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## **Management Practices as Capabilities Leading to Superior Performance**

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## Abstract

This paper has three main contributions to the debate about the value of management practices. First, the empirical confirmation of a strong and significant relationship between the level of management practices and three major dimensions of firms' performance (profitability, growth and productivity). The value of this contribution is grounded on a survey of 124 companies in a focused and careful choice of context: packaging industry in an emerging country, Brazil. Second, our theoretical conceptualization of management practices as capabilities addresses recent criticism of the Resource-based Theory and suggests there is no need for a new theory as the proposed Practice-based View. The third main contribution relates to the factors that affect the development of management practices. We confirmed that larger firms tend to have higher levels of management practices, although no support was found for the influence of another factor, the family ownership. We also identified that managerial hubris can be seen as a new strong factor negatively affecting the development of higher levels of management practices. Finally, the findings of this paper can bring attention to management as a new, internal component of the so-called *Custo Brasil* (Brazilian Cost) and its practical effect on the competitiveness of the Brazilian firms.

**Key words:** management practices; performance; capabilities; hubris; packaging industry.

## Introduction

Does the use of updated management practices lead to superior firm performance? The current debate about this question happens in both empirical and theoretical grounds. On the empirical side, although the majority of evidences point to a **yes** answer (Bloom, Genakos, Sadun, & Reenen, 2012), there are some doubts since a few studies found a negative relationship between practices and performance (Chavez, Fynes, Gimenez, & Wiengarten, 2012; Sirén & Kohtamäki, 2016) and others ones found no direct relationship (Flynn, Huo, & Zao, 2010; Stank, Keller, & Daugherty, 2001). The reasons for these mixed results probably reside in different operationalization of practices, performance and a non-controlled context influence, so more focused empirical research is necessary. The theoretical debate is getting fiercer, challenging the usefulness of the Resource-based Theory (RBT) in explaining the heterogeneity of performance at firm level. Practices are thought to be easily copied and available to all firms so they would not have basic characteristics of the resources responsible for sustained performance differences. Bromiley and Rau (2014, 2016) argue that there is need for a new perspective – the Practice-based View (PBV) – to explain these differences. Hitt, Xu and Carnes (2016) reply to this argument contesting several criticisms related to the RBT, but acknowledge value of some points raised by the PBV proposal.

This paper contributes to the presented debate in the empirical and theoretical fronts. On the empirical side, we investigated the relationship between practices and performance in a focused context: the packaging industry in an emerging country – Brazil. Additionally to being focused, this context is likely to have a large variance at the level of practices due to its composition, based on results from previous studies (Bloom & Reenan, 2007, 2010a). Factors that contribute to this variance are emerging country contexts and presence of family owned, medium-sized firms and multinationals. Our results confirm that higher levels of management practices are associated with superior performance. On the theoretical side, we propose a novel interpretation of practices as capabilities, grounding this interpretation on the capabilities literature. In our conceptualization, heterogeneity is caused by different levels of these practices/capabilities instead of simply presence of a capability that has been focus of most of the RBT literature. We also propose that there are barriers for developing these practices/capabilities that promote the sustainability of this heterogeneity. This conceptualization suggests that effect of practices on performance can be supported by the RBT and there is no need for a new theory, just extension of the RBT. Our section on Management Practices as Capabilities develops this argument in detail.

Another contribution of the paper is identification of managerial hubris, overestimation of its own potential, abilities or chances of success, as a relevant inhibitor to development of higher levels of management practices. This finding builds on recent literature on the effects of senior management hubris on organizational outcomes (Ou, Waldman, & Peterson, 2015; Picone, Dagnino, & Minà, 2014; Tang, Li, & Yang, 2015).

The findings have strong implications for competitiveness of firms in emerging markets like Brazil. Previous studies (Bloom & Reenen, 2007, 2010a) have shown that medium-sized companies, particularly in emerging markets, have lower levels of management practices. Multinationals, however, have high levels of management practices in all regions they operate (emerging and developed). Since higher levels of management practices are related to higher performance as confirmed by our results, this indicates that these medium-sized local firms can have a disadvantage in competing with multinationals and imported goods and services. This can be seen as an internal component of the so-called *Custo Brasil* (the Brazilian Cost). Most of the discussion on this topic is related to external factors as inefficient logistics and infrastructure, high taxes, bureaucracy, and bottlenecks (Federação das Indústrias do Estado de São Paulo [FIESP], 2013). Management can be another, less studied and internal component of the *Custo Brasil*.

## Management Practices as Capabilities

The term capability is used in many management texts as a concept that is taken for granted, sometimes with a loose and all-encompassing meaning. Jacobides and Winter (2012), for example, refer to it as “the firm-specific and time- and space-contingent ability to perform a particular productive activity” (p. 1365). The notion of organizational capabilities dates back to the influential paper of Richardson (1972) who, recognizing its vagueness, uses the term to identify the effect of knowledge, experience and skills on specialization of firms in particular activities. During the development of the Resource-based Theory, primarily in the 1990s, there was considerable debate about its definition and its differences from the general notion of resources (Amit & Schoemaker, 1993; Grant, 1991). Dosi, Nelson and Winter (2000) refer to the terminology problem by comparing the term capability to an iceberg in a foggy Arctic sea that is quite difficult to differentiate from several other icebergs floating nearby.

The definition given by Winter (2000) is quite detailed and has influenced most of the more recent work on the topic: “An organizational capability is a high-level routine (or a collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type” (p. 983).

