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RIGIDEZ SOB AMEAÇA – TESTE DA TEORIA, EXPANSÃO DE CONSTRUTOS E ANTECEDENTES

THREAT RIGIDITY – THEORY TESTING, CONSTRUCT EXPANSION AND ANTECEDENTS

Doctoral dissertation presented to the Management Doctoral Program at Universidade Nove de Julho - UNINOVE Management Graduate School, in partial fulfillment of the requirements for the degree of Doctor in Management.

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by

FELLIPE SILVA MARTINS

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São Paulo, June 26th, 2017.

“Consider this, you who are engaged in investigation: If you choose to seek truth, cast aside: passion, accepted thought, and the inclination toward what you used to esteem, and you shall not be led into error.”

Moses Maimonides (12th Century scholar, philosopher, and physician).

I said in mine heart concerning the estate of the sons of men, that God might manifest them, and that they might see that they themselves are beasts. For that which befalleth the sons of men befalleth beasts; even one thing befalleth them: as the one dieth, so dieth the other; yea, they have all one breath; so that a man hath no preeminence above a beast: for all is vanity. All go unto one place; all are of the dust, and all turn to dust again.

Ecclesiastes 3:19-22

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ABSTRACT

Among the several theories related to organizational decline, the Threat Rigidity thesis is one of the most cited. This is because it provides a simple but adequate explanation for many real instances of organizational failure. In accordance with this theory, threats will lead organizations to enter a stress-induced phase, which, in turn, makes them rigid. This rigidity has negative outcomes for an organization, such as leading to a restricted flow of information and increased control concentrated in the top management. Although being one of the most cited theories in strategy, its testing and empirical confirmation has been attempted only in a very short list of papers and the overall result has been mixed (Plotnick & Turoff, 2010). To verify the theory, I propose a reorganization in the internal constructs in Threat Rigidity and test whether it affects another organizational-level construct (Market Orientation), through a partial-least squares structural equation model. The results obtained demonstrate that the internal reorganization holds true, and that Threat Rigidity affects organizational Market Orientation. I further verify two antecedents to Threat Rigidity (Crisis Response and Organizational Reputation) and the results show that both directly affect Threat Rigidity. Both Organizational Reputation and Threat Rigidity (as tested before) affect Market orientation, but Crisis Response only indirectly affects it, through mediation of Threat Rigidity. The overall results assist in redressing the Threat Rigidity concept, offer insights on the internal components of the theory, and opens horizons for future research on antecedents and consequences of Threat Rigidity.

Keywords: Threat Rigidity, Organizational Decline, Market Orientation, Organizational Reputation, Crisis Response.

RESUMO

Entre as diversas teorias relacionadas ao declínio organizacional, a tese da Rigidez sob Ameaça é uma das mais citadas. Isto se deve ao fato de que esta teoria fornece uma explicação simples, mas adequada, para muitos exemplos reais de falhas organizacionais. Segundo esta teoria, ameaças levam as organizações a entrarem em uma fase induzida pelo estresse, que, por sua vez, as torna rígidas. Esta rigidez tem resultados negativos para uma organização, tais como induzir um fluxo restrito de informações e controle aumentado e restrito aos altos escalões. Embora seja uma das teorias mais citadas em estratégia, seu teste e confirmação empírica foram tentados apenas em uma lista muito curta de trabalhos, cujo resultado geral não fica claro (Plotnick & Turoff, 2010). Para verificar a teoria, eu proponho uma reorganização nos constructos internos na Rigidez sob Ameaça e testo se ela afeta outro constructo em nível organizacional (Orientação de Mercado), através de um modelo de equações estruturais de mínimos quadrados parciais. Os resultados obtidos demonstram validade na reorganização interna e que a Rigidez sob Ameaça afeta a Orientação de Mercado organizacional. Acrescento ainda ao modelo dois antecedentes da Rigidez sob Ameaça (Resposta a Crises e Reputação organizacional), cujos resultados mostram que ambos afetam diretamente a Rigidez sob Ameaça. Tanto a Reputação Organizacional quanto a Rigidez sob Ameaça (como testado anteriormente) também afetam a Orientação de Mercado, mas a Resposta à Crise só a afeta indiretamente, através de mediação pela Rigidez sob Ameaça. Os resultados gerais auxiliam em retificar o conceito de Rigidez sob Ameaça, oferecem perspectivas sobre os componentes internos da teoria e abrem horizontes para pesquisas futuras sobre antecedentes e consequências da Rigidez sob Ameaça.

Palavras-chave: Rigidez sob Ameaça, Declínio Organizacional, Orientação de Mercado, Reputação Organizacional, Resposta à Crise.

INDEX

1. INTRODUCTION

> The crisis cannot be separated from the viewpoint of the one who is undergoing it (Habermas, 1975:58).

Under the strategy perspective, decision-making studies evolved from the so-called 'rational' standpoint in strategic choices (Andrew, 1971; Child, 1972). This rationalist paradigm dominated much of the strategy scenario to the point of still being prevalent today (Steensen, 2014; Suddaby, 2014). On the other hand, it had to deal with criticism from the very beginning – attacks either to its technical impracticalities (Lindblom, 1959; Ansoff, 1987) or to its naïve interpretation of how complex systems work (Teece, Pisano & Shuen, 1997; Dooley, 1997). Nevertheless, the processes introduced by this phase are still very much alive, as they provide a reasonable and pragmatic way of designing planning, if not to deploy strategy (Burford et al., 2011).

Later, the decision-making processes have become increasingly central to the strategy literature, especially by means of economic approaches such as Industrial Organization (Mason, 1949; Bain, 1959) or Resource-Based View (Wernerfelt, 1984; Mahoney & Pandian, 1992; Barney, 2001), as well as adaptive behaviors (Mintzberg & Waters, 1985). After the first cracks on the rational approach's surface, several paradigms and schools of thought for strategy emerge (Wiltbank et al., 2006). Consequently, decision-making becomes central in strategy issues and has been widely studied by other schools of thought, such as the High Echelon Theory (Hambrick & Mason 1984) and the evolutionary theories (Combe, 1999; Hoskisson et al., 1999; Dagnino, 2015). Several other less widely accepted paradigms open the boundaries of strategy to complementary fields of study like sociology and psychology (Combe 1999; Steensen, 2014). Yet, after more than 50 years of theoretical development in strategy (Chandler, 1962; Steensen, 2014), these theories combined do not offer sufficient explanation as to why decision-making is difficult, especially when facing threats.

Amidst all the theories strategy draws from, there are several basic psychological and behavioral theories (Järvilehto, 2015) that may offer a more comprehensive explanation to certain difficulties in decision-making and organizational decline, such as the Threat Rigidity (TR) thesis

(Staw, Sandlands & Dutton, 1981; Muulink et al., 2012). This theory emerges from the evolutionary assumption that stress leads to rigidity – the usual observed behavioral outcome for both humans and animals in the wild (Willner, Muscat & Papp, 1992; Belzung & Griebel, 2001; Li et al., 2008; Lupien et al., 2009). In an organizational setting, rigidity is related to the difficulty to accept new concepts and change habits regarding prior attitudes and decisions (Stewin, 1983). Per this theory, rigidity leads to several negative effects on decision-making. The first model to detail Threat Rigidity in organizations (Staw, Sandlands & Dutton, 1981) posits that rigidity leads to restriction in information since information flows becomes more rigid (Staw, Sandlands & Dutton, 1981) - they bunker themselves inside what Cyert and March (1963:127) call the internal solution stock. In a similar fashion, constriction of control ensues, i.e., decisions are concentrated high up in the hierarchy and there is a sensible cut in the communication flow downwards (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010) – which could become a distinct form of organizational blindness.

Subsequent models and research attempt to complement the original model by adding aspects not detailed before (such as gravity of decision, temporal necessity, probability of occurrences, etc.). Criticisms aimed at disproving its effects (Plotnick & Turoff, 2010) as well as bids to integrate the Threat Rigidity theory with other theories that deal with organizational negative reaction (Ocasio, 1995; Chattpadhyay, Glick & Huber, 2001; Shimizu, 2007; Niesen, DeWitte & Battistelli, 2014) or organizational decline approaches (Ribeiro Serra, Portugal Ferreira & Almeida, 2013; McKinley, Lathan & Braun, 2014; Soltwitsch, 2015) have also come to light.

Be that as it may, after more than 30 years after Threat Rigidity's classic introduction to the strategy literature world, vagueness in its concept (forewarned by the authors themselves, Staw, Sandelands & Dutton, 1981:502), understanding and interpretation as well as doubts about practical and technical (not to mention circumstantial) triggers remain (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010). Furthermore, despite several attempts at integrating or connecting the various schools of thought that offer 'answers' to decision-making (Mintzberg & Waters, 1985; Chaffee, 1985; Ansoff, 1987; Combe, 1999; Wiltbank et al., 2006), the integration of Threat Rigidity in the most common frameworks is at best loose (Mellahi & Wilkinson, 2004; Kovoor-Misra, 2009). Among these, one aspect that has not received much attention and is somewhat overlooked by the extant literature is the fact that inside the strategical decision-

making theory, there seems to be a significant gap between strategical concepts and constructs (especially after Mintzberg's definitions of deliberate, unrealized and emergent strategies) and their possible psychological explanations for difficulty in decision-making and consequences to organizational inertia and decline (Felin et al., 2012; Felin et al., 2015).

On the other hand, one may find scattered facts and ideas in the literature about strategic decision-making that point to the growing importance of psychological and behavioral aspects in strategical concepts and constructs (Venkatraman & Grant, 1986; Bateman & Zeithaml, 1989; Wally & Baum, 1994; Dean & Sharfman, 1996; Smith & Tushman, 2005; Salas et al., 2010). The very downfall of the rationalist approach supremacy was triggered by thought paradigms that directly charge at the unbounded rationality aspects (Simon, 1948, 1949; March & Simon; Lindblom, 1959). In addition, the idea that the human mind and its formalized mechanisms cannot design and deploy full-fledged models of the environment and internal features of an organization as to have detailed overall understanding of causal strategy is also widely accepted (Schipper, 2009; Sandberg & Tsoukas, 2011; Akinci & Sadler-Smith, 2012), although such an idea of unbounded rationality keeps resurfacing cyclically (Cabantous & Gond, 2011).

Besides, psychological, sociological and behavioral concepts have slowly and carefully made their way into strategy and marked their territory by the end of the 1970s (Staw, 1991). The assumption of unbounded rationality was the first to be attacked, but it was not the last. DiMaggio and Powell (1983), for instance, describe how managers make mostly choices that are not strategic, at least in the long run. Instead, they usually operate in the gray area between rationality and nonrationality, choosing from a range of "deeply embedded predispositions, scripts, schema, or classifications" (1983:149), in a sense that later was systematized through a series of 'schemata' assumptions by Ocasio (1995).

The idea that decision-makers are not fully rational, but rather rationalizing (Lindblom, 1959; Lovallo & Kahneman, 2003), led to the comprehension that people take risks in different configurations than formalized thought. Individuals also interpret risks in a non-systematical way (Alderfer & Biernan, 1970; Audia, 2003; Audia & Greve, 2006). Not only that, but individuals and groups also seem to have several blind spots towards the possible outcomes of risky solutions (March & Shapira, 1987; Levinthal & March, 1993; Sjöber, Moen & Rundmo, 2004) and their beliefs act as filters (or framing mechanisms) to distort risk-assessing capacities (Sjöber, 1979;

Sjöber, 2000). Moreover, there is clear evidence for Bowman's paradox, in which the expected correlation between gains and risk is not always present (Bromiley, 1991).

The idea that risk assessment is done by roughly defining points of reference to gauge the possibility of critical failure versus recovery also points to the gray area between full rationality and nonrationality, reaching refurbished solutions (Kahneman & Tversky, 1979; Greve, 2003). The focus on teams and their effects on the decision outcomes is also apparent (Hackman & Morris, 1975), with individuals taking a more central role (McGrath, 1984; Milliken & Vollrath, 1991). This organizational innate incapacity of fully understanding itself or the environment and, instead, oversimplifying problem and solutions also mirrors behaviors and concepts well anchored in the psychological literature (Levinthal & March, 1993; Muurlink et al., 2012).

Making decisions is the basic cornerstone of any strategy but – truth be told – it is a burdensome task (Keeney, 1994). Decisions must be made at all times in organizations, from the most frivolous, daily situations to the most fundamental game-changing, survival-led choices (Pearson & Clair, 1993; James, Wooten & Dushek, 2011) – and in cycles that never stop. Nevertheless, most of the literature deals with organizational decline induced by problems, threats and maladaptation issues (Serra, Ferreira & Almeida, 2013), but not crises. Consequently, organizations do not always prepare for crises and failures, hoping for the best when hard times knock on the door (Pearson & Mitroff, 1993). As such, organizations usually oscillate, arguably, in a simplistic binary form of thinking between two different extremes (Lindblom, 1959; Wiltbank et al., 2006) – either a decision is not important enough to be made accordingly (in terms of cost, scope or formalization) or it is too important and all else must be set aside during its course.

One may argue that the problems associated with the strategic needs that arise from these complex scenarios where decision-making is mandatory will boil down to faulty strategic problem formulations (SPF) (Lyles & Thomas, 1988). SPF is the practical and theoretical counterpoint to what Mason and Mitroff (1981) called "wicked problems" – problems defined by their temporal, causal and scope complexities combined with high levels of external dynamism and uncertainty (Grint, 2005; Grint, 2010), which, in turn, are mimicked by the same levels of faulty organizational learning as defined by Levinthal & March, 1993. Thus, SPF aims at (somewhat naïvely) reach a definition of what a problem is, by means of identifying core

challenges inside an organization's value chain, according their own mindset (Baer, Dirks & Nickerson, 2013). This is problematic, however, since it is founded on top of backwards formulation (like the classical definition of microfoundations of strategy) (Felin, Heimeriks & Madsen, 2012).

This poses a problem and Keeney (1994) addresses it by pointing to the classical, unquestioned inversion in decision-making – he claims that by choosing alternatives before values (criteria under which a solution is to be chosen), one closes the window of opportunities to finding alternatives not initially present and that could be potentially elicited from the values. It is similar to a medical diagnosis – an *ex-post facto* decision, based on hypothetical alternatives towards a not completely defined problem (Baer, Dirks & Nickerson, 2013). This demonstrates the common reactive nature of crisis management, i.e., trying to fit alternatives or plans (usually mimicking other situations or experience) to an out-of-control situation (Jaques, 2007). While it is easy to see how counterproductive and impetuous from an external point of view, it is a very normal human behavior and a very common example of a type of decision-making heuristic in practice (Gigerenzer & Gaissmaier, 2011; Gigerenzer, 2015).

As such, logics will point to the gap between strategy – whatever it is supposed to mean – and basic psychological phenomena. Although the Threat Rigidity thesis provides a fundamental explanation for several of the issues aforementioned, there is much to discuss and test, especially concerning the psychological basis for crisis-induced panic reactions, through 'schemas' or heuristics. A few other future avenues of research are also possible, some of which will be dealt with during the course of this dissertation.

1.1 PROBLEM STATEMENT

Making decisions is not easy, and becomes increasingly more complex during difficult situations. Such circumstances are ever-present and part of normal organizational management, but may become aggravated as little organizational experience clashes with unprecedented situations (James, Wooten & Dushek, 2011), escalating into crises, especially when their impact is public, significant and promotes highly undesirable outcomes for stakeholders (James &

Wooten, 2010). The fact remains that most crises can be traced back to external conditions – directly linked to environmental and evolutionary explanations – although slow-developing internal crises are not unheard of (Barnett & Pratt, 2000). In addition, there is a wide gap between the risk management behavior organizations display prior to crises – that range from disbelief to disdain (Pearson & Mitroff, 1993) – to the perception stakeholders perceive of an *ex-post facto* staggering unwillingness to react (Coombs, 1999, 2002, 2010) – organizations are said to show "accommodative, defensive, external-attribution dependent responses" to crises (Liu, Austin & Jin, 2011: 350).

The complexities involved with decision-making during (and after) crises is the main reason for the existence of a large body of literature in risk management (Pearson & Clair, 1998), crisis avoidance (Boin & Hart, 2003; Seeger, 2006) and crisis management (Pearson & Mitroff, 1993, Jaques, 2007). However, although their development, standardized processes and responses may have had a positive impact on organizational survival (Bernhardsdóttir, 2015), organizations continue to fall into the failure cycle trap and eventual extinction (McKinley, Lathan & Braun, 2014). Nevertheless, not all organizations are alike – they are intrinsically different in their markets, components and organizational configurations and the crisis management literature has not been entirely sufficient to provide theorists and practitioners with tools to revert crises. Therefore, the need for understanding the effects of crises, their antecedents and turnaround strategies has culminated in more exploration inside the topic of organizational decline (Trams, Ndofor & Sirmon, 2013).

Organizations are different from each other as much as people are, although it is possible to categorize them per their internal mechanisms and developments (Van de Ven & Poole, 1995; Dijksterhuis, Van den Bosch & Volberda, 1999). They are part of a larger organizational ecology system (Carroll, 1984; Singh & Lumsden, 1990; Amburgey & Rao, 1996), and as such, they need to manage their learning capacities (Levinthal & March, 1993). Organizational learning is recursive, but generally unfair considering time framing since this binomial separation between success and failure is always *ex-post facto*. For that reason, organizational learning, especially during and after a crisis, will be prone to be undermined by several cognitive biases.

This success-failure threshold is commonly anchored backwards in time as to scrutinize and challenge failures in terms of the so-called "quality" of decision-making process at that time,

whereas in a dissimilar way the circumstances of successes are usually overlooked, which could potentially induce hindsight (Gigerenzer, 2007; Kahneman, 2011) and choice-supportive biases (Kangas et al., 2015). In addition, this future interpretation of past decision-making processes depends on the actors tasked with it and is anchored in their experiences (in and out of such an organization), an action itself vulnerable to survivorship bias (Gilovich, Griffin & Kahneman, 2002), which has already been studied as potentially problematic in top management (Brown et al., 1992; Gallagher, 2003; Garret & Neubaum, 2013).

Therefore, this unending cycle of reinforcing successes without the same level of scrutinizing and criticizing as would be expected from a failure may press organizations to enter a state of overconfidence (Malmendier & Tate, 2015; Chen, Crossland & Luo, 2015). While the effect of such cognitive biases does not amount to much in good times, during crises they may promote several organizational handicaps. Among those, temporal, spatial and failure myopias (Levinthal & March, 1993), overlearned behavior reversal (Miller & Friesen, 1982; Kelley & Amburgey, 1999), pluralistic ignorance (Westphal & Bednar, 2005), managerial autism (Muurlink et al., 2012), narrow and unfocused problem perception (Baer, Dinks & Nickerson, 2013) – not to mention several other cognitive biases – are potential candidates to transform an organization's solution stock (Cyert & March, 1963) into a problematic cookbook managers will certainly refer to during crisis-induced panic situations.

To make matters worse, although research and development may give an organization enough foothold to escape a crisis, it is something on which managers cannot count. Also, in case managers try their hand at problemistic search for solutions outside in the environment (Cyert & March, 1963), they might find themselves in trouble. Most of the management and strategy research focuses on growth, not on decline (Whetten, 1980; Freeman & Cameron, 1993; Serra, Portugal & Almeida, 2013; McKinley, Lathan & Braun, 2014). But there is a reason – it has been argued that the same variables that play pivotal roles in growth are also directly responsible for organizational long-term failure and that, consequently, it is the fault of management to cope with crises (Heine & Rindfleisch, 2013).

Most organizations can be classified into the life cycle type (Van de Ven & Poole, 1995). Yet they are not only a metaphor for living beings. In fact, they react just in a remarkably similar way, and should be studied using the same psychological concepts (Staw, 1991). Like most

animals, under stress, organizations may display a tunnel vision-based approach to defining and understanding problems (Brändström, Bynander & Hart, 2004; Schraagen & Van de Ven, 2008), which can be better explained by problems being framed inappropriately or out of focus (too narrowly) (Baer, Dinks & Nickerson, 2013). This is directly linked to what Van de Ven and Huber (1990) have posited – as to 'how' and 'why' organizations decide to change being a possibility to understand decline through the sequence of actors and events that lead to a significant change – which, in turn, is comprised inside the frame of microfoundations of strategy (Felin et al., 2012).

Not only that, but crises are rare events that have a strong emphasis on time pressure for the decision-making process, which is blurred by ambiguity in the causes, effects and means of resolution (Pearson & Clair, 1998). As such, organizations may enter a phase of organizational inertia (Kelly & Amburgey, 1991; Geiger & Antonacopoulou, 2009) directly due to a stronger underlying form of organizational autism (Muurlink et al., 2012). While the 'general' idea of rigidity is common sense – which may account for the citation volume – it still lacks more research on the internal working of the construct (to help solving the apparent problems with the definition as stated in the original paper). It is based on the overall concept of 'threat' but not all threats induce panic and freezing (Shimizu, 2007). A second theoretical need is the fine-tuning of the 'return to overlearned behavior' of 'well-known practices' component. In the original paper, two different concepts share the same name ('keep doing what was done' versus 'go back to doing what was done') (Staw, Sandelands & Dutton, 1981).

The theory also needs proper confirmation through methodological advances – using a psychometric scale may counter the negative aspects of some of the control issues associated with bad theory testing in TR. That is, while TR is a cognitive mechanism, what studies generally focus on is on the behavioral outcomes (Plotnick & Turoff, 2010), whose link may be feeble, providing studies with a weak proxy to measure TR in real-world situations. Finally, there is a need for more research on antecedents to and consequences of TR on organizations.

1.1.1 Research Questions

In view of the aforementioned aspects, I consider that the studies on Threat Rigidity still need clarifications on theoretical terms, as well as better explanations for its internal constructs. It is also in need of further research on antecedents and consequences, as well as overall phenomena that may be generally associated to it.

Thus, it is worth questioning whether significant results can be obtained if one studies more deeply the internal components of TR. In this way, this paper proposes to answer the following pending question:

How is Threat Rigidity composed internally and which antecedents affect it?

While it is not feasible to list and test all potential antecedents, I decided to provide a starting point with two (Crisis Response and Organizational Reputation), following which may provide researchers with a path to add more constructs further on.

1.2 OBJECTIVES

Once the research question was established, the following general objective was drawn:

Identify and explain antecedents, inner components and combined effects in the threat-rigidity phenomenon, at an organizational-level response basis.

To fulfill the main objective, a few specific objectives have been defined below. Each of the specific objectives will be dealt with in a separate chapter. Each of these chapters is built on the theoretical and practical implications found on the previous one, so that there is a clear theoretical and methodological articulation between them. They are as follows:

- Objective 1: Scan what has been published about Threat Rigidity (TR) in the confines of strategy and analyze the current state of the art.
- Objective 2: Reorganize internal measurable constructs in the Threat Rigidity (TR) thesis and test their interrelationships.
- Objective 3: Test Threat Rigidity (TR) validity, by verifying whether it affects an organization’s Market Orientation (MO).

- Objective 4: Identify antecedents for threat rigidity and their combined effects in decision making.

1.3 CONTEXT MATRIX AND MICROFOUNDATIONAL APPROACH

Since each objective is distinct, one needs to understand how these questions will be addressed. The structure of this dissertation is to tackle these questions in separate studies, but they have an underlying logic and theoretical concatenation. As such, I propose the following context matrix to link the different studies, to serve as reference to the reader and to provide a clear map of the internal components of each study – see Table 01.

How is Threat Rigidity composed internally and which antecedents affect it?						
Identify and explain antecedents, inner components and combined effects in the threat-rigidity phenomenon, at an organizational-level response basis.						
Obj.	Study	Questions	Method	Analysis unit / level	Data collection procedures	Data analysis procedures
Obj. 1 Obj. 2	Study 1	How to reorganize TR in a new model? Are there new internal constructs? How does one test its validity? How to test its effect on behavioral outcomes? Is it ready to be used in future studies?	PLS-SEM	Organization	Survey	Statistical
Obj. 3	Study 2	What antecedents could be coupled with TR? Do they affect both TR and MO?	PLS-SEM	Organization	Survey	Statistical

Table 01: Context matrix for the studies comprised in this dissertation.

The details of theoretical ramifications and consequences of this table can be better understood in each study. The idea behind the context matrix is to provide readers with clear, sequential information on the development and linkage between studies.

Another aspect worth mentioning is that this dissertation was thought in terms of possible microfoundational explanations for organizational poor decision-making. The idea behind microfoundations is that, at least sometimes, macro level relationships can be better explained by micro level interactions, in a form of reducing and decomposing the higher-order effects (Felin et al., 2012). However, I focus not on individuals, as taken separately, but immersed in the process of interpreting the decision-making process – more specifically in the process and interaction as well as in the structure (Felin et al., 2012:3).

While the discussion whether the microfoundational approach is a modern rereading or refocusing of the dynamics of routines and capabilities is out of the scope of this dissertation, both approaches are useful to understanding the phenomenon at hand. Given that an event N can be explained by the sum (or part) of the interactions in its immediately lower levels and at an immediate previous time space, there is an underlying logical principle that understanding the causal internal mechanisms of decision-making may prove fruitful as a tool to understand organizational change.

For the structure of this dissertation, please refer to Figure 01. This figure illustrates the two studies contained in the dissertation, their hypotheses as well as the microfoundational relationships. It is built on the idea that the eventual decline in organizations (in a time T_0) may be linked a inadequate reaction triggered by Threat Rigidity, itself triggered by the threat and influenced by antecedents. For the levels, four divisions are shown – while N_0 is the macro organizational scenario, the other remaining three levels roughly translate as top management, middle management, and the sum of all other individuals in a collective organizational setting.

The first study focuses in the internal mechanisms of TR and how it affects the reaction, measured in the MO constructs (T_{-1} to T_{-3}). Since the hypotheses comprised in this study focus in the N_{-2} level, it is the main microfoundational argument for this dissertation. The hypotheses are focused on the effects of Restriction in Information (RII) (see item 2.3) and Constriction in Control (CIC) (see item 2.4) on other added constructs in this updated version of the Threat Rigidity model – Reduction in Discriminative Abilities (RDA), when the stress-induced state makes understanding what the threat is about, its scope and potential consequences difficult to pinpoint; Reduction in Peripheral Stimuli (RPS), when the organization tends to become increasingly closed to external environments, looking for solutions and guilt inside its borders;

and Return to Overlearned Behavior (ROB), a resulting situation, following TR, when an organization retrenches to tried-and-tested strategies and displays very little flexibility.

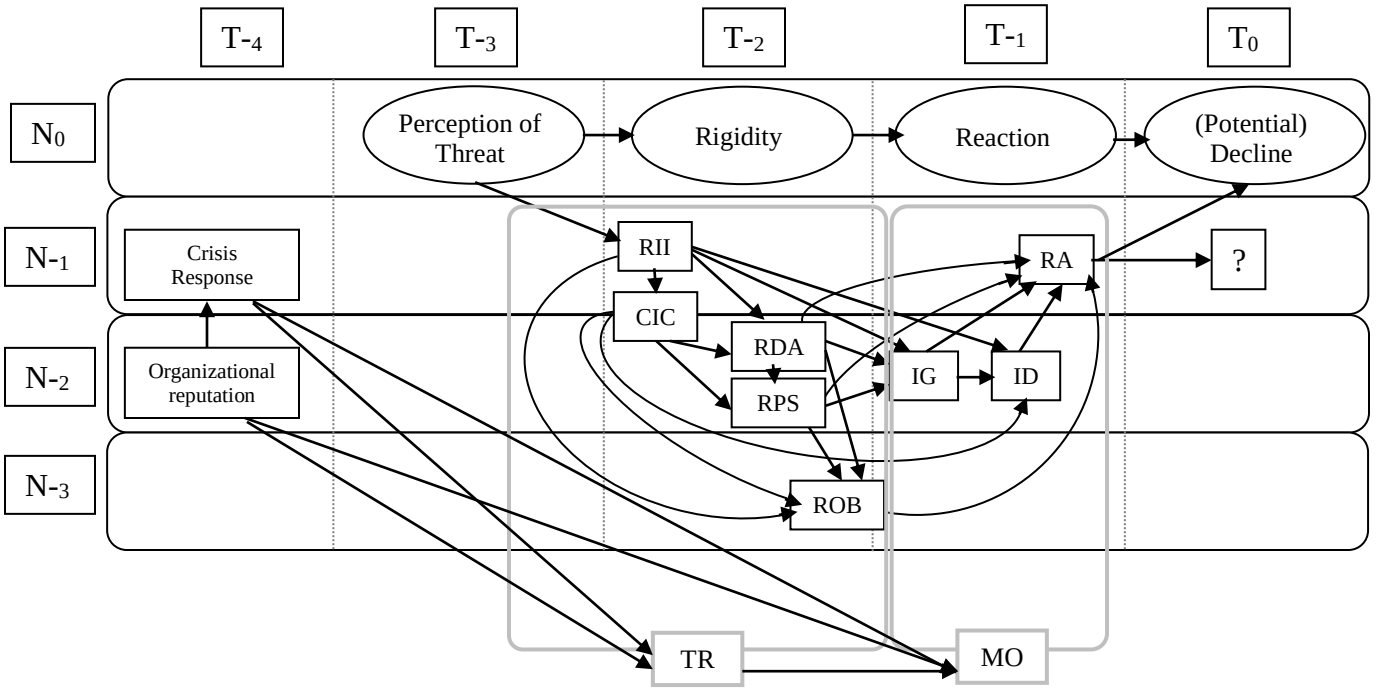

Figure 01 – Microfoundations of threat rigidity – an illustration.

