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The importance of firms' strategic resources and capabilities in crisis situations

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The importance of firms' strategic resources and capabilities in crisis situations

A Master thesis presented to the faculty of Brazilian School of Public and Business Administration (FGV) in partial fulfillment of the requirements for the degree of Master of Science in Administration.

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THE IMPORTANCE OF FIRM'S STRATEGIC RESOURCES AND CAPABILITIES IN CRISIS SITUATIONS.

Dissertação apresentada ao Curso de Mestrado em Administração da Escola Brasileira de Administração Pública e de Empresas para obtenção do grau de Mestre em Administração.

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ASSINATURA DOS MEMBROS DA BANCA EXAMINADORA

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Abstract

The general idea of this research is to analyze overall firm performance before and after the global financial crisis of 2008. The main question is: What kind of strategies did companies adopt that led to positive business performance after the crisis? Are there any particular competitive advantages that bring better performance in the case of an economic downturn? This research focuses on competitive advantage gained by resource-based view attributes of a product (quality, durability and prestige) and dynamic capabilities (strategic flexibility in product development and technological innovation ability). The economic crisis setting provides a proper background to analyze the competitive advantage strategies in a dynamic, low-probability environment to determine which are most worth adopting in the business world.

I employ an OLS regression analysis in order to measure the business performance of 136 Brazilian firms across four years – 2002, 2005, 2008 and 2012. The findings indicate that even though all of the strategic resources and capabilities positively influence firm performance in expansionary periods, only the superior product characteristics are pertinent in surviving an economic downturn.

Keywords: *Competitive advantage, Resource-based view, Dynamic capabilities, Global Financial Crisis (GFC), Business performance.*

Contents

1. Introduction

Organizations have always faced external shocks that could threaten their viability and prosperity. Even though economic crises do not happen frequently and are unique in nature, they should not be omitted in academic research. Especially in the emergence of a network economy (Achrol & Kotler, 1999), even a seemingly not dangerous downturn can evolve and spread across the globalized world in a quick and detrimental manner, unexpectedly influencing firms' well-being. Therefore, studying crises and possible ways to resolve them at the organizational level can be valuable in terms of its scientific theoretical contribution and application in the business world.

The crisis has been studied in different business perspectives. Chung *et al.* (2010) explored the topic of subsidiary expansion orientation across – or within – countries during the Asian economic crisis (1997-1998); Lee & Makhija (2009) examined strategic flexibility gained by international direct and export-related investments during the Asian crisis in Korea; and Grewal & Tansuhaj (2001) focused on market orientation and strategic flexibility based on investment, diversity of environment and macro environmental risk management, also in the Asian setting. Other researchers such as Ngah-Kiing Lim *et al.* (2009) examined the influence of a product diversification strategy on debt financing levels during the Asian crisis, proving companies that pursue unrelated product diversification take on less debt financing in stable environments, but more in dynamic environments. Moreover, Wan & Yiu (2009) investigated corporate acquisitions in turbulent and stable periods, which resulted in the general conclusion that acquisitions are positively correlated with firm performance during an environmental jolt, which means that it is possible to capitalize on opportunities created by economic change in certain aspects. One of the most recent studies proved

that during economic instability, a firm's financial flexibility is crucial for its performance (Garcia-Sanchez *et al.*, 2014).

Hence, it could be generally concluded that flexible and adaptive capabilities in terms of investment or acquisitions, as well as across-countries orientation, help companies survive unforeseen negative environmental change. Moreover, it has been confirmed recently that a firm's positive performance during an economic crisis mostly depends on its own resources and capabilities and less on the roles of the industry or country, which are significantly reduced in such adverse conditions, especially in emerging markets (Bamiatzi *et al.*, 2015). Thus, the external environment effect is less important in relation to business performance than a self-determined internal power that can be gained by a firm's competitive advantages. This will be investigated further.

In theory (i.e., Barney, 1991; Hunt & Morgan, 1995; Day, 1994), valuable and competitive resources, strategies and capabilities together are responsible for strong performance of a company, but it is not clear if they are effective under an unexpected, external shock, which significantly affects the internal stability of a firm. According to some research (Kogut & Kulatilaka, 2001; Bowman & Hurry, 1993), the direct assumption that specific resources and competences working effectively in stable market conditions would also be automatically be successful in the unstable period of time is misleading. It is crucial for this research to indicate how selected competitive resources and capabilities will perform during stable and unstable economic periods, where direct comparison is noted in the hypotheses presented. Moreover, it is beneficial to uncover their strengths and weaknesses in an extreme economic hardship scenario, as all kinds of companies could experience this at a given moment, especially in this era of strong international interactions.

The competitive advantage a company gains by its tangible resources has not been examined empirically in the crisis context. The resource-based view (RBV) features, such as uniqueness, persistence, quality and reputation of a product, tend to represent high value for a firm in stable conditions (Barney, 1986; Peteraf, 1993), but they have not been proven beneficial in case of an economic downturn. This study tries to fill this research gap and answer whether this kind of competitive advantage helps an organization survive a crisis. Moreover, there is room to address another aspect of the resource-based view – dynamic capabilities, in terms of technological innovation. The focus goes to organizational capability of change, which combines two crucial competences each firm should consider to adopt. The first one is strategic flexibility in terms of a product lineup development and technological adjustments concerning customer and competitor behaviors. The second one is technological innovation capability, which concerns readiness for new technology adaptations and innovation drive. Both of these capabilities in the aforementioned aspects have not yet been examined in the crisis situation.

Furthermore, there is a clear absence of business strategy research in the setting of the most recent global financial crisis (one of the few examples is Bamiatzi *et al*., 2015), as the majority of studies concentrate on the Asian crisis of the late-1990s (Grewal & Tansuhaj, 2001; Lee & Makhija, 2009; Ngah-Kiing Lim *et al.*, 2009; Wan & Yiu, 2009; Chung *et al.*, 2010). As Bamiatzi *et al.* (2015, p. 4) note: "*There is no empirical work within a strategic management literature that offers reasonable expectations of 2008 recession consequences on the firm effects-performance relationship."*

This crisis focus, in contrast to the Asian downturn, gives a current perspective on market risk faced by international and domestic companies, especially concerning the

globalized nature of any economic downturn that may occur. In addition, this research concerns Latin America's largest market and an emerging global economy;[1] this helps us better understand crisis response mechanisms among developing markets, where fighting crises might be even tougher and more complex than in developed countries.

Additionally, the longitudinal nature of the dataset differentiates this study, as we have a direct comparison of the same companies between economically stable and unstable periods of time, within a 10-years time period. The 136 matched automotive firms give us a legitimate source of comparable indicators since the resources and capabilities were measured unchangeably (with the same questions and survey structure) across the years and, in most cases, were evaluated by similarly positioned organizational employees.

