



Innovation in business models of brazilian start-ups in the educational sector

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Abstract

Objective of the study: The aim of this article is to analyze how education technology start-ups in Brazil innovate their business models.

Methodology: We conducted a multiple case study with 6 start-ups in the field of education, varying in terms of age, size and level of diversification. Our field surveys comprised interviews, observations and documents as data sources from 6 education sector start-ups. We used the extended case method as a guide for data analysis.

Originality/relevance: This research contributes to a better understanding of how start-ups innovate in their business models.

Main results: Among our main results, we found that in value creation, capabilities are developed in an informal and unstructured way. In value proposition, start-ups demonstrate considerable creativity in their offerings, but pay little attention to their channels and customer relations. In terms of value capture, they focus too much on the pursuit of revenue, but do not pay sufficient attention to cost control and pricing structure.

Theoretical/methodological contributions: We collaborated with the scientific discussion on innovation in business models by discussing how 6 different start-ups innovate in their models.

Keywords: Business Model Innovation. Business model. Start-up. Education.

Inovação em modelos de negócios de start-ups brasileiras no setor educacional

Resumo

Objetivo do estudo: Analisamos como empresas iniciantes (start-ups) de tecnologia voltadas para a educação no Brasil inovam em seus modelos de negócios.

Metodologia/abordagem: Realizamos um estudo de caso múltiplo com 6 start-ups da área da educação, variando em termos de idade, tamanho e nível de diversificação. Nossos levantamentos de campo compreenderam entrevistas, observações e documentos como fontes de dados de 6 start-ups do setor educacional. Usamos o método de caso estendido como um guia para a análise de dados.

Originalidade/Relevância: Essa pesquisa contribui com uma melhor compreensão de como start-ups inovam em seus modelos de negócio.

Principais resultados: Entre nossos principais resultados, identificamos que na criação de valor o desenvolvimento de competências acontece de

forma informal e desestruturada. Na proposição de valor, há muita criatividade pelas start-ups na oferta, mas pouca atenção em seus canais e nos relacionamentos com os clientes. Na captura de valor, há foco demasiado na busca por receitas, mas desatenção no controle de custos e na estrutura de precificação.

Contribuições teóricas/metodológicas: Colaboramos com a discussão científica sobre inovação em modelos de negócios discutindo como 6 start-ups diferentes inovam em seus modelos.

Palavras-chave: Inovação em Modelo de Negócio. Modelo de Negócio. Start-up. Educação.

Innovación en modelos de negocio de start-ups brasileñas en el sector educativo

Resumen

Objetivo del estudio: analizar cómo las startups (start-ups) de tecnología para la educación en Brasil innovan en sus modelos de negocio.

Metodología/enfoque: Llevamos a cabo un estudio de caso múltiple con 6 empresas emergentes de educación, que varían en términos de edad, tamaño y nivel de diversificación. Nuestras encuestas de campo comprendieron entrevistas, observaciones y documentos como fuentes de datos de 6 nuevas empresas en el sector de la educación. Utilizamos el método del caso extendido como guía para el análisis de datos.

Originalidad/Relevancia: Esta investigación contribuye a una mejor comprensión de cómo las empresas emergentes innovan en sus modelos de negocio.

Principales resultados: Entre nuestros principales resultados, identificamos que en la creación de valor, el desarrollo de competencias ocurre de manera informal y no estructurada. En la propuesta de valor, hay mucha creatividad por parte de las start-ups en la oferta, pero poca atención a sus canales y relaciones con los clientes. En la captura de valor, hay demasiado enfoque en la búsqueda de ingresos, pero falta atención al control de costos y la estructura de precios.

Aportaciones teóricas/metodológicas: Colaboramos con la discusión científica sobre innovación en modelos de negocio discutiendo cómo 6 start-ups diferentes innovan en sus modelos.

Palabras clave: Innovación del modelo de negocio. Modelo de negocio. Start-up. Educación.

