RAI - Revista de Administração e Inovação
ISSN: 1809-2039
campanario@uninove.br
Universidade de São Paulo
Brasil

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RAI - Revista de Administração e Inovação, vol. 12, núm. 2, abril-junio, 2015, pp. 130-152
Universidade de São Paulo
São Paulo, Brasil

Available in: http://www.redalyc.org/articulo.oa?id=97340038007

RAI – Revista de Administração e Inovação
ISSN: 1809-2039
DOI:
Organização: Comitê Científico Interinstitucional
Editor Científico: Milton de Abreu Campanario
Avaliação: Double Blind Review pelo SEER/OJS
Revisão: Gramatical, normativa e de Formatação

STRATEGIC DECISION-MAKING SPEED IN NEW TECHNOLOGY BASED FIRMS

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ABSTRACT

New Technology Based Firms (NTBF) operate in high-velocity environments that make considerable demands about the speed of strategic choices. This study draws upon strategic decision-making and organization theories to propose that strategic decision making speed mediates the relation between personal, organizational and environmental factors and performance. Hypotheses were theoretically developed and tested with data from an empirical investigation of Mexican NTBF. Measures of personal characteristics, organization structure, business environment, strategic decision speed and performance were collected from 103 Technology Founder Managers at the end of 2012. The results confirmed that strategic decision making speed influences the performance of NTBF and mediates the relation of uncertainty, CEO model, dynamism and hostility with firm performance.

Keywords: Entrepreneurship; Strategy; Technological Innovation; New Technology Based Firms.

1. INTRODUCTION

The essence of competition is changing in various industries around the world. To identify the boundaries of an industry has become a challenge. Hypercompetition is a term often used to capture the reality of the current competitive landscape. The emergence of a global economy and technology, and the rapid technological change are the main drivers of a hypercompetitive environment (Hitt, Ireland, & Hoskisson, 2011). In hypercompetitive conditions, assumptions of market stability are replaced by perceptions of instability and change (McNamara, Vaaler, & Devers, 2003). In a hypercompetitive environment, the companies challenge the competition hoping to improve its competitive position and, consequently, their performance (Ferrier, 2001). Hypercompetition has forced companies to accelerate their decision making process, either for survival or growth. Therefore, the strategic decision making process and its rapid development is a research phenomenon of interests in the entrepreneurship and strategy fields.

The New Technology Based Firm (NTBF) is a special actor in a hypercompetitive environment, as it develops and offer products or services through the application of modern technologies and operates in high-speed environments (Storey & Tether, 1998). In a NTBF the Technology Founder-Manager (TFM) figure is very important. This is a person with wide professional experience and a formal high-level education, who creates and directs the NTBF (Marvel & Lumpkin, 2007). The TFM makes decisions that are crucial to the company's competitiveness and requires a good performance level. Furthermore, only timely strategic decisions can lead to a competitive advantage; in highly dynamic environments, delays can be highly detrimental (Audretsch, 2001). Therefore, the strategic decision making speed process in start-ups is especially important (Eisenhardt, 1989, Shane & Venkataraman, 2000; Talaulicar, Grundei, & Werder, 2005).

The strategic decision making process has received special attention in the literature (Eisenhardt & Zbaracki, 1992; Schwenk, 1995; Wheelen & Hunger, 2004), however, few studies have investigated the factors that determine how quickly strategic decisions are made and their consequences. Investigations are even scarcer, when this phenomenon focuses on the NTBF's reality. To guide the study of the factors involved in rapid strategic decision making, this research is based on the process theory of strategic decision making, which states that this process is driven or limited by the individual decision making, the organization in which the decision is made and the environment in which the organization operates (Baum & Wally, 2003). Therefore, the aim of this paper is (1), to identify the personal, organizational and environmental factors that influence strategic decision making

speed and (2), better understanding the relationship between strategic decision making speed and firm performance.

In the next section of this paper, we develop the theoretical framework and hypotheses that guide research work. Subsequently the methodology is explained and the investigation results are presented. In a final section the results are discussed and the main conclusions are shown, so it is necessary to discuss some limitations of the study and future research lines.

2. STRATEGIC DECISION-MAKING SPEED: HYPOTHESES AND MODEL

Strategic decisions determine the direction of a company and its viability in the light of the known and unknown changes that occur in the environment (Quinn & Mintzberg, 1997). In an era marked by global markets and shorter product life cycles, strategic decisions involve the commitment of various company resources (Wally & Baum, 1994). The literature indicates that there are personal, organizational and environmental factors that influence the strategic decision making speed. They are developed in the following sections.