The second study also exhibits microfoundational traits – since it does have an emphasis on constructs that depict routine-based tasks – but to a lesser extent. In this, following the results of the first study, the relationship between TR and MO is already established, but two antecedents to this relationship are added, the role of Crisis Response and Organizational Reputation. These two sets of relationships contained will be better explained and dealt with in the subsequent studies.

1.4 DISSERTATION STRUCTURE

This dissertation is divided in five sections. The first section is aimed at introducing the subject and it accounts for the pre-textual aspects of this project. The following two sections (Chapters 1 and 2) are the main studies developed for this dissertation project.

As for the first chapter, its objectives are developing a following critique of TR and its theoretical implications, expanding the model according to the latest developments, testing its potential internal cohesion and finally testing whether it effectively affects organizations by verifying its effects on foreign trade companies' market orientation.

The third chapter initiates a search for potential organizational antecedents to TR. Both Crisis Response and Organizational Reputation are tested, as well as the effect of these together with TR on Market Orientation. The last chapter aims at integrating the findings and theoretical developments and general discussion, and is followed by the references and appendices.

In the appendices, I developed a short study based on a mixed approach to analyze the extant literature on Threat Rigidity. The first part is a content-based analysis, using Reinert's hierarchical classification technique and content clustering. The second part is classical bibliometric study aimed at finding the main theoretical sources and developments in the theory, as well as eliciting the main researchers and classical works. The third part is a content analysis of the most prominent works concerning the TR thesis, according to the bibliometric part.

Also in the appendices are the scales used in the research, as well as an in-depth analysis of the most relevant papers in the Threat Rigidity literature.

1.5 LITERATURE REVIEW

Before the 1950s, the use of the word 'strategy' was much confined to areas of knowledge outside management, chiefly the military studies (Steensen, 2014), following its original sense and etymology ("art of troop leader", "the way of being a commander"). That may be the reason why Mintzberg decides to introduce his own notion of what strategy should be by building upon these previous concepts of battle survival through cunningly crafting a way before presenting his

views (1987:26). In this early pre-management concept, strategy was focused on obliterating adversaries, a concept still present, albeit somewhat softened for instance, in the notion of the commander as the provider of answers in critical situations (Grint, 2005; Grint, 2010a). As such, the history of strategy as a formal field of study inside management is recent, and fewer studies date from before the 1940s.

These military-focused strategy concept has not vanished, but was challenged by several waves from different perspectives. From an econometric standpoint, Nash's equilibria proved that decision makers do not entirely optimize decisions (Van Witteloostuijn, 1998; Ellison, 2006). From sociological, psychological, political perspectives, one may point the Carnegie school with providing a consistent basis for organization modelling and strategy (Simon, 1949; Simon & March, 1958; Cyert & March, 1963). Thus, strategy grew from an economical, profit-maximization function, to be permeated by behavioral, evolutionary and transaction costs theories (Williamson, 1996).

The successive phases of strategy can be roughly divided in four or five main periods, depending on the scholar. Whittington (2001), for instance, divides the phases of strategy studies into the following categories: classical, evolutionary, processual and systemic, but this taxonomy is not uniform among the strategy history studies. The boundary of an organization also defines a useful threshold to classify multiple strategy paradigms – "inwards", that comprises deterministic strategies (such as industrial organizational economics, contingency theory and evolutionary economics), and "outwards", spanning several rationalist explanations for strategy (Combe, 1999). Alternatively, as Brews and Hunt (1999) posited, opposite orientations that deal with predicting in detail versus adapting faster.

Either way, the first period, usually known as the "rationalist" paradigm starts in the late 1950s and early 1960s. Continuing the tradition from early turn-of-the-century management theories, it depended heavily on the belief that it is possible to understand holistically both inside and outside an organization, and, consequently, it equates top-management planning with strategy (Kay, 2003). In this sense, strategy cannot be disassociated from and is a synonym of strategic planning as we know today, which, in turn, is much akin to multicriteria decision analysis – finding a problem, breaking down in components, analyzing weights and matching suitable solutions (Mintzberg, 1994).

After the 1960s, this unified rationalist view of strategy becomes increasingly fragmented, due to criticisms that oppose this lack of bounds to rationality, to discrepancies between the normative aspect of the theory and very different empirical evidence, and finally to the emergence of other theoretical paradigms. This approach is seen today as shortsighted or outdated, and its disadvantages are widely known (Mintzberg 1994; Ezzamel & Willmott, 2004), but still present and strong, possibly having a future revamped comeback due to data mining techniques and ample data management to model environments (Marks, 2002; Berends et al., 2016).

Either way, the economical-rational approach was forever instilled with features from organizational and environmental aspect that called for more research (Hannan & Freeman, 1977; Aldrich, 1979; Haveman, 1992; Mellahi, Jackson, Sparks, 2002). Research has also benefitted from reaction and organizational policies during environmental turmoil (Starbuck & Hedberg, 1977; Hannan & Freeman, 1984; Walsh, 1995; White, Varadarajan, & Dacin, 2003). Along with these, other approaches exist. Mintzberg and associates have been active in finding evidence of several discrepancies between strategy as it was meant and what it was supposed to mean. That shed a new light on the effectiveness of planning, the separation of its notion as a synonym for strategy and to the introduction of concepts such as deliberate, unrealized and emergent strategies.

However, focusing on the organizational aspects of the research has its own set of setbacks. Organizations heavily draw on human behavior. Therefore, multilevel theories have found a niche in strategy (Rousseau, 1985; Klein, Tosi & Cannella, 1999; Felin & Foss, 2005). Thus, it is natural that such shortsighted way of constructing 'strategy' is found in the early strategy works. Several theories have applied the ‘pathology’ analogy to understand organizational strategy problems, such as threat rigidity (Staw, Sandelands & Dutton, 1981), organizational myopia (Levinthal & March, 1993), organizational cognitive inertia (Hodgkinson & Wright, 2002) or organizational autism (Muurlink et al., 2012). This innovative idea, of seeing an organization as a collection of individual behavior is groundbreaking in the sense that it allows individual psychological and cognitive theories to be applied directly to organizational level. Staw (1991) affirms that changing the wording in the strategy and organizational literature – from organizational to individual and vice versa – makes much sense since there is almost no losses in meaning. The same may be applied to top managers and the results perceived by middle

management, - i.e., “managerial (mis)behaviors area result of, at least in part, factors that often exist beneath the level of conscious awareness” (Mellahi & Wilkinson, 2004:23).

1.5.1 Threat Rigidity theoretical developments

Among these ideas, TR is innovative because it was one of the first attempts to apply psychological and cognitive as well as behavioral concepts to organizational strategy. The general idea is that TR happens when organizations fail to adapt to sudden, radical changes in the environment. Technically, Staw, Sandelands & Dutton (1981:502) have defined TR as a “general tendency for individuals, groups, and organizations to behave rigidly in threatening situations”. They have also demonstrated through organizational examples that TR usually entails two negative outcomes. First, organizations display an increased level of restriction in information processing (narrowing in the field of attention; simplification of codes; reduction of channels, etc.) and second, a higher degree of constriction in control (power and influence concentrated or placed in the higher levels of a hierarchy) – see Figure 02.

The TR thesis offers a potential explanation to a common-sense, widely observable set of situations – stress goes up, quality of decision goes down; stress goes down, quality of decision goes up. However, it is simplistic in a sense. In an attempt to cater for several organizational decline scenarios, as well as several levels in the same organizations, it has to compromise clear theoretical boundaries. That is why the authors warn readers that TR observations may suffer slippage from its original definition as well as a generous dose of ambiguity. It also builds on the notion that restriction in information and constriction in control run in parallel. Yet there is evidence that the information component is the trigger of the control counterpart, since information marks the limits of an organization and control comes into play in an attempt to enforce those limits (Van der Aalst, 2000; Bouty, 2000; Santos & Eisenhardt, 2005; Zamutto et al., 2007).

Other TR-related theoretical limitations may also appear. The trigger (threat) is overall ill-defined, although Staw, Sandelands and Dutton do spend a significant part of their paper in framing it. While it is in the original paper that the idea that equals threats with crises appear, it

takes a while until Shimizu (2007) define ruinous threats (‘crises’) as significant triggers to organizational rigidity. Another theoretical shortcoming worth of further examination may be the fundamental idea that the threat is originated from sudden, radical changes in the environment – while internal crises are also possible. In addition, the notion of wicked problems – which may be internal as well – is absent (Grint, 2005; Grint, 2010; Muurlink et al., 2012).

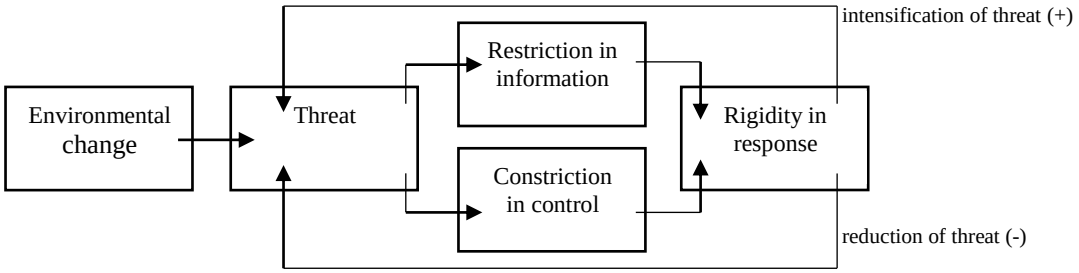

Figure 02 – Threat Rigidity original model (Staw, Sandelands & Dutton, 1981:503).

Subsequent TR theoretical developments delve on this question. Barnett and Pratt (2000) have argued that what Staw, Sandelands & Dutton call a ‘threat’ can be subsequently split in two main categories: ‘imminent threat’ (which must be dealt with immediately) and ‘long-term threat’, which leads to what they call “autogenic crises” – i.e., past problems with decision making and dealing with crises leads to new, internally generated crises. Although smaller in impact (if taken separately and compared with a single major crisis), they have deeper impacts as they can undermine organizational performance in the long run. This long-range, unsolvable problem notion is comparable to wicked problems (Churchman, 1967; Brown, Harris & Russel, 2010).

They propose a countering strategy to solve TR with a conscious process of “flexibilization” – mainly through generation of new knowledge and expansion of control (which can be linked to innovation efforts and investments) – see Figure 03. This approach, however, proves itself as naïve at best. While consciously one may understand that the rigidity arisen from the threat is adverse for the organization, managers may not even be aware that they are in a rigidity state, and even if they become aware, it does not ‘feel’ right as a reaction – it goes against survival instinct and survivalist reactions at the moment of a crisis are not strategy, it is desperation. It is possible to conceive or imagine a set of organizational failsafe mechanisms for

critical instances to flexibilize strategy, or secondary systems to improve flexibility, but as far as I could search, such implementations are nowhere to be found.

An analogous thought is described by Antonacopoulou and Sheaffer (2013:10) as "learning through crisis by engaging dynamically with the unknown and developing new understandings, by experimenting with existing knowledge to improve actions and negotiations with emotions, attitudes, and behaviors in response to forces shaping learning and crisis". That idea is a different version but still similar to Barnett and Pratt's (2000) concept of flexibilization – whenever panic creeps in, simply stop panicking. It seems easy, and straightforward to implement but the basic psychological mechanisms that induce panic (and rigidity) refrain decision makers from simply stop being rigid.

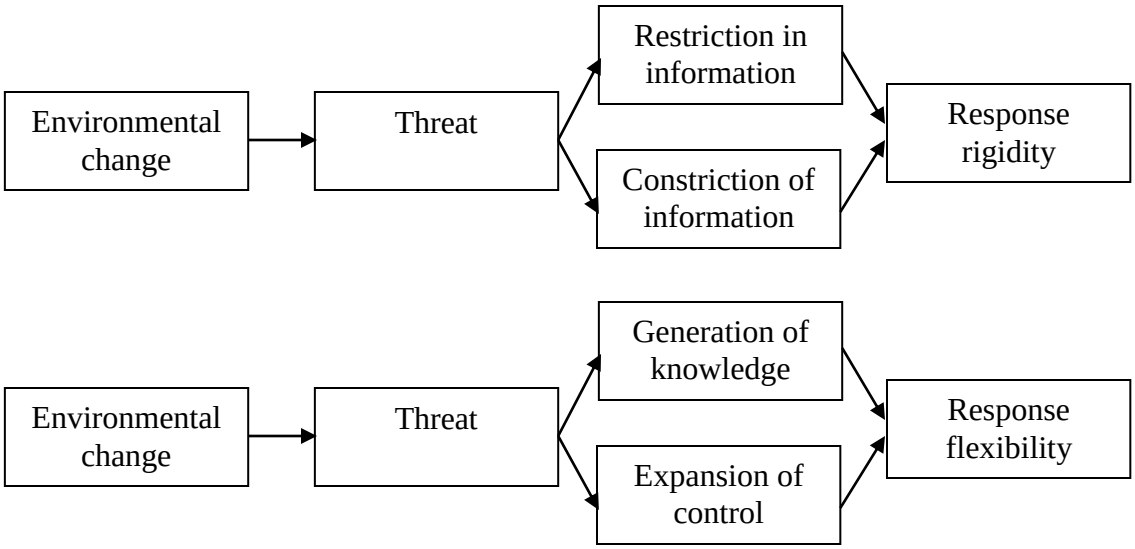

Figure 03 – Threat-Flexibility Model (Adapted from Barnet & Pratt, 2000:77,80).

Therefore, I believe that the Threat-flexibility model developed by Barnett & Pratt is a useful conceptual development, but one that at the same time lacks practical applications and empirical observations. Thus, this attempt of changing solidified perception/behavior may become a tautological paradox since external stimuli are necessary to change perspective, and TR also leads to a significant reduction in peripheral stimulation (Muurlink et al., 2012). On the other hand, at least in a conceptual level, it proposes a similar way of recycling old ideas into new formats or performance incrementalism during crises (Antonacopoulou & Sheaffer, 2013).

From a cognitive perspective, the problem with the previous approach is that although in principle this should work as simple method to counter TR, its main effect is induced by "panic". Whenever in face of panic (stress, anxiety, etc.) most people (especially conservative ones) tend to shift to a higher need for closure and, even worse, premature closure as a way of escaping the threatening situation (akin to a 'fight or flight' effect). That is, in face of panic, most organizations will tend to try to "stop" the crisis quickly (satisficing) – or postpone decisions (and maybe enter a denial phase), which has not been very well documented and researched in strategy. Most executives will not just consciously use flexible decision making tools and strategies.

A third theoretical development that incorporates threat rigidity (alongside prospect theory) as antecedents of organizational outcomes was proposed by Chattopadhyay, Glick & Huber (2001) – see Figure 04. It posits the function of threat rigidity as an antecedent, but their theory testing suffers from technical difficulties and following ambiguity in results (Plotnick & Turoff, 2010). In addition, the variables employed to measure 'control-reducing threat' and 'control-enhancing opportunity' may not be entirely adequate (all of them were coded from 'external' crises, when clearly Barnett & Pratt (2000) had demonstrated that both internally and externally threats can cause threat-rigidity.

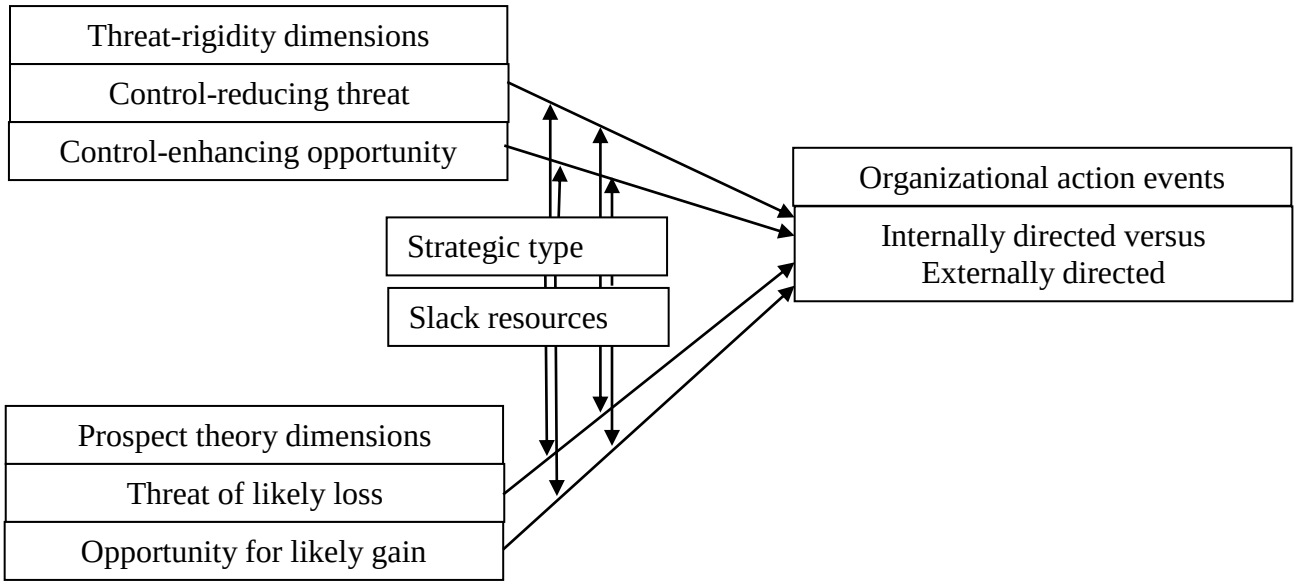

Figure 04 – Threat-Rigidity and Prospect Theory effects on Organizational Action (Chattopadhyay, Glick & Huber, 2001:941)

A third aspect deserves attention, as the two variables to code threat-rigidity were taken from environmental changes instead of the internal perception of crisis from the board, for instance. Therefore, while the threat is present, the perception of the harmful TR consequences, as defined by Staw, Sandelands & Dutton (1981) cannot be assessed.

Another source of ambiguity in Barnett and Pratt's work is that prospect theory should have been traded for regulatory focus. While the former is much more renowned in the strategy literature, the dual nature of regulatory focus and the shifts in focus (promotion-prevention) may be better alternative explanation and offer a more adequate fit to TR theoretical aspects.

A fourth and last theoretical development on TR is overall encompassing notion of 'organizational autism' (Muurlink et al., 2012) – see Figure 05. By 'autism' the authors mean organizations under stress will display a heightened sense of isolation, exaggerated inward focus and an impaired ability to assess reactions, and a general return to dominant, overlearned behaviors – even these clearly do not solve or reduce the negative outcomes of a crisis. Following current research that suggests return to overlearned behavior is a function of company time in operation (Plotnick, Turoff & Van Eede, 2009; Plotnick & Turoff, 2010), Muurlink et al. (2012) also verify young, small-to-medium-sized companies' reaction to crises (although only with five cases) and found that the absence of previous successful strategies, they display a higher level of flexibility.

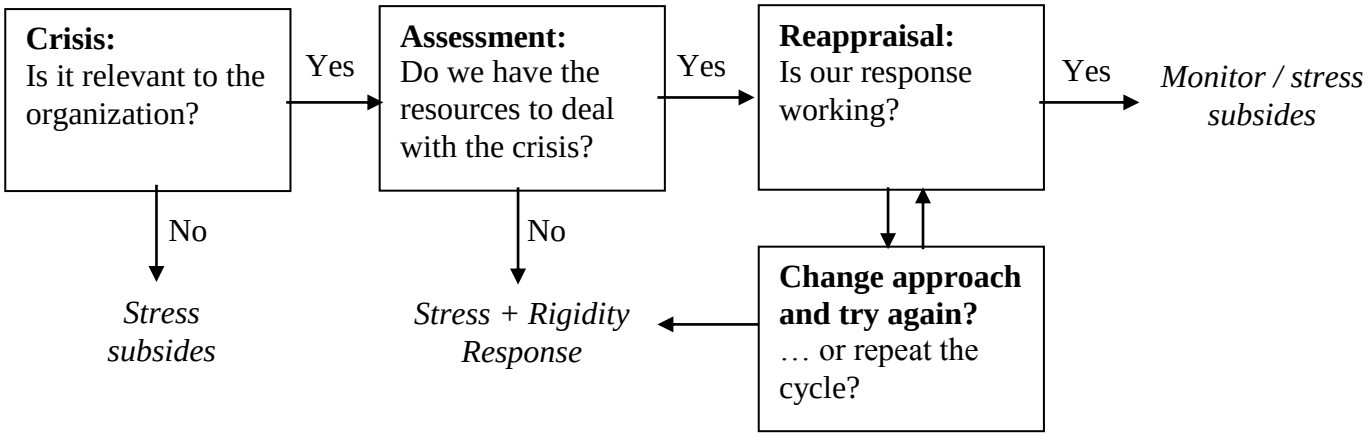

Figure 05 – A crisis response model based on the cognitive appraisal model of coping (Muurlink et al., 2012:77)

One may summarize, thus, the main TR-related features and consequences. The original model contains a context (change in the environment), but literature suggest that internal changes may also result in crisis-framing of a threat. It also comprises a threat or, more adequately, a crisis which works as a trigger to the remaining consequences. The main proposed outcomes are decreased flow and quality of information and increased control. Scattered around the literature emerge three other close consequences – reduction in peripheral stimulation, reduction in discriminative abilities and return to overlearned behavior. This last may have a dual nature – staying in course versus going back to dominant response. In sum, whenever facing crises, groups and organizations tend to overlook external possibilities, redo what they did before in times of need and lose sight of what is important – especially in the mid- and long range.

Finally, one may argue that threat rigidity is a tautological response. Since crises are necessarily different from previous threats, Threat Rigidity outcomes, although common and expected, are entirely counterproductive – the reactions it induces are exactly the *opposite* an organization needs. If a re-used choice could be safely employed, it would not be such a daring threat. For more studies dealing with TR and its theoretical, testing, technical and practical shortcomings, refer to Plotnick and Turoff's (2010) analysis and comparative framework.

1.5.2 Assessment of risk and organizational consequences of Threat Rigidity

The idea that decision makers use rough guidelines as references to assess risk is not new. Kahneman & Tversky (1979) use this argument in their renowned Prospect Theory. According to this theory, people use rough probabilistic alternatives (opposite to the traditional economic function-maximizing theories) to assess their commitment to riskier scenarios. Although it has been challenged, it persists as a basic theory for trade-offs between risk and gain/loss. Prospect theory is based on cognitive aspects, the same that influence decision makers during Threat Rigidity, which means that during a heightened stress scenario, the continuance of Threat Rigidity depends on the probability of its affecting the organization and the risk of it going under. Risk is an essential component of TR, and its assessment is the trigger for the threat. Framing a threat as a crisis – i.e., roughly interpreting risk as a possible ruinous outcome makes decision

makers rigid. The idea of assessing risk scenarios may be traced back to Cyert and March (1963) – see Figure 06.

According to this model, the decision-making process is directly influenced by an organization's risk tolerance, which, in turn, depends on the assessment between performance and aspiration. This means that if performance is above aspiration, organizations enter a satisficing state, but when the opposite happens a problemistic search phase will be triggered, as well as raising red flags on the risk tolerance. The problem with this approach is that this model works well under the assumption of incrementalism – i.e., constant monitoring of performance and continuing reworking aspiration levels (Gavetti et al., 2012) – but its theoretical assumption fails when radical changes arise.

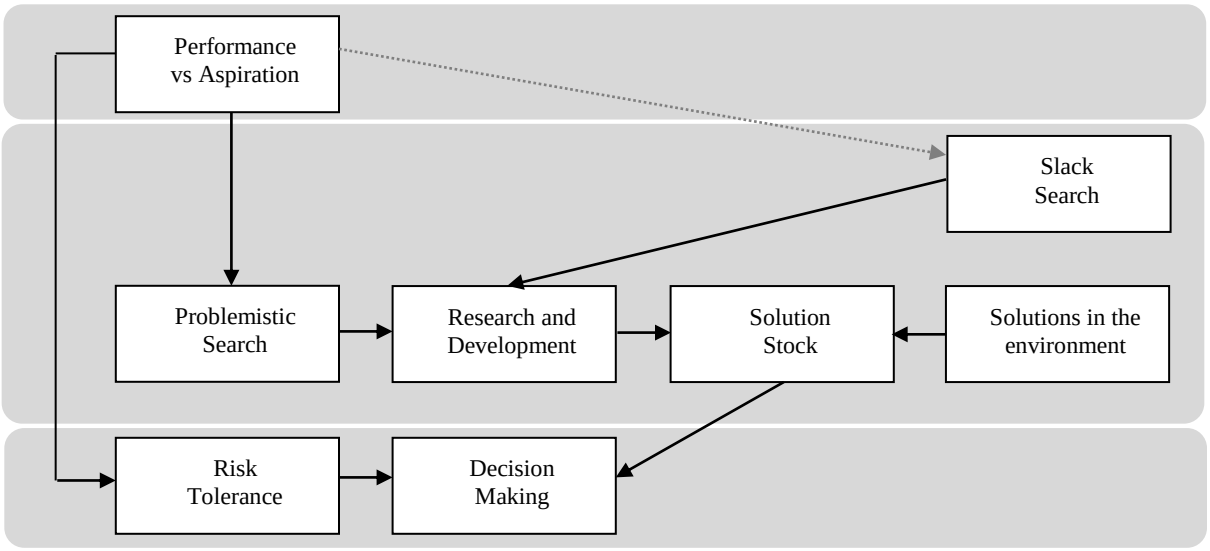

Figure 06 – Performance Evaluation Theoretical Model (Greve (2003), based on Cyert & March (1963:279)).

To counter this idea, Audia and Greve (Greve, 2003; Audia & Greve, 2006) developed what they call the Shifting-Focus Model of Risk Taking – see Figure 07. This concept of shifting focus has a better theoretical fit to radical changes because it considers a base reference of internal resource slack (survival point) as a 'cushion' to soften the blow from any riskier alternatives. In comparison, while Prospect Theory comprises only a potential gain/loss level that

may entail conservative/risky behaviors, Audia and Greve believe the survival point is the main cognitive reference for decision making. In simple terms, if the 'distance' between the possible negative result (a conservative approach) and the survival point (lower reference) is shorter than between result and the aspiration level (higher reference), risk will be salient and general conservativeness will ensue.

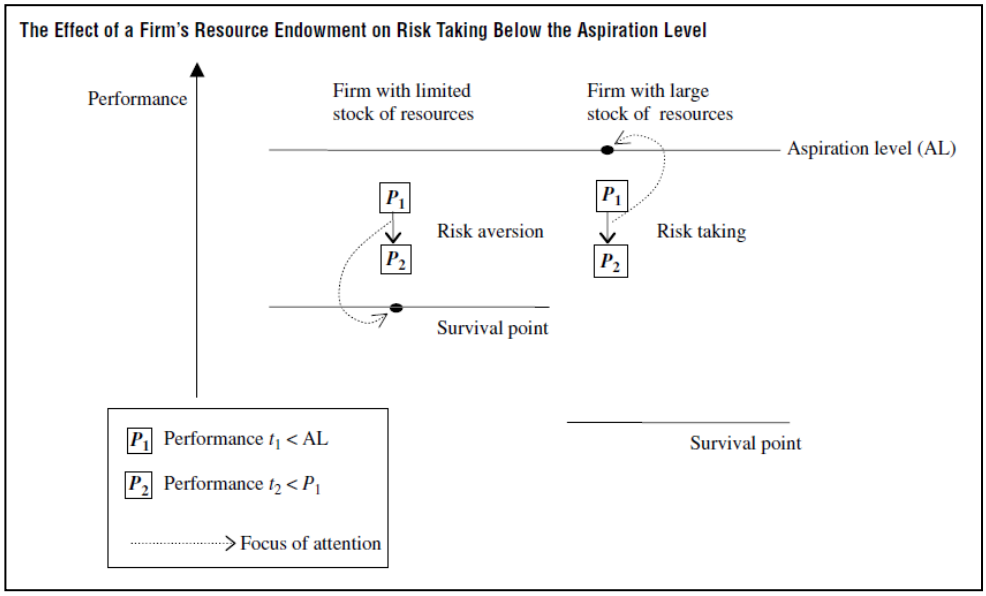

Figure 07 – Risk taking guidelines (Audia & Greve, 2006:86)

Risk salience is also important in developing an organizational view of the problem – i.e., how an organization interprets the threat and attempts to define its scope and consequences. This is the rationale behind a concept called Strategic Problem Formulation (SPF) (Baer, Dinks & Nickerson, 2012). The problem is that when TR is present, the impaired flow of information and excess of control makes the organizational functions to become problematic, and faulty formulations for the problem will occur. This means that the organization may not be able to fully apprehend the consequences, scope and the very essence of the problem, spending time and energy to counter a poorly understood problem.

