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Exploring the key success factors: A case study of a digital marketplace platform for Brazilian small farmers

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Abstract

Small agricultural businesses are exposed to global competitive paradigms, and digital marketing platforms have a significant social and economic impact on their competitiveness. An analysis of current product marketplace platforms reveals that many of these platforms cease to exist in an average period of two to three years, which raises the research question: Do any of these platforms have a track record exceeding three years? If so, what are the key success factors that underpin their sustained viability? The objective of this case study is to identify and describe the key success factors of a commercialization platform in Brazil which directly connects small rural producers with their end consumers. Employing an interpretive qualitative approach, this empirical research presents a case study based on a theoretical analysis of the main success factors, examining their application within a Brazilian digital platform facilitating the trade of products between agricultural producers and consumers. The results emphasize key success factors for implementing innovative technology solutions in small agricultural businesses: a committed, supportive management team with visionary leadership; prioritizing market and stakeholder needs; maintaining strong customer relationships; and resource availability. Persistence, resilience, and learning from experiences were also identified as vital skills in the case study, contributing to the platform's long-term success.

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1. Introduction

The agribusiness sector in Brazil has experienced significant growth, positioning itself as one of the largest agricultural producers and exporters globally. In 2021, this sector accounted for 27.4% of the Brazilian Gross

Domestic Product (GDP) and contributed to 48% of the country's total exports [1]. Moreover, agribusiness plays a crucial role in ensuring global food security, aligning with the United Nations (UN) 2030 Agenda.

The remarkable productivity of Brazilian agriculture is a result of technology adoption, exemplified by the increasing number of agribusiness startups, currently totaling 1703 [2]. However, to maintain its leading position, Brazil must embrace modernization, technological advancements, and innovation throughout the entire agricultural production chain. These aspects converge into digital agriculture, an outcome of the digital transformation within the agribusiness sector [3].

The implementation of digital transformation in agribusiness is seen as a catalyst for transforming activities, processes, skills, and business models within organizations [4]. However, concepts related to digital transformation are still in the process of consolidation in the agricultural sector, as in other industries. In literature, terms such as Agriculture 4.0 or Agro 4.0 are used to draw an analogy to Industry 4.0 [5].

This changing landscape necessitates new perspectives and strategies that influence work culture, human and professional relationships, and agricultural business models [6]. Particular attention should be given to small agricultural properties, which, despite being embedded in local production logic, are exposed to global competitive paradigms, as highlighted by previous research [7].

Regardless of the target markets or market channels employed, small farms need to leverage digital tools [8]. According to these authors, such tools have become increasingly indispensable for ensuring the sustained competitiveness of these enterprises. Moreover, the emerging business models driven by digital transformation rely on platforms, enabling closer proximity to potential customers.

The exponential growth in the adoption of digital platforms is noteworthy. In 2022, renowned companies such as Alibaba, Amazon, Apple, Facebook, Google, Microsoft, and Tencent embraced platform-based business models, accounting for seven out of the top ten largest companies globally [9]. Similarly, within the agricultural sector, digital platforms have emerged as a subject of study concerning the sector's economic development. Bolfe [10] defines platforms as business models that facilitate and encourage interactions between two parties or user groups, such as producers and consumers, creating a collective space for value creation, exchange, and problem-solving.

Efforts aimed at enhancing the economic sustainability of small agricultural enterprises often involve initiatives to facilitate product commercialization. While there is existing research on innovative platforms [11], limited attention has been dedicated to platforms designed specifically to streamline commercial processes [12]. Embracing these platforms necessitates changes in collaboration methods, interactions, and stakeholder relationships, aimed at overcoming obstacles and amplifying the impact of collective actions [11].

In a documentary inquiry conducted by Lemos [12] to identify various commercialization platforms, it was revealed that a majority of these platforms ceased operations within three years. This leads us to pose the following crucial research questions: Do any of these platforms have a track record exceeding three years? If so, what are the key success factors that underpin their sustained viability?

The objective of this case study is to identify and describe the key success factors of a commercialization platform in Brazil which directly connects small rural producers with their end consumers. Additionally, we aim to provide some useful information for startups interested in implementing similar projects.

2. THEORETICAL BACKGROUD

2.1. Marketplace platforms

The commercialization of products from small rural properties in Brazil, both in regional and local markets, predominantly relies on well-established channels such as cooperatives, agribusinesses, traditional intermediaries, and regional distribution centers. These commercialization channels impact the efficient utilization of resources generated on small properties and their income-generating capacity [13], [14].