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1 INTRODUCTION

Although research on business model innovation (BMI) has experienced immense growth in recent years, this research field is still considered unconsolidated (Andreini & Bettinelli, 2017; Foss & Saebi, 2017). From the still-emerging nature of research on BMI, several obstacles arise for its full development, among which is the lack of greater precision regarding the conceptualization of the construct (Foss & Saebi, 2017). As part of an effort to develop a new scale aimed at measuring BMI, Clauss (2017) conducted a conceptualization of the BMI construct and its constituent elements (subconstructs). This concept, however, has not yet been subjected to wide application, especially in the context of an emerging economy such as Brazil.

Based on the business model innovation scale proposed by Clauss (2017), this study aims to analyze how start-ups of technology for education in Brazil innovate in their business models. The focus of the study on startup companies is consistent with general research on BMI, which is, to a large extent, oriented toward themes of entrepreneurship and entrepreneurial companies (Cosenz, 2017; Liu, 2018; Trimi & Berbegal-Mirabent, 2012; Zotta & Amit, 2007). When a company is formed, its founders need to define the most appropriate business model for their operations, considering the alternatives available for the implementation of an architecture responsible for creating, delivering, and capturing value in their offers to customers (Teece, 2010). Foss and Saebi (2016) identified that existing studies on BMI predominantly focus on innovative start-ups but concluded that more studies are still needed to better understand the implications of BMI for the performance of these companies. Our research problem seeks to answer: how do technology start-ups for education in Brazil innovate in their business models?

The choice of technology for the education segment for the research we carried out considered the transformations in the higher education market in Brazil in recent decades, which caused significant effects on the provision of technology-based services, both for higher education institutions (HEIs) and for students. From the publication of Decree 2306 of August 19, 1997, Brazil underwent a legislative change that caused the migration from a traditional education model with low competition to a mass education model, characterized by high competition and focus on profit, efficiency, and productivity. There was a large growth in the number of private HEIs in the country: according to the 2015 Higher Education Census, there were 2,364 higher education institutions in Brazil that year, of which 2,069 (87.5%) were private (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira [INEP], 2016).

In parallel, successive administrations of the federal government implemented programs to facilitate access to private HEIs via scholarships, such as PROUNI and FIES. These programs expanded opportunities for access to university education for a significant portion of the Brazilian population and stimulated an increase in the number of undergraduate enrollments in private HEIs, which reached 75.7% of the total of 8,027,297 enrollments in on-site and distance learning in the year 2015 (INEP, 2016). The expansion of vacancies in private HEIs led to the intensification of competition between

these institutions, which resulted in constant pressure for greater operational efficiency and increased quality of services. This scenario has created a space for expanding the offer of educational technology solutions, which several new companies formed in Brazil in recent years have been trying to occupy (Ferreira, Rosado, Lemgruber, & Carvalho, 2019).

For this investigation, we conducted a multiple case study covering six start-ups in the education sector. Our field surveys comprised interviews with directors, observations, and documents as data sources.

This study contributes to the literature on business model innovation by analyzing how Brazilian start-ups innovate in value creation, proposition, and capture. We perceive that, in the creation of value, the development of competencies happens in an informal and unstructured way. In the value proposition, there is a lot of creativity by start-ups in the offer but little attention on their channels and customer relationships. In value capture, there is too much focus on the pursuit of revenue but too little attention to cost control and the pricing structure.

2 THEORETICAL FRAMEWORK

2.1 Business model (BM) and business model innovation (BMI)

Business model innovation (BMI) is one of the biggest challenges of this business era (Nunes & Russo, 2018). Intensification of competition and growing customer demand for better products, services, and solutions at lower prices have led organizations to rethink their business models to gain competitive advantage (Johnson, Christensen, & Kagermann, 2008; Lindgardt, Reeves, Stalk, & Deimler, 2009; Teece, 2010).

Before discussing innovation strategies in business models, we consider it opportune to present definitions of what a business model (BM) is which are listed in Table 1. An analysis of the definitions in this table allows us to conclude that BMs consider a series of variables and flows that lead the company to create, deliver, and capture value, aiming to achieve competitive advantages. Some authors also highlight the importance of relationships with stakeholders.