It is possible to include these modern ideas in the framework proposed by Cyert and March – see Figure 08. When crises arise, the usual working schemata used to assess problems becomes impaired and the problem may be poorly misrepresented. Second, crises may make the situation seem worse than it really is, and may cause imbalance in the risk assessment and

tolerance. Third, according to the original TR concept, the crisis will induce changes that will diminish information flowing and increase control, which, in turn, restricts R&D development, the search for alternatives in the external environment and, mainly, how solutions are selected. The later additions to the theory demonstrate further restriction *inside* problemistic search, R&D development, search for external solutions. Finally, combining the concepts in the TR literature and SPF, as well as risk salience, we conclude that when crises take hold of an organization, it is restricted to finding a solution in the solution stock and forward it to the decision-making process, to find a satisficing status as soon as possible.

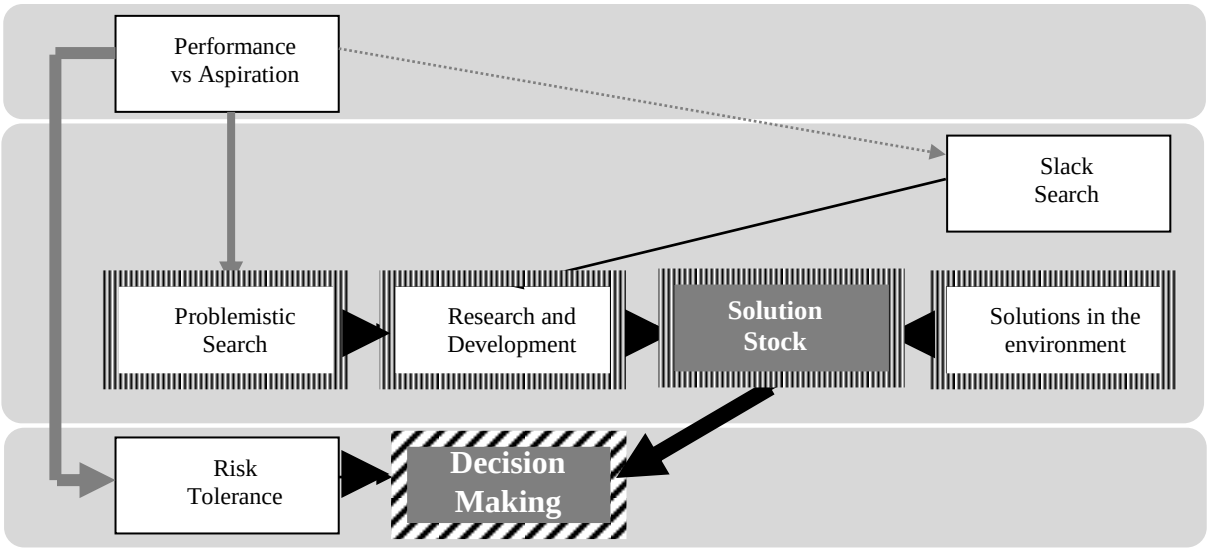

Figure 08 – TR and SPF concepts and Cyert and March's organizational concepts (developed by author, based on Greve (2003:686))

This is better explained by seeing March & Cyert's (1963:62) Behavioral Theory of the Firm model, with the theories superimposed. The original effects of Threat Rigidity (Staw, Dutton & sandelands, 1981) are the black arrows (restriction in information processing / constriction in control) and the thick squares are the areas affected by constriction in control. In light gray are the areas affected by the Threat Rigidity concepts added by Muurlink et al. (2012). In dark gray, the area that affects Strategic Problem Formulation (Lyles & Thomas, 1988; Baer,

Dinks & Nickerson, 2012), especially concerning narrowed focus in formulation. The gray arrows indicade Greve's (2003) innovation sources and in yellow the Salience in crisis (Mitchel, Agle & Wood, 1997; Chattopadhyay, Glick & Huber, 2001). Finally, in dark gray are the only two areas that are actively maintained in the loop during a threat.

On may conclude that threat rigidity is not an isolated incident. It possibly depends on antecedents poorly defined in the literature, and it may also operate in conjunction with other organizational pathologies. It is an organizational irony – crises induce organizations to do the same, frantically, yet the repetition of well-known, drilled strategies may be exactly what leads them to failure. It is a normal reaction, but understanding its cognitive and behavioral foundations and consequences may offer future insights on how to counter its negative effects.

2 CHAPTER ONE: THREAT RIGIDITY – UPDATE ON THE MODEL, THEORY TESTING AND ITS EFFECTS ON MARKET ORIENTATION

The Threat Rigidity (TR) thesis is a groundbreaking concept in terms of explanation for possible poor decision making processes under stress situations, nested inside the organizational decline theories (Staw, Sandelands & Dutton, 1981). It is also part of a newer, broader trend of studying negative reactions, especially including crises and their consequences (Whetten, 1980; Sitkin, 1992; Staw, Sandelands, & Dutton, 1981; Barnett & Pratt, 2000; Gladwell, 2002; Weick, 2003; Shimizu, 2007; Wooten & James, 2008; Brockner & James, 2008; Kovoor-Misra, 2009). Its importance in the extant strategy literature becomes clear since it has amassed a very high citation count in the strategy literature (Ribeiro Serra, Portugal Ferreira & Almeida, 2013). Nevertheless, one possible explanation for this escalation in citations may be due to the vagueness in its definition and boundaries, and, thus, its use as an 'one-size-fits-all' theoretical foundation for organizational failure. TR is also plagued with the lack of literature dealing with more complex models, antecedents, triggers and overall consequences. This theoretical and practical standstill calls for more research on the topic.

More specifically, three main courses of action are necessary. First, an update of the original model proposed by Staw, Sandelands and Dutton (1981) is in order, especially in light of the recent reviews and additions (Barnett & Pratt, 2000; Plotnick, Turoff & Van den Eede, 2009; Muurlink, Wilkinson, Peetz & Townsend, 2012). A second item in the agenda is testing whether the relationships among these internal components hold true. A third and last is testing whether the Threat Rigidity thesis effectively affects organizational Market Orientation (MO) – since empirically testing its effects has usually been met with technical difficulties, measurement paradoxes, and, as a consequence, a generalized predisposition to show a weak link between the vague initial definition and general theory testing (Plotnick & Turoff, 2010).

In this chapter, I endeavor to undertake these three aforementioned tasks. Concerning the first, I have attempted to add the newer concepts of Threat Rigidity and reorganize its internal concepts in an updated model of TR, employing the Threat Rigidity scale developed by Daly as a starting point (Daly, 2009; Daly et al., 2011). As for the second, I attempted to test the interrelationships between theoretical constructs by employing a structural equation model (SEM). The same was done for the third aspect, by testing the effect of the internal constructs in

the Threat Rigidity updated model on organizational Market Orientation. The second and third objectives were done in the same SEM.

To do so, data were collected from 210 foreign trade professionals in Brazil. The reason for choosing foreign trade professionals is that Brazil is currently facing an acute financial crisis, whose severity can be particularly felt in the decline of foreign trade deals (Chamon & Garcia, 2016; Robertson, 2016). This scenario potentially heightens threats and crisis-related pressures (Nassif, Feijó & Araújo, 2015), and overall organizational problem-solving salience (Mitchell, Agle & Wood, 1997; Agle, Mitchell & Sonnenfeld, 1999; Alpaslan, Green & Mitroff, I. I. (2009; Bundy, Shropshire & Buchholtz, 2013).

The SEM developed demonstrates there are strong relationships between the internal constructs of TR. It also serves to establish the comprehensive negative effects of TR in organizational Market Orientation, chiefly in the generation and dissemination of information inside organizational boundaries. It also demonstrates that when TR is in place, organizations will have impaired response action processes. Therefore, the model provides concrete evidence of TR as ascribed in the extant theory, contributing to dismiss claims of lack of validity in TR (Plotnick & Turoff, 2010).

2.1 THE THREAT RIGIDITY THESIS

The idea behind Threat Rigidity is that organizations may be understood from an anthropomorphic lens (Staw, Sandelands & Dutton, 1981). This provides insights about how and why decisions are made, as organizations mimic human behavioral and psychological standpoints (Antonacopoulou, 2006; Schoeneborn, Blaschke & Kaufmann, 2012). Since the underlying explanations for reactions are not entirely rational (and rather *rationalizing*), this means strategy, as seen from the top managers, is essentially a system of cognitive interactions and reactions (Amason, 1996; Das & Teng, 1999).

As part of the anthropomorphic parallel, organizations react negatively to perceived organizational danger and its subsequent fear (Ashkanasy & Nicholson, 2003), across levels (Ashkanasy, 2003). Fear is an organization-wide pervasive trigger to lower quality (Deming, 1982; Reger et al., 1994) and lessening organizational learning (Argyris, 1993; Slater & Narver,

1995). Fear has different reactions in a multilevel perspective. Top management may relate fear to risk (Singh, 1986), and display higher levels of reaction under a personal point of view, but generally maintain a high construal level (psychological distance) from the dangerous situations when dealing with company-related risks (March & Shapira, 1987), which may lessen the effect of danger-interpreting filters. Middle management, on the other hand, may be more subject to actual reactions of fear (Dutton et al., 1997) or mitigated fear of organizational negative consequences (Raes et al., 2011), as well as overall organizational overall reaction to and perception of the setting in of crises (Westley, 1990; Mangaliso, 1995; Floyd & Wooldridge, 1997; Shi et al., 2009; Johansen et al., 2012).

Either way, at an individual level, like animals in the wild, humans tend to "freeze" under danger or react in a restricted manner, especially when severe consequences are associated (Mobbs et al., 2007). However, there is a clear difference between 'fear', that stands for a feeling or sensation, and 'threat-induced defensive reactions', which have compelling physiological and behavioral consequences (LeDoux, 2013; Hagenaars, Oitzl & Roelofs, 2014). There is significant evidence that literal bodily reactions are elicited from images of wild animals (Sagliano et al., 2014), socially negative imagery (Roelofs, Hagenaars & Stins, 2010), or negative words (Estes & Verges, 2008). It also brings out sensible levels of anxiety and heightened levels of vigilance (Eilam, Izhar & Mort, 2011). TR works under the same assumptions, but at the individual, group and organization level (Staw, Sandelands & Dutton, 1981). As an organization, the interpretation of danger goes through a social construction filter (Simpson, 1996), and as such is subjected to several social and cognitive distortions (DeGloma & Friedman, 2005), particularly from the top management perspective (Thomas & McDaniel, 1990).

However, TR concentrates on the cognitive and behavioral levels, instead of the physical reactions found in the wild. Strategic decision making is mainly affected by cognitive aspects such as diversity (Olson & Parayitam & Bao, 2007) and style (Hough & Ogilvie, 2005). Yet, cognitive *biases* have long been understood as an important foundation of strategic decision (Das & Teng, 1999; Roberto, 2002). Technically speaking, TR is built on the concept of premature closure (Keinan, Friedland & Ben-Porath, 1987; Kruglanski & Webster, 1996) or cognitive closure (Webster & Kruglanski, 1997). These two effects affect primarily intra-group dynamics and are related with information processing (Chao, Zhang & Chiu, 2009). It has also been pointed that cognitive closure is one of the most critical shortcomings in changing an entire

organization's direction (Mezias, Grinyer & Guth, 2001). Other cognitive biases may also be present and interact with the main closure effects.

The main constructs in the Threat Rigidity thesis (Figure 09) can be interpreted through the many associated cognitive biases. As for Restriction in Information, along with premature and cognitive closure, there is also a possible presence of several biases that essentially restrict the way information is processes, such as Base Rate Fallacy (ignore general information for specific details) (Baron 1994, pp. 224–228), Semmelweiss reflex (tendency to filter out evidence that contradicts a belief) (Edwards, 1968), Focusing effect (focusing on specific aspects of an event) (Kahneman et al., 2006), Confirmation bias (look for data and evidence that reinforces one's belief) (Oswald & Grosjean, 2004) and Information bias (seeking for information that may not affect an action related to it) (Baron, 1994).

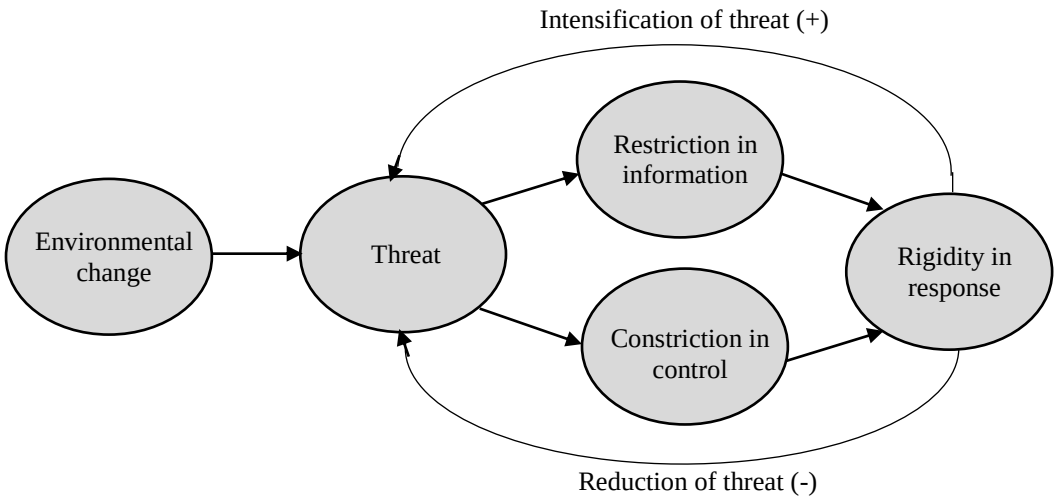

Figure 09 – Threat-Rigidity model (Staw, Sandelands & Dutton, 1981:503).

Constriction in control also displays possible associated cognitive biases, mostly related to the top management mindset, such as Illusion of Control (tendency to overestimate real control of situation) (Thompson, 1999), Effort Justification (belief that the effort will necessarily pay off) (Festinger, 1957), Defensive Attribution Hypothesis (Walster, 1966), Overconfidence Effect (subjective confidence in a result is much greater than objective accuracy of judgments) (Pallier et al., 2002), False Consensus Effect (tendency of believing one's opinion are normal and typical) (Pronin, Puccio & Ross, 2002) ,"Lake Wobegon" Effect (tendency to believe one is better suited

for decisions or has more achievements than others) (Kruger, 1999; Zuckerman & Jost, 2001) and Forced compliance (people will act against their own judgment if they feel obliged) (Smith, 1961; Zimbardo et al., 1965).

These two main concepts (Restriction in Information and Constriction in Control) are the starting point to the development of the first TR-oriented scale (Daly, 2009; Daly et al., 2011). However, according to other sources (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010; Muurlink et al., 2012), three other constructs should be included in an alternative model – Reduction in Discriminative Abilities, Reduction in Peripheral Stimulation and Return to Overlearned Behavior.

Other effects such as anchoring (tendency to rely too much on a subset of information) (Iverson, Brooks & Holdnak, 2008), availability heuristics (tendency to put too much significance on concepts with greater recurrence in memory) (Schwartz et al., 1991), availability cascade (the more one speaks about something, the more it is understood as true) (Kuran & Sunstein, 1998), attentional bias (tendency to give more importance to repeated thoughts) (Bar-Haim et al., 2007), choice-supportive bias (judging past choices better than what they really were) (Mather, Shafir & Johnson, 2000), Sunk-cost Fallacy (the more one invests in something the harder it is to leave it behind) (Kahneman & Tversky, 1979; Arkes & Ayton, 1999; Ariely, 2009), Escalation of Commitment (one keeps investing in something even when there are negative results) (Staw, 1976, 1997), Pseudocertainty Effect (people see some result as certain while actually the result is uncertain) (Tversky & Kahneman, 1981, 1986) and Bandwagon Effect (tendency to follow the group in the decision making) (Colman, 2003) are secondary reasons to why boards tend to become conservative and reuse old strategies during crises.

2.2 THREAT RIGIDITY AND ADDITIONAL CONSTRUCTS

The original Threat Rigidity concept revolves around two main constructs – Restriction in Information (RII) and Constriction in Control (CIC). The first model to explain the interaction among constructs in Staw, Sandelands and Dutton (1981) has both constructs affected by threat as an antecedent – refer to Figure 01. However, leaving the threat itself aside, precedence between the two constructs is geared towards Restriction in Information. Modern organizations

rely on open communication to survive (Eisenberg & Witten, 1987), to the extent of its dismissal affect their learning (Huber, 1991; Liang et al, 2010), especially in critical times (Schweiger Denisi, 1991). Communication is also seen as essential as commitment and engagement from employees is more needed (Shadur, Kienzle & Rodwell, 1999). Likewise, not all threats are interpreted as crisis, but assessing a situation as crisis changes the way an organization processes the flow of information and control (Dutton, 1986; Reilly, 1993).

Constriction in control is, therefore, a close consequence – i.e., while in normal times control (both of decision-making and informational processes) may be flexible, due to unforeseen circumstances, this free flow of information is less desirable or it is not at all. Control of information and boundaries is needed because the free flow of information in face of significant threats and full-blown crises may be understood as a potential leaking of vital, critical information both internally and externally (Sturges, 1994; Bordia et al., 2004; Hale, Dulek & Hale, 2005). There is evidence that internal sharing of information concerning negative outcomes to employees may mitigate critical scenarios (Sitkin & bies, 1993; Schaubroek, May & Brown, 1994), but it is not always the case. Even when there is excellent planning for crisis and transparent internal disclosure happens, it may still be understood a sign of upending disaster (Kitchen & Daly, 2002; Mazzei & Ravazzani, 2011), with dire consequences to the internal maintenance of crucial processes. This means that crisis communication, internally at least, is not to be taken lightly, and even according the best master plan available it is still prone to backfiring (Coombs, 2010).

Externally speaking, the way a crisis is perceived depends on several aspects, especially the severity of the crisis, the organization's performance history (how it has dealt with past crises), the framing of the responsibility for the crisis (both from the organization's disclosure plans, but also public perception), the crisis response strategies and finally the organization's overall reputation (Reilly ,1993Coombs & Holladay, 1996, 2001; Coombs & Schmidt, 2000; Coombs & Holladay, 2002; Coombs, 2010), as presented in two classical crisis management models, in Figure 10 and 11.

Reilly's model focuses on the internal aspects of crisis handling. While it also offers insights about external perspectives, linked to the interpretation of the environment as crisis (crisis dimensions and problem sensing), it does have a "microfoundational" flavor (Felin &

Foss, 2005). Thus, it endeavors to explain the crisis and its possible outcomes as the result of internal operations and at a lower operational level.

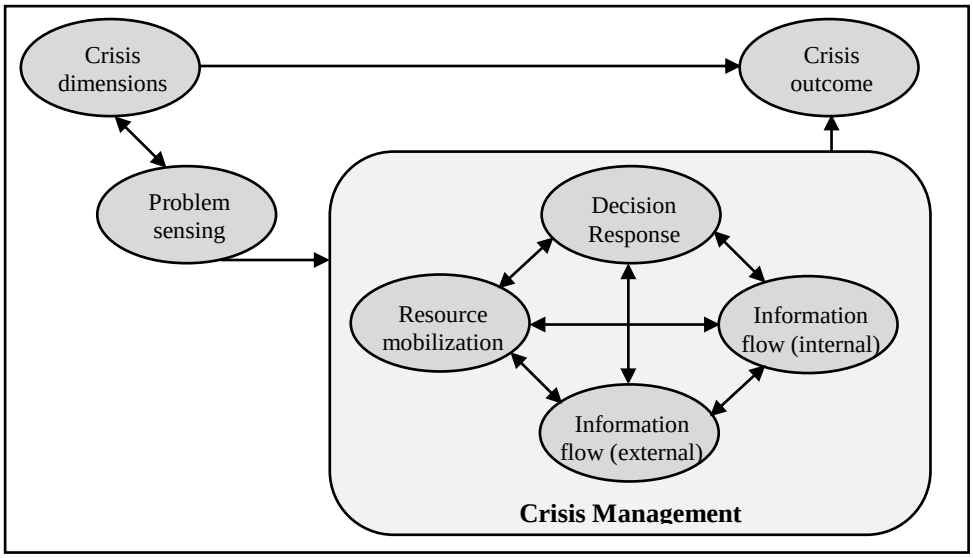

Figure 10 – The Process of Crisis Reilly (1993:118).

In Reilly's (1993) model, the information flow is clearly marked a substantial aspect to be taken in consideration when dealing with crises. In the second (Coombs & Holladay, 2002), it is understood as part of both performance history, crisis responsibility and response.

Figure 11 – Revised model of situational crisis communication theory (Coombs & Holladay, 2002:168).

As such, both models are not contenders, but rather complementary. Reilly's model contributes to the TR scenario by clearly demonstrating that crisis handling outcomes are directly linked to internal resources, mobilization of these as well as struggling to maintain the flow of information and loosened grip in control. Coombs and Holladay's model focuses on the perception of the crisis from an external perspective, and as such move into what James, Wooten and Dushek (2011) define as crisis (as being a public event that affects all stakeholders).

Whereas Restriction in Information and Constriction in Control are very useful constructs to understand organizational behavior under threats, the idea of 'rigidity' is not as clearly defined. Thus, decomposing it in new constructs may help the theory stand on its own (Muurlink et al., 2012). First, an organization will deal with Return to Overlearned Behavior (ROB) whenever it searches for a way out inside what Cyert and March (1963) call internal solution stock (an organization's "long-tested response cookbook"). Most organizations eventually feel the *pull* to reinvest in successful ideas, and this pull becomes stronger when crises are on sight, because they help an organization feel 'safer' in a more familiar setting (which is linked to a bias called availability heuristics).

Second, an organization enters a stage of Reduction in Discriminative Abilities (RDA) when it is taken by surprise and cannot cope with the amount of information, its ambiguous boundaries and contradicting ways. As such, an organization will usually fail in defining strategic problems, their scope and consequences (Baer, Dirks & Nickerson, 2013). Third and last, an organization will suffer from Reduction in Peripheral Stimuli (RPS) when it inadvertently (or even deliberately) attempts at closing its boundaries and looks for answers as well responsibility (or guilt) inside its own ranks and knowledge.

These three added constructs group several other sub-processes associated with cognitive malfunctioning and maladaptation. Plotnick and Turoff (2010) developed a list of such sub-processes, which I have classified per the three constructs. These are additionally split in contextual and organizational categories, which might also help understanding smaller details on the internal workings and cognitive mechanisms of Threat Rigidity.

Reorganized constructs	Contextual features	Organizational effects
RII	- Cognitive overload - Cognitive burden - Perception of reality - Expectation of better information if actions / decisions are delayed	- Restriction of information flow - Level and homogeneity of threats - Lack of authority or freedom of information - Inhibited information exchange among team members
CIC	- Lack of trust downward - Lack of sense of control - Lack of trust / confidence in other taking over a person's role - Interruptions in task - Stress producing anxiety - Anxiety	- Lack of oversight - Not deferring to expertise - Perception of limited temporary nature of threat - Time pressure - Production blocking
RDA	- Cognitive narrowing - Cognitive simplification - Lack of curiosity/creativity - Distraction - lack of focused immersion - Temporal dissociation or lack thereof - Feeling that better information exists but is not being delivered - Stress producing attention / concentration	- Competition for resources/limited resources - Resource limitation - Ignoring contradiction - Ignoring weak signals - Process losses due to mismatch of task assignment, heterogeneity of group, and so on
RPS	- Perception of external stressors - Lack of curiosity / creativity - Feeling that better information exists but is not being delivered - Stress producing attention / concentration	- Not updating expectations - Inhibited information exchange external to team - Conflict of goals of team members reflecting different organizations
ROB	- Habituated responses - Peer pressure - Trust in group together with uncertainty as to self-ability - Expectations of success or anticipation of low consequence - Expectation of positive / negative impact on self-image	- Groupthink - Lack of group cohesion - Familiarity of the threat - History of success or failure - Hidden disagreements underlying a fake consensus - Pressure to generate premature consensus

Table 01 – Psychological contextual features and effects of TR on organizations (adapted by author from Plotnick and Turoff, 2010).

Next, I focus on the role of the main constructs (RII and CIC) and their effects on the remaining constructs.

2.3 THE ROLE OF RESTRICTION IN INFORMATION – HYPOTHESES

Stressful situations mean too many aspects to be handled at once by an organization already dealing with a possibly life-threatening scenario. This complexity means a fair disclosure

of a crisis or severe threat is not guaranteed to be well executed or well-taken (Fitzpatrick, 1995; Desai, 2014). That is the rationale behind several different strategies in dealing with communicating crisis to stakeholders, including denial of any eventual liabilities (Tyler, 1997; Seeger, Sellnow & Ulmer, 1998). Such strategies depend of the historic of a company's external communication, overall performance, and level of transparency prior to crises (Das & Quintyn, 2002; Loewenstein, Cain & Sah, 2011). Thus, the communication processes loosely mark the boundaries of an organization (Brown, 1966; Hinds & Kiesler, 1995; Picot, Ripperger & Wolff, 1996; Van der Aalst, 2000; Zamutto et al., 2007), but information escapes the confines of controllable procedures (Bouty, 2000; Santos & Eisenhardt, 2005). This is why control of the information is an *a posteriori* attempt to close the gates of an organization.

In addition, it is plausible to believe that this coupling scenario between Restriction in Information and Constriction in Control emerges at the top management (McGabe, 1987; Barnett & Pratt, 2000). Not only that, but it also seems that these two behaviors tend to keep concentrated in the strategic, decision-making strata (Dutton & Jackson, 1987), so that other organizational levels only sustain the consequences and damage from this (Simons & Peterson, 2000; Serra, Três & Ferreira, 2016). Finally, RII and CIC are such a natural, involuntary reaction that it also seems that the top management is not always aware of these processes taking place (Slancik & Pfeffer, 1978; Staw, Sandelands & Dutton, 1981; DiMaggio & Powell, 1983). This means that if the organization is a reflection of its top managers (Hambrick & Mason, 1984), and an outside perspective may be clearer – one of the reasons why testing this with CEOs and board members may not be a better procedure.

> ***Hypothesis 1:*** Restriction in Information (RII) is positively related to Constriction in Control (CIC).

Restricting the flow of information and who has access to it has its share of consequences for an organization. This idea is cited in the original TR paper (Staw, Sandelands & Dutton, 1981) and it is better explained as a crucial inhibition in the organization's capabilities of sense-making (Weick, 1985; Weick, 1993; Weick, 1995). It also directly diminishes its resilience (Blatt, 2009).

Training for stressful situations makes staff more comfortable with standardized procedures (Driskell & Johnston, 1998; Driskell, Salas & Johnston, 2001). This becomes even more salient as factors pile up (sides in a business deal, different business units, scope and range

of consequences etc.) decision increases in complexity (Sondak, Neale & Mannix, 2013). While this has a positive effect on the rapidity of decision-making and adaptation to the environment (Legnick-Hall, Beck & Legnick-Hall, 2011), when dealing with anxiety-driven situations people just respond according to what was ascribed in the master plan (Westphal & Bednar, 2005). In addition, decision-makers tend to leave aside the process of assessing whether this new threatening situation fits in the solution stock (Cyert & March, 1963; Schwenk, 1984; Nutt, 1998; Westphal & Fredrickson, 2001). It has also been posited that highly routinized environment and procedural organizations display an even higher tendency of board members to entrench themselves in standard behaviors (Smart & Vertinsky, 1984; Dutton & Jackson, 1987; Thomas, Clark & Gioia, 1993; Aragon-Correa & Sharma, 2003). This preemptive effect can also be felt in other business units that may be later affected (Natividad & Sorenson, 2015).

From the point of view of an organization, two aspects deserve consideration. One is the set of schemata organizations employ instead of a full-fledged rational model of the environmental interactions and the organization itself (Nelson & Winter, 1982; Levitt & March, 1988; Thomas & McDaniel, 1990; Ocasio, 1995; 1997). What Ocasio defines as mental schemes is a formalization to what DiMaggio and Powell define as "deeply embedded predispositions, scripts, schema, or classifications" (1983:149), or what Hambrick and Mason call a "set of givens to an administrative situation" (1984:195). Under the psychological perspective, this means "heuristics" (Eisenhart & Zbaracki, 1992; Busenitz & Barney, 1997; Lau & Redlawsk, 2001; Dane & Pratt, 2007) – i.e., tried and tested "rules of thumb", although this term is not as common in the strategy literature. Consequently, according to this school of thought, organizations tend to stick to pre-arranged strategies (Mellahi, Jackson & Sparks, 2002; Viellechner & Wolf, 2010), or to overhaul old strategies (Crossan & Berdrow, 2003; Nedelea & Paun, 2009). The second is how organizations deal with risk under stress. That is, decision makers usually choose strategies based on a trade-off that maximizes returns for risk (March & Shapira, 1987; 1992), as well as search for risk-lessening strategies (Sommer, Howell & Hadley, 2015).