Challenges in product distribution to the market result in increased inventory management costs [15]. Furthermore, consumers' purchasing behavior has undergone significant changes [16]. In response to these challenges, various actions have been implemented to mitigate their impacts, including the establishment of digital platforms to facilitate agricultural market processes.

While conventional commercialization channels continue to exist, the Covid-19 pandemic has emphasized the need

for alternative channels, exemplified by the platforms depicted in Figure 01. These platforms contribute to enhancing farmers' autonomy and reducing their reliance on external markets, strategically prioritizing territorial and socially proximate markets. This form of commercialization enables the operation of short food supply chains, fostering direct connections between producers and consumers [17], [18].

In this context, Gazolla and Schneider [19] explain that short food supply chains aim to establish new forms of interaction between producers and consumers, emphasizing product origin and identity based on social, cultural, ethical, and environmental values and principles. It is within these shorter chains that commercialization processes can be facilitated through digital marketplace platforms.

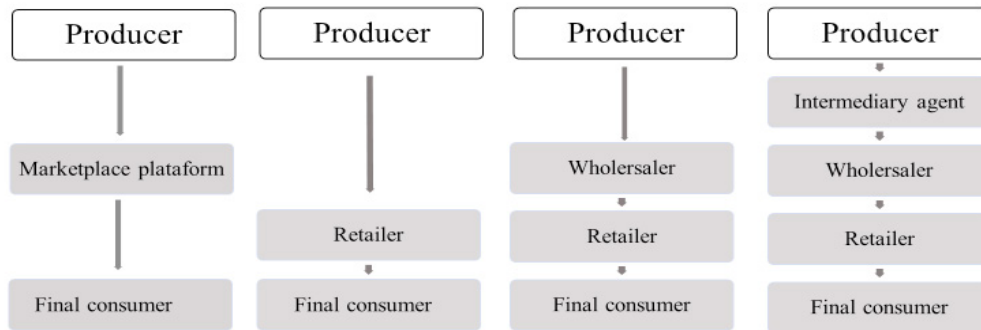


Fig. 01: Food market channels.

The digital transformation of the agribusiness sector facilitates access to platform-based business models, enabling closer proximity to potential customers. This network connectivity among individuals, organizations, resources, value, and economic growth can be generated within the interactive ecosystem of digital platforms [20]. These platforms often emerge in the form of startups due to their ability to leverage increasingly rapid communication channels and market accessibility [12].

Technological startups in Brazil operate in fields such as automation, drones, big data, biotechnology, internet of things (IoT), and urban farms, collectively known as agtech (A term used to describe companies promoting innovations in the agribusiness sector through the application of new technologies in the field) or agritech (Technology for agribusiness). They have gained prominence in the country, seeking sectoral growth through impactful innovations offered as products or services available at all stages of the agricultural and livestock production chain [12].

The adoption of digital transformation in the agribusiness sector is now recognized as an accelerator for transforming activities, processes, skills, and business models within organizations [4], aligning with the concepts of Agriculture 4.0 or Agro 4.0, drawing parallels to Industry 4.0 [5]. However, when evaluated from a startup perspective, it is observed that startup failure rates remain high worldwide [21]. Furthermore, most startups are small, with limited resources, and face competition from large and experienced companies [22].

Recently, the "Radar Agtech" report in 2022 identified 124 startups related to marketplaces, trading platforms, and sales of agricultural products [2], highlighting the significance of platforms in the commercialization of agricultural products.

Platforms can be defined as programmable digital architectures designed to facilitate user interactions [23]. Specifically, in the realm of commercialization, their purpose is to streamline and facilitate commercial processes [12] and contribute to the decision-making of the involved stakeholders. Agricultural trading platforms focus on the integration of multiple commodities and reach a wide range of actors, including small farmers, small agribusinesses, end consumers, restaurants, industrial kitchens, schools, and hospitals. They aid in the development of market niches and create additional market opportunities [24], [11]. The use of these platforms also necessitates changes in collaboration methods, interactions, and relationships among stakeholders and organizations to overcome obstacles and enhance the impact of their collective actions [11].

What distinguishes this business model is that competitive advantages do not depend on physical infrastructure or control over scarce and valuable resources. Companies can utilize digital platforms to create successful business

models, despite having limited knowledge about it, because platform-based business models often outperform traditional businesses in various aspects [20].