This definition has several aspects that deserve further consideration. First, a capability must be relevant to the firm. The terms **high-level routine** and **significant outputs** embody this aspect. Second, a capability needs some level of visibility and intention. They exist for an intended purpose. The term **decision options** accounts for that aspect. Third, routines are not isolated. Often, they need specific resources to produce their effects. For example, a marketing capability may need a specific customer database to be effective (Dosi, Nelson, & Winter, 2000). This aspect is covered by the expression **together with its implementing input flows**.

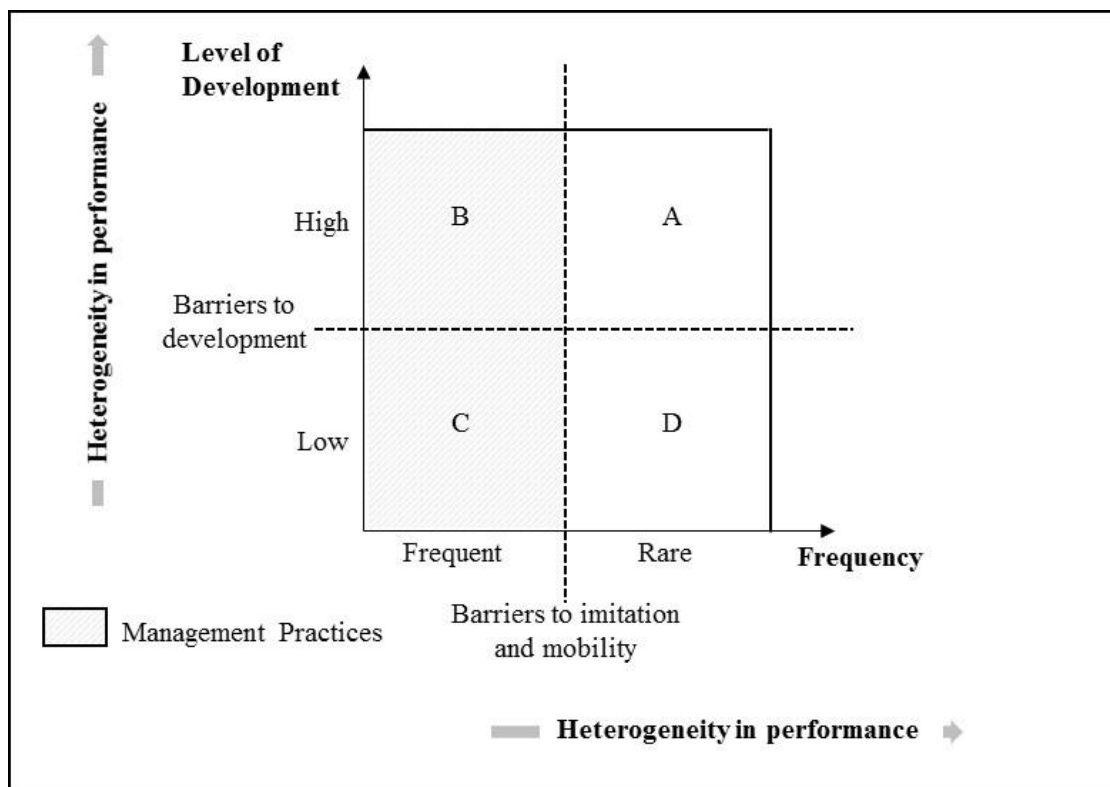
Another aspect that is not clear from the definition is that there can be different levels or degrees in a capability. Capabilities evolve and develop over time (Helfat & Peteraf, 2003) and can follow different trajectories and reach different levels (Rockart & Dutt, 2015). Winter (2000) recognizes this variability in level: “whether an organization has a certain capability is often a matter of degree” (p. 981). Thus, heterogeneity can result not only from different capabilities or combinations of capabilities but also from different levels of the same capabilities (Hoopes & Madsen, 2008).

Winter’s (2000) definition does not contain any reference to rareness of barriers to imitation or replication. According to the RBT, these characteristics of valuable resources have the potential to contribute to a firm’s sustained competitive advantage (Barney, 1991). However, the management literature often conflates these characteristics with the definition of capability. A capability does not need to be rare or costly to imitate to be a capability. The same holds for the more general term resources. What the RBT adds is that valuable resources and capabilities that exhibit these characteristics have the potential to be a source of sustained competitive advantage.

**Management practices** is another ubiquitous term in the management literature. It relates to sets of general practices used by firms to achieve better results. Examples are quality management (Cole, 1998), market orientation (Kohli, Jaworski, & Kumar, 1993), and strategic management (Grant, 2003), which are general bodies of knowledge that consolidate and document companies’ experience and research in the field. When a specific firm attempts to apply these practices, the process is not a straightforward re-enactment of existing knowledge; rather, it involves adaptation, new learning and novelty (Jacobides & Winter, 2012). The implementation of a management practice is not a simple process and is influenced by context. A classic example is American firms’ efforts to implement Japanese production techniques in the 1980s (Adam *et al.*, 1997; Cole, 1998; Hayes & Wheelwright, 1984). The term practices would be properly used when these techniques are still outside the firm, in the external body of knowledge. When a firm applies them, it is more appropriate to consider them capabilities at initial level of development with varying levels of specificity. These capabilities can develop over time, reaching different levels of effectiveness and specificity. An applied management

practice has all of the characteristics of a capability. It is relevant and usually a high-level routine or a collection of routines and also has a clear intended purpose. Management practices are usually top-management driven in search for better results, and they usually interact with other resources or input flows.