Likewise, board members either lack independence in the decision-making process (Mizruchi, 1983; Rindova, 1999), are too similar in background and experiences (Westphal, Zajac, 1995) or do not display industry-specific background and experience (Johnson, Daily & Ellstrand, 1996; Rindova, 1999). There is also evidence for decision-making specifics or situations to take precedence over management general procedures (Papadakis, Lioukas &

Chambers, 1998), so the crisis framing may take over the overall rationalized decision making. Even worse, the level of involvement board members exhibit when short-term decisions with long-term financial consequences take place or threats to control in the industry arise are present is highly correlated (Judge & Zeithaml, 1992) – i.e., "firefighting".

Instead, involvement in strategic issues is low (Daily & Dalton, 1994; Hung, 1998), although small firms suffer from this slightly less (Dowell, Schackell & Stuart, 2011). Especially when an organization has limited stock of resources, they tend to go for safer strategies (Audia & Greve, 2006; Greve, 2011). As for information processing, board members usually display a large amount of 'cognitive inertia', in which strategic plans are filtered according to past experiences (Hodgkinson & Wright, 2002; Mellahi & Wilkinson, 2004) and responses to previous crises averted (Herrero & Pratt, 1996; Coombs, 2014).

This points to a scenario where not fully independent, specific business-trained boards make hasty decisions with risky consequences in critical processes – and, understandably, retain, restrict and oversimplify information. All of these common factors together, in face of a crisis, lead board members to be more prone to make 'safer' decisions, and dip in the organization's solution stock (Cyert & March, 1963).

> ***Hypothesis 2:*** Restriction in Information (RII) is positively related to Return to Overlearned Behavior (ROB).

Organizations are constantly fighting battles against problems. Such problems need different appraisal and responses per their severity, scope and range (Seeger, Sellnow & Ulmer, 1998; Lee, 2004). Heightened threats such as crises need to be understood from the internal perspective, where either entrepreneurial or adaptive strategies with long and short-range focuses may arise (Smart & Vertinsky, 1984). They also need to be framed from the external perspective (Baer, Dirks & Nickerson, 2012), where several far-reaching responses to crises may take place – such as labelling them as non-existent, distancing the organization from the crisis, passing the crises on to other environments, go for remediation or simply bracing for impact (Coombs, 1995; Coombs, 2014). This is why assessing the problem, including its symptoms and underlying causes is paramount to organizational survival (Reilly, 1993).

However, when it comes to judging threats and crises, organizations suffer from two aspects that demonstrate their anthropomorphic origins. The first is the myopia of learning (Levinthal & March, 1993). According to this theory, organizations (and more specifically

boards) are not perfect mechanisms for coping with information processing (Walsh, 1988; Wiersema & Bantel, 1992). They struggle to balance the development of new knowledge from information scouting with the full use of the knowledge already inside the confines of the organization (Bhatt, 2000; Teece, 2000; Schultz, 2001; O'Reilly & Tushman, 2008). Consequently, they end up oversimplifying knowledge and, therefore, becoming increasingly specialized. Levinthal and March define three main types of myopia organizations may experience (temporal, spatial and failure). This means organizations cannot distinguish well scenarios, problems' scope, severity and consequences.

The second one is organizational autism (Muurlink et al., 2012). This idea is built on the concept of premature and cognitive closures. The emergence and solidification of cognitive closure in the top management stratus means a severe, palpable deficiency in changing the whole organization to react to crises (Mezias, Crinyer & Guth, 2001; Muurlink et al., 2012) since they become crystalized information processing procedures (Weick, 1995). It also contributes in causing organizations to delve further into the exploitation strategies, rather than direct them to open-ended horizons of exploration (Schenkel, Matthews & Ford, 2009). This happens as a consequence to a faulty 'enactment-selection-retention' sensemaking mechanism (Weick, 1979; Grandori, 1989; Hatch, 1997; Wright & Manning, 2004).

Shifting boards and CEOs' views of an issue as gain-loss situations makes them overturn their cognitive processes (Thomas & McDaniel, 1990). This means that even when boards are effectively composed of experienced, business-specific professionals, they are not entirely able to distinguish bad from good. Thus, when encountering crises, organizations need to search for and evaluate more information and assess the weaknesses of plans (Reilly, 1993). During threats, organizations also suffer from considerable cognitive narrowing and simplification, as well as less information processing due to stress (Plotnick, Turoff & Van den Eeede, 2009; Plotnick & Turoff, 2010). Other effects also happen during crises, such as ignoring weak signals and ignoring clear contradictions (Plotnick & Turoff, 2010).

However, they also tend to focus solely on main information (Reilly, 1993) and become eventually trapped in desperately superficially scouting for options, choosing on that will relieve them from the most consequential emergencies (Janis & Mann, 1977). This is why the six main issues in strategic problem formulation (heterogeneous information sets, objectives and cognitive

structures, narrow sampling of information, jumping to solutions and representational gaps) (Baer, Dinks & Nickerson, 2012:7) will become even more dangerous in face of a crisis.

Hypothesis 3: Restriction in Information (RII) is positively related to Reduction in Discriminative Abilities (RDA).

Cyert and March (1963) define solutions in the environment as one of the information sources in their decision-making process. It is not only necessary in "peace time" for the potential added exploration capabilities, but especially when preparing for "wartime" and avoid unforeseen consequences (Day, & Schoemaker, 2005). However, most organizations do not handle well external stimulation – i.e., information is usually not gathered at all or too much information is gathered, but still it is misanalysed (Feldman & March, 1981).

Exploitation needs internal R&D or scouting, but crises shift the focus from scouting in the environment to either finding the fault inside (witch-hunting), employing "overexploitation" strategies, or dealing with short-term decisions with long-range consequences. Either way, identifying large-scale changes in the environment is essential for organizational survival (Cyert & March, 1963; Staw, Sandelands & Dutton, 1981; Shimizu & Hitt, 2004). Nevertheless, as organizations develop competences and niches, they become increasingly entrenched in their 'view of world' (Levinthal & March, 1993).

The effect crises imprint on this already bunkered situation is devastating. During normal operations, an organization is usually permeable to external information, which will impact general information acquisition and transmission, and, more importantly, utilization, particularly *prior* to crises (Moorman, 1995). The same is amplified when such an organization scouts for information from related businesses, but under stress the opposite happens and potential mistrust from external sources may arise (Lenox & King, 2004), in a crude instance of not-invented-here syndrome (Katz & Allen, 1982; Tushman & Nadler, 1986; Gupta & Singhal, 1993; Cummings & Teng, 2003). Other cognitive effects on openness to external stimulation are also clear – there is a decline in the perception of external stressors, lack of curiosity and creativity, and considerable less attention and concentration (Plotnick, Turoff & Van den Eeede, 2009; Plotnick & Turoff, 2010).

Hypothesis 4: Restriction in Information (RII) is positively related to Reduction in Peripheral Stimuli (RPS).

2.4 THE ROLE OF CONSTRICTION IN CONTROL - HYPOTHESES

Excess of control in stressful situations generally lead to the generation of anxiety (Plotnick & Turoff, 2010). Pressure from stiffened procedures may also cause significant blockage of decision (Weick, 1990). Higher levels of stress lead organizations to discard traditional formal procedures of control and rather enforce "specific, high intensity forms of control over the 'errant' individual or group" (Euske, Lebas & McNair, 1993:275). This herd mentality status associated with a history of decision making processes may lead to both premature consensus and hidden disagreements (fake consensus) that may amplify the negative effects on the group decision to stay in course or display a well-learned strategy (Plotnick & Turoff, 2010). This is even more salient in top management, since boards suffer from higher levels of homogeneity and endogeneity, to the point of comprising "indistinguishable professionals" (DiMaggio & Powell, 1983:153). Shimizu (2007) explains organizational longevity as based on incrementalism in the solution stock as well as the accumulation of past experiences and rules.

Salancik & Pfeffer (1978) believe that professionals realize attitudes towards rational thoughts as actual justifications for non-rational decision making, which also leads to commitment to former decisions. They also believe that perception about decisions is a backwards process, constructed on top of recollection procedures. Finally, they believe there is a circular motion – the more there is justification and commitment, the more defined are the boundaries of an organization (including workers and strategy selection), which in turn crystalizes justifications and so on. The potential circular effect of augmented control is restricting even more the justifications and organizational boundaries – or, as DiMaggio and Powell (1983:149) define, "in the long run, organizational actors […] construct among themselves an environment that constraints their ability to change".

Hypothesis 5: Constriction in Control (CIC) is positively related to Return to Overlearned Behavior (ROB).

Pfeffer and Salancik (2003) admonish against closing off the boundaries of an organization, especially in interdependence-focused situations – which is directly affected by increased power and control whose objective is deter uncertainty (Hickson et al., 1971). Consequently, maintain malleable organizational boundaries is essential to long-term

performance (Aldrich & Herker, 1977; Staw, 1980). While top managers may maintain inwards organizational focus, middle managers usually employ vertical communication to "sell issues" to top management, horizontal communication to establish internal coordination (intelligence generation/dissemination), but, most importantly, they act as filters to the external environment, working as active observers of market and technical novelties and alterations (Ancona & Caldwell, 1992).

Ignoring external events is a possible outcome in faulty external scouting, even more so when such events are unlikely or remote (Kunreuther, 1976). This is something related to a cognitive bias called construal level (psychological distance), which makes the relevance of far (in time and space) events seem less important. This affects information processing making information sets smaller and narrower (Loewenstein, Read, & Baumeister, 2003; Cantor & Macdonald, 2009). There is evidence that ignoring external information that is interpreted as unlikely affects the synchronization of organization and environmental cycles (Pérez-Nordtvedt et al., 2014).

The issue of labelling situations as controllable also affects decision making during threats (Thomas & Macdaniel, 1990) and labelling them as threats induces a higher level of control (Staw, Sandelands & Dutton, 1981). Ironically, the more information available, the more relaxed the control procedures become (Eisenhardt & Bourgeois, 1988; Eisenhardt, 1989; Milliken, 1990), yet during crises the shortening in the external information is directly affected by increased control (Thompson, 1967).

Hypothesis 6: Constriction in Control (CIC) is positively related to Reduction in Peripheral Stimuli (RPS).

Strategic decisions serve as a tool to filter who has access to power (decision-making value) as well as access to information. As such, top managers decide who must be present and available during the process (Ashmos, Duchon & Macdaniel, 1998). Middle managers are usually absent from such decisions, but act in the functionality of bridging the gap between external sources of information and effective decision makers (Dutton et al., 1997; Raes et al., 2011). However, when crises come into play, higher levels of control mean an increased lack of trust downward from the top management towards middle management (Plotnick & Turoff, 2010). That is, under normal circumstances top management believes it is possible to control low-level

routines (Duncan, 1974), and control is even more important at middle and lower management levels (Fiol & Lyles, 1985).

With the incidence of a threat, the operationalization of routines does not aim at learning from information, but rather at immediately reducing the effects of the crisis, relegating information interpretation to a secondary importance (Starbuck, Greve & Hedberg, 1978). Control affects how organizations acquire, assess and interpret information (Kloot, 1997) and move any generated knowledge to an organization's solution stock (Cyert & March, 1963). Crises affect how systems will be set as to deal with information assessment generate appropriate crisis responses (Coombs, 2002, 2010). Heightened levels of stress may put extra constraints on the control structures (formal, emotional or cultural) (Feldman & March, 1981; Pearson & Mitroff, 1993) and how these affect an organization's discriminative abilities.

Hypothesis 7: Constriction in Control (CIC) is positively related to Reduction in Discriminative Abilities (RDA).

Top managers have difficulty in dealing with the volume of information available to them, which affects decision making processes (Mintzberg, 1973). This relation between top management and information is mediated by middle management and technical advisors. With the increased stress introduced by a significant threat, this contact is severely diminished, oversimplified and mistrust between top and middle may arise (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010). Consequently, the top management becomes myopic and autistic after the much reduced capacity in interpreting large amounts of information and assess validity, importance, scope and consequences (Levinthal & March, 1993; Muurlink et al., 2012). Thus, the personnel that usually collects external information from the environment may display further lack of creativity and curiosity, as well as process losses related to mismatch between task assignments and organizational value (Plotnick & Turoff, 2010)

Hypothesis 8: The overall Reduction in Discriminative Abilities (RDA) is positively related to Reduction in Peripheral Abilities (RPS).

The interactions between the proposed constructs can be found in Figure 12. Other concepts not included in the hypotheses tested are also present to allow for a comparison with the original model.

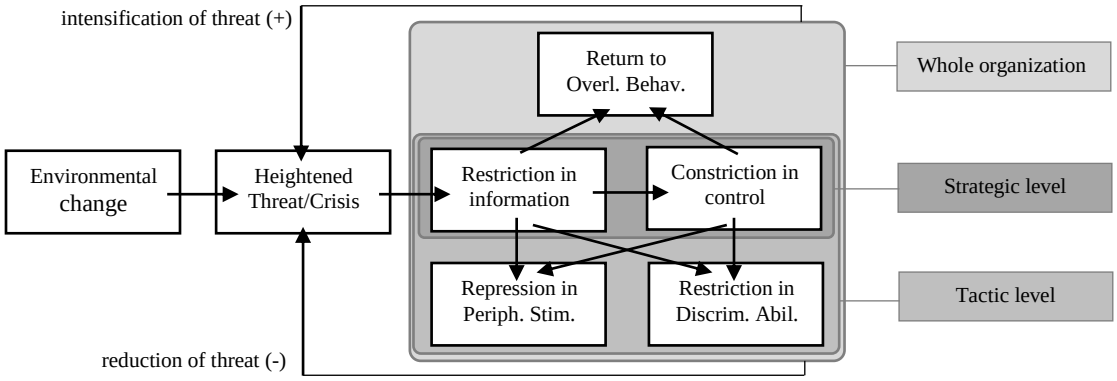

Figure 12 – Threat Rigidity updated model (developed by author, 2016).

2.5 THE ROLE OF MARKET ORIENTATION

Earlier theorists define marketing broadly as an overall state of mind (Felton, 1959) or philosophy (McNamara, 1971), under which organizations integrate all internal functions, as well as external scouting, in a single overarching plan to establish a fit between organization and external environment (Slater & Narver, 1995; Han, Kim & Srivastava, 1998). Inside marketing, the concept of Market Orientation (MO) (Kohli & Jaworski, 1990) is particularly important for strategy theorists because it provides a tangible bridge to understand organizational performance (Hunt & Lambe, 2000; Dobni & Luffman, 2003). Market Orientation can be defined as a mechanism that "facilitates a firm's ability to anticipate, react to, and capitalize on environmental changes, thereby leading to superior performance" (Shoham, Rose & Kropp, 2005: 436).

The role of market orientation concept in strategy is also present from the start (Ruekert, 1992; Lumpkin & Dess, 2001; Calantone, Cavusgil & Zhao, 2002). Initially it was met with discredit, where questioning whether it affected organizational performance was constant (Selnes et al., 1996; Deshpandé et al., 1997; Hult & Ketchen, 2001; Olson, Slater & Hult, 2005), yet later it was counterbalanced by compelling evidence for its existence (Noble, Sinha, & Kumar, 2002; Vorhies & Morgan, 2003; Langerak, Hultink & Robben, 2004; Morgan, Vorhies & Mason, 2009). That is the reason why Market Orientation is a critical construct in understanding organizational performance (Kohli & Jaworski, 1990; Narver & Slater, 1990; Jaworski & Kohli, 1993; Kohli et al., 1993; Deshpandé and Farley, 1998; Shoham, Rose & Kropp, 2005).

Either way, the link between MO and organizational performance has been long established and confirmed by a series of meta-analyses. Shoham, Rose and Krop (2005) have found that both direct and indirect effects of MO have significant impact on performance. They have also found that three main issues occur when applying MO in empirical studies that may affect results – study location (country, for instance); MO (theoretical) operationalization and measurement; and measurement for the MO-performance hypotheses (2005:436). Another meta-analysis found slightly less confident results (Cano, Carrillat & Jaramillo, 2004), since it is suggested milder effects on for-profit and service organizations, if compared to non-profit and industry sectors – a similar finding in Wood, Bhuian & Kiecker (2000). A third meta-analysis (Kirca, Jayachandran & Bearden, 2005) finds evidence that the coupling of MO and performance is stronger in manufacturing and also in uncertainty-avoidance cultures. In addition, marginal negative effects of formalization and centralization were found (Matsuno, Mentzer & Özsomer, 2002; Kirca, Jayachandran & Bearden, 2005; Abebe & Angriawan, 2014).

As for the theoretical relationship between Threat Rigidity and Market Orientation, the evidence is scarce and scattered. Farrell (2003) posits that there is potential effect of Threat Rigidity on Market Orientation. Tran (2008) posits that reasonable threats will cause organizations to a higher level of organizational learning, which decreases market response action – one of the main constructs of MO. He also believes the arrival or existence of threats will lead to incremental or sustaining effects on the learning culture. Bowen, Rostami & Steel (2010) find marginal evidence of TR on MO. Abebe and Angriawan (2014) believe TR may be an explanation for low performance in MO. Neill & York (2012) find mixed results in the relationship between TR and MO, but stress the valence (positional value) as a potential explanation to its ambiguity – the same as Greve (2010). Other minor relations between TR and MO can be found in the strategy and marketing literature (Boeker et al., 1997; Kim & Feick, 1999; Butler & Sullivan, 2005; Maltz, Menon, & Wilcox, 2006; Verdú & Gómez-Grans, 2009; Samra & Hartman, 2009; Li, 2010; Deverell, 2010; Sternad, 2011; Sternad, 2012; Winther Nielsen, 2013; Bouncken et al., 2016).

Naidoo (2010) found that a good measure of MO management before crises helped companies to survive them. Mitchell, Wooliscroft, & Higham (2010) believe that MO needs to be tested outside mere marketing functions and be understood from a broader, strategical perspective. MO is a necessary condition but not entirely responsible for performance generation

and competitive advantage (Dickson, 1996). However, institutionalization of "higher order learning processes" (Baker & Sinkula, 2002:5) takes precedence. The effect of threatening situations on organizations is twofold – when the threat is labelled as a risk, there is a general trend of focusing inward confirming the existing business 'essence', whereas when it is treated as an opportunity it engenders organizational change (Kovoor-Misra, 2009). This gives salience to the idea that when Threat Rigidity takes place, Market Orientation takes the hit. The question whether MO is an antecedent or consequence to performance is also present (Tuominen, Rajala & Möller, 2004).

Measuring Market Orientation is done with the MARKOR scale (Kohli & Jaworski, 1993), or one of its refinements, alterations and critiques (MARKTOR, MORTN, etc.) (Caruana, Pitt & Money, 1996; Farrell & Oczkowski, 1997; Deshpandé & Farley, 1988; Gauzente, 1999; Matsuno, Mentzer & Rentz, 2000; Perin & Sampaio, 2002; Schlosser & McNaughton, 2009). The basic concept, however, is based on the three constructs of Intelligence Generation (IG), Intelligence Dissemination (ID) and Response Action (RA). A few scales have been adapted for export efforts (Cadogan, Diamantopoulos & De Mortanges, 1999; Garrido, 2007) and studies relating MO with foreign trade abound (Rose & Shoham, 2002; Kaynak & Kara, 2004; Lages, Lages & Lages, 2005). However, the hypothesis that Threat Rigidity affects Market Orientation is absent from the extant literature.

The three main components of MO (intelligence generation, intelligence dissemination and response action) may be potentially affected by threat rigidity – since its genesis is the restriction in the information flow. Other potential effects associated with the remaining constructs in the reorganized TR model also occur. Organizational learning, from its generation could be linked to TR (Baker & Sinkula, 1990; Slater & Narver, 1995; Calantone, Cavusgil & Zhao, 2002; Keskin, 2006). Turbulence in the external environment is also linked to impaired MO (Calantone, Garcia & Dröge, 2003). Market Orientation is also affected by the general trade-offs between exploitation and exploration (Kyriakopoulos & Moorman, 2004). Market Orientation may bolster or curtail innovation and subsequent performance (Atuahene-Gima & Ko, 2001); Deshpandé & Farley, 2004). MO and ambidexterity are circularly influenced (Li, Lin & Chu, 2008).

Knowledge is the main source of strategic advantages for organizations (Prahalad & Hamel, 1990; Teece & Pisano, 1994; Spender & Grant, 1996; Song, Bij & Weggeman, 2006).

However, any eventual restrictions in acquisition of information by an organization diminishes its competitive advantage (Makadok & Barney, 2001). Even the location and internal procedures for collaboration (opposite to disputing budget) affect how intelligence is generated (Song, Bij & Weggeman, 2006). In addition, the commitment of members in an organization affects its knowledge generation (Song, Bij & Weggeman, 2006).

Hypothesis 9: Restriction in Information (RII) is negatively related to Intelligence Generation (IG).

Hypothesis 10: Reduction in Peripheral Stimuli (RPS) is negatively related to Intelligence Generation (IG).

Hypothesis 11: Reduction Discriminative Abilities (RDA) is negatively related to Intelligence Generation (IG).

Organizations bolster competitive advantage when opening borders to collaboration (Rohrbeck, Hölze & Gemünden, 2009). Too much formality leads dissemination not to happen as quick as necessary to keep up with the market (Maltz & Kohli, 1996). In addition, dissemination needs spontaneity to happen appropriately (Maltz & Kohli, 1996), which arguably would not happen under heavy stress. It is also affected by interpersonal (positional power and relationship) aspects (Maltz & Kohli, 1996), also affected increasing of control. Finally, dissemination inside an organization is a necessary mediator to organizational learning (Jiménez-Jiménez & Cegarra-Navarro, 2007), and under stress this may not happen. Finally, the availability of information inside an organization mitigates the effects of uncertainty (Becker & Knudsen, 2005).

Hypothesis 12: Restriction in Information (RII) is negatively related to Intelligence Dissemination (ID).

Hypothesis 13: Constriction in Control (CIC) is negatively related to Intelligence Dissemination (ID).

The set of possible responses organizations may undertake in case of crises are directly dependent on the strategic planning, in proactive strategies – such as forming partnerships to reduce risks openness to stakeholders (Seeger, 2006) –, as well as crisis preparation itself. The way an organization actively employs sensemaking through outwards scanning and interpretation also affects its Market Orientation (Thomas, Clark & Gioia, 1993) and it is one of its main precursors (Neill, McKee & Rose, 2007). Problems with restricted sensemaking can also be linked to narrow, high controlled environments (Maitlis, 2005). MO is also affected by leadership

and decision-making, if properly managed through appropriate channels (Menguc, Auh & Shih, 2007). Finally, when an organization's prevalent rationale is crystalized, it is more difficult for an organization to change its course of direction (Bettis & Prahalad,1995; Ashmos, Duchon & McDaniel Jr., 2000).

Hypothesis 14: Reduction in Peripheral Stimuli (RPS) is negatively related to Response Action (RA).

Hypothesis 15: Discriminative Abilities (RDA) is negatively related to Response Action (RA).

Hypothesis 15: Return to Overlearned Behavior (ROB) is negatively related to Response Action (RA).

Overall, the extant literature has polarized views on TR. While there is certainly evidence that it happens in the real world, there are inconsistencies in the confirmation of the thesis (Plotnick & Turoff, 2010). This may be due to the fact that TR is a *positional* theory. What I mean by positional is that it is defined as depending on context to be perceived, opposite to absolute theories that can be assessed no matter the setting. It also needs a reference point for comparisons (before and during/after threats) in secondary data, in case respondents are unavailable to attest the change. Thus, evaluating the effects of TR depends on the measurement system (need for longitudinal data or scale), which is a well-known technical difficulty. Several works have limited results because of these aspects (Ketchen & Palmer, 1999; Griffin et al., 1995; Audia and Greve, 2002; Chattopadhyay et al., 2001).

A second difficulty in assessing TR effects is the fact that the original paper treats it as a *multilevel* theory (Staw, Sandelands & Dutton, 1981). It does not only draw from a wide range of related sciences (mathematics, sociology and mainly psychology), but it also provides a generic understanding that encompasses several levels (individual, team and organization), but that does not fit any specifically. A third problem is that it is built on top of somewhat unstable definitions, which may account for the different interpretations in the applications (and, thus, its confirmation). The authors forewarn readers to this aspect in several instances – possible "slippage from definition", "conclusions more speculative" and concept "ambiguity is inevitable" (Staw, Sandelands & Dutton, 1981:502) – yet more formalized definitions are in order.

Generically, TR is seen a maladaptive response to adversity. The original paper discusses whether this adversity is a general threat or a crisis, and defines threat as "an

environmental event that has impending negative or harmful consequences for the entity" (1981:503). This is only a rough guide to understanding organizational risk and failure prospects. Since top management is mostly affected by TR, managers perhaps are used to higher levels of stress, if compared to the general population. This is the reason why for the purposes of the current research, threats and crises are interchangeably used, following Shimizu's (2007) understanding that only *ruinous* threats may effectively elicit the responses as ascribed in the theory such as cognitive overload, stress and anxiety (Plotnick & Turoff, 2010) – this reference point (utmost failure) is also Greve's (2003) understanding. In addition, there is not overall accepted definition for crises either (Reilly, 1993).

Another definition problem that may cause theoretical issues and further hinder theory confirmation is the *dual* nature of the rigid response – it is understood both as staying in course and reverting to the dominant response (1981:502). Arguably, these could be the same – in a scenario where an organization is doing what it has always done when crisis arises and keeps doing the same as a response. Yet an alternative scenario could be where an organization is following a strategical course and when cornered by the threat it reverts to an overlearned behavior, *different* from the current course of action. I had special care in including an extra item to complement Daly's (2009) TR scale (more on this later).

A final theoretical aspect worth mentioning is the original definition of "overload of communication channels" and "reduction in communication complexity". Although these definitions are generic enough as to be applied to a multitude of settings, the actual communicational processes entailed by TR may be slightly different (see Figure 13).

I believe that the overload of communication channels happens mainly laterally (within top management, and within middle management), with a sensible decrease in top and middle communication (possible due to mistrust) and the use of informal communication channels ("corridor" / "watercooler" talk, also possible "witch-hunting") to compensate for the constrained official channels. I also included items to cover these aspects on the questionnaire.

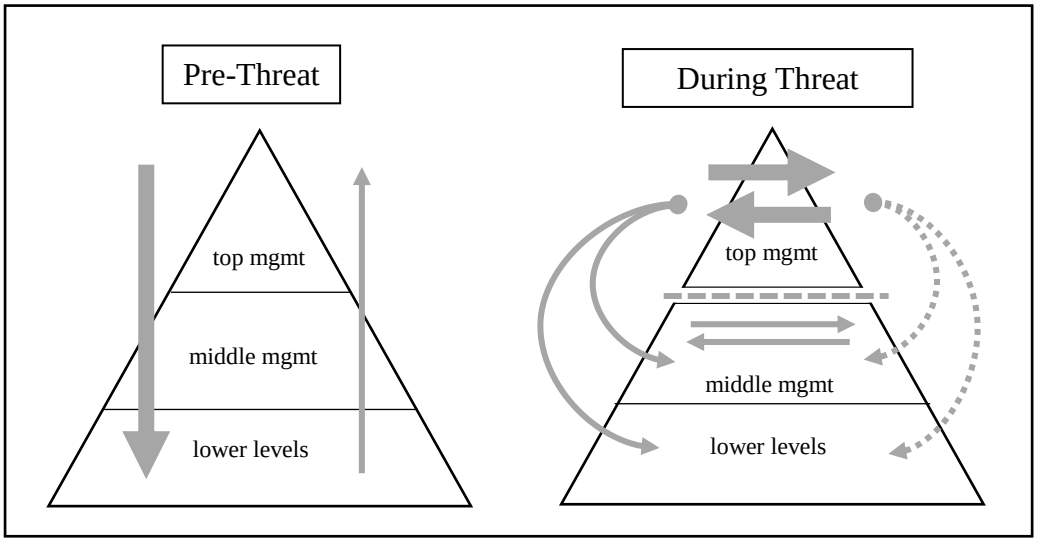

Figure 13 – Communications change due to threats (developed by author).

The paths in the MO model were previously tested in the extant literature, but for the sake of clarity were included in the model – see Figure 14.

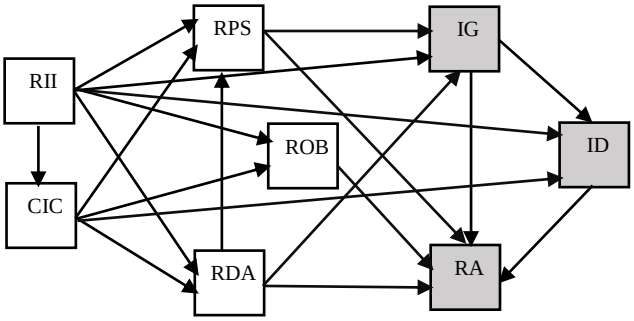

Figure 14 – Proposed Structural Equation Model (in white TR and in grey MO constructs).

2.6 RESEARCH METHODS

Brazilian export logics is highly dependent on commodities (Mueller & Mueller, 2016). Commodities are not country-level controllable variables, depend on large internal resources production coordination, and suffer from high volatility in the foreign trade (Cavalcanti et al., 2015). Brazilian exports have been targeted at industrially-driven economies, mainly China

(Wilkinson & Wes Jr., 2013). China, however, is going through a beginning process of de-industrialization and consequently dropped its levels of commodity consumption (Wang & Wang, 2013). Consequentially, Brazil has suffered a great blow with this (Jenkins, 2015).