2.2. Key success factors

The Key Success Factors (KSF) play a strategic role in achieving excellent business performance. Ghosh et al.[25] emphasises the relevance of key success factors for successful companies, highlighting distinctive skills of small companies. The most relevant KFS are satisfying customer needs, close working relationship between top management and employees, regionalization, leadership and availability of resources, financial and technological support [25]. In addition, the study revealed that, as the company establishes itself and competitiveness increases, changes occur in the importance of these KFS, requiring greater attention to the following dynamics and strategic impulses: strong market orientation, effective management characterised by commitment and management support, and networking to gain access to comprehensive support and resources [25].

It is noteworthy that the FKS differ from the critical success factors, which are related to the survival of companies, while the Key Factors of Success seek to achieve excellence in business performance [25].

In addition, Startups face challenges adapting and executing in an ever-changing market. A meta-analysis mapped 24 key success factors grouping them into three categories: market and opportunities, team of entrepreneurs and resources [26].

Radomska et al.[27] argue that successful companies must be effective in their actions, innovative and creative, in addition to building a network of internal and external relationships based on trust and proximity. Recently, a framework for the interaction of key success factors in digital platforms was proposed [20]. The framework addresses six categories of key success factors: value creation, value delivery, value capture dimensions, promotion and awareness of digital transformation, proper platform architecture and strategic judgement of platform providers, and promotion of a startup culture as a key success factor [20].

Based on these surveys, it is evident that creating a successful startup requires attention and application of adequate strategies and resources. In the discussion of the article, an analysis of the factors listed in relation to the case under study will be carried out.

3. Methodological procedures

This exploratory case study [28] investigates a commercialization platform managed by a startup. The study utilized literature review, document analysis, semi-structured interviews [28] and Discourse analysis technique [30].

Document analysis was based on Lemos [12] study, which indicates that digital platforms often cease operations within three years. As a result, the Sumá platform, which had been on the market for six years in 2019, was identified and its data accessed for the case study.

The case study focused on the Sumá platform, operating since 2013 in the southern region of Brazil. It has received continuous investments from various investors and has been recognized with national and international awards [24]. The platform's primary focus is on empowering small farmers, facilitating their development, and aligning them with food buyers' requirements. Acting as an intermediary, Sumá connects these producers to significant consumer markets, including restaurants, hospitals, and supermarkets. The business model is of the B2B type with a logistics system characterized by being centrally managed and executed by third parties. The platform's technological solutions and business model have constantly adapted to ensure scalability. Sumá has demonstrated numerous possibilities for effective interaction with other food-producing companies. Hence, the generation of knowledge and empirical research are significant factors in reducing startup mortality rates, as observed in the case of the Sumá platform.

This case study aimed to identify and describe the key success factors of a commercialization platform in Brazil that directly links small rural producers with their end consumers. Data collection utilized a semi-structured qualitative research protocol involving exploratory interviews, adhering to replicability guidelines [29].

The semi-structured interview comprised 11 questions formulated from categories associated with key success factors [25][26][27]. Among these, 3 questions were dedicated to Market and Opportunities, 3 to Resources, and 3 to the Entrepreneurial Team, while 2 questions were of a general nature concerning success, encompassing inquiries about what should be asked and what may have been overlooked. The interview, conducted in October 2019, was

recorded, transcribed, and involved one of the founders and the current manager of the Sumá platform. Notably, data collection occurred before the onset of the Covid-19 pandemic.

Discourse analysis technique was employed for data analysis [20]. This technique considers the social representation of testimonies collected in empirical research, examining how discourses produced by various social actors, such as individuals, groups, and institutions, reflect their representations of reality.

For the data analysis, in addition to the key success factors listed in Table 01 and their corresponding evidence in the interviewee's responses, the dimensions presented in the framework for key success factors of digital platforms [30] were also taken into account.

To ensure scientific rigor, validation, and reliability, criteria including data triangulation were adopted. Data coding and analysis were performed manually, with each interviewer analyzing the interview responses. Cross-analysis of excerpts addressing the categories and subcategories of analysis, as highlighted in the data analysis section, was conducted, comparing them with theoretical data and information from documentary sources.

4. Results

The key success factors studied by different authors until 2019 were organized based on the category proposed by Song et al. [26], thus organizing Table 01 with the key success factors by category. Other authors were also included in the analysis of the research data. Ghosh et al [25] and Radomska et al [27] presents the key success factors of companies and industries, which we adapted in our study to a digital platform context.