2.1 Personal characteristics and strategic decision-making speed

Managers, especially those that define the firm's direction, as is the case of the TFM, influence the company with his/her own values, cognitive style, and personality traits, which are manifested in strategic decision making (Schwenk, 1995), including the decision making speed (Bourgeois & Eisenhardt, 1988; Eisenhardt 1989; Judge & Miller, 1991; Wally & Baum, 1994). In this sense, Prahalad and Bettis (1986) introduced the dominant logic concept and describe it as the way in which the firm's senior management conceptualizes the business and its administrative tools, to achieve their goals and make decisions. The authors mention that the dominant logic depends largely on the experience of senior management. This experience is stored via shared cognitive schemas or maps, which in turn help to interpret, evaluate and make decisions based on the information they are receiving.

In the NTBFs particular case, the dominant logic lies in the TFM, since he/she is able to promote a strong corporate culture that becomes a collective company's behavior (Hofstede, 2005). In fact, previous studies have revealed the cognitive differences between entrepreneurs and managers,

with regard to the way in which they process information and make decisions (Busenitz & Barney, 1997; Tan, 2001; Forbes, 2005). In this regard, Bakker, Curseu and Vermeulen (2007) point out the importance of identifying cognitive factors that influence the decision-making process and its consequences. According to Noorderhaven (1995), four cognitive factors influence the decision making; however, the factor referring to control is not included in the cognitive factors group as it is contemplated, with a different focus within the organizational characteristics that are developed later in this paper. The first of them is complexity. When a situation is simple, that is, consisting of a limited number of variables, the strategic decision making process becomes trivial. Campbell (1988) mentions that a decision's complexity is found in the multiple trajectories that can be followed to reach a result; or various results can be reached, considering that interdependence exists among the factors that lead to those results. The second cognitive factor mentioned by Noorderhaven (1995) is uncertainty. The decision-maker does not know the possible results due to multiple existing alternatives. This means that the information asymmetry influences the decision making, given the uncertainty generated by not having the necessary information, at the right moment. The third and last cognitive factor is rationality. The decision maker analyzes the advantages of all the possible trajectories that allow him to reach the specific objectives previously established. It is expected that this person has an extensive knowledge about the relevant matters involved in the situation, as well as resources and capabilities which allow him to identify the option with the greatest value in his preference scale.

These three cognitive factors influence the process of strategic decision making, so that this process can become faster or slower. This analysis leads to proposal of the following hypothesis:

Hypothesis 1: The more complex the situation on which the TFM must decide, the slower the strategic decision making speed.

Hypothesis 2: The more uncertain the consequences of TFM's decision making are, the slower the strategic decision making process.

Hypothesis 3: The more analytical the TFM is in its decisions, the slower the strategic decision making process.

2.2 Organizational characteristics and strategic decision-making speed

The strategic management literature mentions that organizational characteristics influence the decision-making process (Sutelife & McNamara, 2001). Organizational characteristics that have been studied are centralization, formalization and complexity (Fredrickson, 1986). This research focuses on the centralization and relies on the proposal of Talaulicar, Grundei, & Werder (2005) to identify the

organization that holds the Top Management Team (TMT), which can be a departmental or a Chief Executive Officer (CEO) model. The departmental model refers to a horizontal division of labor within the TMT. In this organization form, TMT members function as department's heads, with individual decision authority for their own areas of responsibility. The CEO model is a hierarchical relationship between TMT members, namely a team member has the authority to give directions to the rest of the management team. Consequently, the CEO alone can determine the strategy of the entire company.

Previous research has shown that these two organizational models are important in the case of start-ups. In particular, the NTBFs usually are not initiated by an individual but by a group of people, who are the first TMT of the newly created company (Francis & Sandberg, 2000; Daily *et al*., 2002). In addition, due to the NTBFs small size, the way in which the TMT is structured can have a direct impact on the firm's destination (Ensley, Pearson, & Amason, 2002). In this sense, a departmental model can reduce the strategic decision making speed because it requires time consuming analysis, that can even cause paralysis to the organization (Langley, 1995). Related to this argument, a heterogeneous TMT may prevent quick decisions, since it may raise time consuming frictions and communication problems that make it difficult to reach a consensus (Talaulicar, Grundei, & Werder, 2005). Moreover, a CEO model in the TMT organization is likely to increase the decision making speed. A TMT with a CEO who has the authority to make a final decision can be faster than a departmental model. Consistent with this argument, is the recommendation of Vroom and Yetton (1973) as well as Eisenhardt (1989), who favor an autocratic decision making style when decision speed is a critical factor. These arguments leads us to propose the following hypothesis:

Hypothesis 4: A departmental model in the TMT organization will be positively related to the strategic decisions making speed.

Hypothesis 5: A CEO Model in the TMT organization will be positively related to the strategic decision making speed.

2.3 Environmental characteristics and strategic decision-making speed

The strategic management literature has shown the influence of the context on strategic process (Miles, Covin, & Heeley, 2000). There are two environmental constructs of particular interest in this work, which has influence on the strategic decision making speed, the dynamism and hostility.