The foreign trade market in Brazil is geographically concentrated in Sao Paulo and surrounding area, and approximately 75% of Brazilian foreign trade is transported through the port of Santos (Péra & Caixeta-Filho, 2016), the closest to Sao Paulo, at approximately 75 km (45.6 mi). Foreign trade is a very traditional sector in Sao Paulo. It is also highly standardized and procedural-oriented, much like any other foreign trade sectors worldwide. It also suffers from a high level of concentration in the trade company numbers. This is a perfect combination for this study – predisposition to bureaucratic and standardized procedures, prone to rigidity, high volatility and market sudden changes.

2.6.1 Questionnaire design

Demonstrating real-world effects of Threat Rigidity in business scenarios has been proven difficult. This is either due to the fact TR is a *positional* theory – i.e., several factors interfere with the interpretation of the severity of a threat (Chattopadhyay et al., 2001; Ferrier et al., 2002; Audia and Greve, 2006; Desai, 2008; Greve, 2010) – or to the fact that measuring TR and its theoretical implications is generally seen as impractical and technically limited. This is the reason why Daly developed a psychometric scale to assess TR effects on respondents (Daly, 2009; Daly et al., 2011). However, Daly's scale has been met with restricted use and replication, mainly in education, where certain business-related aspects of TR are largely absent.

To test the posited effects of TR on real-world situations, I have reorganized the items in Daly's original instruments (including items eventually dropped) according to the 5-construct model (see Figure 01) – including eventual dropped items in his original scale, which may not have been accepted due to the context in which the scale was tested. I have also added items to match the new organization, whenever theoretical implications for the construct were missing (see Appendix 01 footnotes). To test the effects of TR on MO, I have chosen Garrido's (2007) export MO scale, an adaptation of Cadogan, Diamantopoulos & De Mortanges (1999). The reason for choosing a less known scale is because it maintains the same psychometric adequacy properties, but with fewer items, as well as being adapted to foreign trade.

For the pretest a small number of foreign trade professionals and professors were asked to review questionnaire. I then modified the order of the constructs and respondent profile questions. I have also provided content validity through the literature review and also from insights from the pre-test respondents. The MO scale is quite short, but special effort was made to limit the number of items in the TR reorganized items. The calibration and adjustment process resulted in a medium-sized questionnaire, with average responding time of 30 minutes (see Annex 01).

2.6.2 Survey administration

Our sample set was taken from the population of foreign trade professionals in Sao Paulo Metropolitan Area – from an original database of approximately 450 professionals actively working in international trading. Special care was taken to choose professionals from different companies to ensure internal variation in the data collection. I also focused the data collection on middle management or lower levels.

The rationale behind this is that whereas top managers are primarily affected by TR concepts, middle managers are those who perceive more quickly and clearly the introduction of TR effects. They are also the ones who are constrained by or suffer from the newly added constructs. While this may be considered methodologically novel, comparing with previous TR papers, I expect it will yield significant results. All respondents were assured of confidentiality of their responses all through the end of the data collection period. At first, verbal and online contact was used to reach potential respondents. After listing all potential respondents, an email was forwarded with a notification of our study with an URL to the questionnaire. Respondents were reminded to fill the questionnaire 1, 2 and 3 weeks after the initial email.

2.6.3 Choice of method for analysis (Partial least squares structural equation modeling)

To analyze the problem in question, very few methods meet the requirements. Standard statistical methods may be useful to understand the overall regressions in the equation

developments – and, therefore, describe the behavior of the variables or confirm existing theory. Yet they may not be as suitable to *develop* theory and verify *causality*, which is more commonly done with structural equation modeling (Hair, Ringle & Sarstedt, 2016).

Among the SEM methods two main families diverge – co-variance based SEM (CB-SEM) and partial least squares SEM (PLS-SEM). There is a general positive perception towards CB-SEM as being the 'appropriate' SEM method to employ, coupled with a slightly negative perception of PLS-SEM as being a 'silver bullet' (Sosik, Kahai & Piovoso, 2009). In this sense, a comparison could be drawn with case studying (Yin, 2013), a method sometimes deemed inappropriate or scientifically devalued because of the several violations to the requisites and protocols commonly found in low quality research (Yin, 1981) – yet a powerful tool indeed when used *properly*. This perception about PLS-SEM may stem from the fact that while the two SEM approaches share a general concept, their uses, objectives and requisites are quite different. It may also be associated with the fact that because of the fewer requirements imposed by PLS-SEM (mainly the non-requirement of multivariate normality of data and a smaller sample size) it is effectively easier to do low quality research using it since it may require a lot less work to obtain valuable, usable data.

PLS-SEM has an enormous potential for prediction and its main use is in developing new theory as is the case here. In addition, several aspects of this research are addressed by using PLS-SEM instead of CB-SEM, such as "developing an extension of an existing structural theory", when the model is "complex (many constructs and many indicators)" and when the "data is to some extent non-normal" (Hair, Ringle & Sarstedt, 2016: 144).

2.6.4 Sample size and collection

Minimum sample size was calculated in the software G*Power (effect size $f^2 = 0.15$; α error probability = 0.05; 1-β error probability = 0.95; number of predictors (arrows) = 5). For a statistical power of 95% (effect), minimum sample size was defined as 138 responses. A more conservative calculation was obtained according to Cohen (1992), Ringle, Silva and Bido (2014) and Hair et al. (2016) for a PLS model with the same parameters (arrows = 5; significance level 1%; minimum $R^2 = 0.10$), and estimated in 205 responses. A total of 210 respondents provided full, usable responses (approximately 46.7%), and, thus, the sample is deemed adequate for

subsequent analyses. Females accounted for 53,4% of all respondents. As expected and planned, there was a low level of strategic level participation (2,8%). Age mean was 27,22 (sd= 6,15), ranging from 17 to 56 years old.

2.7 DATA ANALYSIS

The data obtained are presented as follows – measurement model results, validity checks and hypotheses results. The first part in verifying a PLS structural equation model is assessing its basic measurements, which may be seen in Table 02. Three main indices are used to assess the reliability of the general model (Average Variance Extracted, Composite Reliability and R^2).

All constructs attain the minimum threshold of 0,6 in Cronbach's α, with the exception of Restriction in Information. The problem with taking Cronbach's α alone as a measurement of reliability is that in its calculation it is prone to distortions because of its sensibility to the number of items (Ringle, Silva & Bido, 2014). This means a large questionnaire will always have a higher Cronbach's α than a smaller one, and therefore it is a somewhat unreliable tool in PLS SEM analysis (Hair et al., 2016). A potential explanation for this low level is due to the fact that only five items remained intact by the end of the factor analysis.

Variable Constructs	**Average Variance Extracted**	**Composite reliability**	**R^2**
Threat Rigidity			
Restriction in information	0.52	0.70	-
Constriction in control	0.57	0.76	0.33
Reverting to overlearned behavior	0.60	0.82	0.49
Reduction in discriminate abilities	0.55	0.78	0.25
Reduction in peripheral stimuli	0.56	0.65	0.53
Market Orientation			
Information Generation	0.52	0.90	0.46
Information Dissemination	0.59	0.86	0.32
Response Action	0.50	0.86	0.51

Table 02 - Assessment of the measurement model

In sequence, the Fornell-Larcker Criterion is presented, whose goal is providing discriminant validity for each construct – i.e., demonstrating the constructs are sufficiently different to stand on their own (see Table 03).

	RII	**CIC**	**ROB**	**RDA**	**RPS**	**IG**	**ID**	**RA**
RII	**0.72**							
CIC	0.58	**0.75**						
ROB	0.55	0.67	**0.77**					
RDA	-0.43	-0.42	-0.34	**0.74**				
RPS	0.58	0.55	0.43	-0.60	-			
IG	-0.50	-0.44	-0.41	0.61	-0.57	**0.72**		
ID	-0.26	-0.40	-0.29	0.38	-0.38	0.52	**0.77**	
RA	-0.31	-0.34	-0.32	0.41	-0.36	0.64	0.60	**0.71**

Table 03 - Fornell-Larcker Criterion Analysis for checking Discriminant Validity

The same concept may be reinforced through the factor loadings and cross loadings, which demonstrate that the internal items in each construct belong to them since the effect of the item is significantly larger than the effect on other constructs (Table 04).

	Threat Rigidity					**Market Orientation**		
	RII	**CIC**	**ROB**	**RDA**	**RPS**	**IG**	**ID**	**RA**
RII01	**0.73**	0.34	0.39	-0.24	0.38	-0.24	0.00	-0.08
RII02	**0.84**	0.54	0.49	-0.39	0.49	-0.47	-0.32	-0.31
RII03	**0.69**	0.31	0.36	-0.25	0.27	-0.33	-0.17	-0.12
RII04	**0.74**	0.50	0.46	-0.28	0.46	-0.32	-0.17	-0.22
RII10	**0.61**	-0.37	0.28	0.35	-0.46	0.40	0.22	0.32
CIC05	0.40	**0.77**	0.48	-0.31	0.33	-0.24	-0.25	-0.24
CIC06	0.45	**0.76**	0.55	-0.28	0.28	-0.22	-0.20	-0.17
CIC07	0.56	**0.84**	0.61	-0.38	0.54	-0.42	-0.30	-0.30
CIC08	0.45	**0.81**	0.57	-0.28	0.45	-0.29	-0.25	-0.24
CIC10	-0.28	**-0.54**	0.27	0.37	-0.43	0.45	0.52	-0.32
ROB02	0.49	0.57	**0.82**	-0.27	0.44	-0.34	-0.26	-0.23
ROB03	0.35	0.44	**0.74**	-0.32	0.25	-0.44	-0.35	-0.34
ROB05	0.44	0.54	**0.76**	-0.21	0.30	-0.19	-0.06	-0.19
RDA03	-0.35	-0.46	-0.29	**0.79**	-0.42	0.48	0.32	0.28

RDA07	-0.32	-0.25	-0.23	**0.81**	-0.50	0.50	0.33	0.41
RDA08	-0.29	-0.20	-0.25	**0.59**	-0.41	0.35	0.16	0.20
RPS02	0.37	0.30	0.26	-0.31	**0.51**	-0.30	-0.15	-0.09
RPS03	0.52	0.56	0.51	-0.29	**0.66**	-0.31	-0.22	-0.20
RPS04	-0.32	-0.26	-0.17	0.48	**-0.76**	0.47	0.39	0.38
RPS06	0.47	0.47	0.38	-0.43	**0.74**	-0.40	-0.21	-0.23
RPS07	-0.34	-0.33	-0.20	0.45	**-0.67**	0.41	0.25	0.22
IG01	-0.34	-0.31	-0.18	0.46	-0.44	**0.76**	0.43	0.50
IG02	-0.44	-0.37	-0.25	0.47	-0.51	**0.76**	0.36	0.40
IG03	-0.41	-0.34	-0.35	0.48	-0.48	**0.78**	0.41	0.52
IG04	-0.42	-0.39	-0.43	0.52	-0.53	**0.81**	0.34	0.54
IG05	-0.20	-0.13	-0.18	0.35	-0.21	**0.55**	0.36	0.27
IG06	-0.23	-0.23	-0.24	0.29	-0.24	**0.63**	0.28	0.37
IG07	-0.35	-0.32	-0.35	0.44	-0.34	**0.71**	0.48	0.56
IG08	-0.42	-0.37	-0.36	0.48	-0.44	**0.76**	0.35	0.47
ID03	-0.12	-0.22	-0.17	0.17	-0.29	0.29	**0.54**	0.25
ID05	-0.18	-0.22	-0.15	0.21	-0.24	0.34	**0.70**	0.45
ID06	-0.23	-0.35	-0.31	0.41	-0.35	0.48	**0.74**	0.48
ID07	-0.22	-0.33	-0.29	0.32	-0.31	0.46	**0.89**	0.51
ID08	-0.21	-0.34	-0.12	0.24	-0.26	0.33	**0.79**	0.48
RA01	-0.21	-0.24	-0.28	0.30	-0.22	0.54	0.51	**0.80**
RA02	-0.19	-0.25	-0.19	0.28	-0.17	0.39	0.57	**0.74**
RA03	-0.27	-0.18	-0.12	0.35	-0.36	0.58	0.39	**0.78**
RA05	-0.16	-0.20	-0.29	0.26	-0.29	0.37	0.12	**0.57**
RA07	-0.27	-0.40	-0.15	0.27	-0.20	0.39	0.45	**0.72**
RA08	-0.20	-0.24	-0.39	0.31	-0.35	0.44	0.40	**0.61**

Table 04 - Factor loadings (bolded) and cross loadings

Since the constructs are stable and defined, the measurement model is adequate for subsequent analysis. In sequence, the measurement model, which is the part that relates all the constructs among themselves, is tested. The PLS-SEM tests he hypotheses through a series of T-tests using bootstrapped standard errors (verifying whether the hypotheses are > 1.96) (see Table 05).

Threat Rigidity Internal Model Hypotheses/Paths	**T-test**	**Result**
H01 RII → CIC	8.316	Accepted
H02 RII → ROB	2.673	Accepted
H03 RII → RDA	2.730	Accepted
H04 RII → RPS	3.090	Accepted
H05 CIC → ROB	6.848	Accepted
H06 CIC → RPS	1.982	Accepted
H07 CIC → RDA	2.475	Accepted
H08 RDA → RPS	3.402	Accepted
Threat Rigidity and Market Orientation/Paths	**T-test**	**Result**
H09 RII → IG	2.197	Accepted
H10 RPS → IG	1.875	*Rejected*
H11 RDA → IG	3.714	Accepted
H12 RII → ID	1.365	*Rejected*
H13 CIC → ID	2.331	Accepted
H14 RPS → RA	1.044	*Rejected*
H15 RDA → RA	0.495	*Rejected*
H16 ROB → RA	0.712	*Rejected*

Table 05 – Model paths and hypotheses results

The hypotheses are concentrated in three groups. First, the first group whose goal was provide evidence as to the standing of the new model (hypotheses 1-8), all of which were confirmed. A second block of hypotheses was established to provide evidence of the internal influences of Market Orientation, following the literature. As expected of an already tried-and-tested concept, all the hypotheses were also confirmed. The third block of hypotheses was intended to test the real-world effects of Threat Rigidity on Market orientation. Not all hypotheses in this block were confirmed, with mostly the hypotheses dealing with the influence of TR on eventual response actions not being confirmed. The main effects found were in the relationship with the intelligence generation and dissemination within an organization.

Although the paths are confirmed through the hypotheses' testing, the weight of such relationships deserve some further consideration. These two tests are the Stone-Geisser indicator (Q^2), which reveals the predictive validity of the model (i.e., it evaluates how accurate the model is or how close the model is to reality), and Cohen's Indicator (f^2) which evaluates the weight of each construct in the model (i.e., how useful it is to explain the model). The results are found in the Table 06.

Construct	Q^2	f^2
RII	0.29	0.28
CIC	0.18	0.36
RDA	0.10	0.13
RPS	0.23	0.19
ROB	0.27	0.21

Table 06 – Model Predictability

Ideal Q^2 values are over zero, and according to Henseler et al. (2009), values close to 0.02, 0.15 and 0.35 mean that the model prediction respectively is low, medium and high. The results retrieved allow us to understand that the model does indeed measure what was supposed but that its reliability is only medium to high. The reference f^2 values, according to Cohen (1988) are also 0.02, 0.15 and 0.35 for respectively low, medium and high relative importance in the model. Since all constructs have achieved at least 0.19, constructs are considered of medium-high to high importance to the model.

Once all the adequacy tests have been finished, the final model is ready. The main differences between the research model and the final model is that some paths were considered as non-significant, rejecting a few hypotheses. The final model is presented in Figure 15 (dotted line indicates rejected hypothesis).

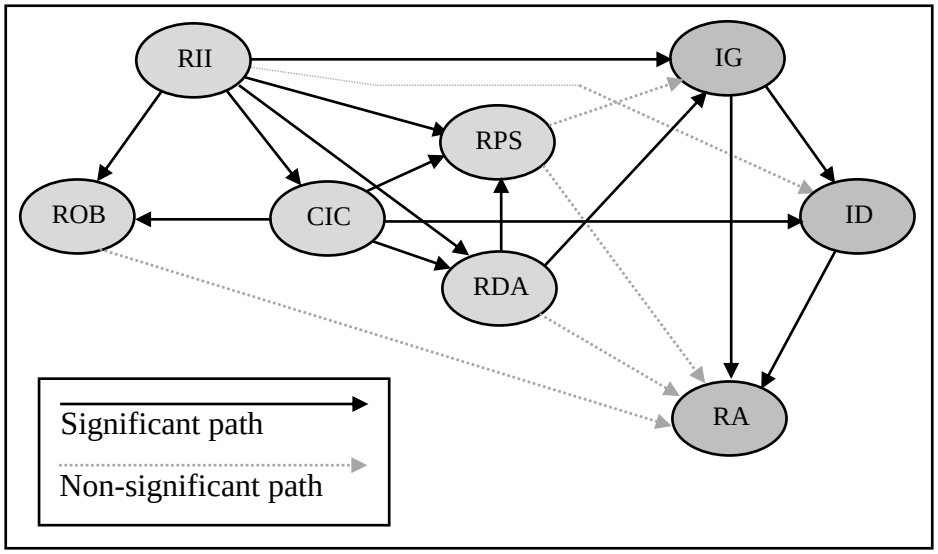

Figure 15 – Effects of Threat Rigidity on Market Orientation (Significant Paths).

2.8 DISCUSSION

The idea behind the original paper on Threat Rigidity (Staw et a., 1981) persists as it is simple and logic enough for driving the amount of citations in the field of strategy, and specifically as an explanation for organizational decline. This is, at least theoretically speaking, due to the concept being common sense enough to be easily applicable to a wide range of organizational problems. However, the lack of further research on better defining its scope, boundaries and stabilizing the concept may be the reason why it is treated as a silver-bullet – i.e., it is always cited as a potential or alternative explanation, with most researchers refraining from delving in the questions whether TR is or is not a main reason for organization decline. The fact remains that the concept is sound, even if needs more research. From a cognitive standpoint, the reactions entailed by threats will lower the decision-making quality across levels (from the individual to the whole organization).

The idea of treating organizations as individuals (i.e., multilevel theory building) is not new and analogous concepts were, for instance, the basis for a few analyses such as the ones performed by Miles et al., (1978), Hannan and Freeman (1977) or Van de Ven and Poole (1995), applied at a multilevel standpoint. Understanding the psychology of small groups is even more important, especially with decision-making processes in mind. As such, organizations display behaviors much like the people from whom they are made. While this is common knowledge and generally accepted as true in the research on strategy, more research is still needed to understand the underlying cognitive foundations that trigger such behaviors (Wooten & Hofmann, 2016).

This is a difficulty in research on organizations because whereas behaviors are tangible, directly measurable, and (maybe more importantly) objectively observable, the cognitive aspects of human psychology deal with mechanisms of thought and reasoning that are intangible in nature, fluid in concept and are not always consistently associated with a set of behavioral outcomes (Kuhl, 1985; Gioia & Sims, 1986; Feldman & Lynch, 1988; Walsh, 1995; Podsakoff et al., 2003; Kuhl & Beckman, 2012). That is, the cognitive effects that have been studied so often (Staw, 1991; Kanneman & Tversky, 2000; Jährvilehto, 2015) are largely left aside – i.e., always cited as potential but mostly left unanswered. They are acknowledged as important in many studies (Whittington, 2006; Duriau et al., 2007) but dropped or marginalized, either because there

is usually a gap between the psychological effects and their operationalization in constructs or because it is easier to test alternative explanations to phenomena studied.

Therefore, decision making inside the confines of strategy comprises two very different levels, from its own strategically centered point of view: very high (organizational behaviors operationalized through specific strategy theories) and very low (basic cognitive effects that explain general individual behavior). When it comes to experiments in strategy, very few studies have tried their hand at closing the gap between these two separated levels (Powell et al., 2011; Miller & Tsang, 2011). This may be because most of the apparatus psychologists employ do not match the immediate needs of strategy. Staw (1991) points at using psychometric scales and constructs along with macro-organizational meanings *without adaptation* as a probable cause for disappointing results, since these were not originally meant to measure aspects outside family or school circumstances. However, as he also affirms, that does not mean it cannot be done.

This is pointed as a problem with most multilevel theories, yet not without its advantages as well (Rousseau, 1985; Glick, 1985; Poole & Van de Ven, 1989; Morgeson & Hofmann, 1999; Mesarovich et al., 2000; Burnes, 2005; Nielsen, 2010). On the opposite, multilevel theory research should be done more often, and due to the complexity found in organizations and the uniqueness in most of them, building theory based on psychology or sociology to explain is more than acceptable, it has become mainstream (Birkinshaw et al., 2014). This is especially true with the emergence and practical materialization of the field of microfoundations (Felin et al., 2012; Felin, Foss & Ployhart, 2015), whose utility for this study is bridging these gaps.

As such, care was taken to adapt a scale and provide a behavioral consequence for the mainly cognitive-based TR concept. As Daly's scale employed the main concepts of TR, but in a context (public school system in the USA) that may take its toll on the results for market entities, it was necessary to review its internal organization to follow the constructs as well as adding items to reflect its changes. To counter the cognitive-behavioral gap, I specifically added the MO constructs to demonstrate whether TR – which paunches more on the cognitive side (i.e., *generative*) – can effectively influence the actual organizational processes – which, in turn, paunches more on the behavioral outcomes side (i.e., *reactive*). Both aspects proved fruitful on the results of the model, as the spectrum of human decision making is presented, from a cognitive starting point through behavioral outcomes. This transition from cognitive to behavioral is not

perfect though, as not all hypotheses between the two constructs are accepted, yet the negative effect of TR on MO is clear, mainly in the internal procedures of information gathering and dissemination – which lead to a faulty process of organizational learning.

The updated TR model is a refined explanation for the phenomenon, as it provides more detail on the workings of the stress-induced mindset of the decision-making process of an organization. It also provides adequate validation to its original and extended theoretical claims. It not only provides confirmation on TR itself as a perception but the integrated TR-MO model presents support for understanding its real market consequences. While not all hypotheses are directly confirmed in the tests (see Table 02), the generation and dissemination of intelligence in organizations is undoubtedly hindered if not handicapped. As a consequence, the expected response action is not triggered – as organizations may suffer from cognitive overload (Eppler & Mengis, 2004; Bawden & Robinson, 2009) and fail to respond adequately and quickly as necessary for their own survival.

As for the literature on strategy, we move further away from a rationalistic point of view – perception of risk and outcomes under a mathematical/econometric/value modelling only to a deeper understanding of human cogitation and behavior as triggers to decision making. It is possible to understand that resources alone and position in a given market or environment are not the only mechanisms that lead to strategy (or avoid organizations going through decline). This is a contrast and alternative to theories such as the Resource-Based View in the same setting. Consequently, new avenues of research open up, to include emotions, denial as well as other kinds of cognitive biases and their consequential organizational and strategic outcomes.

As such, the updated model defines in a more detailed way the internal mechanisms of Threat Rigidity, stabilizes the theoretical boundaries, tests it and provides a base for future studies. This provides the opportunity of changing discourse from TR being a potential or alternative explanation to it being the main or parallel construct tested in future studies. Thus, future studies may keep on closing the gap between the citations and its real applications in empirical studies.

2.8.1 Limitations and further directions

This study has also a few limitations worth of noting. First, the choice of foreign trade professionals was meant to make the sample homogeneous – this is a bureaucratic field with a high level of mimetic, coercive and normative isomorphic forces. Although it is optimal for comparison reasons, it does not guarantee that the effects will be exactly similar in less restrictive scenarios. The kind of organizations that deal with foreign trade in Brazil are also known as systematic and top-down organized. Organizations that have different origin and development paths (Van de Ven & Poole, 1995) as well as internal leadership and control structures (weberian or not) (Kavanagh & Ashkanasy, 2006; Avolio et al., 2009) may display different behaviors under the same constraints. These two aspects deserve further consideration in deeper studies. An extra limitation in this sense is that only the foreign trade sector was included. The same concepts may encounter different reactions in different industries, especially when it comes to decision making models, procedures and experience needed (Judge & Miller, 1991; Forbes & Miliken, 1999).

A second important aspect is that Brazil is a western country. Asian and far-eastern cultures, in comparison, display much higher levels of conforming to rules and obedience (Hamilton & Biggart, 1988; Whitley, 1990; Whitley, 1991; Chen et al., 2004). They also display higher levels of paternalism as well as clearer hierarchical forces (Erben & Güneşer, 2008; Diefenbach & Sillince, 2011). The effect of ‘stiffness’ on such organizational models may affect even more negatively reactions of strategic planning deployment, which also merits more studying.

In case of bureaucratic or traditional organizations, this homogeneity would be more transparent and the underlying psychological traits would more probably emerge in research (Staw, 1991), maybe outstandingly more so due to the possible polarizing of opinions (Lamm & Myers, 1978; Staw, 1991; Bär, Kempf & Ruenzi, 2010). The possibility of applying psychological scales to organizational aspects is concrete, and the number of psychological biases available to test individual behavior at organizational level proliferate, although the ones concerning decision still are the clear majority (Staw, 1991).

While the role of risk and slack resources has already been paired with TR concepts (Greve, 2003; Audia & Greve, 2006), it still needs deeper research. By that I mean that current research focuses on organizational risk and resources as a starting point, but the role of executives and top management in general could potentially distort the evaluation of organizational potential survival through concepts such as agency theory. As such, when organizations are closer to minimum resource threshold than the aspirational target, the top of the organization may not only make extra efforts, and rather find a way to 'save themselves'.

This updated model opens new avenues of research on strategy, organizational theory as well as marketing and innovation. On strategy, it may potentially assist in diminishing strategic risks, as the TR model converges to the main issues in strategic problem formulation (heterogeneous information sets, objectives and cognitive structures, narrow sampling of information, jumping to solutions and representational gaps) (Baer, Dinks & Nickerson, 2012:7). This has its share of consequences for organizational theory as the field further dissociates from the classical models of rationality and delve into evolutionary and cognitive aspects of group decision. The same happens for marketing theorists, as it becomes clearer now that MO has to account for cognitive antecedents largely ignored by current research (Kohli & Jaworski, 1993; Kirca, Jayachandran & Barden, 2005).

An aspect that may seem trivial and passed unnoticed, but that is important to the understanding, is that MO usually has a different testing scenario. First-order constructs (IG, ID and RA) stemming from a second-order construct (MO) is the usual arrangement found in the marketing literature, although what we tested (IG → ID; IG → RA; ID → RA) seems more useful, logical and the causality testing in a PLS-SEM is a close consequence. As such, not only the internal constructs of TR are rearranged but also are the MO constructs for this study. Whereas innovation does its share of research on cognitive aspects of team composition and individual talent, new facets are possible as research on tools, mechanisms and managerial practices to hinder TR to creep in in creative and innovation generation procedures.

The results of this study provide a starting point for future studies on TR both as a antecedent and as consequence for organizational change. As a measurable construct (especially in terms of cognition and behavior) it is not complete in itself, unless it is coupled with antecedents and consequences. TR may affect (as a mediator or moderator) several other

organizational and strategic processes going on in organizations facing threats and crises, and, as such, research on this concept may continue to thrive.

3 CHAPTER TWO: THREAT RIGIDITY EFFECTS & ANTECEDENTS (CRISIS RESPONSE AND ORGANIZATIONAL REPUTATION)

Organizations, as much as the people that they comprise, do not possess unlimited information processing capabilities and, therefore, are rationally bounded (Simon, 1958). Moreover, besides exhibiting only rationalizing procedures instead, organizations have an anthropomorphic quality: their general behavior mimics the basic underlying psychological traits and features and thus "administrative theory must be derived from the logic and psychology of human choice" (Simon, 1947:XLVI). Such human-like characteristics mean organizations may display similar human reactions to threat (mainly stress, anxiety and fear) and become rigid – a thesis known as Threat Rigidity (TR) (Staw, Sandelands & Dutton, 1981). In situations of already known, little impact threats, rigid responses may be appropriate, ensuring operational continuity despite special organizational focus on stress and its related disturbances. However, in face of unforeseen, ruinous threats (or simply: crises) (Shimizu, 2007), rigid responses may create devastating outcomes for the organizational long-term survival. Thus, TR is an organizational maladaptive response to adversity.

As a theory, Threat Rigidity has gained a lot of attention within the organizational decline literature (Serra, Portugal Ferreira & Almeida, 2013). However, TR citations usually evoke only the most obvious, basic attributes of the thesis, which may, arguably, be combined with any organizational decline ideas (see study 1). Consequently, general testing of the theory has been met with ambiguous results (Plotnick & Turoff, 2010). As such, TR studies suffer from weak theoretical boundaries, poor modelling, lack of transparency in data collection, TR definitions non- or only partly overlapping the original, as well as poor choice of respondents. Among these, poor theoretical development is perhaps the main hindrance to a large-scale empirical research of TR in the literature (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010).