Studies in several areas of administration, such as e-commerce, strategy, and technology management in organizations, have increasingly used the BM concept (Zott, Amit, & Massa, 2011). The large amount of empirical research and theoretical studies on this topic has allowed a convergent accumulation of knowledge, as indicated by several studies published in recent years (Maucuer & Renaud, 2019; Wirtz, Pistoia, Ullrich, & Göttel, 2016; Zott & Amit, 2013; Zott ., 2011). Although it has experienced growth in recent years, research on BMI can still be considered a field of research that lacks a consistent theoretical basis and the accumulation of knowledge through empirical research (Foss & Saebi, 2017). Recent reviews of the academic literature on the subject (Andreini & Bettinelli, 2017; Foss & Saebi, 2017), observed the still-emerging nature of research on BMI, which recorded the

predominance of studies of a qualitative nature, especially case studies, which enable small generalization of their results.

Table 1

Definitions of Business Models

Author	Definition
Timmers (1998)	A description of the flow of products, services, information, and sources of income involved in the business and its activities, as well as its potential benefits.
Morris . (2005)	The role of variables in strategy, organizational design, and economics to create competitive advantage in organizations.
Dubosson-Torbay . (2002)	How companies and their stakeholders create and deliver value to their target market, generating sustainable and profitable income streams.
Teece (2010)	The design or architecture of a company’s mechanisms for creating, delivering, and capturing value .
Sinfield . (2012)	Relationships and aspects involving the approach of companies to offer benefits that generate profits through their target audience.
Saebi . (2017)	The company’s value proposition and market segments, the value chain structure needed to realize the value proposition, the value capture mechanisms the company implements, and how these elements are intertwined in an architecture .

Source: The authors.

There is a consensus among authors that the business model should consider a set of variables that create value for companies (make them competitive). In addition to this set of variables, more recent definitions also began to focus on relationships with the organizations’ stakeholders. That is, relationships began to be considered inherent to the business model.

2.2 Conceptualization of Innovation in Business Models

The studies considered by Foss and Saebi (2007) as representative of this research front seek to offer definitions and conceptualizations of BMI, proposing a minimum conceptualization of the construct and dimensions through which organizations can innovate their business models. For example, Lindgardt . (2009) argue that BMI occurs when two or more elements of BM are renewed to deliver value in a new and different way. They add that there must be innovation simultaneously among the business elements, in a coherent, organized, and planned way. In another study focusing on multiple stakeholders, Casadesus-Masanell and Zhu (2013) classify BMI as a new means for the company to create and capture value for its stakeholders.

From the analysis of the studies in their sample, Foss and Saebi (2017) offer a definition of BMI, which we consider in our research: “designed, innovative, and non-trivial changes in the key elements of a company’s BM and/or in the architecture that connects these elements.” This definition highlights

changes in the individual elements of the BM (as Lindgart ., 2009, cited above) and how these elements are organized and structured – its architecture.

When executing their business model, organizations must think not only about their business but about the architecture of the entire ecosystem that supports the organization's business model (Bittencourt & Figueiró, 2019). Therefore, organizations in emerging economies are increasingly encouraged to structure the management of their innovation ecosystem, visualizing the creation of shared value among all the actors involved (Bernardes ., 2019).

2.3 Proposal by Clauss (2017) for conceptualizing Innovation in Business Models

For conducting research aimed at better defining the BMI construct, Foss and Saebi (2017) recommend the study by Clauss (2017), which proposes conceptualizations for both BM and BMI. According to Clauss (2017), at a systemic level, BMs are structural models that define how companies manage and develop their businesses. These structural models or BMs are configurations of different dimensions, the most important of which are related to the creation, proposition (or delivery), and capture of value (Baden-Fuller & Haefliger, 2013; Johnson ., 2008; Massa & Tucci, 2014; Morris, Schindehutte, & Allen, 2005, Spieth, Schneckenberg, & Ricart, 2014; Zott & Amit, 2013). The domain of value creation comprises the means through which companies create value using internal resources and capabilities and those of their partners in the industry chain (Achtenhagen, Melin, & Naldi, 2013). The value proposition comprises the company's portfolio of products, services, and solutions and the means through which they are offered to the market (Johnson ., 2008; Morris ., 2005). Finally, value capture defines how the organization captures revenue and obtains positive and sustainable results from the value proposition (Teece, 2010). For Clauss (2017), BMI means innovation in all dimensions of BM; for this author, BMI only occurs when all three dimensions of BM undergo some change.