In sum, there are a few important reasons why this research should be conducted. First, there is a shortage of research measuring the consequences of the global financial crisis in the business spectrum, especially in the strategy field. Analyzing this severe and extremely globalized crisis gives new insights on the overall impact this event had on businesses. These findings could be more generalized than the results from studies of the regional Asian crisis. Moreover, they contribute to emerging economy studies.

Furthermore, even if economic rent generation has always been of high interest to management scholars, there are still several unaddressed issues. The literature has not examined the competitive advantage gained by superior product characteristics. Also, the benefits of strategic flexibility in product development and innovation capabilities have not yet been examined in the economic munificence period. Finally, this paper presents direct contrasts between the stability and crisis times among the same

[1] Taking into account Brazil's economic condition from 2002-2012, when the data was gathered.

companies, which is a rare practice, and it contributes to a deeper analysis of the phenomenon.

2. Research Background

2.1. Global Financial Crisis

The Global Financial Crisis (GFC) began in late 2007 in the United States when the most important and reliable financial institutions and enterprises collapsed and went bankrupt (Scott, 2010). After a while, the “Great Recession” spread out globally, mostly affecting developed countries in Europe, as well as emerging economies in Asia, South America and Africa influenced by the stock market fluctuations (Velde, 2008).

The global financial crisis was caused by a combination of complex factors. First, globalization of fiscal illiquidity issues contributed to the rapid evolution of the crisis. The uncomplicated credit conditions during the period of 2002-2008 encouraged high-risk lending and borrowing practices not only among ordinary people, but also among banking sectors and governmental institutions globally (Taylor, 2009). People and institutions were functioning above the realistic level of their affordability. Subprime mortgages took control over the market and caused the American "housing bubble" (Taylor, 2009, Reinhart & Rogoff, 2008). The problem occurred when unreliable and credit-unworthy customers began having difficulty repaying their loans because of increasing interest rates. When some of banks in the U.S. went bankrupt – including the well-known Lehman Brothers – otherwise got acquired by or merged with other private and public financial institutions (Scott, 2010), individuals and organizations lost a significant number of assets and securities. Since the United States is tightly linked with

the global economy, it did not take long to see the effects spread outside the U.S. international trade imbalances and global market ineffectiveness started to arise, mostly due to a strong globalization trend and a system of "communicating vessels" (Calabro *et al.*, 2011) that spread the economic slowdown rapidly and deviously (Stiglitz, 2012). Another cause of the GFC was a widespread belief in neo-liberalism and free markets (Rudd, 2009). The inherently self-corrected and self-regulated financial markets were overestimated, and their "Smith's invisible hand" regulation did not occur (Stiglitz, 2012). Economic liberalism, which started to dominate within financial markets and economic policies around the world during the twentieth century (mainly after adaptation of the Bretton Woods system in 1944), has not been as reliable and efficient as many claimed it would be. The monetary policies, with low interest rates, high liquidity and limited regulations, were considered safe and able to prevent market instability. However, they had the opposite effect (Rudd, 2009). Even Alan Greenspan, an influential American economist and former Federal Reserve chairman, agreed that the ideology he believed in was not working well and the "hands off" ideology was not completely flawless (*The Guardian*, 2008). The failure of economic fundamentalism was unexpected, and that was the main reason the financial crisis became such a massive and tough issue. Moreover, the severity of existing and emerging problems was not noticed quickly enough or solved promptly, which led to long-term consequences. As a result, global financial markets have suffered tremendous dislocation and have lost many assets. The total loss has been estimated as equivalent to the collective GDP of the countries belonging to the G7, which is approximately US$32 trillion (Rudd, 2009). In the United States and beyond, a large number of people lost their jobs, properties and savings, which caused an increase in social inequality (Stiglitz, 2012). Even though governments and international financial institutions invested a large amount of money

in stimulus packages for private and public institutions to improve this critical situation, the process to full recovery took a long time. Some argue it is still in progress.

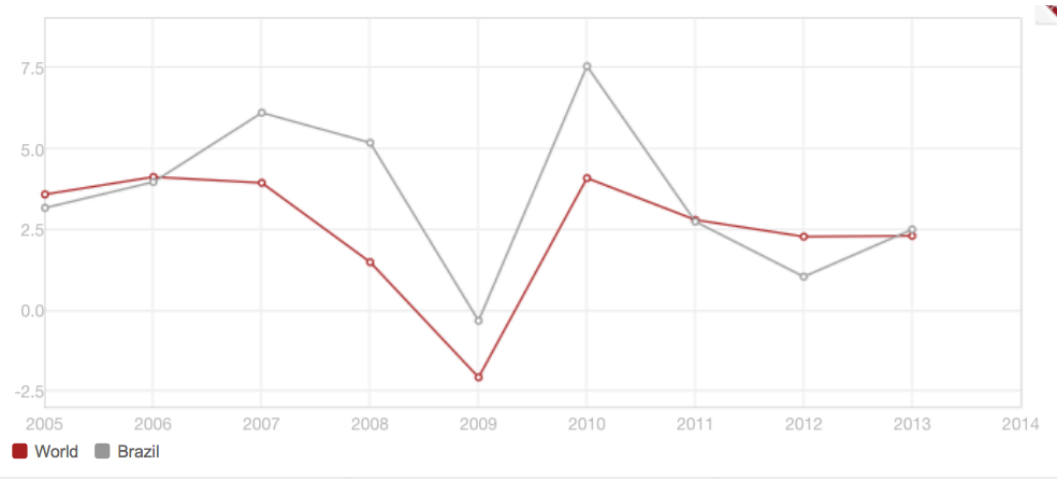
In summary, the main result of the global financial crisis was a large credit deficit and general illiquidity, which directly led to turbulences in the business world. The sudden increase in transaction costs led to a decline in firm resources (Lathman & Braun, 2008) and, therefore, reduced organizational efficiency and productivity, lowered revenues and, consequently, caused default and job cuts. In such adverse conditions, companies struggled to maintain their profit margins and stay competitive. Hence, the recession of 2008-2009 provides an excellent case for further investigation of business performance fluctuations in an economic downturn.

2.2. The impact of the crisis in Brazil

At the onset of the global financial crisis, Brazil had been experiencing high economic growth, and it managed to sustain social reforms because of this. This, aligned with a more participative foreign policy, gave the country more room in the geopolitical scenery, which brought the popularity of then-president Lula da Silva to very high levels. He was so confident of Brazil's strength that he made an infamous statement that the "crisis would hit Brazil like a wavelet, as opposed to the tsunami it had been in other countries" (Ferrari Filho, 2011; p. 2).