Along with lacking general theory testing and deeper cognitive foundations, literature on TR lacks comprehensive verification of its potential antecedents. TR has a better fit in the intermediary part of the organizational processes chain, as a mediator or moderator variable, as well as directly affecting internal functions. TR provides a (negative) simplified version of Cyert and March's (1963) Behavioral Theory of the Firm model since it compresses most processes in a

short chain of events. Nonetheless, antecedents that affect performance evaluation, problemistic search, risk assessment and decision making, still need more research.

In this chapter, I attempt to verify the direct effects of Crisis Responses (CR) (Pearson & Mitroff, 1993) and Organizational Reputation (OR) (Fombrun, Gardberg & Sever, 2000) on Threat Rigidity, as well as the effects of these three concepts on Market Orientation (Kohli & Jaworksi, 1990; Garrido, 2007). Organizational Reputation is understood in this chapter as an *internal* appraisal of the organization (resources, management, etc.) (Fombrun, Gardberg & Sever, 2000), rather than an *external* assessment of performance whose concepts are scattered inside Market Orientation consequence constructs (Kirca, Jayachandran & Bearden, 2005), analogous to the results found in the antecedents in Wood, Bhuian & Kiecker (2000).

Bearing these objectives in mind, data were collected from 210 active foreign trade professionals in Brazil. The underlying rationale is that this sector is very likely to suffer from high levels of volatility (Cavalcanti et al., 2015), as well as homogeneity, which may create an adequate setting to verify the presence and interaction among the chosen variables. The sector has also seen Brazilian rise in foreign trade in the 2010s (Cervo, 2010; Jenkins, 2012) and economic slowdown after the international crisis in 2014 (Castro, 2015; Paula, Modenesi & Pires, 2015). This scenario is adequate to perceive whether internal changes and adjustments due to enduring crises arise and provide answers to the longstanding question in the TR literature whether TR effects subside during high, but stable levels of threats (Anderson, Allred & Sloan, 2003; Plotnick & Turoff, 2010).

In order to integrate the constructs and verify their combined effects, I have developed a structural equation model (SEM). The results obtained demonstrate that Threat Rigidity directly affects Market Orientation, Organizational Reputation minimizes the negative effect of Threat Rigidity and Crises Responses. However, the direct effect of Crises Responses on Market Orientation was not confirmed – although a full mediation effect (CR → TR → MO) occurs. Hence, this model offers theoretical complementation to the one in study 1, and contributes to the validation of the expected TR effects as ascribed in the extant literature.

3.1 Research model

Not all threats induce TR on organizations, but crises certainly do – at least when threats are interpreted as crises. As such, TR-induced threats hamper the decision-making process and transforms the top management from an expert group into a not so prepared group of people to deal with the crisis. Consequently, the top is not always aware of the cognitive, emotional and behavioral consequences of their restricted actions (Dutton et al., 1997) and sudden disruption in the flow of information (Guth & MacMillan, 1986; Wooldridge & Floyd, 1990; Westley, 1990; Mangaliso, 1995). Thus, crises' impact perception is felt primarily by middle management and lower organizational structures (Floyd & Wooldridge; 1992; Floyd & Wooldridge, 1997; Wooldridge et al., 2008; Shi et al., 2009; Johansen et al., 2012).

Crises make rigidity emanate from top, but it takes an overall fear climate to take hold of an organization's daily operations. It not only affects how the market will assess an organization's survival chances in the long-run, but also especially how it will affect the immediate actions to tackle the said crisis. Organization reputation may be seen from the outside as MO (since it affects the response an organization puts in motion during/after crises), but it may also be understood internally as a key factor and a tool for internal sense-making on capabilities and resources (as well as capabilities / resource management) during crises.

That is the reason why Fombrun's scale has items that can potentially assess internal and external perspectives, but some items have only internal use. Therefore, most uses of Fombrun's scale are for appraising internal capabilities of an organization through the standpoint of employees. Therefore, organizational reputation in this sense is an antecedent. Employee appraisal of internal aspects of an organization is not present in any of the MO meta-analyses.

This internal assessment idea that leads to capabilities to deal with crises may be traced back to Reilly's (1993) process of crisis – see Figure 15. In this model, the management of the consequences of a crisis directly depend on the mobilization of organizational resources (both tangible and intangible), in keeping the internal flow of information as well as keeping the organizational boundaries somewhat porous to the external environment – precisely contrary to what happens during TR-induced panic. However, the rapidity in the decision making process (itself dependent on the resource mobilization) is restricted by the sense-making process. If a

faulty sense-making arises (i.e., faulty SPF processes), the mobilization may not be enough to counter negative effects.

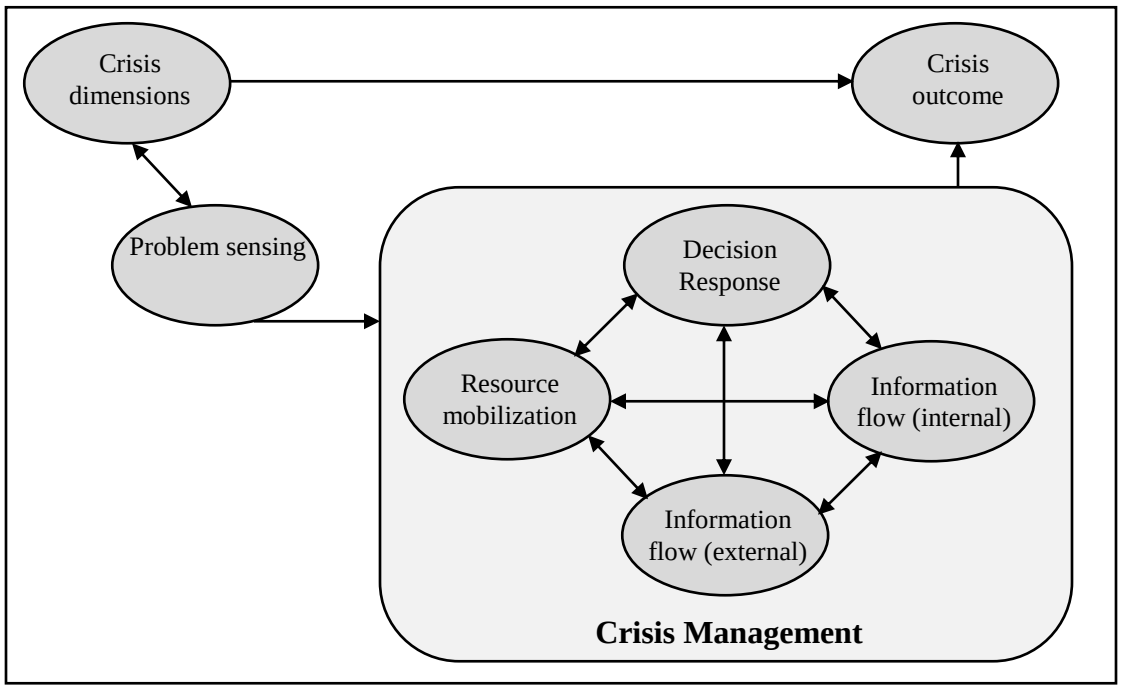

Figure 15 – The Process of Crisis (Reilly, 1993:118).

A revised model for crisis can be found in Coombs and Holladay (2002) – see Figure 16. In this model, both the severity and the organizational performance history are important to determine the consequences of a crisis. These will work as a lens to focus responsibility of the crisis.

Consequently, both responsibility and crisis-handling strategies will influence the organizational reputation. Here, reputation is understood as *external* market orientation (assessment by competitors and customers), while performance history is more adequate to measure internal reputation as in resources. Thus, an organization needs to assure that its internal coordination efforts are on par with its environmental fit. It also needs to balance its internal generation of information and knowledge (Ferreira & Tallman, 2007) as well as its R&D efforts (Hurley & Hult, 1998). Cyert & March (1963) define both R&D capabilities and solutions in the environment as potential candidates to fill an organization's solution stock needs.

Market Orientation (MO) is a classical definition for an organization's information needs (Kohli & Jaworski, 1990), and how the internal strategic coordination occurs to answer to market needs (Felton, 1959; McNamara, 1972). This means MO may be understood as an answer

to Cyert and March's model. Most MO definitions spin around *external* needs of an organization or, at least, more tangible aspects of its marketing strategies (Kotler, 1988).

Figure 16 – Revised model of situational crisis communication theory (Coombs & Holladay, 2002:168).

However, some early views take the opposite direction, defining MO as the channel through which information flows from the environment to the assigned internal departments (Levitt, 1969; Bell & Emory, 1971; Stampfl, 1978). In a broader sense MO is the organizational umbrella function that coordinates information-seeking efforts and bridges the external environment and internal needs. It may also be seen as a practical approach to operationalize theoretical issues on firm performance (Shoram, Rose & Kropp, 2005).

Either way, Sinkula et al. (1997) define Market Orientation as a central aspect of an organization. By central it means that it bridges the learning orientation of an organization (how it conforms to the internal mechanisms and external sources) towards the market dynamism and the needs for response. These responses provide feedback to the organizational memory (part of Cyert and March's solution stock) (Greve, 2003). It also reinforces organizational capacity of interpreting both the environment as well as itself (both tangible and intangible assets) (See Figure 17).

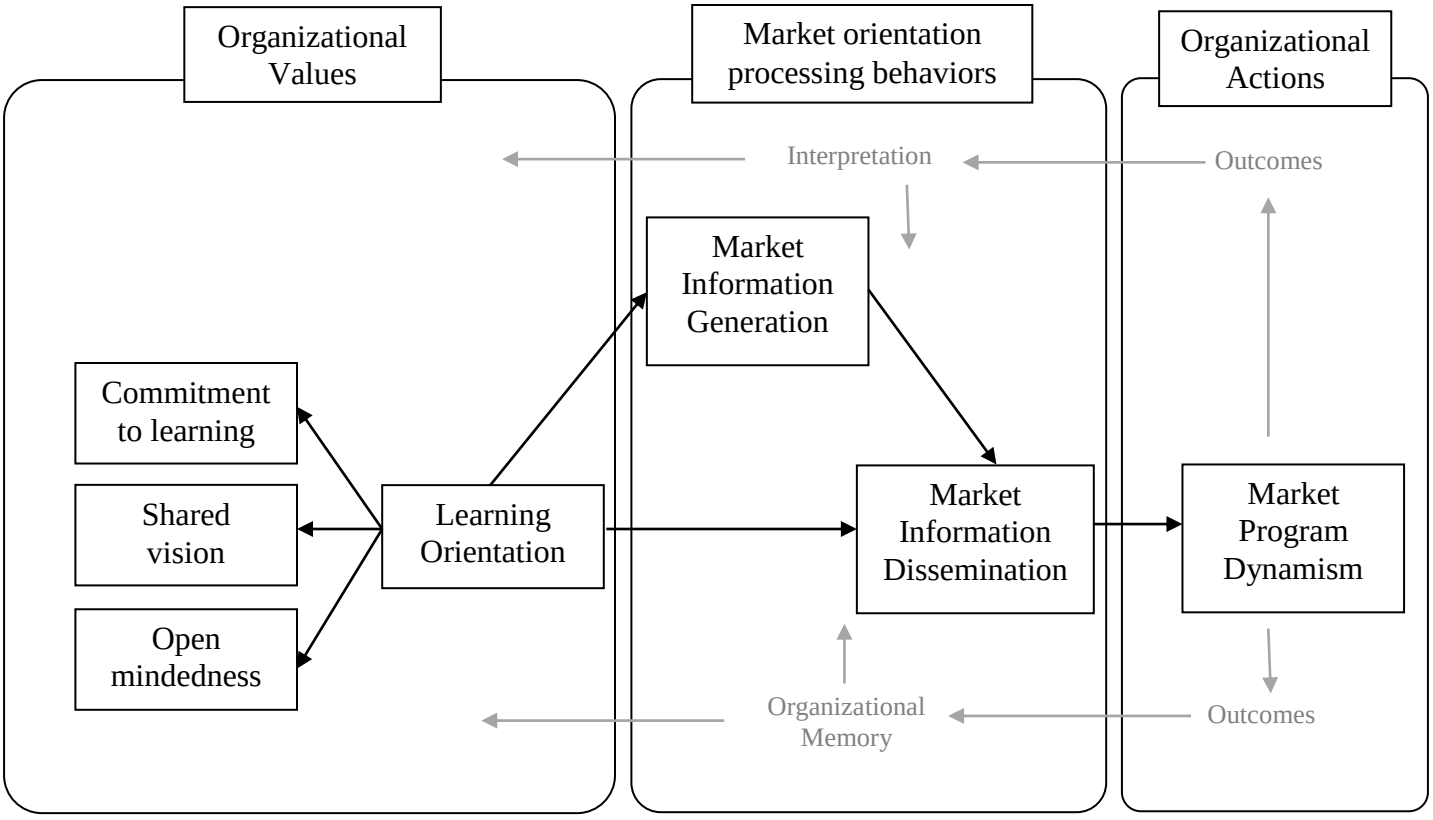

Figure 17 – A framework for Market-based Organizational learning (Sinkula, Baker & Noordewier, 1997).

Market Orientation is, therefore, an organizational construct responsible for managing channels for organizational learning, regulating not only official channels but also less tangible forms of internal communication such as climate and culture (Slater & Narver, 1995). Its main internal divisions are intelligence generation, dissemination and subsequent response action (Kohli & Jaworski, 1990). As such, MO is prone to suffer setbacks or develop deficiencies in contact or under the influence of well-known problems such as organizational myopia (Levinthal & March, 1993), organizational cognitive inertia (Hodgkinson & Wright, 2002) or organizational autism (Muurlink et al., 2012). These issues can be traced back to Cyert and March's (1963) three cognitive aspects of management - satisficing, problemistic search and the notion of existing, underlying rationalizing rules of thumb. These mean organizations will deal with incremental distances between performance and aspirational level by defining a problem, employing internal, tried-and-tested schemata instead of true, full-fledged rationality and satisfice (stop iterating)

whenever finding a minimally adequate solution. Not a great or the best solution though, but finding a local instead of a global maximum is not a bad trade-off.

While this approach works well with *incremental* problems – issues not nearly as harmful to the organization (Kiesler & Sproull, 1982) or even disruptive as to promote opportunities of growth (Milburn et al., 1983; Reilly, 1993) – more *significant* problems may need other approaches or entail adverse reactions (Turner, 1976; Gephant, 1984; Mitroff & Kilmann, 1984; Pearson & Mitroff, 1993). For the first, problem categorizations (Reilly, 1993; Pearson & Mitroff, 1993) and response management exist (Coombs, 2002; 2010). But threat and crises management is not an easy task and positive outcomes are not always consistently associated (Smart & Vertinsky, 1984; Coombs, 1995).

For the second, reactions will be proportional to the impact on the organizational foreseeable future. Reilly (1993) defines crises as problems that display four axes - novel, unstructured, atypical (or abnormal) and requiring non-programmed decision strategies. Other more developed ideas about crises expand the scope and consequences for organizations – ambiguity, low probability, little time to respond, unexpectedness, and judgment-bound (Brockner & James, 2008) as well as negative-outcome focused, time pressure, publicness (highly undesirable outcomes for stakeholders) are also present (James, Wooten & Dushek, 2011). Greve (2003) splits reactions in three segments based on risk: first, whenever some threat occurs, organizations may let time pass and see if it persists or use spare slack to deal with it – either in a form of denial or conceding the loss; b) in case of a more significant threat, dealing with the risk and tackling the issue head-on; and c) entering a state of increased conservativeness and, arguably, organizational inertia.

The first two cases in Greve's (2003) explanation may have some long-range harmful effects but rarely lead to *ruinous* outcomes for an organization (Shimizu, 2007), and thus are not of great concern for this work. The third form, however, presents a challenge since situations along these lines – and especially if analogous to the aforementioned aspects of crises (Brockner & James, 2008; James, Wooten & Dushek, 2011) – are those in which a reaction is *most needed*, and, ironically, are the ones that evoke *less reaction*. Whereas from a rational standpoint it makes no sense, it is a normal human reaction to freeze when sensing danger. The organizational counterpart to this 'pathology' is the idea behind Threat Rigidity. Its close consequences – overload of communication channels, reduction in communication, centralization of authority and

increased formalization – overlap and directly affect Market Orientation and its benefits to organizational reaction and survival. Or, as Hodgkinson and Wright have affirmed (2002:949-950), "there is a danger that actors may become overly dependent on their mental models of strategic phenomena, to the extent that they fail to notice changes in the material conditions of their business environments until these changes have become so widespread, or significant in other ways, that their organization's capacity for successful adaptation has been seriously undermined".

Hypothesis 1: Threat Rigidity (TR) is negatively related to Market Orientation (MO).

Whereas not all threats result in *petrified* reactions, crises mostly do. And, in addition, while some executives and companies seem better off after going through crises (Brockner & James, 2008), most cannot affirm they went through the same process unscathed (Probst & Raisch, 2005). If they are most likely to enter a failure cycle that will lead to bankruptcy, the kind of reaction and the fit between the organization and the crisis response strategy have an outstanding role in survival, especially considering its history of stakeholder relationships (Pajunen, 2006). These reactions may be assumed both from individual (if taken from top management mindset behavior) or organizational (top management as a whole) levels.

The first (individual) perspective may find its theoretical basis on reactions such as denial, rationalization (justification), idealization (romanticizing), fantasy or symbolization (Brown & Starkey, 2000; Mellahi & Wilkinson, 2004). These overall categories may comprise several other negative cognitive biases (for more, see Chapter 2). The second, organizational / group perspective, has a longer, more developed literature. Pearson and Mitroff (1993) define "major issues" according to types of crises, phases they go through, systems crises affect or are affected by, and which stakeholders have priority in the response. But more importantly, they define four main axes of faulty rationalizations (i.e., the same cognitive issue on the individual level, but now expanded into the group mindset) that hinder the handling of a crises (properties of the organization, environment, prior crises management and the crises themselves and how they affect the organization and the crises handling). An alternative model exists, in which timely, consistent and active responses also affect crises (Huang, 2008).

These may be seen as antecedents for actual crises handling strategies, as prescribed by Coombs (1995), who divides such possible strategies in five categories (nonexistence of the crisis, distancing, ingratiation, mortification and suffering). The bridge between the two

perspectives (individual / group) may be due to the importance of certain stakeholders instead of others – predominantly shareholders' interests before other stakeholders, a move that has seen its ups and downs (Jawahar & McLaughlin, 2001). This exceeding focus on shareholders is also one of the key aspects in the rationale behind the 'burnout syndrome' and/or the 'premature aging' syndrome (Probst & Raisch, 2005). Consequently, organizational survival during crises is affected by Market Orientation, itself dependent on the kind of response an organization chooses to counter its negative effects (Naidoo, 2010).

Hypothesis 2: Crisis Response (CR) is negatively related to Market Orientation (MO).

The link between Organizational Reputation (OR) and performance is generally understood as a driving force towards organizational survival (Bontis, Booker & Serenko, 2007). However, this link is clear when understanding Organizational Reputation from an organizational external, consequential standpoint. More importantly, research has been bleak in terms of *internal*, antecedent organizational reputation. Extant research associates this concept with corporate social performance and concludes that it leads to financial performance (Orlitzky, Schmidt & Rynes, 2003), or that OR should be understood as an (intangible) item in a list of valuable organizational resources (Rindova, Williamson & Petkova, 2010).

As such, internal organizational reputation may also be identified with the Resource-Based View (RBV), in the sense that OR is the sense-making logics associated with the existence and dynamics of existing resources in an organization (Bergh et al., 2010). However, measuring RBV effects in an organization may prove itself an unfruitful task, to such an extent that psychometric measurements may be needed to circumvent technical difficulties (Bergh et al., 2010:4). Fombrun (1996) understands Organizational Reputation as having a dual nature – being both a collection of resources inside an organization and a hierarchical evaluation of firms in a given market. OR also suffers from a 'circular' logics – studied both as antecedent and consequence to performance (Fombrun & Shanley, 1990; Sobol & Farrelly, 1988; Roberts & Dowling, 2002; Shamsie, 2003; Deephouse & Carter, 2005). Brown et al. (2006), for instance, suggest that reputation emanates from within the organization and is circularly fueled by stakeholders' and market's perception of created value.

Hence, from the internal perspective, OR may be interpreted as the "stakeholders' perceptions about an organization's ability to create value relative to its competitors" (Rindova et al., 2005:1033) – including internal stakeholders. In this sense, OR is theoretically close to the

concept of Organizational Legitimacy (Deephouse & Carter, 2005). Organization Reputation, for the sake of this work, is defined as a deliberate process of internal value creation (Fombrun & Rindova, 2001) and, thus, is interpretable from inside an organization, both from its board and top managers' perception (Hillman & Daziel, 2003) but also middle managers (Dutton & Ashford, 1993; Deephouse & Carter, 2005) and lower power structures.

Hypothesis 3: Organizational Reputation (OR) is positively related to Market Orientation (MO).

Organizational reputation – seen from the RBV-based lens – is an internal assessment of intangible organizational assets. Fombrun's (1990, 1996) concept of organizational reputation comprises roles as vision, leadership and internal management, other than traditional market-performance indicators. Resource slack (both tangible and intangible) is also a source of organizational confidence (Greve, 2003; Audia & Greve, 2006). These two concepts – intangible slack and complementary assets are intertwined to a point where there may not be a clear distinction. Therefore, the higher organization's reputation is, the more it will become confident.

The internal organizational areas that result in organizational reputation may be associated with the internal flow of information and control an organization deploys. While *too much confidence* may also cause distortions in the way an organization sees itself and prepares for or responds to crises, a higher level of organizational reputation may 'cushion' the cognitive blow resulting in less panic and consequently much less rigidity.

Hypothesis 4: Organizational Reputation (OR) is negatively related to Threat Rigidity (TR).

Organizations can only prepare so much for an eventual crisis. Many organizations even question themselves whether *a priori* crisis handling procedures may effectively lessen the negative repercussions, especially since these are costly and may never come in handy (Coombs, 2000). Pearson & Mitroff (1993) list several properties of an organization and its environment, as well as the crisis itself, that may affect an organization's crisis-response outcome. Although crises have usually negative, ruinous consequences for an organization, quick responses and information and resources deployment may have a countering effect (Calloway & Keen, 1996). Thus, those which decide to prepare for crises and invest in crises response strategies may have a better chance at tackling crises.

Hypothesis 5: Crisis Response (CR) is negatively related to Threat Rigidity (TR).

Managing the internal relations between functional areas may also counter the negative cognitive effects of a crisis, especially in the corporate strata (Ponis & Koronis, 2012). In addition, organizations with resource slack have leeway to handle resource mobilization (Reilly 1993), and the extra internal resources give organizations footing to behave differently than the traditional cutting essential personnel and in restricting crisis responses (Tenant, 2012). Internal, intangible resource slack also diminishes the assessment of risk, which leads to more alternatives to deal with crises (Audia, 2003, Audia & Greve, 2006)

Hypothesis 6: Organizational Response (OR) is positively related to Crisis Response (CR).

All combined hypotheses and their constructs may be found in the model as follows:

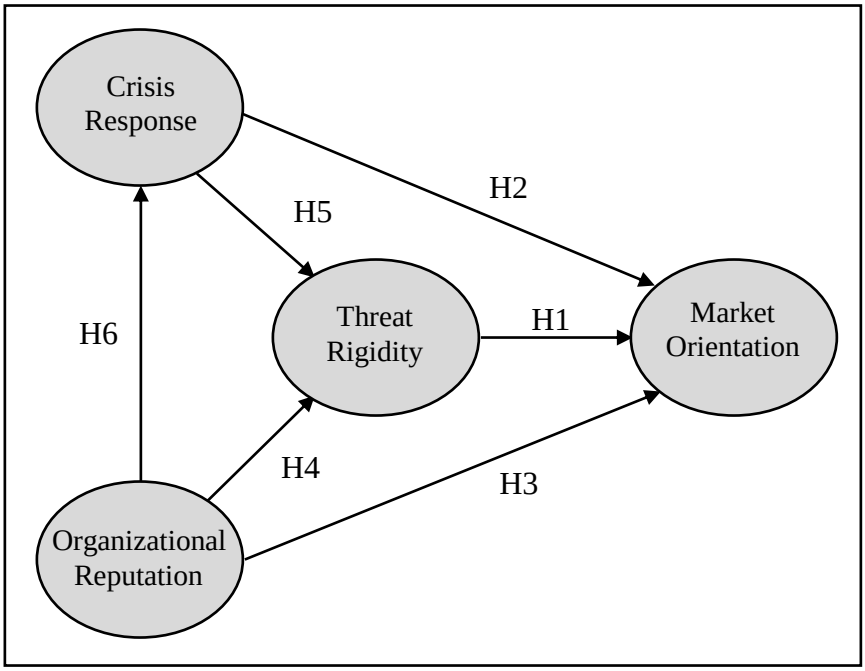

Figure 18 – Proposed antecedents of Threat Rigidity (developed by author).

3.2 Research methods

Brazilian export logics is highly dependent on commodities (Mueller & Mueller, 2016). Commodities are not country-level controllable variables, depend on large internal resources production coordination, and suffer from high volatility in the foreign trade (Cavalcanti et al., 2015). Brazilian exports have been targeted by industrially-driven economies, mainly China

(Wilkinson & Wesz Jr., 2013). China, however, is going through a beginning process of de-industrialization and consequently dropped its levels of commodity consumption (Wang & Wang, 2013). Consequentially, Brazil has suffered a great blow with this (Jenkins, 2015). The foreign trade market in Brazil is geographically concentrated in Sao Paulo and surrounding area. It a highly standardized and procedural-oriented sector, much like any other foreign trade sectors worldwide. It also suffers from a high level of concentration in the trade company numbers. This is an adequate combination for this study – predisposition to bureaucratic and standardized procedures, prone to rigidity, high volatility and market sudden changes.

To test the effects of Threat Rigidity, Crisis Response and OR on Market Orientation, we have chosen Garrido's (2007) export MO scale, Fombrun, Gardner and Sever's (2000) reputation scale, Pearson and Mitroff (1993) framework and an adaptation of Daly's Threat Rigidity scale (Daly, 2009; Daly et al., 2011). For the pretest a small number of foreign trade professionals and professors were asked to review questionnaire. The calibration and adjustment process resulted in a medium-sized questionnaire, with average responding time of 20 minutes. Our sample set was taken from the population of foreign trade professionals in Sao Paulo Metropolitan Area – from an original database of approximately 450 professionals actively working in international trading. All respondents were assured of confidentiality of their responses all through the end of the data collection period. At first, verbal and online contact was used to reach potential respondents. After listing all potential respondents, an email was forwarded with a notification of our study with an URL to the questionnaire. Respondents were reminded to fill the questionnaire 1, 2 and 3 weeks after the initial email.

To analyze the problem in question, very few methods meet the requirements. Standard statistical methods may be useful to understand the overall regressions in the equation developments – and, therefore, describe the behavior of the variables or confirm existing theory. Yet they may not be as suitable to develop theory and verify causality, which is more commonly done with structural equation modeling (Hair et al., 2016), which is why we chose partial-least square structural equation modeling as a method.

3.2.1 Questionnaire design

The procedures for the data collection followed the same basic steps as the previous study and data collection was done simultaneously with the first study, in the same instrument. However, in this study I test influence of the whole Threat Rigidity construct on Market Orientation instead of specific hypotheses since last study yielded that such an influence exists. As part of the guiding questions for this research, we add two more constructs. The first one (Organizational Reputation) is based on Fombrun's work (Fombrun, Gardberg & Sever, 2000) (see Appendix A). This scale is well known and has already been verified through a staggering amount of studies (Barnett et al., 2006). Although mostly used for its external, *ex-post facto* properties, it does display a fair amount of items whose purpose is to demonstrate the internal, *ex-ante* properties that influence organizational reputation from within.

The second scale employed was an adaptation of the Crisis Response questionnaire (Pearson & Mitroff, 1993) (see Appendix A for items). This aims at verifying whether certain properties of the organization, the environment, the ongoing crisis as well as historic of prior crisis management efforts on the current state of readiness to tackle crises. One of the reasons of the inclusion of the items in the Pearson and Mitroff (1993) is that the organizational memory effect of prior crises is well present.

3.2.2 Survey administration, sample size and collection

The same precautions were observed as in the previous study. But since the number of paths is significantly lower, the number of respondents is equally lower. Minimum sample size was calculated in the software G*Power (effect size f2 = 0.15; α error probability = 0.05; 1-β error probability = 0.95; number of predictors (arrows) = 3). For a statistical power of 95% (effect), minimum sample size was defined as 129 responses. A more conservative calculation was obtained according to Cohen (1992), Ringle, Silva and Bido (2014) and Hair et al. (2016) for a PLS model with the same parameters (arrows = 3; significance level 1%; minimum R2 = 0.10), and estimated in 176 responses. A total of 210 respondents provided full, usable responses and

the sample is deemed adequate for subsequent analyses. Females accounted for 53,4% of all respondents. Age mean was 27,22 (sd = 6,15), ranging from 17 to 56 years old.

3.3 DATA ANALYSIS

The first step in evaluating the proposed SEM-PLS model is verifying whether the Average Variance Extracted is higher than 0.5 (FORNELL & LARCKER, 1981). Since it is not, it means that probably a few items in constructs should be eliminated from the model. After doing one by one and verifying again the AVE levels, a few times were removed and subsequently, the required minimum AVE levels was obtained (see Table 07).