In his work, Clauss (2017) identified multiple activities or sub-dimensions into which the dimensions of BMs are divided. From a review of the literature on BMs that considered works published from 2002 to 2014, Clauss identified 120 different conceptualizations for components of BMs, which the author aggregated into ten subconstructs, hierarchically subordinated to the three dimensions of BMs previously presented in Table 1. Table 2 describes the sub-constructs allocated to the three dimensions of BM, works representative of their proposition, and examples cited in the literature on BMI associated with these sub-constructs.

Table 2

Dimensions, subconstructs, definitions, and literature on BMI

Dimensions of BM	Sub-constructs and BMI	Definitions	Literature
Value creation	New skills	Companies must develop new capabilities and competencies to exploit opportunities that arise from their environment and internal context.	Achtenhagen . (2013) Teece . (1997)
	New features	Technological resources and equipment necessary for developing new products, services, and solutions, or for reconfiguring the company's BM.	Wei . (2014) Zott . (2011)
	New processes	How the activities in each BM are connected, providing efficiency to the BM, or how this arrangement of activities can be the basis for BM.	Casadesus-Masanell and Ricard (2010) Zott e Amit (2010)
	New partnerships	Partnerships such as suppliers, customers, and competitors can provide resources to BMI in addition to those available at the core company.	Bierly and Gallagher (2007) Dyer and Singh (1998)
Value proposition	New offers	New offerings from the company to solve problems or satisfy the needs of its customers in a superior way.	Cooper and Kleinschmidt (1987) Johnson . (2008) Teece . (2010)
	New clients	Redefining current markets or entering new markets.	Afuah (2014) Baden-Fuller and Haefliger (2013)
	New channels	New means of delivering value to customers (e.g., combining online and offline channels).	Johnson (2010) Osterwalder . (2005)
	New customer relationships	New forms of customer relationships can be a source of BMI, especially for substitutable products or mature markets.	Chesbrough (2006) Zeithaml . (1996)
Value capture	New revenue models	Changes in revenue models can be vectors for introducing BMI (e.g., shift from selling products to subscribing to services).	Baden-Fuller and Haefliger (2013) Casadesus-Masannel and Ricard (2010)
	New cost structures	Changes in the structure of direct and indirect costs of the company may be necessary to guarantee the implementation of BMI.	Casadesus-Masanell and Ricard (2010) Zott e Amit (2008)

In this article, we use the three dimensions of BM and all its subconstructs as the main theoretical background in our research.

3 METHOD

We performed a multiple case study involving start-up companies (start-ups) in the education sector, intending to explore, in entrepreneurial organizations and in the Brazilian context, how the application of the BMI subconstructs proposed by Clauss (2017) occurs. We chose start-ups since they are companies focused on innovation and, above all, on business model innovation. Expert Yuri Gitahy

(2016) states that “the business model is how the startup generates value”. We chose educational start-ups because they “continue to be the main driver of growth and generation of new sources of income” in the education sector (Diário do Comércio, 2022).

According to Miles (1979), in addition to comparing cases, multi-case studies allow the researcher the possibility of seeing idiosyncratic aspects of each case from different perspectives. This enables the researcher to understand not only the similarities and differences but also a situation's atypical characteristics and their consequences in each case.

3.1 Sample

Our sample comprised six education start-ups, varying in age, size, and level of diversification. We selected a sample with varied cases to have many possibilities for comparison, allowing for a richer development of the theory (Strauss & Corbin, 1990). In general, our research followed Dannells' (2002) study as a reference, which contrasted technology companies with respect to their resources and products. In the work of Dannells (2002), the companies studied were at different levels of maturity and presented great differences in their sizes and product diversification.

3.2 Data collection

Our field surveys comprised interviews, observations, and documents as data sources for the six start-ups. The triangulation of the different data collection instruments contributes to the reliability of the research. According to Jick (1979), the triangulation made by different methods allows the counterbalancing of the weaknesses of one method with the strengths of another.