However, when the crisis hit Brazil, it caused a recession in late 2008 and 2009. Brazil's GDP rate dropped by almost 6%, to level of -0.6% [Graph 1], the unemployment rate increased by 2.2% and a stimulus package worth 1.5% of national GDP was triggered to help spur the economy (Carrasco & Williams, 2012).

Graph 1. Comparison of GDP Growth – Annual (%)



Source: The World Bank data (2015)

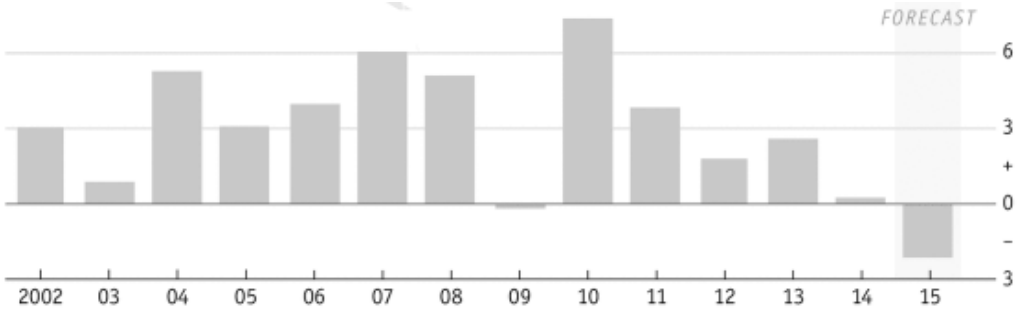
When the global crisis hit Brazil, the country had high international reserves, with a solid demand, and it was not suffering from a housing bubble in the market (some say the bubble was being inflated at that point, but if so, it certainly was not as strongly as in the U.S. before 2008). For these reasons, the Brazilian recession did not last long. Added to these factors, Brazil still had an elevated momentum in consumption, and easy credit aligned with tax incentives helped the country recover from the crisis very quickly, reaching a GDP increase of 7.5% in 2010[2] (Carrasco & Williams, 2012).

Seeing the result, the government lowered the historically high interest rate to the minimum of 7.25%[3] in late 2012 and included a second round for its Growth Acceleration Program (*Programa de Aceleração do Crescimento*). It also increased tax incentives, especially in the manufacturing sector (with the automotive industry being one of the main beneficiaries). All of these actions helped the Brazilian economy recover quite rapidly (about one year after the GFC) and remain stable for several years.

[2] IBGE (Brazilian Institute of Geography and Statistics), 2011 in Carrasco & Williams, 2012.
[3] Central Bank of Brazil, 2012 (The World Bank data, 2015)

However, one could argue that Brazil's expansionist fiscal policy, adopted to counteract the effects of the GFC from 2008 onward, ultimately led to the economic recession observed in 2014 and 2015. Nonetheless, the country experienced, on average, high economic growth from 2004-2007 and kept leading the global emerging market economies ranking, while it overlooked many of the necessary reforms required to keep government finances under control. Brazil was taking advantage of high commodity prices, China's expansion and increasing geopolitical influence, but the country neglected to prepare for another economic downturn. Therefore, after 2008, it had to adopt counter-cyclical measures – low interest rates, tax incentives, government spending and credit concessions, among others. In other words, incentivizing demand, but overlooking, for instance, investment in productivity. Such measures gave a false impression that the country had recovered quickly from the crisis and that the growth observed in the previous decade would resume. The measures adopted by the government could work only temporarily, and they finally caused a decline in the post-crisis economical prosperity. Brazil is currently in a severe recession, with high unemployment (7.5% in July 2015 with a forecast of 10% next year), GDP decline [Graph 2], skyrocketing inflation (fluctuating around a 9.5% level) and high exchange rates (1 USD exceeding the level of 4 BRL, which almost doubled in the last two years). Moreover, another issue is the growing deficit, now worth 8-9% of the total GDP. This recently caused the international rating agency to downgrade Brazil's investment-grade credit rating to “speculative” (*The Economist*, 2015).

Graph 2. Brazil GDP, % of Change vs. a Year Earlier



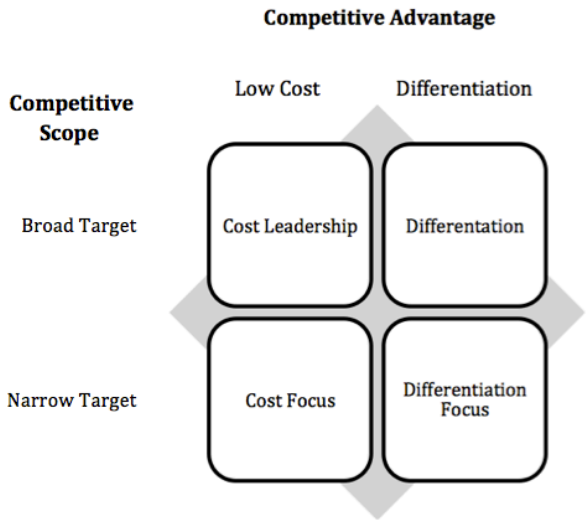
Source: IMF and Central Bank of Brazil, retrieved from *The Economist* (2015)

3. Literature Review and Hypotheses Development

3.1. Competitive advantage

The competitive advantage concept (Porter, 1985; Rumelt, 1984) has been broadly researched in strategic management. The role of competitive advantage positively impacting sustained and superior performance has been confirmed by scholars (i.e., Barney, 1997; Grant, 1998). In the real world, companies try to identify, implement and reinforce competitive advantages in their businesses (Porter, 1996) in order to successfully grow their profits and recognition. Porter explains his rationale behind this term: "*Competitive advantage grows out of value a firm is able to create for its buyers that exceeds the firm's cost of creating it*" (Porter, 1985; p. 3). He categorizes it into two general strategy types: cost leadership and differentiation. The company's position in the industry lies in between competitive advantage (cost leadership and differentiation) and competitive scope, which defines the targeted segment of the industry [Graph 3].

Graph 3. Porter's Generic Strategies



Source: M.E. Porter, "The Competitive Advantage: Creating and sustaining superior performance", 1985; p. 12

Porter (1985) claims that the decision of the type and scope of a firm's competitive advantage is significantly important in order to become favorable of it and not remain "stuck in the middle." Another widely researched approach toward gaining competitive advantage was created in the late 1960s and is now mostly known as the "SWOT" analysis. Summarized by Barney (1991; p. 99), the approach toward sustained competitive advantage should comprise of: *"implementing strategies that exploit their internal strengths, through responding to environmental opportunities, while neutralizing external threats and avoiding internal weaknesses."* Both of these approaches give a general direction toward where the organization should aim in order to stand out among competitors; however, they do not provide specific instructions on how to gain the differentiating set of assets.