4.1. Key success factors identified in the Sumá platform

Based on the analysis of interview data and documents related to the studied case, the identification of the key success factors (KSFs) in the management of the Platform is described below. It is understood that this arrangement may have contributed to the prolonged operation of the platform under study compared to others, as presented in Lemos' study [12]. It is important to note that the data collection was conducted in 2019, prior to the COVID-19 pandemic.

In the Resources category, a total of 14 factors were identified. Within the Market & Opportunity category, 6 factors were recognized, while the Entrepreneurial Team category revealed 6 factors. The specific factors corresponding to each category can be found in Table 01.

Based on the presented data, it is evident that the Resources category demonstrates the highest level of factor fulfilment, with 13 out of the 15 listed factors being met. Despite not having a balanced cash flow and relying on external capital (data from 2019, when the interview was conducted), the platform has successfully attracted investors throughout its existence.

In the Market and Opportunity category, which is the second highest in terms of factor identification, six out of the ten factors outlined in the literature were identified. It is worth noting that, during the data collection phase of the research, the regional market did not exhibit significant competition for digital platforms, which may account for the absence of the remaining factors.

Table 01. Key success factors by category [25] [26] [27] and their identification on the Sumá platform.

Categories	Key Success Factors (KSF)	Authors	Identified
Market and Opportunity	Competition intensity	[26]	No
	Environmental dynamism	[26]	Yes
	Environmental heterogeneity	[26]	Yes
	Market scope	[26]	Yes
	Product innovation	[26]	Yes
	Internationalization	[26]	No
	Low cost strategy	[26]	No
	Market growth rate	[26]	Yes
	Marketing intensity	[26]	No

Categories	Key Success Factors (KSF)	Authors	Identified
	Satisfying customers needs	[25]	Yes
	Strong market orientation capability	[25]	Yes
	Innovation and creativity	[27]	Yes
Resources	Financial resources	[26]	Yes
	Firm age	[26]	Yes
	Patent protection	[26]	No
	Size of founding team	[26]	Yes
	Supply chain integration	[26]	Yes
	Firm size	[26]	Yes
	Non-governmental fin. support	[26]	Yes
	R&D investments	[26]	Yes
	University partnerships	[26]	Yes
	Firm type	[26]	No
	R&D alliances	[26]	Yes
	Regionalization capability	[25]	Yes
	Availability of financial and technology resources	[25]	Yes
	Networking - access to broad base support and resources	[25]	Yes
	Networking based on mutual trust between internal and external stakeholders	[27]	Yes
Entrepreneurial Team	Prior start-up experience	[26]	No
	R&D experience	[26]	Yes
	Industry experience	[26]	Yes
	Marketing experience	[26]	No
	Good relationship between top management and employees	[25]	Yes
	Strong, visionary and capable leadership	[25]	Yes
	Effective management: Strong management commitment and support and Strong organisation and management set-up	[25]	No
	To be innovative and creative	[27]	Yes
	To be effective in actions taken	[27]	No

Concerning the entrepreneurial team there is a noticeable lack of startup experience among the founders. The interviewee mentioned that initially there was a partner with expertise in this field, but they left the project due to another opportunity. While the startup managed to secure financial resources, there was a loss of intellectual capital—a common situation that many organizations strive to avoid.

4.2. Market and opportunity

The Market and Opportunity category, characterized by competition intensity, market dynamism, environmental heterogeneity, segment and product variation and innovation, regional activity, applied strategies, market growth rate, and customer satisfaction, among others, has a significant number of elements, as shown in Table 01.

Regarding market analysis and tracking of commercialization channels, the interviewee expresses confidence in their understanding: "These channels pertain to family farming's commercialization. We specialize in comprehending this market and its primary products, allowing us to align production and consumption within the same territory." However, it should be noted that as of 2023, the market landscape has changed, with new platforms emerging and unforeseen transformations occurring, including shifts in consumer purchasing behavior [16].

While the interviewee anticipated some changes, they could only identify preliminary indications. Notably, there was a rising trend in the consumption of organic products and an increased demand for product origin information

from end consumers. The interviewee perceived traceability as a prominent movement. They remarked, "It is evolving, but it hasn't fully transformed. Multiple initiatives are required for this transformation to happen. SUMÁ alone cannot bring about structural change in the supply chain; much more needs to transpire."