In each of the six start-ups, we interviewed a member of their top team (founding partner or CEO). We interviewed senior management because of their influence on strategic issues in organizations. Table 3 characterizes the organizations and respondents, safeguarding their names and those of their respective companies. We conducted the in-depth interviews either in person or via Skype. To support the semi-structured interviews, we used a questionnaire developed based on the BMI scale proposed by Clauss (2017), presented in Appendix A of this article. We also analyzed several documents, including meeting minutes and CRM reports. The documents validated the data reported by the interviewees. We supplemented our data with observations of social media posts by the studied start-ups. Data collection from interviews and documentation occurred in the second half of 2020.

Table 3

Characterization of start-ups and interviewees' positions

Start-up	Characterization	Position
A	Start-up A is a publisher that offers much more than books. It adapts its more than 100 topics produced in different professional areas to the reality of its teaching start-up, making didactic content compatible with the workload and distribution of curricular components.	Commercial director
B	Start-up B offers very short courses. You get straight to the point without having to watch something you do not need or already know.	Founder
C	Start-up C is an independent channel for the dissemination of learning support content and information on programs and opportunities for access to Higher Education.	Content director
D	Start-up D is an educational platform aimed mainly at helping high school students prepare for the ENEM and choose the best college. When students finish high school, they need to make important decisions, which sometimes generate uncertainty and insecurities. This is normal.	Founder
E	Start-up E was founded in 2010 in the city of São José dos Campos, in the interior of São Paulo and today it is already one of the largest edtech (technology for education) start-ups in Brazil. It is an educational marketing platform that develops solutions to help schools attract and retain their students.	Vice President of Institutional Relations
F	Start-up F is a platform that works on student success by connecting education with the Future of Work to promote employability.	Founder

In this article, we worked with different educational start-ups, varying in size, age, and products offered - such as book publishing, short courses platform, ENEM platform, and educational marketing platform, among others. We believe this variety enriches the comparisons and dialogue between the results and the literature.

3.3 Data analysis

We use the extended case method (Burawoy, 1991) as a guide for data analysis. This approach enables researchers to use empirical data collected through case studies to reconceptualize and extend theories. Burawoy (1991), developer of the extended case study, mentions that “the generation of theory from scratch was perhaps imperative at the beginning of the sociological enterprise, but with the proliferation of theories, the reconstruction becomes more and more urgent; always starting from scratch and developing new theories, we should try to consolidate and build on what we have already produced.” The extended case method approach goes through many cycles of confronting data and theory, in each iteration directing the analyst to additional data and drawing on additional concepts and theories

(Dannells, 2002). In the extended case study method, data analysis and exploration of the scholarly literature occur together. While data analysis points to relevant concepts and theories in the literature, the literature provides frameworks concepts to aid in data interpretation (Dannells, 2002).

After carefully reading all documents, we noted the main themes and patterns (Miles & Huberman, 1994) and critical passages (Dannells, 2002). We performed an iterative process of constantly comparing theory and emerging data, generating conceptual and contextual clusters, which served as the basis for presenting the results. As for the reliability procedures, we followed the protocol by Gibbs (2018): we checked the transcripts of the interviews several times to identify possible deviations in meanings, we held weekly meetings to share information between the authors throughout the analysis and cross-checked the results by independent researchers.

4 RESULTS

This section presents the analysis of the business models of the six start-ups in the education sector. More precisely, we analyze how these institutions innovate in their business models from three perspectives: innovation in value creation, innovation in the value proposition, and innovation in value capture.

4.1 Innovation in value creation

a) Employee training and new skills

The sharp pace of competition observed in the higher education market has opened new opportunities for companies in the technology area but has created a constant need for updating. Employee training and the development of new skills became imperative. For the founder of start-up D, linked to the technology area for the educational segment, *“people are always the biggest asset of every company, but in startups (like ours), people are more than “the biggest asset”, people are “everything”*”. The founder complements this by revealing the difficulty of retaining talent, especially in the technology area. A way to get around this *“are challenges and the possibility of professional and personal growth, seeking to provide employees with conditions to be challenged and show their value”*.