More specifically, even though sources of competitive advantage might vary, the concept generally can be defined as ownership of a valuable resource or competence

that generates economic value (Fiol, 1991) by enabling a firm to perform more efficiently among competitors (Collis & Montgomery, 1995). In this research, both organizational resources and competences will be taken into account as sources of competitive advantage that differentiate a firm from other market players. Outstanding resources and competences should lead to superior performance and, therefore, help a firm overcome any economic turbulence it may face.

3.2. Resource-based view and resource competitiveness

Collis and Montgomery (1995) identify five crucial characteristics of valuable firm's resources creating potential competitive advantage: *i) inimitability,* considering how difficult it is for competitors to copy the resource; *ii) durability,* meaning how quickly it will depreciate; *iii) appropriability*, taking into consideration who captures the value created (customers, owners, distributors, suppliers, etc.); *iv) substitutability,* recognizing uniqueness of the resource; and *v) competitive superiority*, which shows to what degree the resources are better than the competitors.' Collis and Montgomery (1995) provide a detailed response toward the resource-based view, which was first introduced by Penrose (1959) and continued by other scholars (Barney, 1986, 1991; Peteraf, 1993; Teece, 1982; Wernerfelt, 1984). The resource-based view corresponds to a firm's competitive and heterogeneous market position being influenced by a bundle of unique resources and capabilities (Barney, 1986, 1991; Peteraf, 1993). The sustainable competitive advantage resources are supposed to be *valuable*, *rare*, *inimitable and non-substitutable* (VRIN attributes) in order to be beneficial for a company and difficult for its competitors to duplicate (Barney, 1991; Conner & Prahalad, 1996; Peteraf, 1993).

Eventually the VRIN concept evolved into VRIO (Barney, 1997), where the *organizational* aspect has replaced the *non-substitution* variant. Hence, according to the theory, without skilled and capable people at an organization, resources would not be translated into sustained competitive advantage (Katkalo *et al.,* 2010).

The resource-based view has been studied in different scenarios, but the literature does not include sustained competitive advantage being tested in an economic crisis. The theory tells us a firm's superior resources are strategically important in obtaining sustainable competitive advantage and, therefore, lead to significantly better business performance versus competitors. Despite considerable research in this area, it is yet to be established whether the specific superior characteristics of a product are, indeed, able to positively impact firm performance in general terms and, even more importantly, whether they help a firm survive an economic downturn and overcome the external threat on a surplus.

Drawing from the well-established theoretical pillar in strategy, the resource-based view theory, I intend to analyze the relation between the firm's superior product characteristics and their impact on firm overall performance, taking into account financial profitability, market share and sales growth rates throughout the years.

In order for a firm to gain competitive advantage in the market, its resources should be: valuable, hard to imitate and idiosyncratic (Barney, 1991; Conner, 1991), which are concentrated in the overall quality and prestige/reputation of a product. Moreover, I look into a durability (product life cycle) part, which is adopted from Collis and Montgomery's study (1995) regarding crucial features of firm resources that are responsible for sustainable competitive advantage generation.

Therefore, I expect the product characteristics of quality, durability and prestige to be strong enough to enhance firm performance not only in stable economic conditions, but also in the case of an anomalous event, namely the 2008 recession:

Hypothesis 1a. (H1a)

Generally, the greater a firm's ***product quality, durability and prestige****, the higher its level of* ***business performance****.*

Hypothesis 1b. (H1b)

The greater a firm's ***product quality, durability and prestige****, the higher its level of* ***business performance*** *after the crisis, which means these product characteristics will help a firm survive the economic downturn.*

3.3. Resource-based view and dynamic capabilities

The resource-based view analyzes not only the type of resources, but also the kinds of capabilities that are able to generate rent for the company (Amit & Schoemaker, 1993), which leads us to another aspect of competitive advantage. In the more recent literature, the focus goes to "dynamic capabilities," a strategic approach to obtaining sustained competitive advantage by continuously leveraging and developing a firm's assets, capabilities and core competencies (Harreld *et al.*, 2007). In 1997, Teece and his coauthors noticed a need to extend the resource-based view into a dynamic market context, where dynamic capabilities cause crucial changes in internal and external

competences in firms' shifting and competitive environments. By doing this, dynamic capabilities provide an organization with new, innovative forms of sustained competitive advantage (Leonard-Barton, 1992). It should be mentioned that dynamic capabilities performance strongly depends on management capabilities and a difficult to achieve combination of "*organizational, functional and technological*" skills (Teece *et al.*, 1997: p. 510) and confirms the 'VRIO' theory (Barney, 1997). Moreover, most likely a superior performance will be correlated with knowledge resources (Grant, 1996; Kogut & Zander, 1992), which are essential in innovation. Eisenhardt and Martin (2000), by debating about the evolution of dynamic capabilities, concluded that even if each firm has its independent and unique path to follow, the evolution's path is shaped by commonly known learning mechanisms, like repeated practice, that accelerate the process (Argote, 1999). Moreover, as mentioned, small losses (Sitkin, 1992) or crises (Kim, 1998) may motivate a further, more rapid evolution of dynamic capabilities.

In summary, the resource-based view provides an insight that valuable and unique resources are needed to gain a competitive advantage, but other things are important as well. The main goal is to be able to transform these resources into firm-specific, unique competences and capabilities (Prahalad & Hamel, 1990; Conner, 1991), which lead to organizational heterogeneity and a well-established, sustainable position in the market. The point is that the resource-based view cannot, in itself, foresee firm performance in adverse conditions, such as economic crises. Therefore, besides resources examination, dynamic capabilities should also be analyzed in terms of their possible impact on organizational prosperity in turbulent times.

In this study, I would like to focus on one type of dynamic capability – organizational capability of change, which is a combination of a company's strategic flexibility in product development and technological innovation ability.

Strategic flexibility is defined as a firm's ability to respond quickly to market dynamic opportunities and threats (Sanchez, 1995) by reallocating its resources properly and balancing both internal and external environments effectively (Volberda, 1996). Strategic flexibility represents a fundamental approach to managing uncertainty (Sanchez, 1993), and as a dynamic capability, it enables a firm to gain a competitive advantage in a turbulent market setting (Teece *et al.*, 1997). In the long run, it strengthens the positive effects of technological capability associated with explorative innovation (Zhou & Wu, 2010), which is more proof that a company can be more competitive and successful by combining both capabilities. Foss (1998) indicates that in the case of an economic downturn, a firm's flexibility and readiness for unanticipated change is more beneficial than a unidirectional and steady strategy.