2.3.1 Dynamism and strategic decision-making speed

Dynamic environments are characterized by instability and uncertainty and have been cited as an important variable that influences strategic decision making, as it reduces the manager's ability to predict future events that may impact the organization (Khandwalla, 1977). Also, Priem, Rasheed and Kotulic (1995) mention that dynamism makes it difficult to understand the activities that take place along the firm's value chain and thus the strategic options' evaluation becomes complicated.

Thus, in dynamic environments, decisions can be fast because time necessary to obtain more reliable information has little value (Baum & Wally, 2003). Managers can make greater use of intuition based on experience, because sometimes there is no useful information. Furthermore, dynamic environments are caused by the development of new technologies (Dodge, Fullerton, & Robbins, 1994), for new business models (Prahalad & Krishnan, 2008) or by the advantages of being first mover (Kim & Lee, 2011). Therefore, dynamic environments may require quick decisions which in turn may represent an ephemeral advantage.

Although fast strategic decisions may be appropriate in start-ups firms, managers must be aware that they may be creating a business that is not viable, or products for inadequate markets, so that the start-up should experiment and monitor the development of their actions and act quickly to abandon initiatives that were not posed properly. Eisenhardt (1989), Judge and Miller (1991), in the same vein that Baum and Wally (2003), found that environments with rapid changes in demand and discontinuous results, drive a faster strategic decision making speed. Therefore, it is proposed the following hypothesis:

Hypothesis 6: The greater the environmental dynamism within which the NTBF is immersed, the faster the strategic decision making speed.

2.3.2 Hostility and strategic decision-making speed

Hostility is the opposite of generosity and in turn is indicative of the scarcity and intensity of competition for resources (Zahra & Covin, 1995). The effect of a hostile environment on decision making is generally unfavorable, as it forces the companies to be more conservative with their resources. These limitations are evident in a start-up (Lumpkin & Dess, 2001). As noted by Porter (1980), when firms compete in highly competitive industries greater strategic discipline is required.

However, when companies have limited resources, then the decision-making and strategic alternatives are quite limited (Edelstein, 1992).

Usually, small businesses have a resource base and consequently limited capabilities to help them cope with the poor strategic decisions effects. The costs associated with such decisions are usually higher in hostile environments, as the firm is exposed to higher risk levels (Covin & Covin, 1990). Consequently, small business managers can adopt a more passive competitive posture in order to ensure its viability in a hostile environment.

Moreover, empirical evidence suggests that a hostile environment can be positively related to competitive aggressiveness when companies have high performance. Hall (1980, p. 77) reported on a study of 64 companies operating in hostile environments and concluded that, "Successful strategies come from purposeful moves toward a leadership position". Similarly, in an 88 firm study, Miller and Friesen (1983, p. 229) found that "innovation rather than conservatism seemed to be a common response to hostility among successful firm". Slevin and Covin (1997) from a 112 manufacturing firms' investigation, found a positive relationship between a planned strategic posture and a hostile environment. Finally, in a 103 companies study, Khandwalla (1977) found that in a hostile environment, management style is more entrepreneurial. The collective implication of these arguments leads to the following hypothesis:

Hypothesis 7: The more hostile the environment in which the NTBF operates, the faster the strategic decision making speed.

2.4 Strategic decision-making speed and firm performance

The interest in knowing the relationship between strategic decision making speed and firm's performance has its origins in the Bourgeois and Eisenhardt (1988) publication. They identified a positive relationship between these variables. In a later work, Eisenhardt (1989) noted in 8 high technology firms, that the faster its decision-making speed, the greater their sales and profitability. In an extension of this work, Judge and Miller (1991) investigated the same relationship in 32 firms in three different industries, however, they found no relationship between strategic decision making speed and the firm's performance, except for 10 biotechnology firms, which belonged to a high-tech industry. In contrast, Forbes (2001) studied the strategic decision making speed in 83 companies in the information technology area and found no relationship with the firm's performance. In the same perspective, Baum and Wally (2003) in a 4-year longitudinal study identified in 318 companies in 10

different industries, that strategic decision making speed predicts the firm's subsequent growth and profitability. Similar results are presented by Zehir and Özsahin (2008), who after studying 73 large manufacturing firms reveal the positive effect of strategic decision-making speed in the firm's innovation capacity.

The strategic decisions-making speed is appropriate in situations where delay does not provide useful information. For example, predicting consumer behavior can be very complicated, especially in new or technologically disruptive markets (Bower & Christensen, 1995). In imbalanced situations, it may be more appropriate to make a decision and maintain flexibility in the organization thus enabling adjustments to be made quickly if the decision leads to undesirable results. Even when market behavior is erratic, due to causes and effects that technology can generate, the strategic decision-making speed and adaptation are shown as a source of competitive advantage (Jones, 1993; Liao, Kickul, & Ma, 2009). This leads to the assumption that strategic decision-making speed is related to organizational performance in different contexts. Therefore the following hypothesis is proposed:

Hypothesis 8: The faster the NTBF strategic decision-making speed, the better the firm's performance.

