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# Speed and longevity: Elements of the internationalization of technology-based firms

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## ABSTRACT

Is time perception an idiosyncratic element in the internationalization process of technology-based firms (TBFs)? This question serves as the starting point to explore which factors influence international operations' internationalization speed and longevity in TBFs. We gathered them into two groups based on the types of service provided and the characteristics of their clients. We analyzed these TBFs´ internationalization processes and the length of time they continued operating abroad, considering survival over time. Using a qualitative approach, we conducted a multiple case study of four internationalized TBFs from Brazil. Our findings suggest that the level of creativity required by clients impacts both the speed of internationalization and the longevity of international operations. Regarding longevity and survival, while TBFs serving creative sectors tend to adapt more easily to culturally similar markets and develop products more quickly, TBFs working traditional sectors tend to exploit local networks revealing exciting nuances about the time perception among TBFs.

## KEYWORDS

Internationalization speed, Longevity of international operations, Technology-based firms

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## 1. INTRODUCTION

When borders are no longer merely geographical and technological, Technology-Based Firms (TBFs) face significant challenges. While the speed of the internationalization processes is undoubtedly an important element, such firms must also deal with issues relating to the longevity of their international operations. For TBFs in particular, the potential perishability of their international operations constitutes a challenge that requires both speed and agility to ensure the ongoing viability of global operations. In such studies, internationalization speed is defined as the period between its inception and its first international activity.

The scenario of greater accessibility resulting from technological developments and the rise of the Internet over the last few decades has enabled companies to do business and compete in global markets. Scholars have investigated many different aspects of the internationalization process, and research about internationalization speed has been growing in intensity recently. However, most internationalization studies focus on the time elapsed from a firm's inception to its internationalization. Other studies (e.g., Casillas & Acedo, 2013; Hilmersson & Johanson, 2016; Mayer & Floriani, 2021) also investigate the speed over time beyond their initial international activities. The perception of time between TBFs can have different nuances compared to mature industries, especially as technological advances pressure them to reconfigure assets at an ever-increasing speed, compromising the longevity of their overseas operations.

In this study, we address the gap in the literature on the time perception of TBFs, as they seek to balance speed and longevity in their internationalization processes. Despite the efforts to understand the speed of internationalization and link the subject to firm's performance, there has been little discussion of the relation between internationalization speed and the survival and subsequent longevity of international operations (Mayer & Floriani, 2021). Many studies discussing international business ventures' survival are based on behavioral theory, focusing particularly on the entrepreneur's profile or previous international experience and relationships (Oviatt & McDougall, 1995).

Research into internationalization speed has connections with born global studies. Born globals are firms that enter foreign markets shortly after inception (i.e., at high speed). Studies about born globals have investigated many different sectors and predominantly focused on the manufacturing and high-tech sectors (Fayena et al., 2020; Roecker & Floriani, 2022). However, to our knowledge, there are few in-depth studies of different internationalization patterns in TBFs. Andersson et al. (2014) argue that industry factors influence the international development of new ventures. For instance, new information technology makes it easier to transfer financial resources, information, and knowledge internationally. These developments have provided firms with alternatives to choose from among international strategies. However, firms in specific industries can benefit more from this new technology, such as firms with products that can be transferred digitally. In line with that argument, we are interested in investigating whether TBFs selling their products to customers in traditional or creative sectors exhibit differences in terms of the speed of internationalization and the survival of their international operations over time (Lazzeretti et al., 2008).

Considering time perception as an idiosyncratic element of internationalization, we explore which factors influence the internationalization speed and longevity of international operations of TBFs. Therefore, we gathered TBFs into two groups based on the type of services provided, considering the features of their clients. We analyzed the internationalization processes through which of these TBFs entered the international market after their foundation and the length of time they continued operating abroad, considering survival over time. Using a qualitative approach, we conducted a multiple case study of four internationalized TBFs from Brazil.

Our findings suggest that the intensity of organizational creativity as a resource influences a company's development and internationalization speed. In line with recent studies (e.g., Castillo-Vergara et al., 2022), creativity and technology are prominent topics to investigate together. TBFs that develop software for creative sectors exhibit differences in terms of internationalization speed and the longevity of their international operations compared with TBFs that develop software for traditional industries.

## 2. THEORETICAL REVIEW

Although speed and longevity are semantically different, they are closely related in international business studies. Their differing conceptualizations, but similar origins, merit an appreciation of how these constructs emerged.

### 2.1. Internationalization speed

Several measures represent similar concepts in addressing the concept of the internationalization process analyzed against time. For example, early internationalization (Cavusgil & Knight, 2015), internationalization speed (Hilmersson & Johanson, 2016; Mohr & Batsakis, 2017), speed in the internationalization process (Casillas & Acedo, 2013), the sustainability of competitive advantage over time (Zahra & George, 2002), pre-internationalization (Khojastehpour & Johns, 2015; Zheng et al., 2014), and the dynamics of enhancing knowledge of international operations (Garrido et al., 2020). We use the term speed to refer to the velocity at which the stages of the internationalization process occur (Mayer & Floriani, 2021). The dynamics of the internationalization process are more rapid in the case of TBFs.

The speed with which SMEs expand into new international markets has gained attention as a topic of interest in many studies in the field of business (Casillas & Acedo, 2013; Hilmersson & Johanson, 2016; Prashantham & Young, 2011; Yonatany, 2017). These studies have evaluated the different factors and focused on the different periods in the firms' internationalization process that can be linked to essential variations in firms' operations and strategies. Therefore, time has taken on a prominent role in the internationalization process literature. When combined with the internationalization stage, time perception represents how firms learn and expand in foreign markets (Kevill et al., 2021; Prashantham & Young, 2011; Roecker & Floriani, 2022).