Despite facing a market that demands continuous updating, many start-ups do not have the necessary resources to guarantee training for their employees. Therefore, they need to be creative when updating. The founder of start-up B mentions that *“the start-up always participates in meetups and events and also seeks to update itself in WhatsApp groups and online courses, as it does not have the resources to invest in formal training”*. Similarly, the founder of the start-up F indicates that *“training takes place in an informal and unstructured way”*. The vice president of institutional relations for start-up E adds a complicating factor: *“there is a musical chairs, but the professionals are always the same. This means that there is low renewal and little training”*. In general, there is little formality in training and in developing new skills. The innovation that we have happens in an informal and unstructured way.

b) Technical resources

“Does it innovate? It was born from an innovation and its purpose is innovation” - comments the founder of start-up F. Despite innovation being in the DNA of start-ups, many do not have enough financial resources, which forces them to adopt strategies based on creativity and partnership. In this regard, the founder of IES B mentions that *“various platforms grant credits to use their resources for free”*, which drives the innovation of technical resources in general.

In this line of low resources, the founder of start-up D minimizes the issue by mentioning that it is not necessarily required to have the best infrastructure and the best equipment. For her, *“the right equipment is what generates productivity”*. She adds *“that success in offering modern solutions with excellent experiences is listening to the public (b2c and b2b) and building products that meet the needs”*.

c) New processes

“Lean Startup. We fail quickly, cheaply, and learn quickly” (founder of start-up B). The idea behind this concept is to create quick prototypes, based on the needs brought by the market and use customer feedback to develop them much faster than traditional methodologies. This is how start-ups reconcile the speed of the market with the scarcity of their resources. You don't always get it right, but some metrics help control it: *“the evaluation is always based on the metrics of Results, Culture, and Efficiency”* (Vice-President of Institutional Relations at start-up E).

d) New partnerships

New partnerships Collaboration seems to be the main driver of start-ups. All respondents enjoy gains from partnerships, whether in capillarity, new knowledge, or brand and revenue gains through partnerships. This happens because there is a *“very strong innovation ecosystem in the education sector, including advisors, mentors, and other partners who create new opportunities and impact changes in business models”* (founder of start-up B). An example of innovation in value creation through partnerships was the integration of a solution by start-up D into the CRM of a teaching start-up, *“generating value both for customers and the partners involved.”*

4.2 Innovation in value proposition

e) New offers

If, on the one hand, start-ups present innovative solutions, on the other hand, they cannot keep up with the volume of demands (commercial director of start-up A). Most start-ups provide flexible and customizable solutions, continuously seek to improve existing products, and create new solutions but fail to scale these results. Generating new offers becomes an even greater challenge when it already has difficulties in delivering what is offered when the requested volume is large.

The content director at start-up C uses partnership strategies to constantly make new offers available: *“our products are innovative in the sense that all content production is sponsored by advertisers and not by the user (as is the business model of the competition)”*. With this example, it is noticeable how innovation has been happening in current business models to serve markets.

f) New customers and markets

There is a clear weakness regarding the structuring of start-ups' distribution and sales channels. Some interviewees recognize they need and should improve on this but justify that they already have a specific customer niche and should focus their activities on it.

Despite this, there are some actions taken by specific start-ups such as *“searching for customers in class and government associations”* (founder of start-up B) and *“purchasing companies that operate in similar markets to conquer new markets”* (founder of start-up D). The analysis of some internal documents of these organizations demonstrates the concern with the homogeneity of the business.

g) New channels

Most start-ups considered in this study do not innovate in their distribution channels. Only two of them presented examples of improvement or expansion of their channels: in start-up B, the founder commented *“we started to pull our demand through angel investors who can benefit from the businesses and entrepreneurs we educate and businesses we build”*. In start-up D, the founder mentioned that *“they became official partners of TOTVS, the biggest software sales player in the country”*.

