Small and Medium Sized Manufacturing Companies in Brazil: Is Innovativeness a Key Competitive Capability to Develop?

Abstract

Small and medium sized manufacturing companies are important both to economic growth and to supply chains. Yet only limited research has focused on this type of organization – this includes in the area of manufacturing strategy. Using a large scale survey of 149 firms across three States in Brazil, this paper examines the competitive capabilities of small and medium sized manufacturing companies; and the link between their capabilities and performance. Our results show that the best-performing firms are those that lead on capabilities like quality and innovativeness rather than on cost. Much of the available literature on manufacturing strategy emphasizes only four key competitive priorities: cost, flexibility, quality and delivery. Consequently, our results confirm innovativeness as an important, fifth capability for small and medium sized firms in Brazil to maintain or develop. The findings are of relevance both to small and medium sized manufacturing companies in emerging economies and to international firms looking to relocate or outsource to Brazil.

1. Introduction

Small and medium sized manufacturing companies are important both to economic growth/recovery and to supply chains, yet they have received far less research attention than large organizations. Similarly, developing economy contexts have received far less research attention than developed economies – this includes in the vast literature on manufacturing strategy. Consequently, there is a need to conduct more research into small and medium sized manufacturing companies, particularly in emerging economies like the BRIC countries (i.e. Brazil, Russia, India and China). In response, this study sets out to examine the manufacturing strategy of small and medium sized manufacturing enterprises (SME) in Brazil using a large scale survey.

Manufacturing strategy has been described as a coordinated approach that links a firm's functional capabilities to the competitive advantage it is seeking in the marketplace (Hayes & Pisano, 1994; Hill, 2000). The content of manufacturing strategy consists of: (i) decisions concerning the physical and organizational structure of a company, which reflect a firm's present and future capabilities; and (ii) competitive priorities, which reflect the competitive advantage a firm is seeking to develop (see, e.g. Leong *et al.*, 1990). Hence, manufacturing strategy is comprised of competitive priorities and capabilities with, for example, the competitive priorities of a firm shaping the development of appropriate competitive capabilities, based on the deployment of its limited resources. Competitive priorities are thus defined as what a manufacturer intends to emphasize in terms of future improvements to attain or maintain its competitive advantage (Boyer & Lewis, 2002; Rosenzweig & Easton, 2010). This is different from competitive capabilities, which reflect a firm's actual competitive strengths relative to its competitors (Flynn & Flynn, 2004, Rosenzweig & Easton, 2010). The topic of manufacturing strategy continues to receive attention, with the body of literature continuing to grow – recent contributions to this literature include Elmosethy (2013) and Fernandes *et al.* (2012).

Based on the broader operations management literature (e.g. Leong *et al.*, 1990; Ward *et al.*, 1998), Kathuria (2000) suggested that small manufacturers, just like large companies, are driven by four broad competitive capabilities: cost, flexibility, quality and delivery. Indeed, much of the manufacturing strategy literature is consistent with this argument (see, e.g. Miller & Roth, 1995; Boyer & Pagell, 2000; Boyer & Lewis, 2002). According to Zhang *et al.* (2011), prior research on the development of capabilities was largely focused on these four established capabilities. However, in the context of Brazil, Thürer *et al.* (2013) recently underlined the importance of innovativeness as a competitive priority for small

manufacturers, which often compete on unique capabilities rather than on cost. Some of the literature provides support for this finding (e.g. Noble, 1997; Boyer & Pagell, 2000), but it is contradicted by earlier research in Brazil that did not find innovativeness to be an important capability for firms to develop (see Fleury & Fleury, 2003).

Since the publication of the study by Fleury & Fleury (2003), it has been argued that the competitive landscape has changed – and this may provide an explanation for the differing conclusions on the importance of innovativeness between 2003 and 2013 (i.e. Fleury & Fleury, 2003 *vs.* Thürer *et al.*, 2013). For example, Melnyk *et al.* (2010) argued that the way in which firms compete is changing: rather than being strategically decoupled and price driven, companies that are integrated in the 'new supply chain' are strategically coupled and value driven, focusing on a blend of outcomes, including sustainability and innovation. While there exists a broad literature that identifies sustainability as an emerging competitive priority (e.g. Jabbour *et al.*, 2012), innovativeness has received far less attention (Thürer *et al.*, 2013).