Oviatt and McDougall (2005) identified three prominent aspects of internationalization speed. The first is the lag time between the identification of an opportunity and entry into an overseas market. The second is the speed with which the scope of countries increases, i.e., the speed of entry into additional foreign markets. The third aspect is the speed of commitment, which indicates how quickly the percentage of foreign revenues increases.

Similarly, Casillas and Acedo (2013) researched speed in the internationalization process and developed a three-dimensional international speed concept. They did not consider the lag between identification and entry. Their first dimension is the speed at which a firm enters foreign markets (number of markets entered/time taken), equivalent to international scope (Oviatt & McDougall, 2005). Their second dimension is the speed at which a firm intensifies its sales internationally (international sales/total sales), equivalent to the third dimension in Oviatt and McDougall (2005). Finally, in the third dimension, Casillas and Acedo (2013) identified the speed at which a firm intensifies its commitment to resources abroad (foreign assets/total assets).

Recently, failure as a type of learning through experimentation has received attention as a fourth aspect to explain speed and survival as part of a cycle of capability acquisition (Freixanet & Renart, 2020). While internationalization speed is one of the most studied aspects of international business, another theme attracting increasing interest is international operations' survival (and subsequent longevity). In industries where technology is the foundation for competitive advantages, as is the case with TBFs and the swift internationalization to create sustainable competitive advantages in their international operations, ensuring the survival of those international operations is also critical.

## 2.2. Survival and longevity of international operations

After embarking on the internationalization process, firms face a new challenge: succeeding against competitors and sustaining their foreign markets' operations. This period has been studied by several scholars using a variety of terminologies. Prashantham and Young (2011) use post-entry speed to connect social capital and absorptive capacity. Zheng et al. (2012) use the term post-entry, taking an approach that considers the relationship with organizational learning.

The concept of survival is a subject of much discussion in international business literature. Several studies have used the scope of international activities and sales as a percentage of total sales (Hilmersson & Johanson, 2016; Mohr & Batsakis, 2017) to analyze performance simultaneously. Oviatt and McDougall (2005) developed a model of forces that influence internationalization speed, pointing out that swift access to international markets enables firms to develop early, which ends up giving them an advantage in their international performance. Despite the conceptual differences between internationalization speed and international operations' survival, both are crucial as the commitment to external revenues increases (Oviatt & McDougall, 2005).

Employing the same rationale, Preece et al. (1999) and Autio (2005) identified that TBFs rapidly increase their international scope, entering several countries to develop their niche markets. This way, they commit more quickly to the international market. Simultaneously, their new knowledge accelerates the construction of the capabilities and capacities needed to respond internationally (Prashantham & Young, 2011).

However, rapidly reaching international markets can be a two-way path for TBFs. On the one hand, Autio et al. (2000) point out that the advantages of accessing sources of new knowledge return to the firm as product and process improvements. On the other, there is a risk of failure—since TBFs may not be ready for the scenario they are faced with when they begin to compete internationally. Autio et al. (2000) and Prashantham and Young (2011) believe that one solution is the prior identification of factors that can help prepare and generate innovative resources to operate in potential markets, enabling TBFs to overcome post-internationalization challenges more easily.

In line with Prashantham and Young (2011), the technological domain that is, by definition, intrinsic to TBFs may provide and even increase their potential performance when they gain access to the international knowledge base. TBFs can quickly apply improvements to identified needs and adapt themselves to acquire a higher volume of local customers in an international market, penetrating that particular market (Shane, 2000; Zahra et al., 2000). Moreover, as the length of time during which the firm manages to maintain its international operations increases, it becomes increasingly able to incorporate innovation into its products and accumulate the knowledge needed to compete successfully in the international market (Wiklund & Shepherd, 2003).

In conjunction, acquired knowledge about the culture, laws, institutional norms, potential clients, and competitive environment of a specific country creates advantages for firms that have spent longer doing business internationally. For example, a TBF that does business in a more technologically advanced country will discover earlier when technology begins to be incorporated into other industries (Barkema & Drogendijk, 2007). Prashantham and Young (2011) showed that market knowledge enables a TBF to be more efficient than its competitors in terms of sales and market penetration.

Prashantham and Young (2011) make two contributions relevant to the perspective taken in this paper. First, the increasing likelihood of a firm surviving international operations is more relevant than the expansion of the internationalization process after the initial internationalization process. Their second contribution is managerial: due to the short time between TBFs being set up and entering international markets, they are often not fully structured in terms of processes and operations.

Firms operating in international markets must combine the management practices and human resources from their home country and the foreign countries where they do business internationally (Morris et al., 2005). Achieving this integration enables a firm to further understand cultural, local, and legal issues, which in turn constitute a competitive advantage for continued business in that market (Cunha et al., 2022). Recent studies (e.g., Stal, 2010) show that these resources' adaptation is hugely relevant for international operations' survival.

Longevity in the international market directly links to firm's previous knowledge. Firms already achieving efficiency and quality gains are more likely to survive exposure to the international competitive environment (Kannebley Jr, 2011). From the subjective view of the factors influencing international operations' longevity, intangible assets are indicators of good performance in external markets (Mohr & Batsakis, 2017). Developing unique and inimitable competences supports better performance among born globals (Kumar & Yakhlef, 2014), thereby helping them sustain their international operations for longer. In summary, these studies demonstrate the consistency of the evidence de Vasconcellos et al. (2019) have found for considering creativity as a valuable intangible resource that enables firms to differentiate themselves in global markets, subject to rapid change.

## 3. METHODOLOGICAL PROCEDURES

Yin (1994) suggests that a case study is an appropriate research strategy when the aim is to answer "how" or "why" questions, to understand a contemporary set of events over which researchers have little control. Studying more than one organization can add supplementary information on a subject. This section describes the field in which we conducted this study and the respective analyses.