However, the aforementioned statement, made prior to the onset of the Covid-19 pandemic, did not foresee the extent of the market transformation that would ensue. The digital transformation experienced accelerated growth, and new platforms have emerged in Brazil, some of which have already completed three years of operation (e.g., Mercado CNA, Alimento de Origin, Manucã, Mercaf) and exhibited performance comparable to that of Sumá.

During the interview, it became evident that the interviewed executive closely monitors both the agribusiness and technology/startup sectors. They possess knowledge of competitors, small rural producers, and buyers. The interviewee demonstrates a comprehensive understanding of market operations, including payment methods, negotiation flexibility, and the importance of fostering effective business relationships and long-term connections between small rural producers and buyers. The logistics chain is well-defined in their business plan.

Furthermore, the interviewee has dedicated himself to studying the entire chain involved in the process, including investors, in great detail: "regular buyers that generate recurring revenue. And for that, we validated a business model with scheduled purchase contracts and fractional delivery and fixed prices based on production costs throughout the contract. For example, hypothesized and submitted to buyers, they said they wanted fixed contracts and long-term contracts. This is a structural alteration that the chain has not yet undergone. More muscle is needed to show that it is possible to do things differently".

The third category talks about the team of entrepreneurs and addresses innovation, strategies, and internal and external relationships, from the perspective of people's skills and abilities.

4.3. Resources

The Resources category has the highest number of listed factors, encompassing various resource types crucial for business operations. This includes financial resources, intellectual property protection, value chain integration, and support from private, academic, and government institutions. Technological resources are also considered, along with the resources required to hire the necessary team and establish a wide network of contacts (Table 01).

During the interview, the interviewee discussed the investments secured and the challenges faced in reaching the current stage of the platform. Notably, they emphasized the partnerships established with national and international universities. When asked about the startup's success, the interviewee remarked, "In agribusiness, time operates differently. Everything takes longer. The greatest indication of success is persisting in our purpose. We planted many seeds, and now they are starting to sprout."

The interviewee identified three factors contributing to the platform's continuity in the market: a) the founders' passion for supporting small rural producers and their resilience in maintaining the project; b) the support of investors who believed in the idea; and c) the utilization of design thinking to validate market hypotheses. The first two factors pertain to the Resources Category.

The company's trajectory reflects its pursuit of investors and resources, encompassing not only financial support but also mentoring and knowledge sharing, regarded as tangible and intangible resources. Initial funding was secured through "an international acceleration program, where we were one of eight startups selected globally." Additionally, the SUMÁ platform established partnerships with ICE - Instituto de Cidadania Empresarial, received funding from the Inter-American Development Bank - IDB, secured investments from Foreign Impact (a combination of philanthropy and social impact businesses) and received support from GV ANGELS - Anjos do Brasil.

According to the interviewee, investor confidence played a fundamental role in the startup's progress. SUMÁ is also engaged in research with the Massachusetts Institute of Technology - MIT and, on the day of the interview, received news of its selection for an acceleration program with Yunus Negócios Social and MAN SE.

Despite the aforementioned trajectory, the initial investment in 2013 came from the founders themselves, utilizing both financial and intellectual resources. However, in 2018, they recognized the need for additional resources beyond what they could allocate. Subsequently, they began developing an investment thesis and presenting it to different investors. The interviewee shared:

"I talked to more than 50 investors. At first, conversations were cautious, concerned about not disappointing investors, but after the 50th conversation, I was more direct. I asked if they were impact investors. If they were

conventional investors, I explained that the SUMÁ takes more time than conventional business. I learned to approach investors more assertively and lost the idea that I was asking for a favour".

4.4. Entrepreneurial team

The interviewee's statements reveal that the analyzed platform operates with a well-defined team. However, due to its lean size, there is task-switching and collaboration among members. The team consists of six individuals, including two founders responsible for strategic and operational tasks, a commercial coordinator, and a purchasing analyst. Additionally, the startup has two team members located in a different region, a coordinator, and an extension worker. Technology-related activities are handled by a partner company comprising eight professionals experienced in platform development.

The leader and founder express a strong commitment to addressing the challenges faced by small rural producers. He emphasizes, "It's not enough to have the initial desire; one must maintain that desire even in the face of adversity [...] and perhaps this is one of our greatest differentiators. We are starting the platform from scratch for the third time, and it will be an unprecedented endeavor."

The utilization of strategies and decision-making methods, as well as the company's governance model, is evident in the interviewee's responses. The startup employs hypothesis validation and invalidation as the foundation for implementing strategies, seeking input from partners, farmers, and buyers to validate their preferences.