In this research, strategic flexibility measures a firm's capability to react quickly to a major change in different aspects: customers' change in preferences, competitors' new product lineups and general changes in technology; therefore, it is called a strategic flexibility in product development. This kind of flexibility has not yet been proven as beneficial or detrimental to firm performance in adverse economic conditions. Past research (Miles & Snow, 1978) supports the rationale that strategic flexibility with adapted product offering positively influences firm performance. This type of capability is conceptualized as resource flexibility (Sanchez, 1995), which indicates flexibility in product-creating resources. Even though the extent and timing of any kind of crisis is difficult to predict, reactive strategic flexibility allows a firm to be agile and versatile

(Evans, 1991), which is supposed to be a powerful tool for surviving a crisis. Therefore, I expect strategic flexibility to enhance firm performance not only during an expansionary period of time, but also after a crisis:

Hypothesis 2a. (H2a)

Generally, the greater a firm's ***strategic flexibility in product development****, the higher its level of* ***business performance****.*

Hypothesis 2b. (H2b)

The greater a firm's ***strategic flexibility in product development****, the higher its level of* ***business performance*** *after the crisis, which means this dynamic capability will help a firm survive the economic downturn.*

The second dynamic capability is the innovation ability to constantly transform knowledge and ideas into new products, processes and systems inside a firm (Lawson & Samson, 2001). A higher level of technological capability impacts dynamic capability evolution, which helps a firm reallocate its resources and adapt to a market shift in a more prominent way (Eisenhardt & Martin, 2000; Teece *et al.*, 1997). Technological innovations improve the flexibilities in product development, enabling an acceleration of creation processes and increasing the range of products in which a given resource might be applied (Sanchez, 1995). This contributes to a firm's wider prospects and possible performance enhancements. Similar to flexibility in product development, a technological improvement ability and innovative approach correspond to being agile

and versatile which, in case of an external shock, should guarantee better chances for quick adaptations and, therefore, reactive ways to fight the crisis successfully. The nature of dynamic capabilities concerns highly developed responsiveness to environmental change (Teece *et al.*, 1997). Therefore, I expect that the technological innovation competence acquired by a company will be beneficial to firm performance in general and also in economically unstable times:

Hypothesis 3a. (H3a)

Generally, the greater a firm's ***technological innovation capability****, the higher its level of* ***business performance****.*

Hypothesis 3b. (H2b)

The greater a firm's ***technological innovation capability****, the higher its level of* ***business performance*** *after the crisis, which means this dynamic capability will help a firm survive the economic downturn.*

4. Research Method

4.1. Research context

Brazil is one of the biggest emerging economies in the world, belonging to the BRICS[4] group, G20[5], United Nations and the regional trade union Mercosur.[6] It is the largest market in South America by GDP and population (World Bank, 2014) and one of the global leaders in the number of vehicles (estimated at 23 million in 2005 and almost 40 million in 2013), which is 5.1 inhabitants per vehicle for 2013 (ANFAVEA, 2015).[7] The automotive industry is one of the largest and fastest-growing industries in the country, worth 5% of the total GDP and generating US$110.9 billion of revenue in 2013. Moreover, Brazilian production of vehicles is responsible for more than half of the total production in Latin and Central America, estimated at more than 3.7 million units in 2013 (ANFAVEA, 2015).

Global auto components suppliers and assemblers are very well represented in Brazil, since the country is one of the world's leaders in terms of the number of brands being produced in a single country. Therefore, the industry faces sufficient internal competition and a constant need for innovativeness and development. Moreover, the demand pressure for cars in Brazil has been high due to expansion of the middle class, growing dissatisfaction with public transportation and government tax incentives to stimulate the economy by promoting national production and lowering unemployment rates (1.5 million people are employed in the Brazilian automobile industry – ANFAVEA, 2015).

[4] Acronym for five major global emerging economies: Brazil, Russia, India, China and South Africa, first introduced as BRIC in 2001 and developed in 2010 by adding South Africa to the list.
[5] The Group of Twenty gathers major global economies since 1999.
[6] Mercado Comun do Sul/Southern Common Market introduced in 1999 uniting Latin American countries.
[7] Source: ANFAVEA – Associação Nacional dos Fabricantes de Veículos Automotores/Brazilian Automotive Industry Yearbook (2015).

Additionally, a high level of investment and international export (mainly to Argentina, Mexico, the United States and the European Union) shows the importance of expanding the local market and gives further reasons for in-depth investigation of the industry. All of these sector characteristics provide a proper setting to representatively analyze the impact of the global financial crisis on firm business performance in the Brazilian context.

4.2. Data collection and sample

The dataset was gathered based on questionnaires developed after in-depth semi-constructed interviews with plant, supply chain, purchasing and manufacturing managers working in the four main automotive companies in Brazil (General Motors, Volkswagen, Ford and DaimlerChrysler) and their suppliers (i.e., Dana Corporation, Eaton Corporation, Visteon Automotive Systems). The refined survey was developed by FGV professor Ronaldo Couto Parente as part of a project on modularization associated with the Motor Vehicle Program (IMVP) at the Massachusetts Institute of Technology.[8] The survey and a personalized introductory cover letter were distributed among Brazilian automotive manufacturers and suppliers by mail, first in 2002. Follow-up surveys were mailed in 2005, 2008 and 2012. The first questionnaire was received by 456 business units out of 493. After three follow-ups and filtering the responses for the missing values, the sample contained 136 matched companies. The effective response rate was 29 percent. The final sample for both automakers and suppliers had a good variety of firms in terms of product type, size, age and geographical scope.

[8] For more details regarding the data collection and the project refer to Kotabe *et al.* (2007) and Lakshman & Parente (2008).

The questionnaire used five-point Likert scale measurements for the constructs, and it was translated from Portuguese into English and then reversed (back translated) in order to maintain the original meaning of the questions. The initial and follow-up surveys included sections on: background information, business unit and product characteristics, modular production, factors driving adoption of modularization, benefits of modularization and performance, relationship with suppliers, knowledge sharing and technology transfer and macro uncertainty.

The main focus of my study related to the sections on business unit and product characteristics and benefits of modularization and performance. In the model construct validation using confirmatory factor analysis (CFA) and in the OLS regression analysis, I focused on the years of 2002, 2005 and 2008 for performance before the crisis (since the crisis in Brazil occurred mostly in 2009 and the measures are taking into account performance over the past 12 months), and I used 2012 for the post-crisis performance measure.

4.3. Data measures

Dependent Variable

Due to my interest in assessing the operational and financial effectiveness of the company in the best possible way, a business unit's performance was tested as the dependent variable (Venkatraman & Ramanujam, 1986). Six survey factors are combined to measure firm performance versus its major competitors in the last 12 months. This assessment takes into account the financial performance, measured by return on investment, return on sales and general profitability; as well as the

operational performance, which is evaluated by a firm's market share and sales growth. A firm's ultimate performance score is an average of all the five-point Likert scale indicators [Table 1].