Variable Constructs	**Average Variance Extracted**	**Composite reliability**	**R^2**
Organizational Reputation	0,52	0,95	-
Crisis Response	0,50	0,88	0,06
Threat Rigidity	0,51	0,90	0,24
Market Orientation	0,51	0,93	0,52

Table 07 - Assessment of the measurement model

Next, we verified the internal consistency of the model by also measuring the Composite Reliability. As for Composite Reliability, the least required is between 0.7 and 0.9. The measures obtained confirm the model's internal consistency, although a low R2 in the Crisis response may show that it may not be entirely relevant, at least for the Brazilian scenario.

	OR	**CR**	**TR**	**MO**
Organizational Reputation	**0,72**			
Crisis Response	-0,25	**0,71**		
Threat Rigidity	-0,38	0,39	**0,71**	
Market Orientation	-0,69	-0,33	-0,46	**0,71**

Table 08 - Fornell-Larcker Criterion Analysis for checking Discriminant Validity

Second, one needs to ascertain whether the items are correctly placed in their own constructs. To do so, the items were checked against their own constructs, to verify whether they are more important in other constructs than their own according to the Fornell-Larcker Criterion for discriminant validity (see Table 09). As it is clear, only items significantly higher in their own constructs than others were kept (numbers in bold).

Items	**OR**	**CR**	**TR**	**MO**
OrgRepCom01	**0,78**	-0,13	-0,22	0,55
OrgRepCom02	**0,67**	-0,05	-0,26	0,42
OrgRepCom03	**0,74**	-0,22	-0,24	0,55
OrgRepCom04	**0,73**	-0,21	-0,21	0,51
OrgRepFin01	**0,56**	-0,22	-0,17	0,36
OrgRepFin03	**0,70**	-0,17	-0,30	0,43
OrgRepFin04	**0,78**	-0,37	-0,41	0,53
OrgRepLead01	**0,69**	-0,15	-0,35	0,54
OrgRepLead02	**0,69**	-0,08	-0,37	0,47
OrgRepLead03	**0,71**	-0,16	-0,45	0,50
OrgRepMan01	**0,78**	-0,30	-0,42	0,57
OrgRepMan02	**0,69**	-0,18	-0,24	0,49
OrgRepMan03	**0,67**	-0,27	-0,17	0,45
OrgRepResp01	**0,73**	-0,23	-0,23	0,47
OrgRepResp02	**0,73**	-0,02	-0,21	0,45
OrgRepResp03	**0,71**	-0,12	-0,23	0,49
OrgRepTrust01	**0,66**	-0,08	-0,17	0,48
OrgRepTrust02	**0,76**	-0,15	-0,13	0,52
OrgRepTrust03	**0,75**	-0,18	-0,20	0,51
CrisProp08	-0,04	**0,64**	0,20	-0,09
CrisProp09	-0,13	**0,69**	0,25	-0,22
EnvProp04	-0,26	**0,84**	0,31	-0,29
EnvProp05	-0,20	**0,71**	0,35	-0,26
OrgProp05	-0,21	**0,73**	0,28	-0,35
OrgProp06	-0,24	**0,68**	0,26	-0,11
PrevCrisProp04	-0,10	**0,66**	0,25	-0,19
ConstContr05	-0,27	0,28	**0,70**	-0,30
ConstContr06	-0,13	0,20	**0,68**	-0,25

ConstContr07	-0,35	0,35	**0,82**	-0,44
ConstContr08	-0,20	0,14	**0,74**	-0,30
RedPerSti03	-0,20	0,34	**0,72**	-0,26
RedPerSti06	-0,30	0,27	**0,66**	-0,32
RestInf02	-0,29	0,26	**0,72**	-0,41
RestInf04	-0,22	0,29	**0,65**	-0,28
RevOverBeh02	-0,36	0,31	**0,72**	-0,33
IntGen01	0,51	-0,37	-0,31	**0,67**
IntGen03	0,49	-0,30	-0,41	**0,70**
IntGen04	0,47	-0,40	-0,47	**0,67**
InterfCoord01	0,50	-0,16	-0,33	**0,75**
InterfCoord02	0,56	-0,28	-0,41	**0,79**
InterfCoord03	0,45	-0,08	-0,33	**0,72**
InterfCoord04	0,40	-0,09	-0,27	**0,70**
InterfCoord05	0,44	-0,12	-0,34	**0,66**
InterfCoord06	0,53	-0,22	-0,27	**0,76**
InterfCoord07	0,53	-0,23	-0,38	**0,80**
RespAct01	0,43	-0,27	-0,24	**0,67**
RespAct02	0,41	-0,12	-0,21	**0,65**
RespAct03	0,58	-0,25	-0,24	**0,71**

Table 09 - Factor loadings (bolded) and cross loadings

As a consequence, we need to verify whether the paths linking the constructs (hypotheses H1 to H6) truly exist. That is done by a t-test, in which the H0 is that the regression coefficients, thus the path and the hypothesis associated with them, are different from zero, being significant. The results obtained are presented in the Table 10.

Hypotheses	**Paths**	**T-test**	**Result**
H1	TR → MO	1,988	Accepted
H2	CR → MO	1,281	**Rejected**
H3	OR → MO	5,923	Accepted
H4	OR → TR	2,900	Accepted
H5	CR → TR	2,690	Accepted
H6	OR → CR	2,595	Accepted

Table 10– Model paths and hypotheses results

Since the t-test result for the H2 was lower than 1.96, H3 is rejected, which means that the path suggested in the literature does not find support in the data obtained. All other hypotheses are sustained since their result was significant.

While the path CR→MO is not significant, I decided to test whether this may be due to a mediation effect (CR → TR → MO). Mediation was tested through the Variance Accounted For test (VAF) (Hair et al., 2014), according to the following formula:

$$VAF = \frac{\beta_{12}.\beta_{23}}{(\beta_{12}.\beta_{23}) + \beta_{13}} = \frac{2.692 \times 1.988}{(2.692 \times 1.988) + 1.249} = \frac{5.35}{6.60} = 0.81$$

It is considered as a full mediation type of interaction since VAF > 0.80.

As for the predictive validity of the model, the Stone-Geisser indicator (Q2), the constructs rank in the medium-to-high area, except for Crisis Response, whose results put it in a low prediction for the model. As for the weight (importance) in the model, the Cohen's Indicator f^2 values show all of the constructs as important for the model (see Table 11).

Construct	**Q^2**	**f^2**
Crisis Response	0,02	0,32
Market Orientation	0,24	0,42
Organizational Reputation	0,45	0,45
Threat Rigidity	0,10	0,37

Table 11 – Model Predictability and Construct Weight in the model

Finally, per the results obtained, the only hypothesis rejected was H2 and, as such, the following figure represents the final, adjusted model (figure 19).

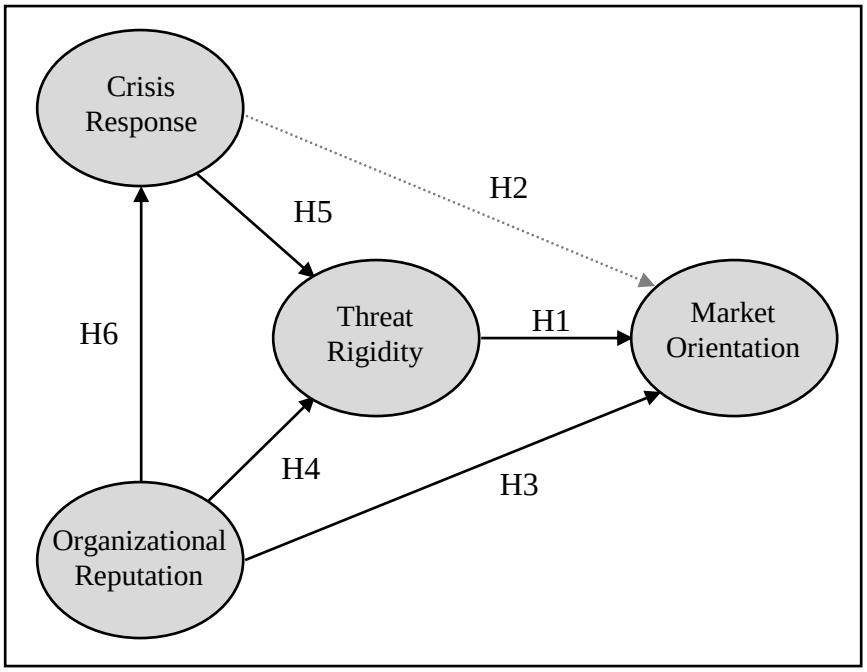

Figure 19 – Final adjusted model

3.4 DISCUSSION

Although highly cited in papers in strategy and organizations, and being posited as a crucial concept in organizational decline (Serra, Ferreira & Almeida, 2013), the Threat Rigidity thesis is unusually less tested and further developed (Plotnick, Turoff & Van den Eede, 2009; Plotnick & Turoff, 2010; Martins, Serra & Maccari, 2017). As such, general testing of its theories pales in comparison to the sheer volume of its citations. A largely neglected aspect of this theory is that the literature development has been lacking inclusion of antecedents and consequences for organizational strategy influenced by Threat Rigidity.

Threat Rigidity (at least the original paper) draws heavily on behavioral outputs (consequences) but the internal explanations for its triggers are not entirely explored and need more foundation, since it deals with information processing which are more cognition-oriented. The research on these internal cognitive mechanisms that trigger Threat Rigidity effects has slowed down because of the current ‘silver bullet’ status acquired by Threat Rigidity – which is unfortunate since the theory does offer useful insights through cases (Martins, Serra & Maccari,

2017) to understand organizational decline. However, research on these mechanisms has been resumed by certain authors (Muurlink et al., 2012; Soltwisch, 2015).

Organizational decline needs deeper understanding, which can be achieved by a microfoudantional approach. The idea behind microfoundations of strategy is bridging the gap between causal relations in the macro strategic processes plane and its internal micro mechanisms (Felin, Foss & Ployhart, 2015). One of its advantages is potentially counterbalancing the negative effects of oversimplification in multilevel theories – i.e., whenever different levels of analysis (such as individual compared to the organization) are studied, there is a general tendency to overlook the influence and weight of individuals (Felin & Foss, 2005) and, consequently, their collective routines and capabilities (Abell, Felin & Foss, 2008). As such, both Threat Rigidity, Market Orientation, Crisis Response and Organizational Reputation fill this space, since the analysis provides cognitive microfoundational arguments for eventual poor organizational performance.

This microfoundational aspect is clear on the first hypothesis. Threat Rigidity is built on top of cognitive and behavioral-based handicaps such as sudden restriction in information access, increased control of information, reduction in the ability to assess problems, sharp decline in openness to external environments and answers and, worst of all, retrenching to overlearned behavior (i.e., going back to the organization's old long-tested response cookbook) (Staw, Sandelands & Dutton, 1981; Muurlink et al., 2012). When these stress-induced mindset is in place, decision-making quality drops quickly, defining priorities and problems to tackle becomes muddy and fuzzy, and overconservativeness reigns with a heavy hand. These will lead to dire consequences for internal components of Market Orientation, which is based on information gathering, knowledge production and dissemination and final response to the environment. While a substandard Market Orientation -based strategy may not prove itself critical calm market circumstances or during over-aspirational performance periods, during heightened threats it may as well become ruinous.

The role of Organizational Reputation is also paramount as organizational self-assessment is indicative of slack resources and internal better resource coordination and management, fueling cyclically overall reputation (Shenkar & Yuchtman-Yaar, 1997; Alessandri, Cerrato & Depperu, 2014), although the relationship between reputation and performance depends on the role of the stakeholders and circumstances, such as internal constituencies in an

organization (Puncheva-Michelloti & Michelloti, 2010), and more so in critical times. More importantly, this microlevel of analysis is fundamental, since internal reputation may foster inwards human capital flow (Makarius & Stevens, 2017). This is essential to give an organization enough flexibility as well as cognitive, experience and expertise heterogeneity (Baer, Dirks & Nickerson, 2013) to deal more successfully with crises outcomes through, for instance, creative problem-solving and innovation exploration (Nickerson, Yen & Mahoney, 2012; Harvey, 2014). Consequently, internal resources appraisal (including complementary assets), and, therefore, their management, may counterbalance Threat Rigidity effects or hinder organizational inflexibility to set in.

Crisis Response, on the other hand, does not influence significantly the Market Orientation of foreign trade companies, at least directly. This is probably due to the fact that two dimensions of CR are mainly present in the items preserved in the constructs – the crisis' properties and environmental properties that protect an organization from the said crisis. For the first, items such as "Each crisis is so unique that it is impossible to prepare for all crises" or "Most crises resolve themselves, therefore time is our best ally" were very important to the formation of the construct. This is on par with traditional Brazilian values of avoiding uncertainty all the while displaying a medium-to-high long-term orientation, such as patience to endure and tolerate crises (Caldas, 2006). Thus, a possible explanation is a mix of fatalism and local attitudes of tolerance to crises.

For the second (environment), the Brazilian economy has become fragilized in control of capital in- and outflows in the 1990s (Carvalho, 2002). Not only that, but there is also an increasingly dependence trend on external capital and Foreign Direct Investment (FDI) to sustain economic growth locally. This dependence is even more evident in the growing foreign trade relationship with China (Fung et al., 2016), which made the Brazilian export market lenient and indolent. As such, liberalization in Brazil meant more permeable borders for FDI, compensated by a steep growth in commodities exports to China (Wilkinson & Wesz Jr., 2016). Therefore, Brazilian commodity exporters became adjusted to the constant and growing outflow of exports. However, there is a tendency of deindustrialization in the central economies (Felipe & Mehta, 2016), and Latin America was particularly hit by it (Rodrik, 2016). To make matters worse for Brazil, China is rapidly occupying the voids left by these economies and, consequently, moved up the ladders to finer industries (Li et al., 2017), which, in turn, suddenly diminished the need

for Brazilian commodities. This scenario makes Brazilian exporters unprepared for sharp drops in the market for commodities.

However, from a microfoundational standpoint, Crisis Response does indirectly influence Market Orientation, since it does its share of setbacks in lowering the quality of the decision-making processes. The same fatalism plays a devastating role when crises arise, and the unpreparedness for them makes the quality of the decision-making take the blow. Believing that crisis management procedures prior to crises is useless and, more importantly, that time will make it go away amalgamate in a catastrophic form of denial –not the external, deliberate denial to calm down stakeholders (Coombs & Holladay, 2002; Coombs, 2007), but a true, much worse form of real denial.

3.4.1 Limitations and further directions

The evidence gathered allows us to understand that Threat Ridigity, with its cognitive aspects and decision-quality lowering capacity does influence negatively Market Orientation. Both have overlapping features, such as dealing with information processing and decision-making. Threat Rigidity focus on the cognitive aspect and behavioral consequences that make all the problemistic search, solution finding and decision-making go haywire in critical times. Market Orientation, in turn, works under the procedural assumptions of information gathering, intelligence generation and response action. As such, they form a continuum of problems and setbacks in the decision-making procedures for an organization undergoing crises. From a theoretical point of view, Threat Rigidity offers microfoudational support for many of the problems found in Market Orientation in times of crisis.

A second important aspect is that Organizational Reputation, especially seen from the inside, is a powerful organizational tool to assess an organization’s stance before crisis. It also helps organizations go through TR-induce state unscathed or at least minimize its negative outcomes. As a cyclical concept, it fuels organizational commitment and helps protect organizations interests in its environment. More research in the internal impacts of organizational outcomes is in order, as well as its relationships with decision-making.

This research has a few limitations. Although the sampling is adequate for testing the hypothesized relationships, different results could have arisen if other sectors were considered for further analysis. The sample also concentrated on professionals in Brazil and, again, different answers would appear in different contexts. Also, in the research were only foreign trade professionals included. The same concepts may encounter different reactions in different industries, especially when it comes to decision making models, procedures and experience needed (Judge & Miller, 1991; Forbes & Miliken, 1999).

As for the choice of scales, the Organizational Reputation scale distributes its items in several concepts, some of which may not be as well associated with internal resources and as, such, needs its own research on how to better separate the generators of reputation from the fueling cycle of reputation. Concerning Crises response, the adaptation was done from a questionnaire whose purpose is to measure several aspects that influence decision making dealing with crises. The problem with this is that some concepts are positively associated with the incidence of a crisis while others are antagonistically associated with avoidance of the crisis. As such, research on the mechanisms of crisis appraisal still needs maturation from a strategic point of view, reflected in its measuring tools.

4. CONCLUDING REMARKS AND FUTURE RESEARCH

The importance of the Threat Rigidity thesis to the studies of strategy in organizations is paramount. Not only it is a well-cited phenomenon but also it is possible to observe it happening in organizations worldwide. This is because not matter where, human cognition and consequent behavior is very much alike. From a theoretical point of view, Threat Rigidity is proposed originally as a potential cause for several negative effects in poor decision-making. However, since the original paper, TR is plagued with curtailed definitions. This vagueness is the probable cause for the different interpretations of what TR is, when it happens and what it causes to organizations. The same reason applies to why there are much fewer empirical studies than theoretical ones, and why they are difficult to compare.

As for the last part, there is a theoretical problem. Threat Rigidity mainly resides in the cognitive domain – i.e., it part of the human experience that is not entirely possible to observe. Its consequences – the decision-making final processes and the decisions themselves – are

observable but not a perfect proxy for the cognitive part of the process. As such, between cognition and behavior, some important parts go missing, and make conclusions for the outcomes may not prove fruitful for proving or disproving the cause.

Because of this delicate stance, employing psychometric scales (although their limitations exist, and are consistently covered in the literature) may prove a better mechanism to understand the cognitive side of the poor decision-making under heightened stress. Therefore, I endeavored to reorganize the original TR model, by including aspects that are present in the literature but largely ignored in the TR studies. In this sense, I am very much indebted to Mr. Daly for the access to his original data on the development of the scale (including dropped items) (Daly, 2009; Daly et al., 2011).

This dissertation, as a consequence, has three main goals. First, is to analyze a closer examination of the original model and verify whether the need for better clarification in the model was in order. For that, the second goal was to re-do the model, including newer elements missing in the original concept – as well as testing whether the behavioral outcomes in organization-level variables would happen as prescribed. While not all hypotheses were confirmed, the ones that remained are a confirmation of the relationship between TR and organizational reaction. The third goal was testing whether this new, improved version of the model would be stable enough to withstand complex testing with other already tested constructs. After finishing the three goals and analyzing the results I believe these three goals were adequately met.

Nonetheless, this research has its shortcomings. While an effort was made to assure the correct modeling and data collection, the studies here do not cover all possible scenarios or other concepts that could be potentially coupled with Threat Rigidity. The same happens with the sample respondents as well as the setting (Brazilian foreign trade sector). Whereas these are good indicatives of the model, more research is in order to solidify the model, expand it and complete its linkage with other significant strategic and organizational constructs. As such, these studies open new avenues of research on both strategy and organization, as well as their connection with other relevant fields in management.

Every concept evolves with time, and with strategy it is not different. The whole change of paradigm from sheer rationality, to bounded rationality and the increasingly presence of

evolutionary aspects, aided by biologically-originating concepts such as cognition and behavior, in the understanding of decision-making makes it ampler to research. As for the updated model in TR, it reflects the changes in the strategy studies' scenario from the time of the publication of the original paper (Staw, Sandelands & Dutton, 1981) – roughly 36 years. During this period, multilevel theories have become widespread, and methods for modelling complex phenomena have also come to become comprehensive and popular. It also reflects the theoretical developments in strategy and organizations as fields of enquiry.

Although the presence of psychological concepts in strategy is far more reaching than it used to be back in the time of the original paper, it still is mainly used as metaphor, and has been for quite a while (Tsoukas, 1991; Tsang, 1997; Heraclious & Barrett, 2001; Bruun & Toppinen, 2004; Sułkowski, 2011). That is, psychology in terms of cognition is usually perceived as metaphor for understanding organizational change, behavioral psychology is used to gauge the cognitive (and I discussed beforehand the potential weak link between them), but usually they are employed and explored in a macro setting without links to the middle and lower levels of organizational strategy, although theories on group think (Crossan, Lane, & White, 1999; Brown, & Starkey, 2000; White, 2016), coalitions (Stevenson, Pearce, & Porter, 1985; Grieves, 2000; Appelbaum et al., 2012) and collective learning (Simonin, 1997; Vera & Crossan, 2004; Powell, Lovallo, & Fox, 2011) are nowadays considered commonplace.

In this sense, the microfoundations approach to strategy fills this void. It aims at bridging the gap between the macro level to the individual, going through routines and group coalitions. The models included in the studies developed for this dissertation have this role, of providing evidence of maladaptive reactions due to Threat Rigidity, but not only on a theoretical basis but rather from an also measurable stance.

Both studies contribute to the practice by detailing the mechanisms entailed by heightened threats. The first study does so in a more detailed level, and the second study in a more organizational level. Both contribute to the understanding of impaired practices and dynamic capabilities when organizations cade crises, as well as in providing more evidence and basis for further research on strategy as practice.

Finally, it provides managers with a clearer view of what happens to their organizations and groups during stress-induced states. This provides them with the theoretical aspects necessary

to put in place organizational mechanisms and newer routines and practices to keep information flowing, have a less strict control and avoid ‘not-invented-here’ syndrome (Cohen & Levinthal, 1990) and become open to finding solutions in the external environment.

In this dissertation, I also included a bibliometric study in an appendix, which was added in order to provide some background information about the expansion of the original concept and further studies from Staw, Sandelands and Dutton (1981) to date. It serves to demonstrate the disparity in the number of citations and empirical studies as well as other relevant facts. However, since it does not directly link with the hypotheses presented in the studies here, it is not supposed to become an extra chapter.

4.1 FUTURE RESEARCH

The results obtained in the studies 1 and 2 allow for more research in three directions. First, there is more research on the TR model as moderator or mediator in future studies. Two antecedents I intend to test in a future study are ‘Search for new technologies’ (Parasuraman, 2000) and ‘Market and Technological turbulence’ (Segarra, & Callejón, 2002; Santos-Vijande & Álvarez-González, 2007) (see Figure 20). While the first may be linked to the openness to external environment as well the open to cognitive variability in groups for decision making, the second aims at understanding the effects of market volatility in TR.

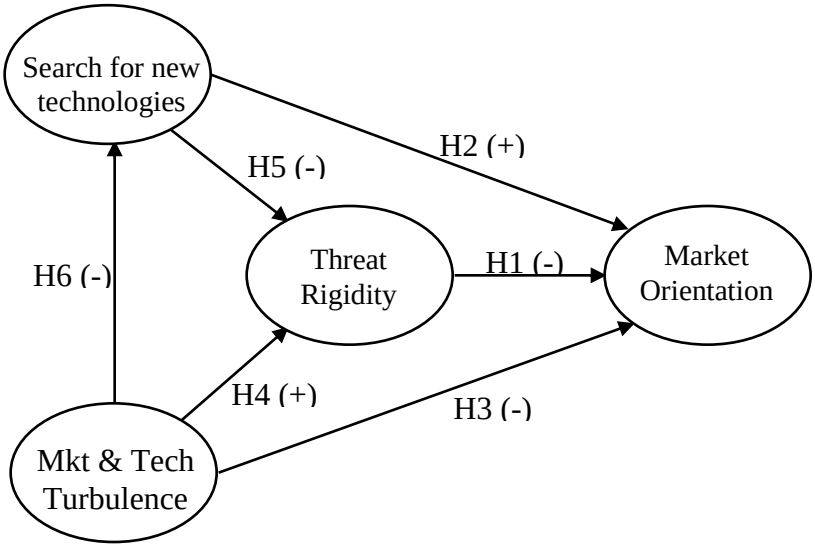

Figure 20 – Future model for research - 1

A second test I intend to test is the effect of Regulatory focus on how (middle to top) managers perceive the internal appraisal of the organization during crises (refer to Figure 21). That is, a formal definition of regulatory focus is dividing people in two groups, one who makes decisions based in 'promotion' and other based in 'prevention' (Higgins, 2000; Brockner & Higgins, 2001). These two can be further defined as "a promotion focus is concerned with advancement, growth, and accomplishment, whereas a prevention focus is concerned with security, safety, and responsibility" (Crowe & Higgins, 1997). As such, promotion-based managers may be more prone to seeing threats as opportunities whereas prevention-based managers may see them as crises.

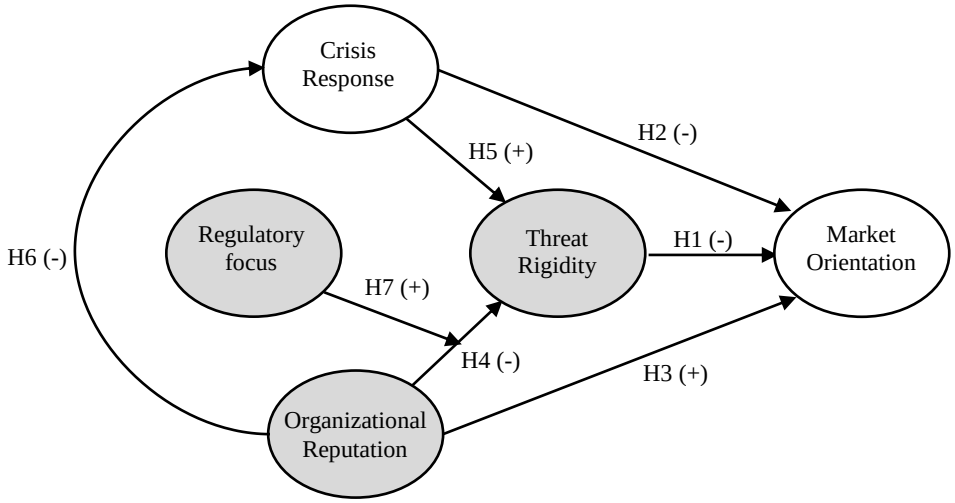

Figure 21 – Future model for research - 2

There is also a third model I would like to test. This one focuses on the 'newness' of organizations – i.e., TR works best when organizations have longer accumulated knowledge and experience and consequentially a larger amount of organizational memory, which, in turn, makes them more prone to Return to Overlearned Behavior. As such, I intend to collect data on start-up companies, in the early stages of development to verify whether TR still works entirely or partially (see Figure 22).

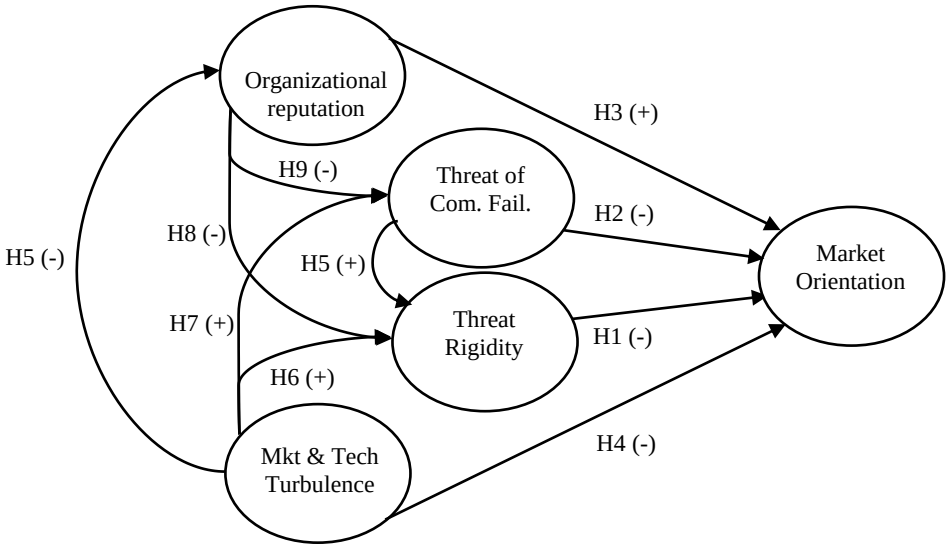

Figure 22 – Future model for research - 3

A fourth and final model I intend to test is the antecedent effect of Threat Rigidity on Strategic Problem Formulation (see Figure 23). Strategic Problem Formulation is a key concept in strategy (Lyles, 2014), but the cognitive problems associated with inadequate decisions was further studied by Baer, Dirks and Nickerson (2012).

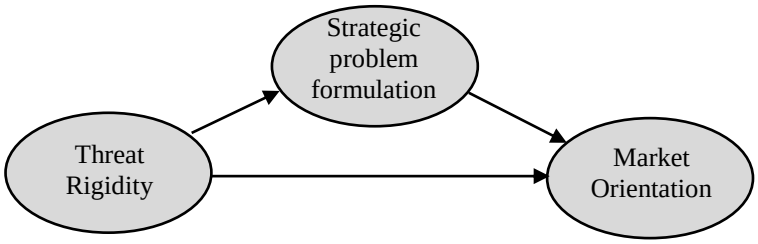

Figure 23 – Future model for research - 4

To test this model, I developed a scale prototype to measure the cognitive and personal differences in their original model (Baer, Dirks & Nickerson, 2012:7) (see Figure 24).