However, as we mentioned, there is still very little effort in channel innovation. We observed very few actions on the start-ups' websites and their social media aimed at other channels such as partnerships in schools, and shopping malls, among others. In general, the channels are very restricted to their own website/platform and in the dissemination of a few online partners (other websites, in general).

h) New customer relationships

Little has been done by start-ups in this regard. Half of the respondents said they are doing nothing to innovate in customer relationships. Some said there were no customers in the renewal phase. *“We need to think about recurrence in business and customer scalability”* (founder of start-up F).

Of all the aspects considered in this study as innovative in business models, distribution channels and new possibilities for customer relationships were the least explored by start-ups in the education sector. We observe that some start-ups fail to extract the best from their CRMs, neglecting possibilities for developing flow and automation, which could improve their primary and recurring relationships.

4.3 Innovation in value capture

i) New revenue generation models

There is a constant and diversified quest to increase revenue. The founder of start-up B, for example, mentioned that *“new revenues can come from angel investors and funds that can invest in ideas”*, accelerating the development of new products and solutions. “New offers of products and services” (founder of start-up F), “creation of products that generate recurrence” (Vice-president of Institutional Relations at start-up E), sales of leads, and marketing actions (director of start-up content C), were examples of new ways to seek revenue.

The search for revenue seems to be in the DNA of start-ups as well as innovation. The founder of start-up D reinforced that *“integrated or recurring sales” are the most used ways to seek revenue. For her, one has to look for “new paths 100% of the time”*.

j) New costs structures

Five out of six respondents studied said they were in the process of validating or adapting their pricing systems. Only start-up E has panels where they review pricing weekly. The importance of these panels *“is in controlling costs and in the possibilities for improvements in general”* (start-up E). As mentioned by the representative of start-up F *“there seems to be a greater concern with the structure and origin of revenues than with the structure and control of costs”*.

In summary, our results demonstrate that in value creation, start-ups develop their skills in an informal and unstructured way. In the value proposition, the start-ups are very creative in the line of the offer, but they invest little attention in their channels and their relationships with the customers. In capturing value, they constantly focus on the search for revenues, however, they are not very concerned with controlling costs and structuring their pricing system. Below, we discuss these and other relevant points of our research.

5 DISCUSSION

Lindgardt . (2009) argue that there is innovation in business models only when there is a change in two or more fundamental elements of the business models. In our research, the vast majority of start-ups indicated that they are innovating (or looking for ways to innovate) in at least five elements of their business models - such as internal competencies, technical resources, partnerships, offers, and revenues.

Our results show that innovations in business models of start-ups in the education sector often happen in an informal and unstructured way. The fact that the teams are lean and there is no slack of resources requires creativity and collaboration from the institutions involved in the innovation ecosystem. The development of an innovation ecosystem seems to be strongly necessary, either because of its interconnected character with local development, sustainability, and with innovation through

partnerships, in essence, with small and medium-sized enterprises (SMEs) (Koerich & Cancellier, 2019).

The development of new technical resources and skills often happens through the sharing of information in WhatsApp groups, in meetups, and in events created by start-ups in the innovation ecosystem. There is also a strong collaboration of start-ups in sharing their platforms, enabling the creation of new solutions, which are often integrated. Thus, Manelau . (2019) argue that organizations should be encouraged to use their resources in catch-up strategies, especially in industry 4.0 activities.

Innovation in value creation happens when the internal resources and capabilities of companies and their partners develop and create value for the industry (Achtenhagen ., 2013). In our study, collaboration and creativity stood out as key elements for innovation in creating value in start-ups. The engagement of stakeholders and the co-creation of value within the innovation ecosystem were fundamental aspects for innovation to take place – albeit in an unstructured and informal way.

Concerning value propositions, it is evident that start-ups have innovative offers (not least because they are often born from innovation) but they are limited to that. The biggest problem is the lack of scalability. Additionally, there is almost no mention of innovations regarding distribution channels, market reach, and customer relationships. The sum found here is a lot of flexibility and innovation, but little productivity and expansion. Johnson . (2008) explain that the value proposition includes all products, services, and solutions that companies offer to the market. In our study, we noticed that start-ups innovate in the way they propose value for their products but are insufficient in the search for new customers and markets, new channels, and in the management of their relationships.