Table 1. Descriptive Statistics for all the Years and Individual Years

Variable	Mean	SD	1%	Median	99%
PANEL A – ALL YEARS					
Business Performance (N=492)	3.65	.63	1.83	3.83	4.83
Product Characteristics	3.59	.80	1.65	3.83	5.0
Strategic Flexibility	4.02	.70	2.0	4.0	5.0
Tech. Innovation Capability	3.78	.76	1.23	4.0	5.0
Past Performance (N=369)	3.57	.63	1.83	3.66	4.83
Sales Size (log) – Fixed	7.57	1.11	5.33	7.47	9.71
PANEL B – 2002					
Business Performance	3.47	.65	1.83	3.50	4.83
Product Characteristics	3.79	.55	2.25	3.83	5.0
Strategic Flexibility	4.04	.74	2.0	4.0	5.0
Tech. Innovation Capability	3.88	.84	1.0	4.0	5.0
PANEL C – 2005					
Business Performance	3.77	.51	2.50	3.83	4.83
Product Characteristics	3.30	.92	1.20	3.50	4.79
Strategic Flexibility	4.13	.65	2.08	4.33	5.0
Tech. Innovation Capability	3.78	.69	1.31	4.0	5.0
PANEL D – 2008					
Business Performance	3.46	.67	1.83	3.50	4.62
Product Characteristics	3.27	.84	1.66	3.50	4.66
Strategic Flexibility	3.74	.65	1.74	3.66	5.0
Tech. Innovation Capability	3.34	.53	2.0	3.25	4.82
PANEL E – 2012					
Business Performance	3.90	.55	2.33	4.0	4.96
Product Characteristics	4.00	.55	2.24	4.0	5.0
Strategic Flexibility	4.17	.67	2.16	4.33	5.0
Tech. Innovation Capability	4.18	.70	1.06	4.25	5.0

Main Independent Variables

The main objective of this study is to verify which types of competitive advantage are most likely to help a company in surviving the economic crisis. The first independent variable analyzed is the RBV product characteristics of quality, durability and prestige. The participants were asked to evaluate their firm's product features by overall performance, durability, shortage of defects, quality, prestige and reputation in comparison to its three main competitors in the last 12 months.

The next two main independent variables are dynamic capabilities, which measure the organizational capability of change. Both of the variables, strategic flexibility and technological innovation capability, are measured by self-reported responses to five-point Likert scale (strongly disagree to strongly agree) questions. The strategic flexibility variable measures a firm's ability and preparation to react quickly to major change on three different aspects: customers' change in preferences, competitors' new product lineups and general major change in technology. The technological innovation capability is highly associated with strategic flexibility, as it indicates the flexibility and readiness to change the firm's business plan – in terms of innovation and new technology adaptation in a product development process and overall strategy of a company. All of the variables are estimated by an average of the score respondents gave to the selected questions.

Moreover, I created a dummy variable "post" in order to analyze the competitive advantage outcomes after the crisis. The new variable indicated whether it was a post-crisis year (2012) or not (2002-2008). All of the separated interactions of the three main independent variables with the dummy variable "post" were added to the OLS regression in order to examine Hypotheses 1b, 2b and 3b.

Control Variables

For control purposes, four additional independent variables were included in the model. The first one is the firm's past business performance, which may influence current performance. Considering "path dependence" (Ermoliev, 1987), the higher the performance before the crisis, the higher should be the performance after it, therefore it was important to control for this effect. Secondly, I added the logged unit's annual size of sales as an indicator of a company's size and sales volume. It is a fixed indicator of sales, referring to the levels taken from the first year measured – 2002. The mean of log sales was 7.5 (min. value 5.0 and max. 9.9) with a standard deviation of 1.11. A higher sales volume number results in more financial resources to sustain a firm's stability, which may lead to a higher probability of surviving an economic downturn. Hence, the log of annual sales volume has been added to the model in order to control for these differences in firm characteristics.

Another control variable is the product type produced by the automaker (assembler or supplier). This variable is a dummy, since there were three categories of products: vehicle, module and component part. The majority of our sample (47%) were component part producers, 33% were module producers and the rest were vehicle producers (car or truck). Finally, the headquarters nationality was added to the model, which was also a dummy variable indicating if it is a Brazilian headquarter (35%) or not (U.S., Argentina, Asia and European countries – 65%). Having a Brazilian-based headquarter could be both beneficial and detrimental for business performance before and after crisis, therefore it was important to control for any unobserved effect.

Table 2. Correlation Matrix for all the Variables

Construct	1	2	3	4	5	6	7	8	9	10
1. Product Characteristics	1									
2. Strategic Flexibility	.17	1								
3. Tech. Innovation Capability	.23	.29	1							
4. Business Performance	.57	.24	.27	1						
5. Past Business Performance	.17	.17	.05	.25	1					
6. Sales Size (log)	.56	.22	.14	.42	.34	1				
7. Product Type – Vehicle	.36	.15	.12	.27	.24	.65	1			
8. Product Type – Module	.46	.13	.07	.37	.25	.23	-.33	1		
9. Product Type – Component	-.72	-.24	-.16	-.57	-.43	-.73	-.46	-.67	1	
10. Headquarters Nationality	-.23	-.04	-.09	-.26	-.19	-.34	-.21	-.18	.33	1

4.4. Data analysis

Structural Equation Modeling and Confirmatory Factor Analysis

In order to validate the constructs of the dependent and main independent variables, I used Structural Equation Modeling (SEM) to conduct the CFA for all the latent variables separately and later to verify the full model [Table 3].

The first CFA analysis was performed on business performance, measured by six indicators. All of them exceeded the recommended .40 cutoff point (Nunnally & Bernstein, 1994) and ranged from .46 to .66 [Table 3]. The overall fit of the model was very good, with the comparative fit index (CFI) = 1.0, Tucker-Lewis index (TLI) = 1.0, root mean square error of approximation (RMSEA) = .00 and standardized root mean squared residual (SRMR) = .01. The χ^2 (9) is 29.7 and all of the factor loadings were statistically significant at $p < .000$. Regarding the reliability measure, the Cronbach's α

was .73, which is above the suggested .70 standard cutoff value (Straub, 1989). Second, the product quality, durability and prestige variable (H1) was tested with six selected indicators ranked from .62 to .78 in the factor loading analysis. The measures of goodness of fit were very appropriate, CFI = .98, TLI = .97, RMSEA = .06, SRMR = .02, with χ^2 (9) = 27.6 and p < .000 for all the loadings. The Cronbach's α (.84) indicated very good construct reliability.