In response, this study examines the competitive capabilities of small and medium sized manufacturing companies in Brazil; and how these capabilities affect their performance. Our focus is on competitive capabilities rather than on competitive priorities as we are interested in the impact of a firm's actual competitive strengths in a certain area on its performance. Moreover, while competitive priorities are a key decision variable for managers and researchers alike – denoting a strategic emphasis on developing certain competitive capabilities (Ward *et al.*, 1995; Ward *et al.*, 1998; Boyer & Lewis, 2002; Flynn & Flynn 2004) – the study of competitive priorities has limitations. Boyer & Pagell (2000) stated that the central problem with competitive priority measures used in research is that they allow survey respondents to rate everything highly. This makes it impossible to interpret the results, especially when it comes to evaluating trade-off decisions between priorities: when all priorities are rated as important, it becomes impossible to distinguish between them.

The objective of this study is to evaluate which competitive capabilities lead to superior performance – this will help guide managerial decisions on which capabilities to develop. This, in turn, will inform managers on how they should compete, i.e. their competitive priorities. To the best of our knowledge, this is the first study that focuses on competitive capabilities and their impact on performance in Brazil. But although our focus is on Brazil, it is argued that the findings are also of relevance to other South American countries, such as Argentina, and to international firms considering relocating or outsourcing to a rapidly emerging economy like Brazil. Therefore, this study goes along with recent studies on SMEs

in Latin American countries, such as Argentina (Castillo *et al*., 2014) and Chile (Arráiz *et al*., 2013).

The remainder of this paper is organized as follows. The theoretical foundation for the study is outlined in Section 2. The research method applied – a large scale survey – is then outlined in Section 3 before the results of the survey are presented and discussed in Section 4. Finally, conclusions are drawn in Section 5.

2. Literature Review: Competitive Capabilities

According to Roth & Jackson (1995), competitive capabilities capture a manufacturer´s "actual" or "realized" competitive strengths relative to its primary competitors in its target markets. Lin *et al*. (2012) state that developing and nurturing strategic competitive capabilities is one of the major tasks in building a manufacturing strategy. In fact, there exists a strong link between competitive capabilities and superior performance (see e.g. Kristal *et al*., 2010; Mallick *et al*., 2013).

The four well-known competitive capabilities can be defined according to Lin *et al*. (2012) as:

- Cost: supplying the product and/or service to customers in the most cost effective way, leading low price;
- Flexibility: the ability to respond to changes in terms of product range, design and volume;
- Quality: producing and delivering the product and/or service to the highest possible standards, providing outstanding products of consistent quality;
- Delivery: the ability to deliver reliably and speedily. Delivery reliability is the ability to meet delivery dates with correct quantities and specifications (Sarmiento *et al*., 2007), while delivery speed is the ability to quickly fulfill a customer order.

There is a lot of research that deals with competitive capabilities in large companies. Indeed, many topics have been discussed since the seminal work of Skinner (1969). Some of these streams are:

(i) studies that address capabilities development;

(ii) studies that explore the relationship between capabilities and company performance; and,

(iii) studies that extend the four traditional competitive capabilities.

Concerning capabilities development, according to Zhang *et al*. (2011), at least two theories emerge to explain the patterns of capabilities development: trade-off theory (improving one capability is at the expense of another capability); and the cumulative theory (simultaneous improvement in several capabilities can be achieved). Some studies within this topic explain how firms acquire the capabilities they need to develop. One example is the paper of McEvily & Marcus (2005), while other studies investigate the level of implementation of capabilities in a particular industry and/or country. For example, Li *et al*. (2010) investigates the current manufacturing strategies and practices of bus manufacturers in China. They show that, with over-capacity in the Chinese bus manufacturing industry, success is no longer determined by high productivity or low price, but by quick response to a customer´s tailored demand. Practices to attain such a capability are shown in this study.

Another important stream of research is on the relationship between competitive capabilities and business performance. Since the beginning of the 1990s, a lot of empirical studies have reported that competitive capabilities have an impact on business performance. Some examples are Ferdows & De Meyer (1990) and Ward *et al.* (1998). More recently, Swink *et al.* (2007) showed empirically that four levels of integration (strategy, customer, supplier and product/process) lead to improvement in manufacturing capabilities; and that these capabilities improve business performance. Meanwhile, Kristal *et al.* (2010) also shows the positive effect of competitive capabilities on business performance (profit and market share) based on a survey in 174 United States (US) manufacturers. Mallick *et al*. (2013) investigates, by means of a survey of 144 plants in the US, the effect of cost and quality capabilities in product design on business performance. The authors conclude that there is a strong link between business performance and quality as a capability, but not cost as a capability. The authors argue that this link deserves further investigation.