Figure 1 helps to integrate this understanding of management practices as capabilities in the general capabilities literature. The horizontal axis of Figure 1 depicts the frequency of a capability in a population of competing firms. We would position a capability owned by only one firm in this population on the extreme right. As we move to the left, more firms would have the same capability. The midpoint would represent a capability that is not rare – it is present in half of the population. At the extreme left, we would have a capability that is present in all firms. The vertical axis represents the level of development of the capability in question. The extreme top of this axis relates to the highest possible level and would be the position of top performer in the population. As we move down, we can accommodate lower levels, thus recognizing that capabilities have different degrees and follow paths of development with different trajectories and final levels (Rockhart & Dutt, 2015).



**Figure 1.** Management Practices as Capabilities

Both axes can cause heterogeneity in performance. The heterogeneity deriving from the horizontal axis has been more extensively explored in the field, but the heterogeneity derived from the vertical axis also exists and could be relevant (Hoopes & Madsen, 2008).

The movement along both axes is not free and has clear barriers. The barriers along the horizontal axis are those commonly explored in the RBT. They are barriers to imitation and mobility that are derived from the general characteristics of such capabilities: unique historical conditions, causal ambiguity, and social complexity (Barney, 1991). There are also barriers to the development of higher levels of capabilities along the vertical axis. Development of capabilities is usually a lengthy process that involves learning, which creates barriers to replication (Kogut & Zander, 1992). They tend to follow an incremental path of refinement (Winter, 2003). During this development they interact with firm- and context-specific resources where path dependency applies (Dierickx & Cool, 1989).

Quadrant A in Figure 1 is the major domain of the literature on capabilities within strategic management. These capabilities create sustainable heterogeneity being possible sources of sustained competitive advantage. The other three quadrants have received considerably less attention. Quadrants B and C encompass what has been called management practices. The capabilities in quadrant B can also be a source of competitive advantage and superior performance for a reasonable length of time. This approach helps in theoretical interpretation of findings from empirical works (Bloom & Reenen, 2007, 2010a).

A new and recent approach presented by Bromiley and Rau (2014, 2016) propose the Practice-based View (PBV) as an alternative theoretical foundation to explain the entire range of firm or unit performance based on transferable and imitable practices. The authors argue that firm abilities that are not necessarily rare, valuable and hard or impossible to imitate can explain performance variation and provide enduring performance benefits. Bromiley and Rau (2014) also focus on practices “that can be transferred across firms, i.e., that are not protected by extremely strong isolating mechanisms” (p. 1254).

In this study we introduce a different argument. We believe, as shown in Figure 1, that management practices can be seen as capabilities and beyond the barriers to imitation, there are also barriers to development, which creates barriers to replication. These two elements together provide an important source of heterogeneity in firm performance. There is no need of a new theory and Bromiley and Rau (2014, 2016) argue since, seen as capabilities, the effects of management practices can be integrated and explained by the RBT.

## Management Practices and Performance

The benefits of management practices are all ultimately evaluated by their contribution to firm performance. We refer to firm performance as a subset of organizational effectiveness that covers operational and financial outcomes (Santos & Brito, 2012; Venkatraman & Ramanujam, 1986). Organizational effectiveness is a fundamental construct in strategic management (Hamann, Schiemann, Bellora, & Guenther, 2013). Organizational effectiveness captures organizational performance and beyond, also measuring other internal performance outcomes related to efficient or effective measures such as productivity, and other external measures that enable a more comprehensive evaluation beyond the economic, such as corporate social responsibility (Richard, Devinney, Yip, & Johnson, 2009).

There is a large number of articles published on research of management practices and performance. Despite this extensive literature, empirical results are not quite consistent and at times, contradictory. For example, higher degree of supplier integration has been found to have a positive effect across a range of different performance outcomes, including reduced development cycle time (Ragatz, Handfield, & Petersen, 2002), improved cost, quality flexibility and delivery performance (Devaraj, Krajewski, & Wei, 2007), increased sales growth (Song & Di Benedetto, 2008) and profitability (Koufteros, Vonderembse, & Jayaram, 2005). In contrast, some authors found a negative impact on quality performance (Chavez *et al.*, 2012; Swink, Narasimhan, & Wang, 2007), on product innovation (Koufteros *et al.*, 2005) and even no significant association on operational performance (Stank *et al.*, 2001). And there is also evidence that this practice may not contribute to operational performance directly, but instead interacts with other practices to improve operational performance (Flynn *et al.*, 2010).

Studies that analyzed strategic planning, another management practice, also showed mixed results (Wolf & Floyd, 2013). Some authors found that strategic planning has a positive effect on organizational performance (*e.g.* Andersen & Nielsen, 2009; Fadol, Barhem, & Elbanna, 2015; Sila, 2007). However, Wilson and Collier (2000) found that this practice does not produce such effects. In contrast, Sirén and Kohtamäki (2016) found a negative effect on firm profitability.