The next variables tested were strategic flexibility and technological innovation capability (H2 and H3). All of their indicators had statistically significant loadings at p < .000. The factor loadings ranked from .59 to .78 for strategic flexibility and from .52 to .73 for innovation capability. For both, the received model fit was within the recommended limits. The Cronbach's α was estimated at .70 and .73, respectively. Moreover, taking into account that all of the factor loadings for the variables were high and the correlations between factors were relatively low, we could assume that the condition for discriminant and convergent validity was met.

Finally, the full model was tested using the SEM approach. All of the measurement factor loadings remained significant at the p < .000 level, ranging from .48 to .77 for the standardized model (which means the latent variables have been rescaled to the variance of 1.0). The results indicated that the covariance between strategic flexibility and technological innovation capability is quite high, at .40 with p < .000, which shows a moderately significant correlation between these latent constructs.

The product characteristics variable covariance with strategic flexibility was .20, and with innovation capability was .23, with p < .000 for both, which proved quite a weak correlation between them. The χ^2 is 254 with 146 degrees of freedom (p < .000), and

the overall structural model fit for the data is very good, CFI = .96, TLI = .95, RMSEA = .04, SRMR = .04, which means our model is well constructed and can be tested further.

Additionally, I ran the path analysis, which gave the first perspective over the hypotheses validation. The path model tested the relationship between business performance and the main explanatory variables. The path analysis supported a positive significant relation between business performance and product quality, durability and prestige ($\beta = .58$, $p < .000$), as well as with technological innovation capability ($\beta = .13$, $p < .02$). However, it did not support the relationship between performance and strategic flexibility ($\beta = .10$, $p < .08$).

Table 3. Measurement Models for Confirmatory Factor Analysis (SEM)

Main Variables	Factor Loadings	Composite Reliability
Business performance		.74
In the last 12 months, in comparison to our 3 major competitors on scale 1-5: 1. Much Lower, 2. Lower, 3. About the Same, 4. Higher, 5. Much Higher		
1. Business unit's performance measured by sales growth rate (was…)	.51	
2. Business unit's performance measured by market share.	.46	
3. Business unit's performance measured by profitability.	.59	
4. Business unit's performance measured by return on investment.	.66	
5. Business unit's performance measured by return on sales.	.65	
6. Business unit's financial performance (has been…)	.50	

Product quality, durability and prestige *In the last 12 months, in comparison to our 3 major competitors on scale 1-5: 1. Much Lower, 2. Lower, 3. About the Same, 4. Higher, 5. Much Higher*		.84
1. Overall product performance (was…)	.65	
2. Product durability/product life.	.62	
3. Product reputation.	.72	
4. Product prestige.	.78	
5. Freedom from product defects.	.65	
6. Quality of workmanship.	.70	
Strategic flexibility *For both: Based on your personal opinion please indicate the degree to which you agree with the following statements: 1. Strongly Disagree, 2. Disagree Somewhat, 3. Neither Agree or Disagree, 4. Agree Somewhat, 5. Strongly Agree*		.70
1. In the event of a major change in customers' tastes and preferences, our business is prepared to quickly make adjustments in production to satisfy new customer demand.	.62	
2. In the event of a major change in our competitors' product lineup, our business is prepared to quickly develop new products to meet head-on with our competitors.	.78	
3. In the event of a major change in technology, our business is prepared to quickly make adjustments in production to adapt to new technological standards.	.59	
Technological innovation capability		.73
1. Have a business plan to use existing technology to enter new market segments.	.52	
2. Have a business plan to develop new technologies for new kinds/variations of products.	.70	
3. Have a business plan to develop collaboration and strategic alliances for developing and exploring new technologies.	.73	
4. Have a business plan to redesign our product development process.	.59	

The Model

In order to analyze the post-crisis performance of a firm with a given competitive advantage, the following model was estimated:

$$\boldsymbol{Y_i = \beta_0 + \beta_1 P_i + \beta_2 M_i + \beta_3 M_i \cdot P_i + \beta_4 X_i + \epsilon_i}$$

where Y_i indicates business performance, P_i is a dummy indicating the year after the crisis (post), M_i is the main independent variable and $M_i \cdot P_i$ is the interaction between each of the three main exploratory variables and the dummy. X_i represents the control variables.

5. Results

Prior to testing the hypotheses, I examined the normality of data distribution and a potential threat of multicollinearity in the sample. Regarding multicollinearity, all of the variables' interactions with the main independent variables were below the variance inflation factor (VIF) 10 cutoff point (Hair *et al.*, 1998), except for the dummy variable "post." The highest mean VIF was 2.5 for the logged sales, the lowest was 1.14 for technological innovation capability and all of the rest did not exceed the 2.0 level; therefore, the threat of multicollinearity was eliminated. Proceeding with the Skewness and Kurtosis tests for distributional normality, all the items show a Skewness value between "+/- 2" (.54) and a Kurtosis lower than twice the value of the standard deviation (Howell, 2003). Therefore, it can be concluded that the normality assumption in data distribution is met.

The OLS regression was used to test all of the hypotheses, and the results are shown in the Tables 4-6. In the regression analysis at each stage, the standard errors were clustered on a firm level in order to control for the correlations between the years (since the firms were the same) and to avoid receiving an underestimated number of standard errors.

The results show that the resource-based view characteristics of firm's product have an impact on business performance [Model 1, 2 and 7]. The product quality, durability and prestige variable is positively and significantly related to financial and operational performance not only in general terms, taking into account the overall trend within years, (β = .14, p = .014) [Model 7], but even more profoundly in influencing positive performance after the crisis (β = .22, p = .039). This supports Hypotheses 1a and 1b. This finding indicates that having highly competitive products in its business portfolio helps a firm survive an economic downturn.

Strategic flexibility in product development, the first of the dynamic capabilities tested, also has a significant and positive impact on business performance (β = .10, p = .016), supporting Hypothesis 2a, but not after the crisis (H2b) [Model 3, 4 and 7]. The findings suggest that being strategically flexible is beneficial in general terms, which is indicated in the theory, but not in the case of economic turbulence. Having strategic flexibility in product development can actually harm the firm (β = -.20, p = .019) since it has a significant negative impact on business performance [Model 7].