Some recent research has argued for the extension of capabilities beyond the four traditional competitive capabilities. Zhang *et al*. (2011) propose new capabilities (service and customization) for industries located in China and show that these new capabilities and the established capabilities (flexibility and delivery) are mutually supportive. Jayaram & Narasinham (2007) present new product development as a competitive capability and show that this capability is related to new product development project success.

Our paper is closely related to these three streams of research. We will examine the competitive capabilities of 149 companies in Brazil and link them to performance (therefore closely related to streams (i) and (ii)). In addition, we investigate a fifth competitive capability for SMEs: innovativeness.

Although a vast literature on competitive capabilities in large organizations exists, the same cannot be said for SMEs. In fact, very few papers address this topic in the context of SMEs. Barad & Gien (2001) develop a supporting methodology for determining the improvement priorities of SMEs; and Corbett (2008) studies ten small companies in New Zealand. Over the period of 10 years, the latter author's firms endured a turbulent environment where they were subjected to large changes in exchange rate, and some faced forced changes in products and markets as a result of changes in ownership and government policy. In contrast to other authors, mainly those focused on larger companies, the study found the strategy configurations were not stable and that many firms moved towards a price-based configuration. Thürer *et al*. (2013) provide insights into the competitive priorities of 30 small companies in Brazil. But, to the best of our knowledge, there has not been a study that examines the competitive priorities of a large number of SMEs, especially in developing economy countries like Brazil. In addition, despite innovativeness itself being the focus of studies in large companies (for example Lee & Tsai, 2005) and SMEs (for example Edwards *et al*. 2005; Kmieciak *et al*., 2012), these studies were not focused on operations strategy.

3. Research Design

This research started by asking:

What is the relationship between the competitive capabilities of small and medium sized manufacturing companies and their performance?

To address this research question, a survey of small and medium sized manufacturing enterprises across three States in Brazil has been conducted. The three States were: (i) Santa Catarina, a State in the South of Brazil; (ii) Rio de Janeiro, a State in the South East of Brazil; and, (iii) Bahia, a State in the North East of Brazil. While this selection is unlikely to provide a full picture of Brazil, we consider it reasonably representative of the Brazilian context.

A survey or questionnaire enables researchers to directly question a great number of individuals. It is a tool that it well suited to quantitative evaluation and allows the researcher to work with a large sample size (Thietart *et al*. 2001). The methodology applied in this study can be roughly summarized as follows:

- Sample Definition: The sample is first defined and is intended to be reasonably representative, allowing the desired effects to be observed.
- Development of Scales: The literature is reviewed to identify existing scales or measurement tools for our constructs. Where no measure exists, new measures are created

and validated. The Q-methodology is applied to ensure newly created measures reflect constructs appropriately.

- Conducting the Survey: The survey is conducted with the aid of an electronic data collection tool (Survey Monkey).

- Data analysis: Data is first examined by simple descriptive statistics to ensure the quality of the data. Statistical tools are then used to statistically validate a proposed model and address the research question.

The sample selection and data collection procedures are described next in Section 2.1 before attention turns to the development of the survey instrument in Section 2.2, which includes the usual four constructs studied in the manufacturing strategy literature (i.e. cost, flexibility, quality and delivery) plus innovativeness. Finally, the data analysis approach is outlined in Section 2.3.

3.1 Data Collection Procedure and Sample

All small and medium sized manufacturing companies registered by the Association of Industries of Santa Caterina, Rio de Janeiro and Bahia (FIESC - *Federação das Indústrias do Estado de Santa Catarina*; FIRJAN - *Federação das Indústrias do Estado do Rio de Janeiro;* and FIEB - *Federação das Indústrias do Estado da Bahia,* respectively) that produce rubber, plastic and/or metal products, including parts, equipment and machinery were considered for our survey. Note that the Brazilian Institute for Geography and Statistics (IBGE - Instituto *Brasileiro de Geografia e Estatística*) defines small industrial enterprises as having less than 100 employees and medium sized enterprises as having less than 500 employees. This identified 1,457 companies in Santa Catarina, 1,908 companies in Rio de Janeiro, and 1,014 companies in Bahia. From these three populations, 996, 1684 and 854 provided an e-mail address, respectively. These companies were contacted in November 2012 via e-mail; 217 notices of failed delivery were received for Santa Catarina, 387 from Rio de Janeiro and 287 from Bahia, resulting in a final conservative estimation of the population size of 779, 1297 and 567 companies, respectively. This first contact resulted in 83 responses, of which 77 were valid or useable. A reminder was sent to the companies that did not respond in March 2013, resulting in an additional 60 responses, of which 52 were valid. A final reminder was sent in May 2013, resulting in an additional 23 responses, of which 20 were valid.

