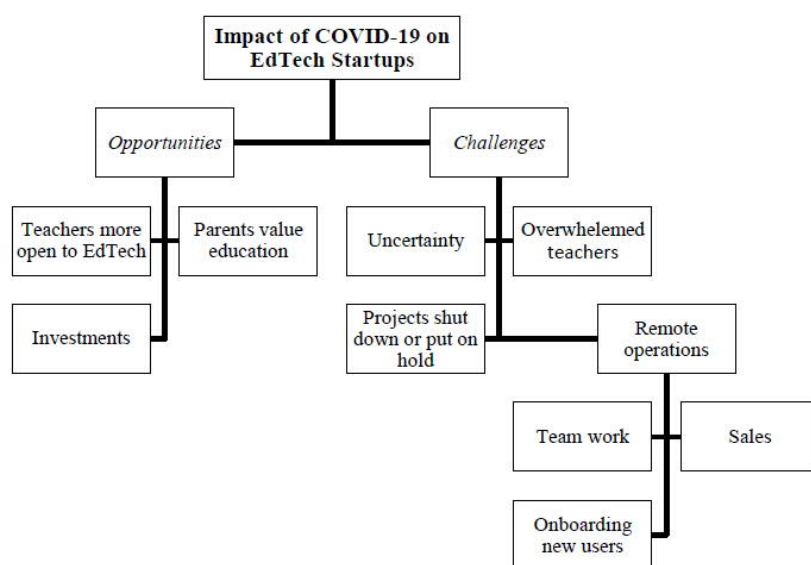

Figure 4. Impact of COVID-19 on EdTech startups.

Figure 5 illustrates that 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.
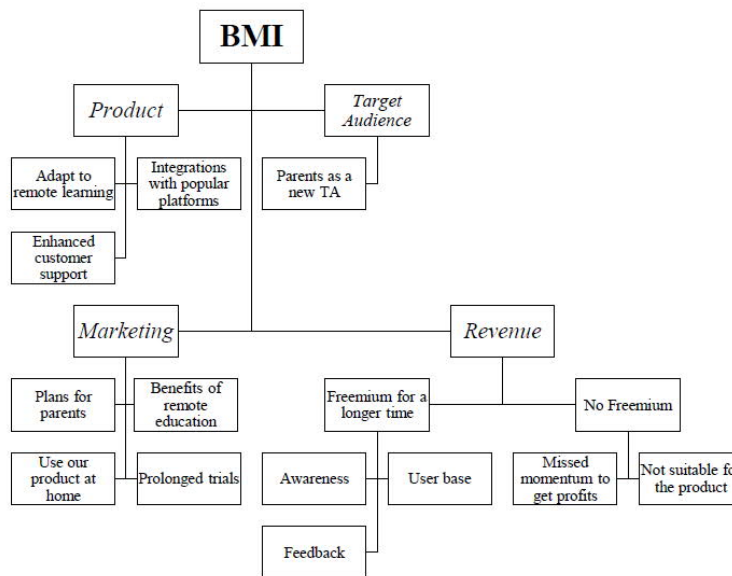
Figure 5. Business Model Innovation at EdTech startups due to COVID-19.

5 Implications

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 presented in Figure 2. 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 6 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.
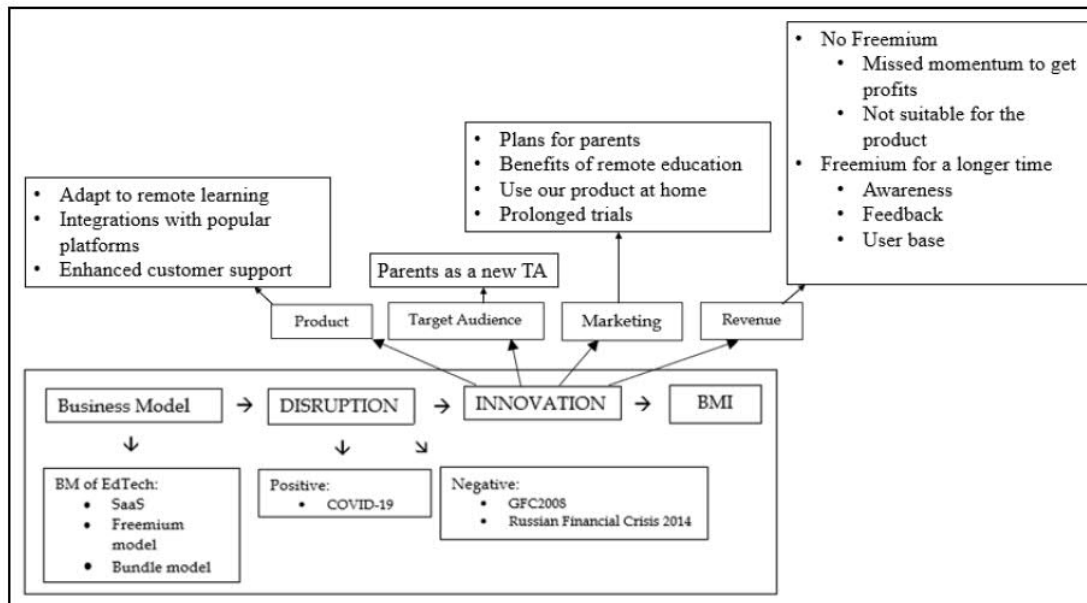
Figure 6. The updated Business Model Innovation framework at EdTech startups.

5.2 Managerial implications

The study is beneficial for EdTech startups in the following ways:
- It allows them understanding how other 14 startups from the same field coped with the pandemic and comprehend that they are not alone
- 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
- 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
- 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
- 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

To thrive in uncertain times in the future EdTech startups should 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. 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.

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