### 3.1. Research field

According to the Global Innovation Index (University Cornell et al., 2020), Brazil is ranked 62$^{nd}$ out of the 131 countries in the world for which the index has data, placing it in fourth place among upper-middle-income countries. This intermediate position is not reflected by the country's position for certain specific technological criteria. For example, Brazil is ranked 56$^{th}$ for Knowledge & Technology Outputs; 48$^{th}$ for Knowledge Creation; 31$^{st}$ for High- and Medium-High-Tech Manufacturing; and 30$^{th}$ for Intellectual Property Receipts.

We selected the cases studied because of the importance of the technology sector in Brazil and the influence of the state of Santa Catarina in this sector. The Brazilian Association of Software Companies Report (ABES, 2019) contains consistent data on the Brazilian information technology market (hardware, software, and services). In 2018, the sector had a turnover of US$ 47.7 billion, considering software, services, hardware, and exports. Brazil's internal market accounts for 2.1% of the world's information technology market, making it the ninth-largest national market globally.

According to the Santa Catarina State Technology Association [ACATE] (Pacheco & Rivero Neto, 2018), Florianópolis has established itself as a technology benchmark. The city is the most innovative and the best for start-ups in Brazil and the fifth-best city to invest in Latin America. Florianópolis has become known as "Silicon Island" (Pati, 2017). The state of Santa Catarina has 12,635 technology firms, employing about 50,000 people. The cities with the highest (Florianópolis) and the third-highest (Blumenau) density of technological jobs in Brazil are both located in the state of Santa Catarina (Pacheco & Rivero Neto, 2018).

In addition to the criterion of being based in Santa Catarina, the following criteria were also applied when selecting the firms for study: (a) doing business in the same sector, (b) being a software developer, and (c) being active in international markets. After selecting firms that met all the criteria for this study, we classified them into two groups. The creative TBFs comprise the group with creative activities, i.e., companies that produce games, marketing, and educational software. The other group, traditional TBFs, comprises those producing software for other sectors, such as business, human resources, public, legal, accounting, and others (Nigri, 2009). The characteristics the selected software development firms have in common ensure more reliable comparisons and make it possible to contribute with better practical and theoretical insights to this investigation's objectives. Considering all the criteria defined for this investigation, the firms selected are summarized in Table 1.

We collected data by conducting semi-structured interviews, based on a series of open questions derived from the literature review and then expanded to aid understanding of the phenomena investigated. We included the interview script in Appendix A. We validated the interview script by requesting two university professors to evaluate it. They considered that answers to the questions would help meet the proposed objectives. We conducted the interviews from August to October of 2017 and recalled them in 2021 to evaluate how the internationalization process has been sustained, as summarized in Table 2.

**Table 1**
*The cases*

| Company | Software type | Technology-based firm type |
|---|---|---|
| Company A | Digital Marketing | Creative |
| Company B | Educational | Creative |
| Company C | Garment design and manufacturing | Traditional |
| Company D | Legal (law firms and lawyers) | Traditional |

***Source:*** The authors.

**Table 2**
*Description of interviewees*

| Company | Interviewee | Job title and time at the firm | Duration of interview |
|---|---|---|---|
| Company A | I1 | Director for international expansion (8 months) | 1h 43 min |
| | I2 | Coordinator for international markets (4 years) | 1h 02min |
| Company B | I3 | CEO (22 years) | 1h 02min |
| Company C | I4 | International sales manager (5 years) | 01h 22min |
| | I5 | International sales manager (3 years) | |
| Company D | I6 | CEO (16 years) | 58 min |

***Source:*** The authors.

After the interviews, we performed data triangulation using multiple sources and cross-comparing data from interviews, secondary data, and institutional documents to ensure the consistency of information and the reliability of results (Creswell & Clark, 2011; Yin, 1994).

### 3.2. Analysis of the research corpus

The data analysis method we used was content analysis divided into three stages: pre-analysis, exploration of the data collected, and treatment of the results, which, as Creswell and Clark (2011) explain, enables researchers to understand and interpret the data. Pre-analysis involves organizing the data collected to operationalize and systematize the analyses. During the exploration phase, we identified the empirical evidence and linked it to the theoretical framework. Finally, we conducted treatment of results, condensing and highlighting interpretive, reflexive, and critical analyses (Creswell & Clark, 2011).

In our research here, we defined the speed of the internationalization process and the longevity of internationalization operations as analytical deductive categories (Zhang & Wildemuth, 2005). We define speed as the time between the firm's foundation and its first international activity, operationalized as the years elapsed from the foundation to the start of internationalization. In turn, longevity is how long the firm has done business internationally without interruption. In addition, Auger and Woodman (2016) proposed that inductive categories can emerge from the data. In this study, this is the case of organizational creativity.

## 4. CASE DESCRIPTIONS

This section describes the cases individually, covering their history, influences on internationalization speed, and factors contributing to international operations' survival.

### 4.1. Company A

Company A is a creative TBF that develops digital marketing software to integrate its clients' communication channels and track each online user's interaction with these channels. The history of Company A goes back to 2005. Company A traces its origins to another firm set up in Florianópolis by its CEO when he finished his undergraduate studies in automation and control engineering at the Federal University of Santa Catarina. He had created a mobile application but encountered difficulties since it was a nascent market at the time. He found that traditional marketing firms only proposed massive campaigns at a high cost.