Although some of the results are not consistent with the majority of the findings, it seems reasonable to expect that adoption of management practices would contribute to overall effectiveness of firms, helping them to improve operational and financial outcomes. Firms that develop higher levels of operational practices (*e.g.* lean manufacturing, just-in-time, quality management) can increase capacity flexibility, speed of deliveries and degree of product variety (Prajogo, Oke, & Olhager, 2016). These firms can also improve productivity, customer satisfaction, safety and market share (Valmohammadi & Roshanzamir, 2015). The development of market orientation practices can enhance profits (Kirca, Jayachandran, & Bearden, 2005). The adoption of human resource management practices such as competitive compensation and internal promotions can enhance firms' ability to attract, select and retain employees with superior knowledge, skills, and increase motivation (Chi & Lin, 2011). The adoption of management accounting practices such as budgeting for controlling costs, product profitability analysis and strategic planning can provide valuable information to link operations to the firms' strategies and objectives (Hyvönen, 2005). Now, the first hypothesis can be formulated:

**H1:** Higher levels of management practices positively impact performance.

## Determinants of the Management Practices Level

The literature explores several factors that influence companies to adopt and develop management practices. This study addresses three of these factors.

The first factor is the company's size. Larger firms are likely to have more complex organizational structures, more managerial levels, more specialized functions, capabilities and greater formalization than smaller companies. All of these features can lead to higher demand for more sophisticated management practices. In addition, larger companies are favored by availability of financial and human resources that can facilitate the adoption of practices (Agarwal, Brown, Green, Randhawa, & Tan, 2014; Bloom & Reenen, 2010a). Based on these arguments, it is expected that company's size is an important predictor for the stage of development of its management practices. Thus, the second hypothesis is formulated as follows:

**H2:** Larger companies have higher levels of management practices.

The differences between ownership modes may also help to explain why some companies are more likely to invest in and develop management practices than others. Family ownership strongly influences the way critical resources are controlled (Carney, 2005) and valued (Habbershon, Williams, & MacMillan, 2003). Less structured and formal processes are frequently found in these types of companies. Because founders or family members control company's assets and are responsible for making decisions on taking risks, there is a tendency for excessive concern with wealth preservation that may inhibit investment in new resources and growth strategies (Carney, 2005). Additionally, a recent empirical study, applying meta-analytical techniques on 48 studies conducted in nine countries, found out that family firms prefer more conservative strategies (Carney, Essen, Gedajlovic, & Heugens, 2015). Therefore, it is expected that family ownership will be a predictor for a low level of management practice usage. The third hypothesis is formulated as follows:

**H3:** Family owned companies have lower levels of management practices.

Managerial hubris, the third factor chosen, is "one of the determinants of CEO judgments, strategic choices, and organizational performance" (Picone *et al.*, 2014, p. 447). Based on Hiller and Hambrick (2005), high self-esteem, self-efficacy, internal locus of control and emotional stability in senior executives are factors that influence their self-assessment toward higher scores. When this trend is especially strong, there is risk of hubris. In other words, hubris is a shift to higher self-assessment scores compared with the scores obtained by applying scientific and objective evaluation criteria. The authors argue that, on average, top executives present self-assessment scores that are higher than the general population, and they demonstrate the following characteristics:

They are sure of their abilities, and they believe deeply that the application of their abilities will bring positive outcomes. They are free of anxiety and have little concern about negative outcomes because they possess a core conviction that they can surmount adversity and repair all problems (Hiller & Hambrick, 2005, p. 308).

As a consequence, executives affected by hubris can overestimate their abilities, performance, and chances of success. Hiller and Hambrick (2005) suggest that the greater the level of hubris is, the less detailed, faster and more centralized the organization's strategic decision-making processes will be, the more organization's strategy will deviate from central tendencies of the industry and the more extreme (big wins and big losses) the organization's performance will be. This shift behaves as a type of **illusion** – the distorted effect of perceiving a more advanced self-assessment position than the supposed **real** position obtained from a scientific evaluation. This illusion is likely to reduce focus, resources and energy applied to actions to improve management practices, significantly diminishing chances of practices developing toward more advanced stages. On the opposite side, there is evidence that humble CEOs establish ambidextrous and profitable companies and are more likely to adopt more effective strategic guidance to the company's performance (Ou *et al.*, 2015).

Going beyond the bad side of managerial hubris, Tang, Li and Yang (2015) used a set of original cross-sectional survey data on a large sample of Chinese CEOs in manufacturing industries collected in 2000 and a set of longitudinal data on a sample of U.S. high-tech public firms that were in operation from 1995 through 2005. The study found that executive hubris leads to higher firm innovation.

Other authors also argue that hubris presents both good and bad sides. Picone, Dagnino and Minà (2014) argue that CEO's overestimation of own abilities and performance brings crystallization in managerial practices. In other words, executives prefer to follow recipes already used in their previous experience which have been successful in achieving exceptional performance. The good side asserted by the authors is on the strategic processes that can be inspired by CEOs' past successful experiences. On the other hand, they can be characterized by inflexibility and mindlessness due the hubris-driven decision process (bad side).

This discussion forms the basis of the following hypothesis:

**H4:** Higher levels of hubris negatively impact the level of management practices.

## Method

### Measuring the level of management practices

It would be a challenging and daunting task to cover every management practice in a single investigation, so we decided to focus on a relevant, but manageable subset of practices. Following up on the previous theoretical discussion, we sought to find practices that are relatively common in the industry.

The starting point for us to select the management practices came from the work of Bloom and Reenen (2007) that developed and applied a questionnaire about 18 management practices at 732 medium-sized manufacturing firms in a variety of industries across many countries. This work and subsequent publications (*e.g.* Bloom & Reenen, 2010a; Bloom *et al.*, 2012) is the most influential recent work on the field and sparked the theoretical discussion of the usefulness of the RBT (Bromiley & Rau, 2016; Hitt, Xu, & Carnes, 2016).