The survey remained online via Survey Monkey during the whole data collection period. To assess non-response bias, differences between early and late respondents were evaluated. In addition, Harman's single-factor test was performed to test for common method variance

(see, e.g., Zu *et al*., 2008). In total, 149 valid responses were received, resulting in a conservative response rate of 5.64 %. The final sample size compares favorably with sample sizes used in previous studies on manufacturing strategy (e.g. Amoako-Gyampah & Boye, 2001; Jabbour *et al*., 2012). The company characteristics are summarized in Table 1.

Table 1: Company Characteristics

	N° of Companies
In your company, what is the total number of people on the shop floor?	
0 – 9	26
10 – 99	88
100 – 249	19
250 – 499	16
Where is your company located?	
Santa Caterina	54
Rio de Janeiro	75
Bahia	20
What type of manufacturing does your company perform? (Multiple responses allowed)	
Rubber and/or plastic products	21
Products derived from non-metallic minerals	6
Metallurgy	56
Metal products except machinery and equipment	34
Computer, electronic and/or optical equipment	6
Electrical machinery, devices and/or material	12
Machinery and/or equipment	33
Automotive industry	7
Other transportation equipment (except automotive industry)	7
Maintenance and repair	27
Others	30
Are the majority of your orders made-to-stock, made-to-order or engineered-to-order?	
Make-to-Stock	23
Make-to-Order	96
Engineered-to-Order	30

3.2 Measures for the Survey Instrument

The survey can be divided into two sections: company information and competitive capabilities. The choice of measures for each section, i.e. the individual scale items for each construct, will be discussed in Section 3.2.1 and Section 3.2.2, respectively. But note that the measures are largely based on the prior manufacturing strategy literature and on previous surveys – this means that they have been used previously and that we can therefore reasonably expect them to be reliable.

The survey was developed in English before being translated into Portuguese (following Chapman *et al.*, 1979) to allow for its use in Brazil. It was first translated into Portuguese by several independent sources before a meeting took place to discuss problems with the translation and establish the final Portuguese version of the survey. This final version was also translated back into English to ensure congruence between the Portuguese and English versions.

3.2.1 Company Information

This first section of the survey focuses on six issues: company size, location, kind of manufacturing performed, production type, demand uncertainty and performance. The production type may be make-to-stock, make-to-order or engineered-to-order. The measures for demand uncertainty were taken from Chen & Paulraj (2004), with managers asked to rate their agreement with the items on a seven-point Likert scale, with values ranging from 1 to 7 (with 1 being strongly disagree, 2 being moderately disagree, 6 being moderately agree and 7 being strongly agree). Measures for performance were taken from Anand & Ward (2004), with managers asked to rate their position compared to their most important competitors on a seven-point Likert scale, with values ranging from 1 to 7 (with 1 being significantly lower, 4 being relatively equal and 7 being significantly higher).

Table 2 summarizes the means and standard deviations of the responses obtained for each individual scale item together with the Cronbach coefficient alpha for each individual construct (a measure for construct reliability). The values exceed 0.6, which was the minimum value applied in previous studies on manufacturing strategy and competitive priorities (e.g. Kathuria, 2000). Note that Cronbach's alpha – a measure for the average covariance between pairs of scale items and the total variance – is greater than 0.6 for all the constructs used in this paper.

Table 2: Descriptive Statistics – Performance and Demand Uncertainty

	Mean	SD[1]
Performance (Cronbach Alpha = 0.722)		
1. Market Share	4.41	1.43
2. Sales Growth	4.34	1.29
Demand Uncertainty (Cronbach alpha = 0.735)		
3. Our production schedule has a high percentage of variation due to changes in demand. *(question deleted due to low loading)*	5.13	1.70
4. Our demand fluctuates drastically from week to week.	3.97	1.97
5. Our supply requirements vary drastically from week to week.	3.57	1.88