In contrast, manual marketing analyses are limited to explaining the flow of multiple social networks and other communication channels such as websites and e-mail. The CEO, therefore, tried to find techniques to promote his firm and developed a methodology for attracting visitors to his website by producing content for users with a genuine interest rather than using the intrusion approaches of traditional marketing. He realized that selling via the Internet using application development could be promising. He then shut down the first company and opened Company A with another four partners in 2012. Since its inception, Company A has undergone several changes to its structure to accommodate its rapid rise. For instance, from five employees at its foundation to 620 in 2017, from one rented room to an eight-floor building, and from a turnover of US$ 7,000 to 1 million dollars a month.

The first discussions about internationalizing Company A took place internally during the second year after its establishment. Previous professional and personal experiences of the CEO and other strategic people accelerated its interest in international markets. They supported their choice of entry into the first foreign countries it entered. The first mention of previous international experience is related to the past activities of the company's CEO, the president of the International Association of Students of Economics and Business Sciences – AISEC, from 2001 to 2003. During that period, he participated in missions to several countries. He hosted students from other countries in Florianópolis, enabling him to create a broad international network and participate in many international events. In 2015, Company A attracted its first investments in international funds. From then on, meetings with investors also identified internationalization as the next strategic step for the Company. "He (the CEO) talked a lot with our board of investors, and after one of those meetings, he came back and said that Mexico would be our priority" (I1). In 2020, Company A had 15,000 clients and sold to 20 countries worldwide.

### 4.2. Company B

Founded in 1996 in Florianópolis, with offices in Brasília, São Paulo, Rio de Janeiro, and Belo Horizonte, Company B currently has about 250 employees dedicated to its domestic and international operations. The company offers solutions for distance education, gamification and games, simulators and interactive systems, corporate social networks, digital communication, competitive intelligence, and big data, and it is a pioneer in the country's MarTech (Marketing Technology) sector. Its flagship product is a tool that centralizes all its other digital offerings. Company B is a TBF, and I3 told us that, over time, Company B created several similar companies that served the ecosystem involved in distance education, thereby growing in strength and scale as a TBF centered on education. "[...] this has been a characteristic of mine since I was a university student, I have an entrepreneurial profile, and I started to set up a company and do business."

The entrepreneur and his enterprise have a joint history of success. Interviewee I3, the CEO of company B, has won several awards for his outstanding entrepreneurship, leading the firm's internationalization process. His personal vision is reflected in the firm's strategic vision, targeting international markets. Before founding company B, I3 worked as a consultant for a German multinational, for which he often traveled internationally. This experience broadened his horizons and widened his perspective on globalization. The initiative to internationalize was a response to the necessity to keep pace with internationalized clients. "A lot of it was the result of opportunity, and, because our technology works via the Internet, we have no borders; our only limit is language. Of course, our goal was to meet our clients' needs" (I3). The firm entered Latin America, the Caribbean, and Africa in 2014 through a contract with the World Bank. I3 explained that Company B conducted a project for the World Bank in Brazil and that this project was voted the World Bank's best distance education program in the world. As a result, they were hired to replicate the project in Latin America, the Caribbean, and Africa. I3 says, "the relationship with these international bodies made me look at a technology that could go global."

### 4.3. Company C

Founded in 1992 at the Business Center for Advanced Technologies - CELTA in Florianópolis, Company C was conceived by five students from the Federal University of Santa Catarina computer science course. After a brief breakthrough in the furniture industry in 1996, they began to focus on the garment segment: "around 1996, we realized that there was a demand for high-tech equipment in the garment industry. There were few competitors; those that existed were foreign firms, and they were expensive and provided poor service. That is when we moved into the textiles sector" (I4). After making this transition, Company C started to grow. It currently employs 240 people, 200 based in Florianópolis and the rest at its Palhoça unit, 15 km from the main office. In addition to software, Company C produces about 20 units/month of equipment such as plotters, destocking tables, cutting machines, and others for the garment industry and has a plant in Italy in Trento. Since this study focuses on the software industry, the interview did not address Company C's industrial operation.

Company C has about 8,500 clients and has partnered with more than 200 educational institutions that run courses in textiles and fashion. It now uses its products, expanding its market scope to operate in over 75 countries. This internationalization process began in 2002. I4 identified the type of segment in which they operated as one of the barriers that affected their initial internationalization process. However, ten years of market learning showed them how to reach potential customers. The first partnership was formed informally when the company participated in a textile exhibition in Argentina. "The opportunity emerged at a trade fair. Since Florianópolis is close to Argentina", an Argentinean prospect said, "I want it; I know it is Brazilian. However, I want it anyway. It was the moment when the idea came up that if we could sell to Argentina, we could sell to other countries too" (I5). Soon after that exhibition in 2002, more contracts were signed that same year with firms from Spain and Venezuela.

## 4.4. Company D

Firm D was set up in 1993 to create and supply a technological tool to meet demands from law firms. The firm's product is one of Brazil's first legal software packages. It was developed to meet the day-to-day operational needs of law firms. Over time, large corporations' legal departments and independent lawyers adopted it. After launching its first product, the firm scaled up and began to grow. Its headquarters are in Florianópolis, and it also has firms in São Paulo and Rio de Janeiro and employs around 90 staff members. After its first product, which drove the business for many years, Firm D launched a second legal software suite in 2011, which only sells in Brazil. The firm's software is the first in Brazil and Argentina. I6 states, "technology and innovation, which have always been part of our essence, have meant that our firm is in a constant cycle of renewal and development." The firm has been in the market for more than 20 years, one of the most important factors in its history together with starting internationalization.