As can be observed in Figure 1, the theoretical model followed in the investigation aims to assess the indirect effect of personal, organizational and environmental characteristics on the firm's performance through the strategic decision-making speed.

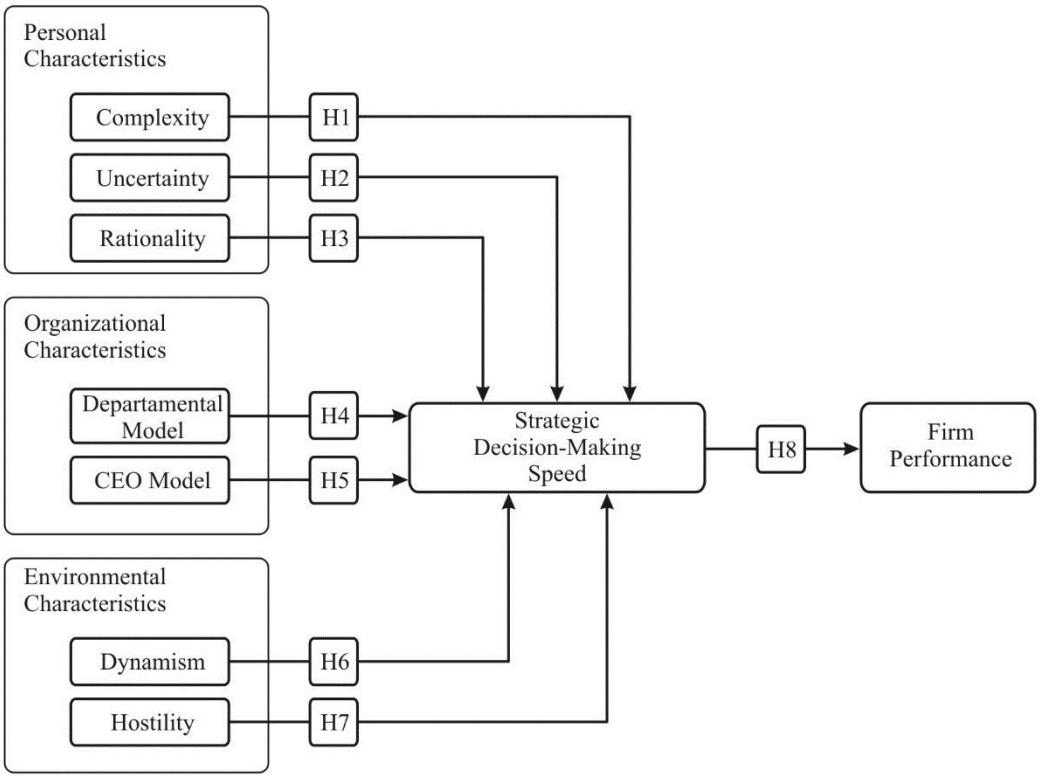

Figure 1. General research model
Source: The authors

3. METHODOLOGY

3.1 Sample and data collection

The study's empirical analysis was based on data obtained through a survey supplied to NTBFs in Mexico. Data collection was done at the end of 2012 and the firms participating in the study began commercial operations up to 5 years prior. This five year threshold is consistent with previous work on NTBFs (Yli-Renko, Autio, & Sapienza, 2001). For research purposes, a NTBF was defined as a firm that provides products or services through the application of modern technologies, so the company had to be identified as belonging to a technical field (Talaulicar, Grundei, & Werder, 2005). Based on these criteria and through the high tech business incubator network, and members of the National Business Incubation Mexico, it was possible to identify 321 NBTFs.

The survey was sent to the NBTFs through the incubators network and was conducted during the period July to December 2012. One hundred and three questionnaires were received representing a 32% response. The response rate is relatively low, but consistent with previous studies on decision making processes (Miller, Burke, & Glick, 1998; Simons, Pelled, & Smith, 1999). Analyses for the nonresponse bias were carried out by comparing early and late respondents, with late respondents being used as a proxy for no respondents (Armstrong & Overton, 1977). Comparisons of the responses gained from these two sources confirmed that the samples can be combined.

Core NTBF businesses responding to the survey were automotive, aviation, e-commerce, internet infrastructure, multimedia services, building, biotechnology, materials technology and other technology-based products. Most NTBFs were founded between 2008 and 2009. Only 16 firms were founded by a single person and the median of the number of founders was 2.8. The average number of people in the firm was 12.