In sequence, we conducted eight in-depth interviews with executives in the packaging industry to identify relevant management practices and practical knowledge about specific aspects of the industry (*e.g.* wording). Eight firms were chosen by the Brazilian Packaging Association (Associação Brasileira de Embalagem [ABRE]), selected from different segments, ownership structures, and company sizes,



representing the diversity of the packaging industry. ABRE also indicated the respondents with recognized industry experience and extensive knowledge about their firms' management practices. This phase was conducted from October to December 2012 through semi-structured interviews with open-ended questions. All interviews were recorded. As a result, we chose seven management practices from Bloom and Reenen's (2007) study (Integrated Production Planning, Quality Management, Manufacturing Management Techniques, Interconnection and Time Horizon of Targets, Building a High Performance Culture, Attracting and Retaining Human Capital and Financial Management) and three other management practices (Supplier Management, Market Orientation and Strategic Planning). These ten management practices have shown to be relevant to the packaging industry. We also performed a comprehensive literature review of management practices aimed to look for empirical evidences of the practices identified in the previous steps and their effects on performance.

We recognize that the ten management practices selected do not encompass management practice in its totality, but they cover three important broad areas of management – strategy, operations, and people management.

An exploratory factor analysis of the ten management practices was conducted with two objectives. The first one was to identify common structural characteristics. The second one was to investigate the possibility of a more parsimonious representation of management practices in the empirical model consistent with the sample and method. Principal components analysis with eigenvalues greater than 1 was used to extract the factors, and the Varimax rotation was used to facilitate the factor matrix interpretation. The correlation matrix of the ten practices revealed a high correlation, showing that the management practices co-vary, that is, companies that have a higher score in one practice tend to have higher scores in other practices, invalidating the analysis of isolated effects. Therefore, the ten management practices were reduced to one factor responsible for explaining 62.22% of the total variance. The KMO measure was 0.92, and the Bartlett test showed a value of 835.21 ( $p$ -value < 0.001), confirming that it was appropriate to use exploratory factor analysis and the one factor model for the data representation. This finding suggests that for the companies in the sample, management practices are not usually adopted one at a time but rather evolved together. This conclusion is consistent with finds from Bloom and Reenen (2007, 2010a). Indeed, empirical evidence on cases of success in quality management, lean manufacturing, supplier management, customer relationship management and human resource management suggests that integration of management practices is relevant for best performance (Cua, Mckone, & Schroeder, 2001).

Therefore, the set of practices was treated in a single construct (the Cronbach's alpha was 0.93). A new variable called Level of Management Practices was calculated using the arithmetic mean of the scores of the ten practices to be used as the main measure for management practices analysis and its relationship with performance (Bloom & Reenen, 2007, 2010a).

## Measures of the management practice determinants

The variable Company Size was measured as the natural logarithmic transformation of the number of employees. The second factor, Family Ownership, is characterized when either the founder or a subsequent generation hold control of the company. Dummy variables were created, coded as 1 for companies owned by the founder or descendants, and coded as 0 for the other companies. To evaluate Hubris, the respondent was asked for a subjective assessment of the level of the company's management practices compared with the industry average. The difference between this score and the average of the scores provided by the interviewer for the ten management practices was considered a proxy for Hubris.

## Performance measurement

In this study three outcome measures are examined to assess firm performance: profitability, revenue growth and productivity. Profitability is defined as a firm's efficiency in utilizing production factors to generate earnings (Hamann *et al.*, 2013). Revenue growth is defined as a change in the firm's revenue from goods sold over the period (Richard *et al.*, 2009). Productivity is defined as a total

efficiency of a production process (Syverson, 2011). Profitability and revenue growth were selected due to their direct relationship to competitive advantage (Brito & Brito, 2012) and productivity was chosen because it reflects more directly the impact of management practices implementation (Birdi *et al.*, 2008).

The performance variables use a five-point scale based on the respondent's perception, with 1 for **clearly worse** and 5 for **clearly better** than the average of competitors' performance in the last three years, period of time used to smooth eventual fluctuations in the results of the companies (Kim, Hoskisson, & Won, 2004). The judgment on the performance level was made by the respondent and recorded by the interviewer.

### Control variables

A dummy variable called Exporter was included to control the effects of adjustment in the management practices level of the exporters. Companies involved in export process and that become regular exporters gain more international experience and need to develop specific international capabilities, such as high degree of entrepreneurial orientation (Cavusgil & Knight, 2015; Floriani & Fleury, 2012; Knight & Kim, 2009). They also need to improve their management capacity due to increasing formalization of export management systems (Leonidou & Katsikeas, 1996) as well as establish of new organizational procedures to address these new tasks (Cavusgil, 1984). The dummy variables for Metal Segment, Paper Segment and Other Segments were created to control potential differences between sub-segments of the packaging industry, such as sales to different user industries and the use of different technologies and production processes. Finally, the variable Company Size (based on the number of employees) was included as a control variable to monitor economy of scale effects (Agarwal *et al.*, 2014), because larger companies usually have a higher market share, which can lead to better resource availability (Bloom & Reenen, 2010a).