The firm's first international sale happened 18 years after its foundation. I6 reports that the idea of internationalizing came up very serendipitously during a holiday trip when he met an Argentinean, and they had an enthusiastic conversation about business. Despite being a frequent traveler, I6 claims that these experiences did not influence the decision to internationalize, "[…] (previous international experiences) were important, but they did not define the internationalization process. I have traveled to more than 25 countries" (I6). However, after the conversation with the enthusiastic Argentinean on a cruise, I6 felt the spark of interest in the neighboring country, having identified it as an opportunity to be exploited. He stated that his first thought was that since all of Latin America - except Brazil - speaks Spanish – the firm could rapidly scale up to several countries if it translated its software into Spanish. Company D entered the international market in 2011. From the firm's financial statements, we discovered that a lack of financial resources had been an issue throughout the 18 years between the foundation and the firm's first international activity. "Since we were not an investment company, all the capital was always our own; I ended up moving away from the company for a while and working as a consultant until 2005" (I6). On the other hand, the interviewee says that there is still much to be exploited in Brazil. Hence, internationalization has never been a strategic objective for the company: "We are positioning ourselves to increase our strength here in Brazil and then enter the international market with greater force" (I6).

## 5. CROSS-CASE ANALYSIS AND DISCUSSION

We cross-analyzed the cases as a matrix, crossing speed and longevity. To analyze how traditional and creative TBFs face speed, we follow Casillas and Acedo (2013), considering ratios between the number of markets entered and time taken and foreign and total assets, as well as the cycle of capability acquisition proposed by Freixanet and Renart (2020). To evaluate longevity, we followed Mohr and Batsakis (2017), who consider how the ratio between international and total sales evolves. Besides, we followed Prashantham and Young (2011), gathering perceptions from the interviewees about how they generate innovative resources in international markets and gain access to international knowledge. We observed that they combine technological, cultural, and institutional perceptions that potentially represent an advantage in other markets (Barkema & Drogendijk, 2007; Cunha et al., 2022).

One of the first characteristics that differentiate the creative TBF from the traditional TBF is internationalization speed. While the traditional TBF enters the international market late, the creative TBF internationalizes within five years after its foundation, one of the characteristics of a born global.

Creative TBFs internationalize rapidly, and the critical role of networks in their internationalization speed is evident. Although networks also affect traditional TBFs, the effect is much less intense. Table 3 summarizes data on the cases presented in the previous section.

Competition stands out as one of the crucial factors in the internationalization speed of the firms studied. While creative TBFs identified opportunities to enter non-competitive markets, the traditional TBFs studied went the other way and opted to operate in markets where their products are up against intense competition. Although the way TBFs position themselves concerning the competition is aligned with the findings of Oviatt and McDougall (2005) – which indicates that the internationalization of small and young firms does not follow the dominant logic of staged internationalization found in the international business literature – there are nuances that should be considered more carefully. While the creative TBFs tended to internationalize rapidly

**Table 3**
*Summary of the cases*

| | Creative TBFs | | Traditional TBFs | |
|---|---|---|---|---|
| | **Company A** | **Company B** | **Company C** | **Company D** |
| **Foundation** | 2012 | 1996 | 1992 | 1993 |
| **Exports start** | 2017 | 2000 | 2002 | 2011 |
| **No. of employees** | 620 | 396 | 250 | 87 |
| **Speed of internationalization** | Five years | Four years | Ten years | 18 years |
| **Scope of international operations** | 20 countries, focusing on Colombia, Mexico, Argentina, Portugal, and Spain | Latin America, Germany, the Caribbean, and Africa | Operations in 75 countries. Resellers in Argentina, Colombia, Mexico, and Bolivia. | Argentina |
| **Longevity** | Three years | 20 years | 18 years | Nine years |
| **Exp/total revenue** | 5% | 10% | 25% | 1% |
| **Distribution channel** | Internet | Internet | Local distributor | Local distributor |

***Source:*** Research data.

and remained international irrespective of the intensity of the competition, traditional TBFs assessed the competition and tended to avoid markets in which they identified a greater risk of failing to sustain their operations over the long term. The findings also align with Andersson et al. (2014), showing that firms in traditional mature sectors must act according to the more stable industry structure. The firms in new growing industries have more opportunities to act in new creative ways.

Another feature of born globals, related to the cases studied here, is the products and services they sell and the distribution channels they use (Gabrielsson & Gabrielsson, 2011). The creative TBFs use the Internet as their product distribution channel, making their product offering virtually self-service. The customer makes the purchase and immediately uses the tool (Gabrielsson & Gabrielsson, 2011). However, traditional TBFs studied sell through local distributors, who resell and implement the product after adjustment, resulting in higher costs and lower revenues, given the existence of intermediaries in the internationalization process.

Although there are some similarities between the internationalization processes of creative and traditional TBFs, such as following their foreign clients or Brazilian partners' internationalization processes, creative TBFs prospected for potential overseas customers who bought their products even before they had been adapted to suit them. This feature constitutes an oscillation between decision-making processes based on causation and effectuation logic (Prashantham et al., 2019).

Foreign operations account for a relatively small proportion of total revenues in the companies studied. In the creative TBFs, international revenue accounts for between 5 and 10% of revenues. In the traditional TBFs, there is a considerable difference between the two cases, with 15% for C and 1% for D. In the case of company C, in which the average ticket value of their software is significant, the clients it serves are outstanding performers in both domestic and international markets. These factors may explain the high revenues from foreign markets. It is essential to consider that company C took ten years to internationalize. Also, Company C has been active in the international market for 20 years and in more than 75 countries. According to the literature (Hilmersson & Johanson, 2016; Mohr & Batsakis, 2017), there is a positive relationship between revenue and the number of countries in which a company operates. The more countries in which a company operates internationally, the higher its turnover.