3.2 Measures

3.2.1 Personal characteristics

Personal characteristics were evaluated through TFM's cognitive style, since that style influences his strategic decision making process. To measure this variable Noorderhaven's (1995) proposal was used and defines the decision-making style through the complexity, uncertainty and rationality factors. The 3 items were developed for each cognitive factor and were rated on a Likert's five points scale. For the subsequent analysis, each cognitive factor was averaged, namely, to assess its influence level on the strategic decision making speed.

3.2.2 Organizational characteristics

This research followed the Talaulicar, Grundei and Werder (2005) proposal to identify the dominant organizational model, and the organizational characteristics were determined with simple measurements. There were 3 items used to identify whether some TMT members had skills to direct specific business areas independently (departmental model) and 3 items to identify whether a TMT member was empowered to coordinate the other team members (CEO model). Averages were calculated for each scale and were used for further analysis.

3.2.3 Environmental characteristics

Dynamic environments are related to unpredictable changes in the firm context and uncertainty that reduces the manager's ability to predict future events that may impact the organization (Khandwalla, 1977). Environmental dynamism was measured by the three items average proposed by Miller and Friesen (1982), using a 5-point semantic differential scale. The greater the average of the three items, the greater the firm's environment dynamism.

Hostile environments are characterized by Khandwalla (1977, p. 335) to be "risky, stressful and dominating". These environments are typical of industries with intense competition and limited opportunities available (Covin & Slevin, 1989). To measure hostility, the average of the three-item in a 5-point semantic differential scale, developed by Covin and Covin (1990) was used. The larger the index, the more hostile the business environment.

3.2.4 Decision-making speed

To evaluate the strategic decision making speed, three scenarios were assessed: (1) a decision on acquisition, (2) a decision on the new product introduction, and (3) a decision on the technology

adoption. Three scenarios were considered because previous studies have already identified their relevance for decision making (Baum & Wally, 2003; Zehir & Özsahin, 2008; Jones, Lanctot, & Teegen, 2001). The decision speed was evaluated as the average of the next three items in the survey (one for each scenario): (1) circle the approximate number of days it would take for the company to decide whether or not to invest considerable time in the search for a merger. (2) Circle the approximate number of days it would take for the company to decide whether to continue or not with the commitment to develop and introduce a new product. (3) Circle the approximate number of days it would take for the company to decide whether to continue or not with the commitment of the new ERP software.

3.2.5 Firm performance

The firm's performance was assessed using subjective measures by the TFM because of the lack of objective measurements. However, this way of assessing the firm's performance has been well received according to several authors (Brush & Vanderwerf, 1992; Wiklund & Shepherd, 2003, 2005), in evaluating the firm's performance compared to its main competitors, which leads to reliability and validity at a higher level. Performance measurement was obtained through the four indicators related to the cash flow average from operations and sales growth, the same as those used in previous works (Walter, Auer, & Ritter, 2006; Lichtenthaler, 2009; Parida *et al*., 2010). The TFM were asked to indicate on a 5-points Likert's scale, the firm's performance compared to its main competitors over the past two years.

Table 1 shows the format, number of items, Cronbach's alpha values and the source for each concept. As seen in Table 1, the Cronbach's alphas for each concept are greater than 0.70, which is considered an acceptable level when it comes to an exploratory study (Covin, Slevin, & Covin, 1990; Sapienza & Grimm, 1997).

Table 1. Measurement model

Concept	No. of items	Format	Cronbach Alpha	Research sources
Complexity	3	LRF[a]	0.76	Noorderhaven (1995)
Uncertainty	3	LRF[a]	0.84	Noorderhaven (1995)
Rationality	3	LRF[a]	0.81	Noorderhaven (1995)
Departmental model	3	LRF[a]	0.73	Talaulicar, Grundei & Werder (2005)
CEO model	3	LRF[a]	0.75	Talaulicar, Grundei & Werder (2005)
Dynamism	3	SDS[b]	0.82	Miller & Friesen (1982)
Hostility	3	SDS[b]	0.78	Covin & Covin (1990)

Strategic decision speed	3	Scenarios[c]	0.83	Baum & Wally (2003)
Firm performance	4	LRF[a]	0.80	Walter, Auer & Ritter (2006)

Notes: [a] LRF – Likert Response Format (five-point: 1 = strongly disagree to 5 = strongly agree); [b] SDS – Semantic Differential Scale; [c] Scenarios – Three scenarios were presented with follow-up questions

Source: The authors

3.3 Analysis

A principal component analysis was carried out with 28 items to assess the 9 constructs identification. Factor analysis indicated that the data was appropriate for this type of analysis. The number of factors to be extracted was determined by the number of components with eigenvalues greater than one. To enhance distribution clarity, the factor solution was rotated using varimax rotation. The hypotheses were tested subsequently applying correlation and multiple regression analysis.