SD[1] - Standard Deviation

3.2.2 Competitive Capabilities

Consistent with the literature, the term competitive capabilities represents a firm's actual competitive strengths relative to its competitors (Flynn & Flynn, 2004, Rosenzweig & Easton, 2010). The competitive capabilities investigated in this paper are cost, quality, delivery and flexibility, plus innovativeness, which is defined as an organization's tendency to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products or services. Most measures were based on Rosenzweig *et al*. (2003), while additional measures for delivery, quality and flexibility were based on the measures used for competitive priorities in, e.g. Kathuria (2000) and Boyer & Pagell (2000). Measures for innovativeness were partly based on Jambulingam *et al*. (2005) and Kroes & Ghosh (2010). As these measures were newly developed for this study, the Q-methodology (see, e.g. Nahm *et al*., 2002) was applied to ensure that the innovativeness construct is reflected by its measures. In other words, we asked students and fellow researchers to link our measures to a set of constructs and assessed if the links were what we expected.

Managers were asked to rate their position compared to their most important competitors on a seven-point Likert scale with values ranging from 1 to 7, with 1 being significantly lower, 4 being relatively equal and 7 being significantly higher. Table 3 summarizes the means and standard deviations of the responses obtained for each individual scale item together with the Cronbach coefficient alpha for each individual construct.

Table 3: Descriptive Statistics – Competitive Capabilities

	Mean	SD[1]
Competitive Capability - Cost (Cronbach alpha = 0.730)		
9. Our capability to offer lower priced products is:	4.48	1.36
7. Our capability to manufacturer products at lower cost is:	4.52	1.44
Competitive Capability - Delivery (Cronbach alpha = 0.822)		
10. Our capability to provide fast deliveries is:	4.95	1.30
6. Our capability to meet delivery promises is:	5.06	1.54
Competitive Capability - Quality (Cronbach alpha = 0.779)		
12. Our capability to provide products of higher performance than the competition is:	5.11	1.43
2. Our capability to offer consistent, reliable quality is:	5.79	1.18
Competitive Capability - Flexibility (Cronbach alpha = 0.833)		
1. Our capability to make rapid design changes is:	5.05	1.54
14. Our capability to adjust capacity quickly is:	4.64	1.36
8. Our capability to make rapid volume changes is:	4.50	1.37
13. Our capability to produce a large number of product features is:	4.55	1.47
11. Our capability to produce a large degree of product variety is:	4.46	1.40
5. Our capability to adjust the product mix is:	5.09	1.43
Competitive Capability - Innovativeness (Cronbach alpha = 0.822)		
4. Our capability to promote new, innovative services/products to our customers is:	4.82	1.52
3. Our capability to provide leadership in developing new services/products is:	4.62	1.57

SD[1] - Standard Deviation

3.3 Data Analysis

The overall values for each construct were determined by summing the individual values for the corresponding measures before dividing by the number of measures. So, in line with previous research on manufacturing strategy (e.g. Kathuria, 2000), we do not attach weights to a measure. To control for company size and location, a general linear model was implemented, with each of our performance, demand uncertainty and competitive capability constructs as dependent variables; and with both company size and location as independent variables. Data were then analyzed using correlation matrices and cluster analysis. The results of this approach will be presented in the next section.

4. Results

Table 4 shows the Pearson correlation co-efficient between a company's performance, demand uncertainty and competitive capabilities. From these correlation coefficients, it can be observed that:

- There is a strong, positive correlation between a company's performance and its competitive capabilities in terms of quality, flexibility and innovativeness. This is independent from the degree of demand uncertainty under which a company operates. No correlation could be observed between performance and being a cost-leader.

- There is a strong, positive correlation between delivery, quality, flexibility and innovativeness, while cost only shows a significant correlation with delivery and flexibility.

The above key findings support the argument put forward by authors like Melnyk *et al.* (2010) in the context of Brazilian small and medium sized manufacturers. Melnyk *et al.* (2010) recently suggested that the way in which firms compete is changing: rather than being strategically decoupled and price driven, companies integrated in the 'new supply chain' are strategically coupled and value driven, focusing on a blend of outcomes. This means companies have to meet multiple performance criteria simultaneously, as demanded by their customers.