### Data collection

There were three reasons for choosing the packaging industry. First, it is a diversified industry in Brazil, with a significant number of midsize family businesses competing with other major companies (seven of the ten largest are local firms) and several multinational companies (25 out of the 45 world's largest packaging companies). As a consequence, the industry likely includes companies that use a broad range of management practices that favor quantitative analysis of the relationship between management practices and performance. A second motivation comes from the competitive environment, which is characterized by low entry barriers, no restrictive regulations and availability of market information. While not a perfect market, these characteristics stimulate competition by limiting the influence of factors not directly associated with competitive advantages obtained by a company's resources and thus decrease the chances of distorted results caused by factors external to the universe of the study. Finally, the express interest of the Brazilian Packaging Association (ABRE) was another motivation for choosing the packaging industry as well as the support of other associations, including the Brazilian Association of Flexible Plastic Packaging (Associação Brasileira da Indústria de Embalagens Plásticas Flexíveis [ABIEF]), the Brazilian Association of Corrugated Cardboard (Associação Brasileira do Papelão Ondulado [ABPO]), the Brazilian Association of Steel Packaging (Associação Brasileira da Embalagem de Aço [ABEAÇO]) and the Brazilian Technical Association of Glass Automatic Industries (Associação Técnica Brasileira das Indústrias Automáticas de Vidro [ABIVIDRO]).

Solicitation mailings were sent to 456 companies from different segments that provide packaging products to industries such as beverage, food, tobacco, clothing, shoes, perfume, pharmaceuticals, cleaning products, cement and fertilizers. The firm was the unit of analysis. The questionnaire was applied through a phone interview lasting 30 minutes on average. Data collection effort covered 124 companies, corresponding to a response rate of 27.2%. The interviews were conducted during the months of May and November 2013. To determine if the respondents significantly differ from the ABRE population, the industry segment distribution was compared. The portion of respondents in each segment was compared to the expected number of respondents based on the percentage of each segment represented in the total sample. A Chi-square test of the expected and actual number of respondent

revealed no significant difference (at  $p < 0.10$ ). These results provide evidence that the respondents are representative of the target sample.

To avoid biasing respondents by providing response options, the questionnaire was structured using open-ended questions (*i.e.* How do you ensure and assess the quality of products and services?) followed by more specific questions (*i.e.* How can the staff suggest process improvements?) and requests for examples (*i.e.* Talk me through the process for a recent problem), following the approach proposed by Bloom and Reenen (2010b). The questionnaire was pre-tested in two medium-size family businesses and one large multinational company; minor adjustments were made. Five selected students from a top Brazilian business school (four master degree students and one bachelor degree student) were specially trained to conduct the interviews. Four intensive trainings (12 hours of training) prior to the survey were applied to explain the ten management practices and the scoring grid. We also run several calibration exercises to ensure consistent scoring. The interviewers followed a script of questions and made a final evaluation of the management practices score using a scale from 1 to 5, taking the whole set of descriptions made by the respondent and comparing them with a specific descriptive scale that characterized levels 1, 3 and 5. The respondent was unaware of the scales used. To validate consistency of the scores, 30.6% of the interviews were submitted to a second score attribution process conducted by an independent experienced researcher. The correlation between the scores provided by the two researchers was 0.93, and a t-test showed no significant differences between the average scores of the two researchers ( $p > 0.05$ ).

### Common method variance

Common method variance is not viewed as a major problem in this study because the dependent and independent variables have different sources. The score for management practices was determined by the researcher interpreting information provided by the respondent, while the score for performance was directly provided by the respondent. Furthermore, we applied several preventive techniques as recommended by Podsakoff, MacKenzie, Lee and Podsakoff (2003): the use of different scales to assess the independent and dependent variables; a guarantee of confidentiality prior to taking the survey for the respondents, the company and data collected; a guarantee that there were no right or wrong answers; and a request for respondents to be as honest as possible in responding. In addition, a Harman's single-factor test was performed, which is the statistical method most commonly used to evaluate the possibility of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We found no generic factor responsible for most of the variance in the measures. The exploratory factor analysis involving all of the variables showed that 63.38% of the variance was explained by four factors with eigenvalues greater than 1, with the first factor explaining 26.13% of the total variance. Taken together, these considerations suggest that common method variance is not a threat to the validity of this study.

### Sample

Respondents include executives and decision-making managers with a broad view of production processes and company management practices (42.7% were in top management positions). Table 1 highlights the diversity of the sample by showing the sample distribution according to the industry segments, number of employees and type of ownership.

Table 1

**Sample Description**

	Frequency	%		Frequency	%
<b>Industry Segment</b>			<b>Ownership</b>		
Plastic	68	54.8%	Family (descendants of the founder)	53	42.7%
Paper and Cardboard	28	22.6%	Family (founder)	37	29.8%
Metal	13	10.5%	Multinational firms	16	12.9%
Glass	5	4.0%	Private equity or Private individuals	16	12.9%
Others (Labels, Caps, Printing and Resins)	10	8.1%	Other	2	1.6%
<b>Total</b>	124	100.0%	<b>Total</b>	124	100.0%
<b>Number of Employees</b>					
3-19	7	5.6%			
20-99	36	29.0%			
100-499	49	39.5%			
499-5000	30	24.2%			
>5001	2	1.6%			
<b>Total</b>	124	100.0%			

**Analyses**

We employed multiple linear regression analysis to test our hypotheses. First, we tested the effect of the Level of Management Practices on performance. Second, we analyzed the three selected internal factors (*i.e.* company size, family ownership and hubris) on the Level of Management Practices. In both cases we used a hierarchical regression approach. Model 1 included only the control variables, and the independent variables were added to Model 2. Variances inflated factor (VIF) scores were calculated for the variables in each regression model. The highest VIF scores was 2.02, suggesting that multicollinearity was not a serious problem in the analysis (Hair, Anderson, Tatham, & Black, 2009) and the assumptions of independent errors, normal distribution of errors and errors with constant variances were tested and confirmed (Hair *et al.*, 2009). The data were analyzed using SPSS software version 20.