4. RESULTS

The principal component analysis shows that 9 constructs are distinguished by respondents through the questionnaire. As expected, the items loaded correctly into nine factors with eigenvalues above 1.0. The pattern matrix of this factor analysis after varimax rotation is shown in Table 2. The total explained variance is approximately 0.59

Table 2. Factor loadings of the items

	Items	1	2	3	4	5	6	7	8	9
Complexity	Co1	0.83								
	Co2	0.78								
	Co3	0.79								
Uncertainty	Un1		0.85							
	Un2		0.80							
	Un3		0.75							
Rationality	Ra1			0.78						
	Ra2			0.75						
	Ra3			0.80						
Departmental	De1				0.81					
	De2				0.83					
	De3				0.80					
CEO	Ceo1					0.84				

	Ceo2					0.84				
	Ceo3					0.86				
Dynamism	Dy1						0.87			
	Dy2						0.83			
	Dy3						0.78			
Hostility	Ho1							0.77		
	Ho2							0.82		
	Ho3							0.82		
Strategic	Sd1								0.79	
decision speed	Sd2								0.83	
	Sd3								0.85	
Firm	Fp1									0.83
performance	Fp2									0.84
	Fp3									0.80
	Fp4									0.81
Eigenvalue		1.93	2.33	2.04	2.64	2.71	2.12	2.13	2.41	2.54
Percentage of variance explained		5.12	6.01	4.78	7.44	9.23	7.14	5.23	8.67	5.45
Cumulative percentage of variance explained		5.12	11.13	15.91	23.35	32.58	39.72	44.95	53.62	59.07

Source: The authors

Table 3 shows the means, standard deviations and correlations for all variables. A correlation analysis can be used as a preliminary evaluation of the proposals, which should be confirmed with other analyses. Firstly it can be observed that a strong positive relationship exists between strategic decision making speed and the firm's performance. In regard to personal characteristics, the variable rationality showed virtually no relationship with the strategic decision making speed. In the organizational variables, the CEO model shows a positive relationship with the strategic decision-making speed, which is being proposed in hypothesis 5. With respect to environmental characteristics, both dynamism and hostility showed a positive relationship with decision making speed.

Moreover, Table 3 has information that it is not relevant to this paper, but is interesting on which to comment. For example, the CEO model also shows a positive relationship with the firm's performance. The uncertainty and dynamism variables show a negative relationship which could provide evidence that these variables affect the firm's performance. Therefore, it is necessary to carry out a more qualified analysis to confirm the predictions found in this paper through this hypothesis. For this reason a regression analysis was conducted.

Table 3. Mean-standard deviation values and correlation coefficients

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Complexity	3.28	1.33	1.00								
2. Uncertainty	3.97	0.91	-0.07	1.00							
3. Rationality	3.03	1.25	0.10^{+}	-0.03^{+}	1.00						
4. Departmental model	3.75	1.08	-0.13	0.05	0.21^{+}	1.00					
5. CEO model	4.66	0.65	0.11^{++}	0.10^{++}	0.19^{++}	-0.02^{+}	1.00				
6. Dynamism	4.41	0.97	-0.18^{+}	-0.08	0.11	-0.04	-0.20	1.00			
7. Hostility	4.02	1.12	0.15^{+}	0.02^{+}	0.13^{+}	0.07^{++}	0.17	0.23^{++}	1.00		
8. Strategic decision speed	5.31	0.82	-0.14	-0.18^{+}	-0.09^{+}	0.17^{+}	0.36	0.28^{+}	0.19^{+}	1.00	
9. Firm performance	4.53	1.21	-0.12^{++}	-0.20	0.13	-0.15	0.22	-0.19	-0.13	0.33^{+}	1.00

$^{+}p < 0.05$; $^{++}p < 0.01$
Source: The authors

The regression analysis shown in Table 4 presents two models. The first model considers the strategic decision-making speed as the dependent variable. In this model, it's possible to confirm hypothesis 2, that is, the more uncertain the consequences of decisions made by the TFM, the slower the strategic decision making process. In fact, within the personal characteristics, this is the only variable that was related to the dependent variable. The study does not provide enough evidence confirming hypotheses 1 and 3, namely, that the complexity and rationality influence the slow strategic decision making process. Regarding the organizational characteristics, the analysis supports hypothesis 5, which means that a CEO Model in the TMT organization, positively contributes to the strategic decision making speed. The analysis is unable to confirm hypothesis 4, namely, the Departmental model domain in the strategic decision making speed.

Hypotheses 6, which relates to a dynamic environment with strategic decision making speed is confirmed by the regression analysis; however, hypothesis 7 can only be partially confirmed. The analysis corroborates that the environment has an influence on the TFM's decision making, principally in the speed thereof. Finally, the same Table 4 shows a second model, in which the dependent variable is the firm's performance. The analysis confirms that in hypothesis 8 the faster the strategic decision-making speed, the better the NTBF's performance. Figure 2 shows the pattern partially confirmed.