Throughout its six years of existence, the platform has tested and discarded several hypotheses, retaining only those most accepted by stakeholders. These specific methods also extend to strategic decisions, which are deliberated between the two founders. In areas where their expertise is limited, they consult specialists such as mentors, investment advisors, and team members.

The interviewee highlights the presence of an investor council, which involves monitoring indicators online and holding quarterly meetings. Board meetings are focused and structured, with agendas circulated in advance, requiring each board member to take a position in favour or against proposals presented by the company's directors/founders.

In the platform analysis, technology emerges as a critical factor for its sustainability and development. According to the interviewee, this marks the third occasion where the platform requires reformulation and temporary suspension of services.

"We don't have direct competitors. We know several startups, but none of them can be considered as a model for us, something we can simply copy. So, we need to build a solution that doesn't exist yet. This takes time and resources, and this is one of the reasons why we have not grown as much as we would like so far. We face difficulties in technological development and lack of resources to hire a suitable team. Recently, about three months ago, we solved these problems. However, we are restarting the platform from scratch, this time with a partner in the technology area. This variable has hindered the expected results so far."

To conclude, the development of action- and results-oriented platforms necessitates flexibility due to their operation in dynamic contexts and their goal of driving change [31]. Both, team members and supporting organizations, must be prepared to adjust their approaches and expectations, and in certain instances, handle potential setbacks and failures [11].

4.5. Dimensions: value creation, delivery, and capture

In platform-based business models, value creation is driven by creating correspondences within an ecosystem of supply and demand and by facilitating direct interactions between commercial parties [20]. Financial transparency is essential for capturing value, showing the participation of everyone involved in the business. Transparency in the chain, as cited by the interviewee, contributes to trust [27] and value delivery [20].

The interviewee highlighted some innovative practices, such as not selling products based on the farmer's production cost and assuming the role of logistics by the family farmer, since other platforms do not dare to assume this responsibility. In addition, the platform establishes alliances and partnerships, foreseen in the studies by Song et al. [26] and Ghosh et al. [25] uses management indicators to monitor and guarantee financial transparency, both for farmers and for investors.

Regarding customer relationships and satisfaction, SUMÁ monitors the indicators of complaints, rural producer

revenue, percentage of supply to the buyer, number of contracts in force and average monthly value of each contract. These indicators contribute to the value capture dimension [20] and ensure transparency for investors.

Regarding digital transformation and startup culture, Rohn et al. [20] proposes four key dimensions for digital business success: promoting digital transformation, proper platform architecture, strategic judgment of platform providers, and promoting a startup culture. In our study, we identified that the interviewee and his partner are engaged in raising awareness in the agricultural community about the use of technology and are establishing partnerships with technology companies to develop a suitable platform for the project that promotes education. The results also show that they have persistence, resilience, and willingness to learn from experiences and achieve the defined goals.

The entrepreneur interviewed recognizes the challenges faced by SUMÁ, such as “the need to maintain a healthy cash flow, be in a market with growth potential, have a strong and engaged team, and rely on a robust technological platform to support exponential growth. By achieving these goals, the platform will be able to declare itself a successful company”.

When analyzing this information, it seems important to highlight that for the success of a business, financial resources are essential, but they are not enough. Managing knowledge and intangible resources is what will ensure the correct management of other resources.

5. Conclusions

This exploratory study investigates the key success factors of Sumá, a Brazilian startup digital platform connecting small rural producers to consumer markets. Three critical domains were identified: Market and Opportunity, Resources, and Entrepreneurial Team.

In the Market and Opportunity domain, understanding market dynamics, consumer behavior, and relationships with stakeholders emerged as vital. Training for producers and grasping market complexities were highlighted.

In the Resources domain, securing financial resources, partnerships, and transparent investor communication were critical for long-term sustainability.

In the domain of Entrepreneurial Teams, visionary leadership, effective teamwork, creativity, and clearly defined roles have traditionally been recognized as key factors contributing to performance. However, our findings shed light on the importance of additional soft skills, specifically, persistence, resilience, and the ability to learn from experiences, as highlighted in the case study.

This analysis aids digital platform developers in supporting small rural producers, fostering competitiveness in the global food production chain, and informs investment decisions while acknowledging the study's single-case limitation.

Future research should explore risk mitigation strategies and multiple-case studies for broader insights.

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