**Results and Discussion**

Table 2 provides the correlation matrix for the studied variables. As reported in Table 2, there were no correlations between the independent variables with a value greater than 0.9.

Table 2

**Pearson Correlation Matrix**

	1	2	3	4	5	6	7	8	9	10	11	12
1 Profitability	1											
2 Revenue Growth	.28**	1										
3 Productivity	.30**	.41**	1									
4 Level of Management Practices	.36**	.36**	.34**	1								
5 Company Size	.22*	.21*	.19*	.65**	1							
6 Family Ownership (founder)	.07	.06	.05	-.33	-.30**	1						
7 Family Ownership (descendants of the founder)	-.23*	-.20*	-.09	.05	.06	-.56**	1					
8 Hubris	-0.24	-0.33	-0.22	-0.8	-0.52	.26**	.00	1				
9 Exporter	.23**	.16	.15	.40**	.52**	-.12	-.05	-0.44	1			
10 Metal Segment	.08	-.05	.05	.03	-.05	.01	.02	.02	-.15	1		
11 Paper Segment	.09	-.08	.00	.02	.07	.07	-.08	.02	.02	-.18*	1	
12 Other Segment	.01	.12	-.12	.26**	.26**	-.19	-.12	-.27	.22*	-.13	-.20	1

Note. \*p < .05. \*\*p < .01.

Hypothesis 1 posits that higher levels of management practices positively impact performance. Supporting the first hypothesis, significant positive effects were found for the Level of Management Practices on Profitability, Revenue Growth and Productivity. The results are reported in Table 3.

Table 3

**Effect of the Level of Management Practices on Performance**

	Profitability		Revenue Growth		Productivity	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Standardized Coefficients Beta		Standardized Coefficients Beta		Standardized Coefficients Beta	
(Constant)						
Control Variables						
Exporter	.19	.15	.05	.02	.11	.07
Company Size	.13	-.07	.18	-.04	.19	-.04
Metal Segment	.13	.10	-.04	-.08	.05	.02
Paper Segment	.09	.09	-.09	-.09	-.05	-.08
Other Segment	-.04	-.07	.04	.00	-.20*	-.24**
Level of Management Practices		.36**		.39***		.41***
Adjusted R <sup>2</sup>	.05	.12	.02	.10	.04	.13
R <sup>2</sup>	.09	.16	.06	.14	.08	.17
F value	2.34*	3.76**	1.50	3.26**	1.98**	4.02***

Note. \*p < .05. \*\*p < .01. \*\*\*p < .001.

These results are consistent with those of Bloom, Genakos, Sadun and Reenen (2012). From the available performance data from 9,079 manufacturing companies, these authors found out that higher levels of management practices scores are strongly associated with profitability and growth of sales. These results also support studies that examine management practices separately and find positive correlations with different cases of operationalization of performance, such as Fullerton, McWatters and Fawson (2003), Samson and Terziovski (1999) and Wilson and Collier (2000).

Fullerton *et al.* (2003) observe that after the adoption of JIT-specific practices, there was an increase in the return on assets for 253 American manufacturing companies included in the sample. The authors also find a significant, positive relationship between profitability and a high degree of reduced setup times, productive maintenance and uniform workloads.

Samson and Terziovski (1999) found out that improved efforts in leadership, people management and customer focus have significant, positive effects on performance as measured by employee morale, productivity, product quality, cost of quality, product delivery in full and on time and customer satisfaction.

In the same vein, the results found out by Wilson and Collier (2000) suggest that practices related to process management, information and analysis have significant, positive effects on financial performance as measured by return on investment, return on investment growth, return on sales and return on sales growth.

Finally, the control variables Company Size and Exporter did not influence the relationship. Similar results were obtained by Sila (2007). Only the control variable Other Segments showed a significant, positive relationship with Productivity. One possible explanation for this result could be differences related to the companies' production processes in this segment; for example, glass packaging companies require a higher usage of advanced operations management practices as a consequence of working with high cost continuous production processes.

Hypotheses 2, 3 and 4 address the effect of internal factors on the Level of Management Practices. The results are reported in Table 4.

Table 4

#### Determinants of the Management Practices Level

	Level of Management Practices	
	Model 1	Model 2
	Standardized Coefficients Beta	
(Constant)		
Control Variables		
Exporter	.38***	-.04
Metal Segment	.12	.06
Paper Segment	.07	.02
Other Segment	.21*	.01
Company Size		.32***
Family Ownership (founder)		-.09
Family Ownership (descendants of the founder)		-.02
Hubris		-.63***
Adjusted $R^2$	.18	.70
$R^2$	.21	.72
$F$ value	7.99***	37.06***

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The results indicate a good fit for Model 2. Considering a 0.001 significance level, we found out a significant, positive effect of the company's size on the Level of Management Practices, supporting Hypothesis 2. The effect of Family Ownership was not significant, and, as a consequence, Hypothesis 3 was not supported. This could be related to our focused context, where intense and highly technical competition exists. We also found a significant negative effect of Hubris on the Level of Management Practices, supporting Hypothesis 4. The control variables showed no significant effects on the Level of Management Practices.