As for capturing the value generated, we noticed a constant effort by start-ups to generate new revenues, both through the development or improvement of products, as well as through the search for investors. Conversely, these institutions had little structure for controlling costs and improving productivity. The feeling is that the insatiable focus on new recipes and new product developments generates myopia in basic aspects of the business, such as price structure and production management. Teece (2010) points out that in addition to being positive, the results of the revenues obtained need to be sustainable to capture value. In this sense, the absence of cost control and price structure compromises the innovative aspect of capturing value in start-up business models.

6 FINAL CONSIDERATIONS

This study analyzed six directors of six different start-ups in the education sector and investigated the practice of innovation in their business models, considering three dimensions and ten sub-constructs proposed by Clauss (2017). The nature of the study, a case study, does not allow generalizing the findings obtained for all start-ups in Brazil, given the differences in age, size, and diversification of the sample. Despite this, we recognized that start-ups were going through similar processes, such as a constant need to update themselves and simultaneously the lack of resources.

Our research responds to the call of Foss and Saebi (2017) who ask for more empirical work and to highlight the processes of change in organizations. Among our theoretical contributions is that this is the first analyzed innovation in value creation by start-ups in the education sector. We highlight that the lack of resources and the dynamism of the market push startup companies to collaborate and co-create value among themselves within the innovation ecosystem. To develop skills, technical resources, and new partnerships, start-ups practice collaborative actions such as sharing information in WhatsApp groups, sharing platforms, and creating events together.

Our second theoretical contribution analyzed the value proposition of start-ups in the education sector. We emphasize that start-ups innovate in their portfolios of products, services, and solutions, but do not adequately develop relationships with their customers, their channels, and the search for new markets.

Finally, our third theoretical contribution analyzed the value capture of start-ups in the education sector. We highlight that start-ups innovate in different ways to reach revenues but fail to control their costs and pricing systems.

Objectively, this study brings as a managerial contribution what are the variables of the business models that start-ups in the education sector are not innovating or are insufficient in their developments. They are search for new customers and markets; new channels; customer relationships; and cost and pricing structures.

Among our main limitations, we highlight that we analyzed only the board of directors of start-ups. New research may consider the middle management of organizations and other stakeholders involved in the innovation ecosystem. The co-creation of value in innovation between different actors can also be studied (Ribeiro ., 2021). We also encourage new researchers to analyze the evolution of start-up business models over time, considering their foundation, maturity, and decline.

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Apêndice A – Questionário Inovação em Modelos de Negócios

1. A empresa investe constantemente no treinamento para desenvolvimento de novas competências dos funcionários? Como a empresa se sente sobre isso em relação aos concorrentes e ao dinamismo geral do mercado?
2. A empresa mantém seus recursos técnicos atualizados? Ela inova? Como a empresa se sente sobre isso em relação aos concorrentes e às oportunidades de expansão de negócio pela venda de novos produtos e serviços?
3. A empresa procura constantemente parcerias de colaboração (terceirização, alianças, etc...) ? Se sim, essas parcerias geram processos integrados e benefícios para o modelo de negócios?
4. Os processos internos da empresa tiveram alguma melhoria recentemente? A empresa os considera inovadores? Eles são avaliados regularmente?
5. Os produtos da empresa atendem às necessidades dos clientes? Se sim, eles são mais inovadores que os da concorrência? Possuem diferenciais?
6. A empresa busca constantemente novos clientes e mercados? Busca oportunidades em mercados antes não atendidos??
7. A empresa busca constantemente novos canais de distribuição para seus produtos e serviços? Recentemente aprimorou ou expandiu os seus canais de alguma forma?
8. A empresa tenta reter os seus clientes com novas ofertas de serviços? Alguma nova ação foi feita recentemente neste sentido?
9. Novas oportunidades de receitas foram exploradas recentemente? Por exemplo, vendas integradas ou recorrentes visando o longo prazo.
10. A empresa analisa constantemente a sua estratégia de preços? Busca ativamente oportunidades de economia? Utiliza oportunidades de precificação com base em seus diferenciais?