On the other hand, the relationship between percentage of international sales and size (Hilmersson & Johanson, 2016) does not influence sales. Creative TBFs have more employees and a small international turnover concerning total sales. One can observe in the descriptions of the cases that Companies A and B are beginning their internationalization processes, which should considerably increase their revenues as they sell in more countries (Hilmersson & Johanson, 2016; Oviatt & McDougall, 2005) and new networks are formed (Gabrielsson & Gabrielsson, 2011). The importance of innovation is notable in case D's description and, especially, creativity in the internationalization process (de Vasconcellos et al., 2019). TBFs that develop traditional software tend to innovate less and, consequently, have a smaller international scope, lower turnover, and shorter longevity of international operations. In both creative TBF cases, technological innovation stands out, absorbed by access to information from the first foreign markets in which they operated. Companies A and B quickly applied product improvements and gained technological advantage to compete globally (Prashantham & Young, 2011).

Regarding creativity, it is evident from the reports of the creative TBFs that being part of the creative technological group influences their international operations' longevity and increases their international involvement. Our findings confirm those pointed out by de Vasconcellos et al. (2019), who investigated organizational creativity in international involvement using innovative and entrepreneurial capabilities as mediating variables. The evidence also corroborates Mohr and Batsakis' (2017) findings on the positive effect of intangible assets on international operations, highlighting creativity as a competitive advantage for a fast internationalization process and survival of international operations.

Within Company D, the language was not the only barrier since specific legal and cultural systems also constituted obstacles. Innovation is limited. Thus, increasing revenues and the number of countries served will likely be even more time-consuming and costly for the company (Cavusgil & Knight, 2015). Another factor that may explain the difference in turnover between the companies investigated is their interest in the domestic market. While firm C, a traditional TBF present in over 75 countries over 20 years, has adopted a strategy of increasing sales efficiency using genuine knowledge about each country, company D is still not familiar with foreign legal systems, and the domestic market demands much of the company's resources. For company D, doing business in the external market increases its value and legitimacy in the domestic market, even though it has no competitive advantage abroad, as was found by Prashantham and Young (2011).

For companies A and B, interest lies in the international market. Consequently, adaptations were necessary as their services were conceived and designed to meet the needs of each country. Changes and adaptations are strong indications of sustainability abroad, such as content and software produced in each country's local language and support provided according to the time zone. These elements direct the company's strategy to the foreign market and indicate growth potential, corroborating recent studies (Stal, 2010). Another important factor that indicates the prospects for the survival of international operations is the human resources strategy. Internal teams formed by foreigners, natives from target countries, and people with previous international experience drive the company's international culture to the global environment (Stal, 2010). Previous international experience was crucial in creative TBFs (Prashantham & Young, 2011). The interviews show that managers' international experiences and professional involvement in a broad range of countries provided knowledge and access to networks contributing to international operations' longevity.

In the cases of creative TBFs, two factors stand out as sources of competitive advantages and as influential in the survival of their international operations. Firm A has a strategy of rapidly increasing the scope of operations into culturally similar countries to mitigate the risk of relying financially on a single country and developing products for new markets more quickly, confirming findings reported by Preece et al. (1999) and Autio (2005). In all the cases studied, firms remained international after entering foreign markets, i.e., none failed to survive internationally. However, they faced challenges constantly adapting products and service structures as they became better acquainted with markets (Stal, 2010) with different effects on the speed and longevity of international operations, as previously warned by Mayer and Floriani (2021).

In sum, Figure 1 shows the matrix between speed and longevity for creative and traditional TBFs.

The analysis indicates that traditional and creative TBFs have no significant difference in longevity, but this condition may result from different aspects. While traditional TBFs depend more on internationalized clients, creative TBFs achieve longevity by accessing the information available in foreign markets and using networks more intensively. Regarding speed, creative TBFs expand more quickly because they take advantage of virtual channels and face less competition than traditional TBFs.

Considering the literature on speed in the internationalization process, our findings about TBFs align with Casillas and Acedo (2013). Generally, the number of markets achieved in each period, and the ratio between international sales and total sales, are speed conditions. Nevertheless,