Thus, two conditions seem to favor the evolution of management practices. The first one is related to a company's size. Larger companies have more financial and human resources, which can facilitate the adoption and implementation of practices (Agarwal *et al.*, 2014; Bloom & Reenen, 2010a). In addition, larger firms are more likely to have more complex organizational structures with more managerial levels, more departments, greater capability and function specialization and a higher level of process formalization, leading to greater demand for sophisticated management practices. The second condition is related to the higher levels of manager's hubris. Hubris negatively influences the evolution of management practices. As Picone *et al.* (2014) assert, managerial hubris "brings crystallization in managerial practices" (p. 456). The overconfidence of managers can influence their decisions (Li & Tang, 2010) and cause them to lower the efforts and resources allocated to improving management practices, which can in turn significantly reduce the chances of achieving superior levels of management practices. Therefore, the results indicate that a company's size positively impacts and hubris negatively impacts evolution of management practices.

## Conclusions

This paper has three main contributions to the debate about the effect of management practices: the empirical confirmation of the relationship between the levels of management practices on performance; the theoretical conceptualization of management practices as capabilities within the RBT literature; and the effect of managerial hubris on the level of management practices.

The value of our empirical contribution is grounded on a focused and careful choice of context: packaging industry in an emerging country, Brazil. This setting is expected to have large variability in the levels of management practices since it includes local, medium-sized companies competing with multinationals (Bloom *et al.*, 2012). Additionally, our choices of operationalization of management practices were based on the most influential empirical work (Bloom & Reenan, 2007, 2010b) adapted to the context. Our choice of operationalization of performance is also encompassing covering the two major dimensions of financial performance (profitability and growth) that can represent competitive advantage (Brito & Brito, 2012), and a summative operational dimension (productivity). Results showed a strong and significant relationship between the level of management practices and all three dimensions of performance. This finding contributes to the empirical debate on this relationship that has shown some contradictory results in less focused works. Our results also showed that management practices empirically co-vary in level. Companies that exhibit a higher level in one practice tend to have higher levels in all other practices as well. This could be a point to be explored in future research covering the reasons for this phenomenon and verifying its consistency when other practices are included.

Our theoretical conceptualization of management practices as organizational capabilities is another main contribution. Using the established literature on the definition of capabilities, we argue that management practices, when applied by a firm could be considered capabilities with varying levels of development. The term practices would be most appropriate to refer to these practices in a general body of knowledge, still outside the firm. Using this conceptualization, we developed the scheme illustrated by Figure 1 where capabilities that are not rare (as the management practices conceived as capabilities) can cause heterogeneity in performance due to their different levels. Since there are also barriers to the development of higher levels of capabilities, firms in quadrant B of Figure 1 could enjoy sustained superior performance based on not so rare capabilities. This theoretical positioning of

management practices as capabilities addresses the recent criticism of the RBT by Bromiley and Rau (2014, 2016) and suggests there is no need to develop a new theory or view as the proposed PBV.

Our third main contribution relates to the factors that affect the development of management practices. We confirmed that larger firms tend to have higher levels of management practices. However, we did not find support for a relationship between family ownership and lower levels of management practices as indicated by Bloom and Reenan (2010a), suggesting a need for further research on this topic. We identified a new determinant, managerial hubris, as a strong factor negatively affecting the development of higher levels of management practices. The relationship was highly significant with a standardized regression coefficient of -0.63 and the final regression explained 72% of the variance in the level of management practices. This finding builds on the literature about positive and negative effects of managerial hubris on different organizational outcomes (Hiller & Hambrick, 2005; Picone *et al.*, 2014; Tang *et al.*, 2015).

It is important to note limitations of this study as well as possible future developments. First, the sample focused on a single industry, which on the one hand clarifies the relations between the constructs and generates regressions that have greater explanatory power given the greater homogeneity of respondents; on the other hand, it limits the generalization of the results. Other industries – manufacturing or service – could be examined in the future. Second, the set of management practices was limited to ten. Although covering a large portion of business activities, this selection is not exhaustive. It is known that many factors can influence the evolution of management practices. In this study, only three were addressed – company size, family ownership and managerial hubris. Other practices and factors should be explored in future studies.

The practical effect of management on competitiveness has received attention of the international managerial press recently (The Economist, 2014). In Brazil, the debate on competitiveness frequently revolves around the idea of *Custo Brasil* (Brazilian Cost) (FIESP, 2013). But this debate focuses on factors that are external to the firms that hinder their competitiveness, like inefficient logistics, bureaucracy, taxes and even corruption. The findings of this paper and other recent studies (Bloom *et al.*, 2012) highlight a possible new, internal component of the so-called *Custo Brasil*: management.

Because investment in management is a factor that serves to increase competitiveness and sustain economic growth, developing management practices in Brazilian companies brings a new sense of urgency; this process takes time and requires persistence before the practices begin generating value for an organization. From the business point of view, this study provides the basis for a steering guide to analyze and develop management practices in the packaging industry by creating comparative references for the levels of utilization of management practices in the industry as a whole. Van de Ven (2007) recommends that academic studies advance in both fields – academic and professional practice. In line with this approach, this study has partnered with ABRE, which actively supported the project, thus reinforcing the relevance of the study to fostering progress in the packaging industry. The conclusions of the study were presented to executives of the industry at an event sponsored by ABRE, fostering discussions about actions that could be done to improve the competitiveness of the packaging industry as a whole.

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