Table 4. Regression analysis for strategic decision speed and firm performance

Dependent variables			
		Strategic decision speed	Firm performance
Independent variables			
	Complexity	-0.091	-0.070^{+}
	Uncertainty	-0.279^{++}	-0.188^{++}
	Rationality	-0.024	0.093
	Departmental model	0.112^{++}	-0.122
	CEO model	0.349^{++}	0.202^{++}
	Dynamism	0.221^{+}	-0.143^{+}
	Hostility	0.107^{+}	-0.178^{+}
	Strategic decision speed		0.337^{++}
Model summary			
	F –ratio	2.711	2.214
	R^2	0.201	0.244
	R^2 adjusted	0.182	0.236
	Standard error of the estimate	0.944	1.085
$^{+}p < 0.05$; $^{++}p < 0.01$			

Source: The authors

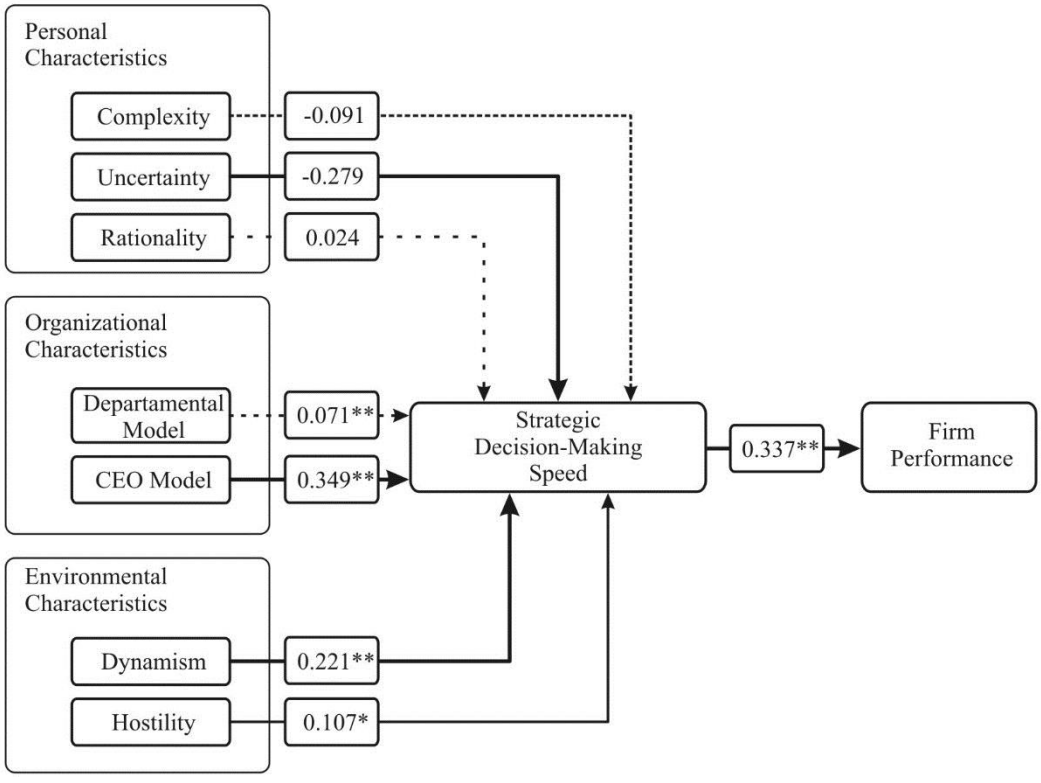

Figure 2. General research model results
Source: The authors

5. DISCUSSION AND CONCLUSION

5.1 Speed and firm performance

This study's results are important as they reinforce the theory published by Eisenhardt (1989) and Judge and Miller (1991), which states that the strategic decision making speed influences the performance of the company. Similarly, the results also enrich research on the strategic decision making speed, as it identifies a set of factors that influence the decision speed. Utilizing decision-making theory, this research adopted the viewpoints of founder-managers of NBTF as decision-makers who must draw upon their perceptions of organizational and external conditions in making strategic decisions. In this work it was found that the strategic decision making speed subsequently influences the firm's performance and that the uncertainty perceived by TFM, the organization style (CEO model), and the dynamism prevailing in the environment, in turn influenced the strategic decision making speed.

Despite of the research results, the causal relationship between the strategic decision making speed and firm's performance cannot be assured. In the NBTF's performance there may be other variables and processes that also affect performance, especially in a competitive environment characterized by rapid technological change. In essence, it is not possible to ensure that a NBTF has good performance only by utilizing the strategic decision making speed. Sometimes by virtue of the fact of being a new company, the decision should be deferred, as this can generate higher opportunities for reflection and analysis (Baum & Wally, 2003).