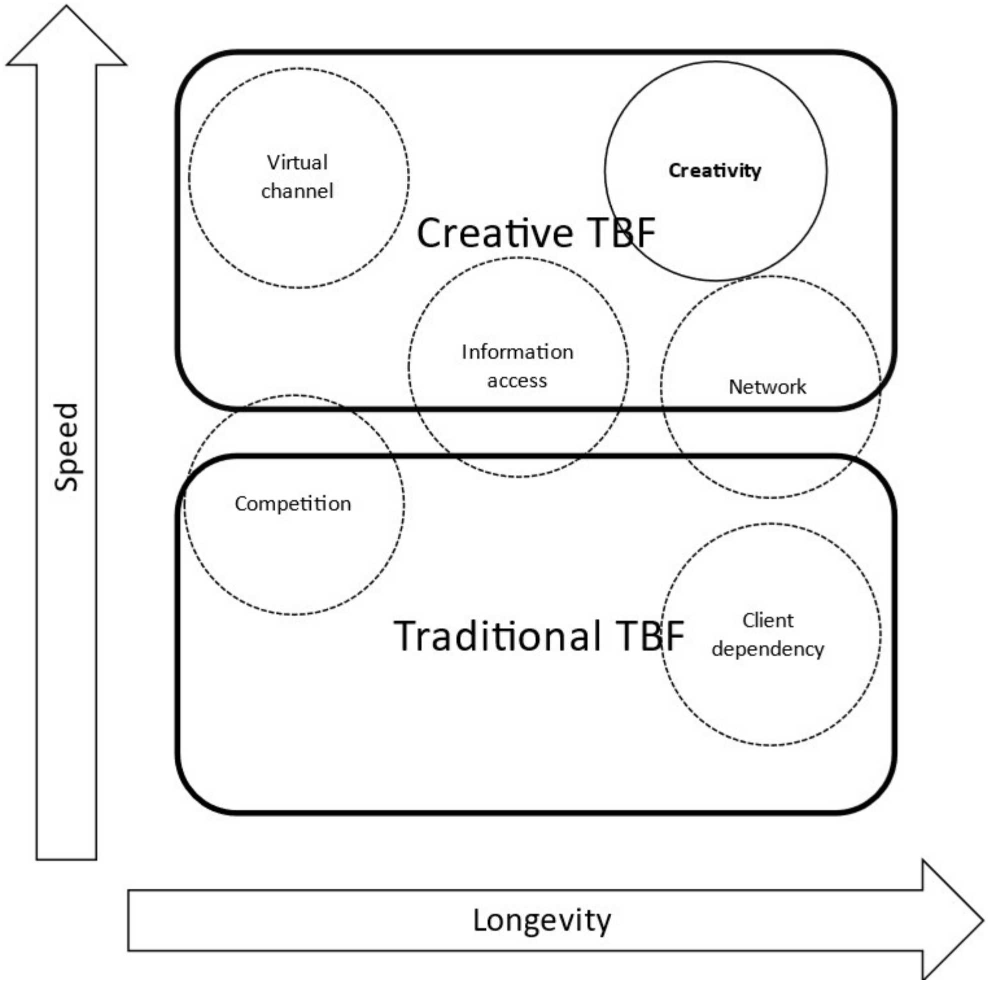


*Figure 1.* The matrix between speed and longevity in TBFs

the third condition proposed by these authors – the commitment to resources – like access to virtual channels, information access, and strong networks – allows creative TBFs to be faster than traditional TBFs. This condition connects with Freixanet and Renart's (2020) findings about the type of learning through experimentation during internationalization.

Our findings confirm that innovative resources are crucial for TBFs to sustain their operations, as previously detected by Prashantham and Young (2011), referring to the survival and longevity of international operations. TBFs acquire knowledge about culture, laws, and novel technology when internationalized, and this condition strengthens their longevity, as proposed by Barkema and Drogendijk (2007). Hence, they can update their managerial practices, combining the experience acquired by human resources, as previously noted by Morris et al. (2005). Nevertheless, TBFs have different responses depending on their creativity, as referred by de Vasconcellos et al. (2019). Our findings reveal that the longevity of traditional and creative TBFs is similar but based on different conditions. While Traditional TBFs sustain their international operations based on clients' positions in international markets, creative TBFs use their networks more intensively. Complementary to the categories we primarily investigated, organizational creativity emerged as an inductive category. Especially creative TBFs reported how they think and act creatively to accelerate and sustain their international operations.

It was possible to identify some characteristics that differentiate the two groups of TBFs. Creative TBFs internationalized earlier and achieved internationalization more rapidly via the Internet, although there was no difference in terms of survival. In the cases analyzed, survival is more related to the capacity to follow customers that are internationalized or enter networks that enable firms to serve new clients abroad.

Table 4 summarizes the elements of the internationalization process of creative and traditional TBFs, highlighting the deductive categories of this study: speed and longevity of the internationalization process. Based on the analysis of the initial questions that inspired this paper, with individual descriptions of the cases and analysis of them in conjunction, we present a framework outlining the main elements that influence the internationalization speed and longevity of international operations in the TBFs studied.

**Table 4**
*Elements of the internationalization processes of creative and traditional TBFs*

| | Creative TBFs | Traditional TBFs |
|---|---|---|
| **Speed** | • Networks<br>• Previous international experience<br>• Prospecting for potential foreign clients<br>• Exploiting markets without competition<br>• Internet as a distribution channel<br>• Creativity as an intangible asset | • Networks<br>• Large accounts (foreigners or Brazilian clients who work abroad)<br>• Software for existing demands |
| **Longevity** | • A more significant number of countries<br>• Higher turnover<br>• Technological innovation<br>• Adaptation of products, processes, and structure<br>• Targeted marketing; creativity as an intangible asset | • Large accounts (large clients)<br>• Company's market value<br>• Adaptation of products |

***Source:*** Research data.

## 6. CONCLUSION

This paper's general objective was to analyze the internationalization process of creative and traditional TBFs concerning their internationalization speed and the length of time their international operations survive. To achieve this, we presented the internationalization processes of creative and traditional TBFs. Initially, many findings were observed when analyzing TBFs in creative and traditional groups. Previous research has treated TBFs as a single type without understanding that a distinction can be made regarding the intensity of creativity embedded in their services.

In general, we observed that the literature characterizes TBFs as born globals. However, regarding the first question investigated, the creative TBFs internationalized faster, within five years of foundation, compared to the traditional TBFs, which internationalized more than ten years after foundation. Triangulation of the data revealed that creative TBFs exhibited a series of additional elements that influenced their internationalization speed. While the internationalization processes of traditional TBFs were only accelerated by networks, large accounts, and selling software to an existing demand, creative TBFs also leveraged international networks from a period before their foundation and other accelerating elements. These additional elements include the accumulation of previous and consistent international experiences by their managers, which enabled the construction of international networks and made possible an international perspective on the business right from inception. Other elements include overseas customers' demand for innovation and product creativity and the inexistence of direct competitors, compounded by the speed with which creative TBFs can create, sell, and deliver their products to the user over the Internet.

Regarding internationalization speed, there is evidence that creativity, as an intangible asset, which is intrinsic to the product, is one of the elements that enabled creative TBFs to access markets abroad more quickly. In contrast, for traditional TBFs, products were the cause of delaying the internationalization process since they first had to overcome technical, legal, and cultural barriers that required adjustment before entering the international market. However, a fast internationalization process is no guarantee that operations will be sustainable over time. For this reason, we also sought to evaluate the characteristics of survival and longevity of the international operations of creative and traditional TBFs. Except for case D, in the cases investigated, building long-lasting relationships with internationally known clients was a factor that facilitated winning new businesses and is consequently reflected in their longevity in foreign markets, both for creative and traditional TBFs.