Table 4. Regression Analysis Results for Hypothesis 1

Variable	**Model 1**	**Model 2**
Product Quality, Durability and Prestige	0.366***	0.151**
	(9.62)	(2.73)
Product x Post	0.250**	0.200*
	(2.70)	(1.98)
Post	-0.873*	-0.618
	(-2.31)	(-1.54)
Sales Size (log)		-0.0193
		(-0.56)
Product Type (Vehicle)		0.443***
		(3.88)
Product Type (Module)		0.432***
		(4.97)
HQ Nationality		-0.098
		(-1.68)
Past Business Performance		0.050
		(1.20)
Constant	2.308***	2.895***
	(15.82)	(9.13)
N	492	369
Adj. R^2	0.29	0.39
F	65.48	40.88

T-statistics in parentheses: *p < 0.5, ** p < 0.01, ***p < 0.001

Table 5. Regression Analysis Results for Hypothesis 2 & 3

Variable	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Strategic Flexibility	0.150***	0.113**		
	(3.39)	(2.69)		
Strategic Flexibility x Post	0.161*	-0.161*		
	(2.07)	(-2.01)		
Post	-0.372	0.934**	-0.357	0.586
	(-1.11)	(2.67)	(-1.11)	(1.76)
Technological Innovation Capability			0.114*	0.119*
			(2.44)	(2.50)
Technological Innovation x Post			0.149*	-0.088
			(2.04)	(-1.14)
Sales Size (log)		-0.011		-0.005
		(-0.31)		(-0.14)
Product Type (Vehicle)		0.682***		0.650***
		(6.68)		(6.46)
Product Type (Module)		0.656***		0.638***
		(9.35)		(9.24)
HQ Nationality		-0.111		-0.092
		(-1.78)		(-1.53)
Past Business Performance		0.043		0.042
		(1.03)		(1.01)
Constant	2.980***	2.798***	3.160***	2.780***
	(16.44)	(10.19)	(18.37)	(9.42)
N	492	369	492	369
Adj. R^2	0.09	0.37	0.08	0.37
F	41.52	39.52	39.20	41.52

T-statistics in parentheses: *p < 0.5, ** p < 0.01, ***p < 0.001

The next hypothesis concerns technological innovation capability, and the analysis supports its positive influence on overall firm performance, but only in the economically stable period ($\beta = .11$, $p = .019$), which confirms H3a [Models 5-7]. However, this dynamic capability will not have any impact on business performance after crisis, rejecting the second part of this hypothesis (3b).

These findings indicate that dynamic capabilities are not a remedy to survive an economic downturn. In general, they might help a company perform better versus its competitors in the market, but they are not strong enough to make a company survive a crisis on a surplus. The only competitive advantage that will be positively related to performance after a crisis is the superior product (in particular, its quality, durability and prestige), so we can conclude that this is the strongest competitive advantage a firm can have.

Table 6. Final Results for the Regression Analysis

Variable	**Model 7**
Post	0.280
	(0.58)
Product Quality, Durability and Prestige (H1a)	0.140*
	(2.50)
Post x Product (H1b)	0.227*
	(2.09)
Strategic Flexibility (H2a)	0.105*
	(2.44)
Post x Strategic Flexibility (H2b)	-0.202*
	(-2.39)
Technological Innovation Capability (H3a)	0.114*
	(-2.37)
Post x Technological Innovation (H3b)	-0.060
	(-0.84)
Sales Size (log)	-0.026
	(-0.79)
Product Type (Vehicle)	0.463***
	(4.03)
Product Type (Module)	0.449***
	(5.08)
HQ Nationality	-0.110
	(-1.84)
Past Business Performance	0.060
	(1.39)
Constant	2.125***
	(5.66)
N	369
Adj. R^2	0.41
F	30.43

T-statistics in parentheses: *p < 0.5, ** p < 0.01, ***p < 0.001

6. Discussion and Implications

The current study sheds additional light on the competitive advantage and resource-based view theories. As predicted, all chosen RBV resources and dynamic capabilities are very important and valuable for a firm's competitive market position and its superior performance in economically stable periods of time, which confirms the theory (i.e., Teece, 1982; Barney, 1986; Fiol, 1991; Amit & Schoemaker, 1993; Collis & Montgomery, 1995). Preceding and following the recession of 2008-2009, these strategic assets were similarly examined in a non-friendly and turbulent period of economic crisis. The analysis reveals interesting findings that could not have been forseen easily.

Even though the literature gives importance to both firm's competitive resources and firm-specific capabilities and competences, there is a strong belief that the core is to blend these resources into capabilities, which requires effective managerial decisions and, therefore, superior *"organizational, functional and technological"* (Teece *et al.*, 1997: p. 510) skills and knowledge (Prahalad & Hamel, 1990; Conner, 1991; Ketchen, Hult & Salter, 2007). Hence, it could be predicted that firms with dynamic capabilities will have a better chance of surviving an economic crisis than those with the resources alone. Moreover, taking into account superior organizational capabilities in terms of innovation, technology and product development, which are highly correlated with a positive business performance, the likelihood of overcoming the crisis should be even stronger. Following this rationale, the research findings are intriguing. In contrast to expectations, superior resources – in this case, valuable and prestigious products – are the most effective in surviving an economic crisis and lead to better performance afterwards.

It is even more interesting that technological innovation capability does not have any impact on a firm's ability to survive a crisis, and strategic flexibility in production surprisingly has a negative influence on the operational and financial performance of a company. It can be concluded that flexibility in quick production adaptations in the event of major change will be more detrimental for business during a crisis. Some could argue that this is caused by lack of objective analysis of the external threat at a given moment, since each crisis is unique and there are diverse ways to approach each. Therefore, being prepared for quick production adjustments might be very helpful in stable conditions, but in a turbulent and unpredictable time, fast and impulsive changes could be misleading and negatively impact firm performance. A business plan oriented toward new technologies will not be helpful in surviving an economic downturn either, possibly due to the duration and complexity of the implementation process of any type of innovation. This might well indicate a lack of a clear answer on what kind of action to undertake at the time of a crisis. Thus, being "traditional and conservative" in a certain way and having a range of products that are characterized by high quality, durability and, more profoundly, prestige and high reputation built within years, will be the most effective weapon against an economic downturn.

Limitations

The current study is subject to certain limitations. First, the research was undertaken in an emerging economy and may not represent other realities. The results could differ in developed economies, since their environmental settings are more appealing. Second, the survey's questions have been designed to measure the dependent and main independent variables according to personal opinions/judgments, which could reduce

objectivity, especially in case of the financial performance measure. Moreover, the data represents only firms from one particular industry, which could circumscribe the generalizability of the results. For instance, in the fashion industry, where the required degree of innovation and creative flexibility is significantly higher, these findings might not be confirmed.

7. Conclusion

It has been found that in emerging economies during a recession, firms should rely more on their own resources and capabilities than on industry- and country-specific effects in order to perform better (Bamiatzi *et al.,* 2015). This study went further and questioned the firm effects of strategic resources and capabilities in more detail. The main goal was to identify whether all of them help manage crises effectively. This study revealed that in the face of a globalized and severe economic crisis, the superior product is more powerful in sustaining competitive advantage of a company and, therefore, generating rent than any of the two capabilities that provide flexibility and innovation in production. In order to cope with growing economic imbalances, strategy focus should go to a solid development of competitive resources, instead of fast and flexible production adaptations.

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