Moreover, it can also be observed that strategic decision making speed is an intermediate variable between personal, organizational and environmental in the firm's performance, which strengthens the causal argument. This means that the relationship among personal, organizational and environmental variables within the firm's performance were lower when the analysis included their relationship with strategic decision making speed and the total variance explained increased in the indirect effects model.

5.2 Personal, organizational and environmental factors of strategic decision-making speed

Among the personal factors, uncertainty was the most representative variable, that is, when TFM makes decisions with little information, therefore, the outcome is uncertain. Now, there is a strong relationship between uncertainty and strategic decision making speed, which means that uncertainty causes the TFM to take a slower decision making process. In this vein, Baum and Wally´s (1994) study indicates that strategic decision makers who possess sufficient cognitive ability to process alternatives simultaneously can further accelerate cognitive processing by focusing on intuition rather than on formal mechanism. To this can be added that TFM intuition can lead to discover of new technological opportunities and a decided advantage.

With respect to organizational factors, it is evident the CEO model domain in the NBTF, confirms the essential TFM role in the firm's fate. It should be emphasized that the sample was taken from NBTF, namely firms in their start-up stage. The start-up stage is the period in which the new organization attempts to become a viable entity. The organization is small and privately owned by one or a few individuals and, it has no established reputation and its structures and processes are simple, informal and flexible (Bonn & Pettigrew, 2009). The results indicate that there is a relationship between a centralized decision making (CEO model) and the strategic decision making speed. Although the CEO model allows more efficient information processing, which facilitates speedy decisions (Scott, 1992), a NBTF´s ability to centralize decision making may be contingent upon the environmental uncertainty it faces. The CEO model may also promote strategic decision making celerity only within the context of the overall model. Thus, although the CEO model may promote speedy decisions, the latter may not necessarily lead to better performance.

With regard to NBTF´s environments, Eisenhardt (1989) proposed and Judge and Miller (1991) confirmed that in dynamic environments, strategic decision making speed is associated with superior performance. That is, the effect of speed upon firm performance is stronger in dynamic environments. This result offers support for Wally and Baum´s (1994) conclusion that the effects of decision speed depend upon context and that dynamism is an antecedent of decision speed. Also, we found a weak relationship between hostility and strategic decision speed. This could indicate that the dynamic environment it's not necessarily hostile.

5.3 Limitations and future study

The study results do not identify the effect of NBTF's size, but by the sample design, the average number of employees was 12, namely small businesses. Future studies could include the effect of organization's size in the analysis, to check if a negative correlation between firm size and strategic decision making speed exists.

Once the relationship between a CEO model and strategic decision making speed has been identified, it might be worthwhile to go deeper into this relationship, given the prominence that the TFM has in the decision making. A personal factor that may help to better understand the decision-making process in highly dynamic environments with decisions based on the TFM is the intuition. It is useful to know to what extent intuition is involved in the strategic decision making speed. However, that remains for a future research study. On the other hand, it is also interesting to know if the company's size contributes to organizational factors, namely a larger company may have other decision-making processes that are not centered on the TFM figure and that can consider the dynamic team participation and effects (Winch, 1995).

The results of this research consider external environment characteristics; however, future work may include other variables such as technology availability or technological sophistication. More generally, other variables that may influence a NBTF competitive environment is the financial resources availability, which influence the decision-making speed, aspects that can be studied in future work.

Finally, the measurement of strategic decision making speed is based on three fictional scenarios: acquisition, product development and technology adoption. Future research could consider evaluating the strategic decision making speed on real decisions. This could lead to changes or the inclusion of new methodologies to incorporate this aspect, such as non-participant observation.

6. CONCLUSION

The research results contribute to extend the strategic decision making speed theory, particularly the early works of Eisenhardt (1989) and Judge and Miller (1991) and subsequent work of Wally and Baum (1991), Baum and Wally (2003), Talaulicar, Grundei and Werder (2005) and Zehir and Özsahin (2008). The results provide insight that compliments previous work including personal, organizational and environmental factors that affect the strategic decision making speed. Taken together, the findings suggest that strategic decision speed is beneficial, even given the negative force

of environmental dynamism and hostility upon performance. The model that can be identified in the NBTFs that participated in the study, is a decision-making centered on the TFM figure, which can be considered by the nature of the start-up firm. The uncertainty with which the TFM must make decisions decreases the process speed, which can be compensated by the ease of making decisions without the need to share or reconcile their decisions with other members of the organization. Furthermore, the competitive environment influence on the decision-making is important, especially the technological change speed, since the results indicate that the dynamism affects the strategic decision making speed, which does not necessarily cause a hostile environment. In essence, there are factors that influence the strategic decision making speed, which in turn influences the NBTF performance.

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Data do recebimento do artigo: 05/04/2014

Data do aceite de publicação: 25/04/2015