Furthermore, it was apparent that, although creativity is an intangible resource that is difficult to measure, creative TBFs were notable for their ability to internationalize rapidly. This may indicate creativity is a factor that impacts both on how long a firm takes to start to internationalize and how quickly it proceeds once started. The cases analyzed did not provide sufficient data to indicate whether creativity impacts internationalization longevity, which remains to be explored in the future. Regarding this limitation, a suggestion for future research is to apply a survey in Brazilian TBFs to identify the relationship between creativity and internationalization longevity as well as speed and survival. A limitation of this exploratory study is that it is not possible to conclude over specific aspects, and results cannot be generalized. This research avenue should be investigated using a larger sample in which the greater or lesser intensity of creativity in firms' operations is controlled. The contribution of this study is to generate insights for a new research stream, which is the relationship between creativity and internationalization speed and especially the relationship between speed, survival, and longevity of operations abroad. Finally, despite the richness of the Brazilian context in exploring the effects of speed and longevity in the internationalization of TBFs, it is possible that studies in more or less internationally interconnected industries in other scenarios could offer an alternative lens to explore the effects of speed, longevity, and also the effects of creativity on the internationalization path.

We also emphasize creativity as a build-block resource to be transformed into an intangible asset for the generation of competitive advantage, as already shown by de Vasconcellos et al. (2019). The results of this paper infer that creative TBFs have advantages compared to traditional TBFs that enable them to access foreign markets sooner after foundation and facilitate the survival of their international operations, provided that their innovation and creativity can be sustained over time. Creativity, as an intangible resource, can be understood in different ways. This paper analyzes firms from technology-related creative industries producing software, as suggested by Lazzeretti et al. (2008). The so-called traditional ones were identified by the alignment of software production for traditional manufacturing industries, that is, a better-known sector. Many other characteristics of creativity can be found in the TBFs, suggesting new studies to evaluate characteristics such as creativity in generating ideas, processes, and new services.

Therefore, we consider that the argument based on creativity, an emergent inductive category in this study, is a relevant contribution to International Business theories, notably theories that address the speed of access to international markets and the resilience of international operations. Our contribution lies in the discussion that a quick entry to international markets after foundation is vital for TBFs, but that international operations' sustainability is even more relevant.

Finally, the results indicate that our first question has an inconclusive answer and deserves further investigation. The perception of time among TBFs is different and possibly is influenced by how creative a TBF is and how dependent they are on their clients in creating products and services. Nevertheless, we believe that the findings of this study are helpful to TBF organizations in three main aspects. The first is their contribution to understanding the elements that accelerate the internationalization process of non-internationalized TBFs. The second is that the factors identified as related to the survival of the international operations of TBFs enable internationalized TBFs to find support to sustain their operations abroad over time. Finally, the third contribution is the understanding that creativity must be transformed into an asset of competitive value for the internationalization process of TBFs. Whether internationalized or not, innovation must be as dynamic as the initial strategies of creative or traditional TBFs.

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**AUTHOR'S CONTRIBUTION**

DF: Conceptualization , Data collection, Formal analysis, Methodology, Writing-original draft; SV: Conceptualization ,Formal analysis, Methodology, Validation, Writing-original draft, Writing-review; CM: Conceptualization, Methodology, Validation, Writing-review, Editing; SA: Conceptualization, Methodology, Writing-review

**CONFLICTS OF INTEREST**

The author(s) states that this research has no conflicts of interest.

# APPENDIX A

## Interview Protocol

Date: ______________________________________________

Company: __________________________________________

## GENERAL INFORMATION ABOUT THE INTERVIEWEE

- Full Name/Position/Age/Time in the position/works at the company since/
- Educational background
- Professional experience abroad (TIME)

## GENERAL INFORMATION ABOUT THE COMPANY

- Foundation
- Time operating abroad
- Number of markets in operation
- National/Foreign/Own/Investment Fund
- Number of employees (Brazil and abroad)
- % of external sales/total sales
- Product type:
  - ☐ Traditional Technology-Based Industry (Management, Retail, Inventory, Accounting, Finance.)
  - ☐ Technologically Based Creative Industry (Games, Educational, Fashion, Marketing)

## COMPANY AND RESPONDENT HISTORY

- Previous professional experience
- Career aspects that impacted the current experience
- Previous experiences and contacts with people/companies that boosted internationalization
- Factors that influenced the beginning of the internationalization

## SPEED OF INTERNATIONALIZATION

### Operations Abroad

- International history - countries where you work or have worked, in chronological order, type of activity performed, and motivation for entering that country
- The main market for the company. How did the company and the managers learn to deal with these markets?
- Responsible for internationalization activities?
- Relevant criteria in choosing to act in the international market?
- Company strengths and weaknesses vs. Competitor strengths and weaknesses
- Responses to competitors in the launch of an innovative service/product
- Post-internationalization partnerships/time of partnership/goal

### Adaptation of the Product/Service for Internationalization

- How the type of product influenced the speed of internationalization
- Main difficulties and facilities related to the type of product

## LONGEVITY OF THE INTERNATIONAL OPERATION

### Sustainability in International Markets

- How is the company recognized/known in the international market?
- How does the company control indicators and results to monitor the performance of international activities?
- Does the type of product influence post-internationalization?
- How does the company identify new markets?
- What does the company do to maintain itself in markets it already operates?
- How does the company measure the performance of the international operation? What does it indicate that operating abroad is sustainable?