Table 4: Correlation Matrix

	P	DU	C	D	Q	F
Performance (P)	-					
Demand Uncertainty (DU)	-0.106	-				
Cost (C)	0.047	-0.149	-			
Delivery (D)	0.203	-0.091	0.367*	-		
Quality (Q)	0.389*	0.055	0.146	0.262**	-	
Flexibility (F)	0.370*	0.065	0.311**	0.472*	0.566*	-
Innovativeness (I)	0.469*	-0.077	0.136	0.384*	0.678*	0.601*

* $P < 0.01$; ** $P < 0.05$; *** $P < 0.1$

To aid the analysis of differences between companies in terms of their competitive capabilities, both performance and demand uncertainty cluster analysis has been undertaken. We used hierarchical K-means clustering with Euclidean distances in Systat ©. In accordance with Kathuria (2000), the number of clusters should be limited to between $n/30$ and $n/60$,

where *n* is the sample size. Given our sample of 149 responses, our analysis should involve between three and five clusters. Table 5 presents results for four clusters from our survey data together with the cluster means and standard deviations.

Table 5: Cluster Analysis

	Cluster I (39 cases)		Cluster II (29 cases)		Cluster III (45 cases)		Cluster IV (36 cases)		F-Ratio
	Mean	SD[1]	Mean	SD	Mean	SD	Mean	SD	
Performance	4.76	1.09	3.16	1.09	4.92	1.00	4.25	0.91	20.09
Demand Uncertainty	5.14	1.14	4.91	1.16	2.88	1.52	2.47	1.04	44.41
Cost	3.65	1.05	4.91	1.28	5.36	0.98	4.01	0.84	23.31
Delivery	4.62	1.24	4.62	1.45	6.06	0.65	4.42	1.15	19.16
Quality	5.96	0.85	4.48	1.11	6.30	0.60	4.61	1.02	40.47
Flexibility	4.79	0.89	3.96	0.97	5.57	0.72	4.18	0.86	27.84
Innovativeness	5.14	0.95	3.14	0.99	6.11	0.61	3.79	0.85	92.23

SD[1] - Standard Deviation

The four clusters – or groups of companies – can be divided according to the environment in which they operate. This concerns whether they operate under high demand uncertainty or low demand uncertainty. Based on this approach, the following can be observed from the results:

- *Cluster I and Cluster II (high demand uncertainty):* Companies contained in Cluster I, which have strong capabilities in terms of quality, flexibility and innovativeness but lower capabilities in terms of cost, show a better performance than companies in Cluster II. Cluster II is made up of companies that are cost leaders but have low capabilities in terms of flexibility and innovativeness.

- *Cluster III and Cluster IV (low demand uncertainty):* While companies in Cluster III have stronger capabilities (in terms of all five capabilities) compared to companies in Cluster IV, this does not result in a corresponding gain in performance. Rather, despite having significantly lower competitive capabilities, companies in Cluster IV rate their performance only slightly lower than companies in Cluster III.

The above results suggest that, if demand uncertainty is high, then the best performing companies are those that lead in terms of quality and innovativeness rather than in terms of cost. Hence, in addition to the four competitive priorities considered in much prior research, our results suggest a fifth increasingly important competitive priority: innovativeness. It is

particularly important to the economic prosperity of small manufacturers, which often produce on a make-to-order basis and therefore sell capabilities rather than specific products. This focus on innovation has also been shown in the context of other developing countries, such as Mexico (e.g. Perez & Ozuna, 2011).

5. Conclusion

Small and medium sized manufacturing companies make an important economic & social contribution and are important members of supply chains. Yet they have received far less research attention than larger firms. Similarly, the business and management literature is dominated by research in the context of developed rather than developing economies. In contrast, this exploratory study has focused on small and medium sized manufacturing companies in Brazil. Using a large scale survey, it has explored the competitive capabilities of these firms and the link between their competitive priorities and performance.

In response to our research question – concerning the relationship between a firm's competitive capabilities and performance – it has been shown that the best-performing firms lead in terms of capabilities like quality and innovativeness rather than in terms of cost. Thus, it can be concluded that innovativeness is an important competitive capability in research and practice. The results further contribute to the so-called "size-innovation debate" (Lejaraga & Martinez-Ros, 2014), showing a positive relationship between innovation and performance in Brazilian SMEs.

5.1. Managerial Implication and Future Research

While innovativeness has been seen as less important in the context of Brazil in previous research (Fleury & Fleury, 2003), it appears to have now emerged as an important, fifth competitive capability to develop in order to compete. But this shift also bears a risk. Noble (1997) argued that competing on innovation from a less solid foundation, i.e. without building up the underlying competitive capabilities (of cost, flexibility, quality, and delivery), may result in a lesser degree of success. Hence, further research is required to examine the sequence in which manufacturing capabilities should be constructed.

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