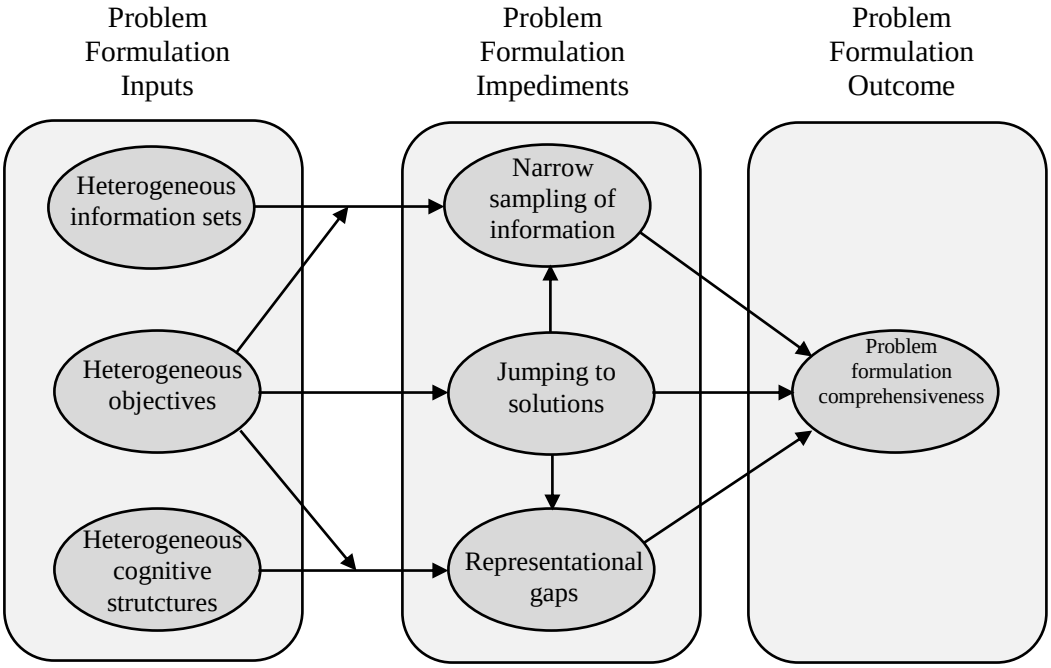

Figure 24 – Adapted from Baer, Dirks & Nickerson, 2012:7.

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APPENDIX A – SCALES

Threat Rigidity (Daly, 2009; Daly et al., 2011; Current research)		
1	Restriction in information (RII)	
	01	Limit the flow of information
	02	Close off dialogue
	03	Suppress opposing views
	04	Curtail quests for new information
	05	Distribute information from the top to the base [n] *
	06	Actively collect information from tactical and operational levels [n] *
	07	Create panic by not disclosing the real situation [n]
	08	Employ vague language to position the organization [n]
	09	Clearly communicate the threat internally [n] *
	10	Ask for collaboration from all areas and levels for a problem solution [n]
2	Constriction in Control (CIC)	
	01	Maintain a rigid hierarchical structure
	02	Make decisions only at the top levels
	03	Micro-manage organizations' daily operations and tasks
	04	View mistakes as signals of failure
	05	Grasp for solutions in a frantic manner
	06	Believe staff is unable to solve instructional problems
	07	Responds to demands impulsively
	08	Ignore suggestions and solutions from non-strategic levels [n]
	09	Open decision making processes to non-strategic levels [n] *
	10	Search for consensus among organizational levels to make a decision [n] *
3	Reverting to Overlearned Behavior (ROB)	
	01	Maintain existing routine approaches
	02	Limit creative problem solving
	03	Make decisions based on preconceived judgments
	04	Respond to new situations primarily on prior experience
	05	Insist in using the same strategies from past crises [n]
	06	React to threats by changing the direction of plans [n] *
	07	Firmly believe the experienced gathered is enough to resist threats [n]
4	Repression in Discriminative Abilities (RDA)	
	01	Oversimplify complex situations
	02	Use short term fixes for complex problems
	03	Fully understand the problems [n] *
	04	Show lack of focus when assessing problems [n]
	05	Underestimate the effects of the threat [n]
	06	Deny the threat applies to the organization [n]
	07	Carefully look for understanding the threat [n] *
	08	Bring in people from different areas and expertise to assess the threat [n] *
	09	Cannot fully assess the consequences of the threat [n]
5	Reduction in Peripheral Stimuli (RPS)	
	01	Limit outside assistance
	02	Avoid opportunities for collaboration
	03	Withdraw from professional interaction
	04	Look elsewhere for novelties or strategies to overcome threats [n] *

	05	Look for and assign blame for the threat internally ("witch-hunting") [n]
	06	Ignore market trends [n]
	07	Invest in R&D having in mind what competitors do [n] *
Market Orientation (Kohli & Jaworksi, 1990; Garrido, 2007)		
1	Intelligence Generation (IG)	
	01	We generate a lot of information about the trends in our international markets
	02	We generate a lot of information in order to understand the forces that influence the needs and preferences of our customers
	03	We generate a lot of information in order to monitor and understand the performance of our competitors in international markets
	04	We constantly monitor our level of commitment and orientation to fulfill the needs of our customers abroad
	05	Our top management, in all functional departments visit regularly our international clients
	06	We regularly and systematically assess our customers' satisfaction in markets abroad
	07	We periodically assess the possible effects of changes in the domestic and international markets' environments on our customers abroad.
	08	We regularly collect and evaluate general macroeconomic information
2	Intelligence Dissemination (ID)	
	01	We share all information concerning our competitors in foreign markets with all company departments
	02	Information that may influence the way we serve our international customers reach the export team quickly
	03	The export team regularly share information with the whole company, concerning our competitors' strategies in foreign markets
	04	We freely exchange information about successful and unsuccessful experiences with our international customers with all functional departments
	05	Our company's top management regularly discusses and assesses the strengths and weaknesses of our competitors in foreign markets
	06	We frequently have interdepartmental meetings to discuss trends and developments in foreign markets
	07	We regularly have interdepartmental meetings to update our knowledge on international requirements and standards
	08	The technical area crew, in our company, spends a lot of time sharing information about technology for new product development with other departments
3	Response Action (RA)	
	01	We periodically review our efforts in product development, in order to ensure they will comply to what our customers want.
	02	We value a lot our post-sale services in our foreign markets
	03	Our goals towards international businesses are determined mainly by the needs and satisfaction of our customers.
	04	We quickly respond to competitive actions of our competitors, which threaten us in our foreign markets
	05	Our strategy for the creation of competitive advantages in international markets is based on our understanding of the needs of international customers
	06	The products we sell in our international market are determined more by the needs of customers than our company policies
	07	Whenever we detect our international customers are unsatisfied or suggest changes in our products and services, we take corrective actions immediately

	08	We are quick to respond to the environmental changes that may affect our international businesses
	Interfunctional Coordination	
	01	In our company, all departments work together, as a team, regarding our international businesses
	02	The activities of the different departments in our company are integrated and well-articulated among themselves in search of a common goal
	03	In our company, whenever interdepartmental conflicts arise, we reach mutually satisfactory settlements
	04	Employees from the same exporting unit and those from other departments help each other
	05	In this company, there is a sense of teamwork that goes all the way to the shop floor
	06	In our company, there is a strong collaboration relationship between the exporting and production crews
	07	The different functional areas of this company work together in the same direction
Organizational Reputation (Fombrun, Gardberg & Sever, 2000)		
1	Emotional Appeal	
	01	I have a good feeling about the company
	02	I admire and respect the company
	03	I trust this company
2	Products and services	
	01	Stands behind its products and services
	02	Develops innovative products and services
	03	Offers high quality products and services
	04	Offers products and services that are good value for money
3	Vision and Leadership	
	01	Has excellent leadership
	02	Has a clear vision for its future
	03	Recognizes and takes advantage of market opportunities
4	Workplace Environment	
	01	Is well managed
	02	Looks like a good company to work for
	03	Looks like a company that would have good employees
5	Social and Environmental Responsibility	
	01	Supports good causes
	02	Is an environmentally responsible company
	03	Maintains a high standard in the way it treats people
6	Financial Performance	
	01	Has a strong record of profitability
	02	Looks like a low risk investment
	03	Tends to outperform its competitors
	04	Looks like a company with strong prospects for future growth
Crisis Response (Pearson & Mitroff, 1993)		
1	Properties of the organization	
	01	Our size will protect us
	02	Excellent, well-managed companies do not have crises
	03	Our special location will protect us
	04	Certain crises only happen to others
	05	Crises do not require special procedures

	06	It is enough to react to a crisis once it has happened
	07	Crisis management or prevention is a luxury
	08	Employees who bring bad news deserve to be punished
	09	Our employees are so dedicated that we trust them without question
	10	Desirable business ends justify the taking of high-risk means
2	Properties of the environment	
	01	If a major crisis happens, someone else will rescue us
	02	The environment is benign
	03	Nothing new has really occurred that warrants change
	04	Crisis management is someone else's responsibility
	05	It's not a crisis if it doesn't happen to or hurt us
	06	Accidents are just a cost of doing business
3	Properties of the crises themselves	
	01	Most crises turn out not to be very important
	02	Each crisis is so unique that it is impossible to prepare for all crises
	03	Crises are isolated incidents
	04	Most crises resolve themselves, therefore time is our best ally
	05	Most (if not all) crises have a technical solution
	06	It's enough to throw technical and financial quick-fixes at a problem
	07	Crises are solely negative in their impact
4	Properties of prior crisis management efforts	
	01	Crisis management is like an insurance policy; you only need so much
	02	In a crisis situation, we just need to refer to the emergency procedures we've laid out in our crisis manuals
	03	We are a team that will function well during a crisis
	04	Only executives need to be aware of our crisis plans
	05	We are tough enough to react to a crisis in an objective and rational manner
	06	We know how to manipulate the media
	07	The most important thing in crisis management is to protect the good image of the company
	08	The only important thing in crisis management is to ensure that our internal operations stay intact

[n] = new items developed for this research

* = reverse-coded items

APPENDIX B – BIBLIOMETRIC STUDY

The 1960s were prolific years in the sense that strategy started being permeated from useful insights from other areas such as psychology and behavioral sciences. Among these, the Carnegie school was preeminent (Simon, 1949; Simon & March, 1958; Cyert & March, 1963), as it was a core university where the idea of unbounded rationality was first challenged. A few decades later, a theoretical consequence for strategy in a more restricted sense was the development of the Threat Rigidity thesis (Staw, Sandelands & Dutton, 1981). The idea behind TR is that when people interpret threats as inductive of possible ruinous outcomes, they become "rigid". In an organizational perspective, two main negative following outcomes may happen – retrenching of control inside the top management following a clear cut in the information flow.

Although simple in its conception, TR provided academics and practitioners with a sound explanation for organizational decline. The original paper may also be considered the second most cited paper in organizational decline, with approximately 20% of all papers citing it. Nevertheless, empirical testing of the theory is scarce and usually met with technical difficulties and theoretical ambiguities. As such, after 35 years of the publication of the original paper, TR still lacks more definition, testing and theoretical expansion. Therefore, a review of the extant literature is in order.

In this study, I propose reviewing the literature on TR in three aspects. The first is a content analysis. This is a different approach since it is not based on the most cited authors, but on the collective, accumulated knowledge found on the whole corpus. Second, a more traditional bibliometric component, focusing on the most cited papers and authors. Third, an in-depth analysis of the most cited papers.

Content Analysis

Unlike traditional bibliometric studies, I decided to start it with a content analysis. While most bibliometric studies do delve into the content, they do so by first eliciting the authors and most cited papers and from them the theoretical interrelationships existent. Although that is the

most used procedure – and later in this study it is also done – analyzing the raw content of a whole database on the subject may prove useful.

To do thus, I searched the Web of Science database with ‘threat rigidity’ as target content and it returned 179 papers. Classic bibliometric studies would traditionally discard most papers after categorizing the corpus in factors (and focusing on the most cited only), but by using alternative methods the full potential of the raw data may be unleashed. This is the rationale behind the use of the ALCESTE method (Ratinaud & Marchand, 2012). Its use is recommended when there is a huge corpus of separated but logically or theoretically intertwined units of content, such as papers, as is the case here. Its procedures include splitting texts into smaller units and these units in shorter segments (sentences, for instance). These sentences are further simplified by a process of lemmatization (having words with the same base simplified to the base form).

As for the analysis itself, this method also classifies lemmatized words in a descending hierarchical order. This is done by comparing dichotomously presence/absence in the all text partitions and a chi square text between words and partitions (correspondence factor analysis).

4.1.1.1 Sample adequacy tests

The first statistical treatment applied to the textual corpus was to carry out a compliance test to Zipf's law. (ZIPF, 1949). Zipf's law is nothing more than a mathematical distribution observed through statistical empiricism, where the frequency of an instance is approximately inversely proportional to its order of descending importance (POWERS, 1998), according to the probability of a rank r such that

$$P(r) \approx \frac{1}{r \ln(1.78\,R)},$$

where r is the number of different words in a linguistic corpus (PIERCE, 1980; GOETZ, 2015). This distribution has a very common occurrence and it is used to verify whether validity can be found in studies of the most diverse fields (THURNER ET AL, 2015).

However, the most common application of Zipf's law occurs in the analysis of sets of words and texts (corpora). Applied to a natural linguistic corpus, the importance of a word will always be about half of the next most important word. In a graphical way, the conformance to this law is interpreted when the instances in analysis approach the decreasing perpendicular axis, shown in Figure 08. However, there is a limitation to the distribution, in which after the first 1000 instances (cases, words, etc.) it lacks potential for explanation. Since the volume of data used for subsequent analyzes does not exceed the limit of 1000 base word forms (through lemmatization / simplification process, see 2.1.1.2), the set of words conforms to Zipf's law.

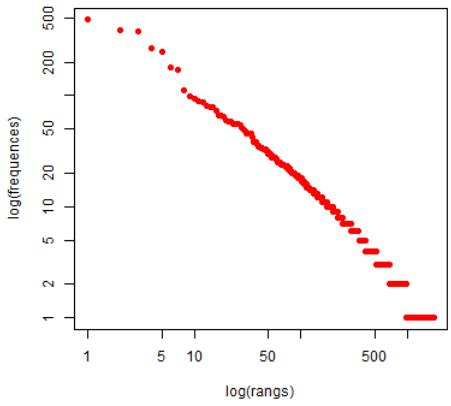

Figure 23 - Compliance with Zipf's Law

The objective of verifying the adherence of the corpus to the Zipfian distribution in a linguistic corpus is that it is an empirical way of validating the existence of latent variables with low dimensionality. This indicates that such a corpus is a relevant extract of data. In turn, these data portray typical phenomena of underlying real-world structures such as subjects with interrelated categories and subcategories among them (Aitchison, Corrad, Latham, 2014). This property is not observed in data sets or texts that do not have internal coherence (Zanette; Montemurro, 2005) or whose arrangement is random (Ferrer-I-Cancho; Elvevåg, 2010).

In other words, the set of selected articles provides sufficient internal variation to be understood as a simulacrum of reality, since the variation in the forms found in the corpus reflects the complexity naturally found in extracts of human sequential communications (Piantadosi, 2014). This is due to artificial communication (scientific citing after citing), but equally valid,

between the various texts, as part of the academic practice of sequential citation and construction based on previous results (Williams et al., 2016).

This property is independent of the language (Corral, Boleda, Ferrer-I-Cancho, 2015) and the size of the corpus (Moreno-Sánchez; Font-Clos; Corral, 2015). Likewise, it is suggested that there are relatively high integrity and internal coherence in studies in applied social sciences (Vilhena et al., 2014), which also applies to the corpus chosen. These results evidenced the adjustment of the database collected to the purpose of this study, since it reflects the same natural variation of concepts and constructs of an ideal set.

On the other hand, traditional textual analysis succumbs in situations of overwhelming numbers of repetitive texts or, at least, they suffer from severe limitations (Pusteyovskiy, Anick, Berger, 1993). However, unlike expected, the repeatability of formats, formulae and sequences within texts does not present disadvantages in automated analysis or saturation, even with billions of words analyzed (Sasano; Kawahara; Kurohashi, 2009). This is, in fact, a clear advantage in analyzing how speeches (Biber; Connor; Upton, 2007), message frames (Morris, 1994; Bloss; Kohles, 2014) and communication formats are comprehensively copied. In this aspect, the greater the repetition of formats, the more clearly the internal categories of texts stand out in automated analyzes (Truc, 2011).

4.1.1.2 Category eliciting

Since the analysis of Zipf's law application demonstrates the adequacy of the sample of articles and provides evidence of the existence of internal categories of theoretical grouping, I proceed to the analysis of such possible groupings via the Reinert method. According to this method, the fundamental elements of discourse and how they are organized internally are determined through statistical distributions (Reinert, 1993), showing the regularities, symmetries, similarities and differences between sets of words, their relations, and the limit of its semantic boundaries as well as its usage overlaps (Thom, 1974; Aubert-Lotarski; Capdeville-Mougnibas, 2002; Kalampanikis, 2005).

This method deduces and extracts the internal categories assembled by means of internal components or constructs, by separating blocks of words that establish mutual relations of joint

use. For that, the Iramuteq software was used. This software breaks texts and analyses all words (although for this analysis only verbs, verbs and adjectives were retained) and develops a descending hierarchical classification. By analyzing the 197 papers' abstracts, it was possible to find a total of 10510 different words, simplified in 1777 lemmas (300 connecting words such as 'the', 'that', etc. excluded) (see Table 12).

Indices	**Results**
Number of text segments	297
Number of forms	2220
Number of occurrences	10510
Number of lemmas	1777
Number of active forms	1477
Number of supplementary forms	300
Number of active forms with frequency ≥ 3	529
Average number of forms per segment	35.39
Number of classes	3
Classification	233 segments out of 297 (78.45%)
Number of hapax (unrepeated words)	806 (7.67% of all occurrences)

Table 12 – Word forms, lemmas and summarized data.

However, only 529 forms had a significant frequency to be analyzed. These are concentrated in chunks of text of approximately 35.4 words. The internal algorithm was able to determine three main classes (internal constructs) using 78.5% of all text chunks, using a χ^2 test, whose results explain the force of the link between the word form and its class (instead of other classes).

However, word forms can freely appear in other classes, and thus, the test serves a reliable measure of construct validity (in-class convergent validity and between-classes divergent validity). On subsequent figures, one may see the most frequent word forms that appear on the three classes – although other forms that do not appear in each class may be more important and frequent in their own classes. Albeit obvious, for the sake of clarification I point out that the word forms 'threat', 'response', 'rigidity', 'strategic' and 'firm' are overall pervasive in all classes.

About these three classes and their relative relation, there is little to say. If there were several classes, divided in several different branches, a few remarks about their positioning could be inferred. However, with only three classes one can only say that they are closely related to

each other and that classes 1 and 2 are slightly closer than class 3 (Figure 24) – see 2.1.1.3 for more details.

Figure 24 – Categories - dendrogram

A dendrogram is a tool to elicit internal similarities between counterparts (subsets) of a larger data set. Since only three 'branches' appear in this dendrogram, it is possible to understand that the differences in internal categorization are not pronounced. It is also possible to understand (from the most relevant words – in hierarchical descending order in each branch) that the main theoretical aspects of TR are more closely related to organizational aspects and its own problems than to a more 'strategic' approach (at least if one considers strategy from a top-down, executive-based decision system).

On the other hand, it is not practical, at least in terms of theory building, to propose a clear cut between strategy (as seen from the top management) and organizational behavior (as seen as holistic approach). This may find some relevance and theoretical foundation in the newer (revamped) field of microfoundations of strategy, which aims at decomposing "macro-level

constructs in terms of the actions and interactions of lower level organizational members, understand how firm-level performance emerge from the interaction of these members, and how relations between macro variables are mediated by micro actions and interactions" (Felin, Foss & Ployhart, 2015:E22).

This trend of understanding macro-level outcomes from these micro-level decision-making mechanisms becomes clear in the dendrogram. It demonstrates that the central aspect of the theory affects organizational daily issues more closely (as problem dealing, routines, and general actors involved in the simpler decisions), and then later affect problems related to power structures and governance.

4.1.1.3 Clusters

Another analysis done with the ALCESTE algorithm is the possibility of qualitatively analyzing clusters elicited from theoretical aspects. All 179 papers were classified according to the decision orientation – i.e., whether this decision was based on *cognitive*, *behavioral* or *emotional* features. The papers were further classified according to the kind of decision involved in the decision-making process – whether it is purely *strategic*, based on *marketing* (external) orientation or *political* (relationships, groups, coalitions etc.). Further classification was done to separate whether the papers dealt with the *leadership*, the *organization* as a whole or *stakeholders* in a generic scenario. Finally, papers were classified according to a few possible, highly repeated situations or foci such as *change*, *learning*, *crises*, *resources* or *performance*. Every paper was classified according to these categories, and sometimes more than one in each category, after the analysis of the text. Three clusters were generated, as seen in Figure 25.

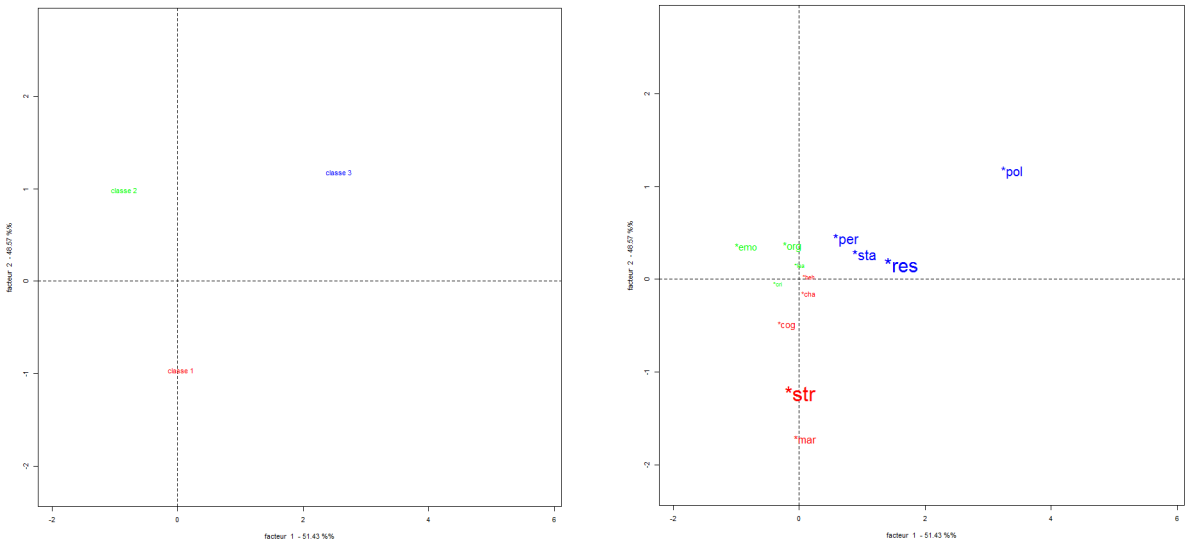

Figure 25 – Clusters – centroids and category classifications

Let us start analyzing each cluster. The first cluster's chi square tests are found in the figure XX and represent the main words associated with it ("classe 1")

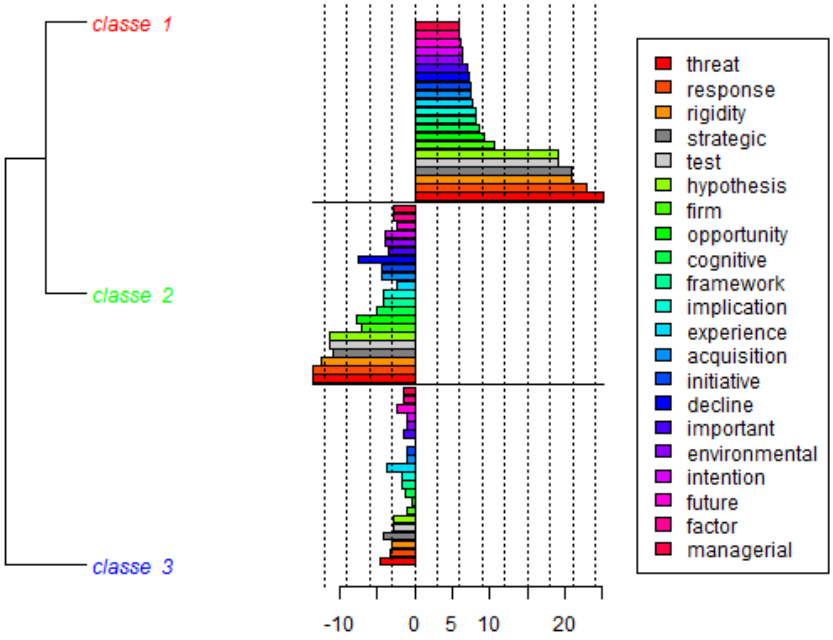

Figure 26 – Cluster 1 and associated words.

To make data more accessible, the words associated with the first cluster, and the classification data are abridged in Table 13.

Cluster 1	Coordination for Change (in red – 48.9%)	Main lemmas associated
	Subject: Marketing + Strategy	threat, response, rigidity, strategic, firm, opportunity, cognitive, implication, experience, acquisition, initiative, deadline, important, environmental, intention, future, managerial, company, intensity, market, develop, low, erratic.
	Orientation: Behavioral + Cognitive	
	Actor: Ø	
	Situation: Change	

Table 13 – Cluster 1 abridged format

This is the main cluster, from which the central words ‘threat’ and ‘rigidity’ appear. Along with these, the other main words associated with this cluster are liked to decision-making (*strategic, opportunity, deadline, intention*) as well as general managerial aspects (*firm, acquisition, managerial, company, market, develop*). It focuses on making changes so that the organization may have a fighting chance during crises. It displays a link to two of the subjects (marketing and strategy), which potentially shows an outwards orientation from within. The same can be said about the decision orientation (cognitive and behavioral), which are, as discussed in the main studies of this dissertation, a mirroring of the subjects.

As such, the first cluster concentrates on the transition between thought and action – i.e., from cognition to behavior as well as from strategy to marketing. The main situation associated with was change. These three aspects point to the coordination an organization needs to deploy in order to assure its fitness to the environment and eventual changes it has to undergo to achieve it.

The second cluster (see Figure 27), focuses on organizational aspects from a more social standpoint. By ‘social’, it means that how groups inside an organization will deal and react from the consequences of crises. Leaving aside the words associated with school life (school, teacher, public, historical, etc.), the main words associated with this cluster focus on routines and events as well as there is depiction of negative emotions associated as well (fear, complex, shortfall, pressure). It is also linked with learning, competition as well as performing and problems.

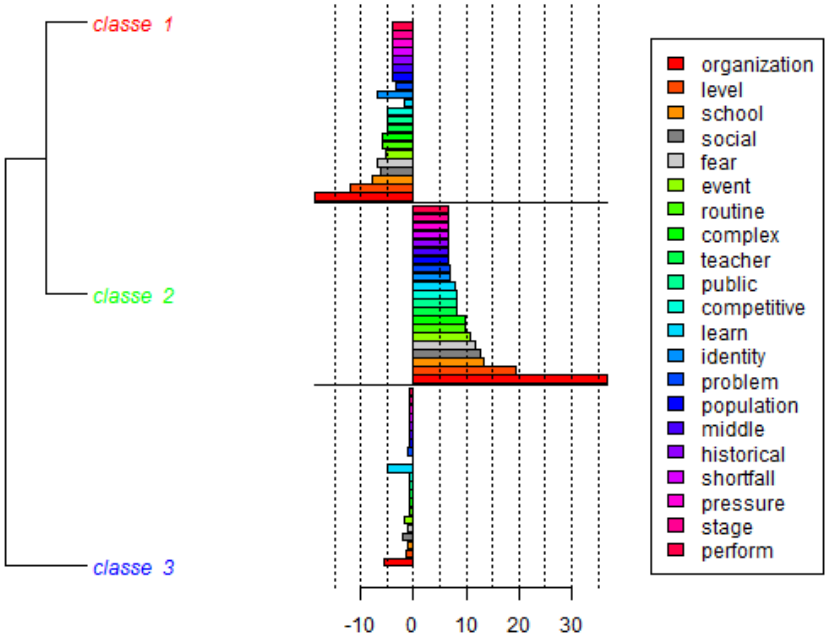

Figure 27 – Cluster 2 and associated words.

The same procedure was done and a table with the abridged information in this cluster is provided (see Table 14).

Cluster 2	**Coping with Crises (in green – 38.2%)**	**Main lemmas associated**
	Subject: Ø	organization, level, social, fear, event, routine, complex, public, competitive, learn, identity, problem, population, historical, shortfall, pressure, perform, improve, enterprise, adaptive, outcome, context, cope, downsize, goal, emotion.
	Orientation: Emotional	
	Actor: Leadership + Organization	
	Situation: Crisis + Learning	

Table 14 – Cluster 2 abridged format

Differently from the first cluster, there is no general subject associated, but instead clear actors involved in the TR processes (leadership and organization). This points to the ongoing

cyclical stages of top-down (recursive) learning of the organization from times of crises. It does also concentrate on emotional aspects, that are mainly ignored in the TR literature.

The third cluster is the one most separated from the other two (see dendrogram).

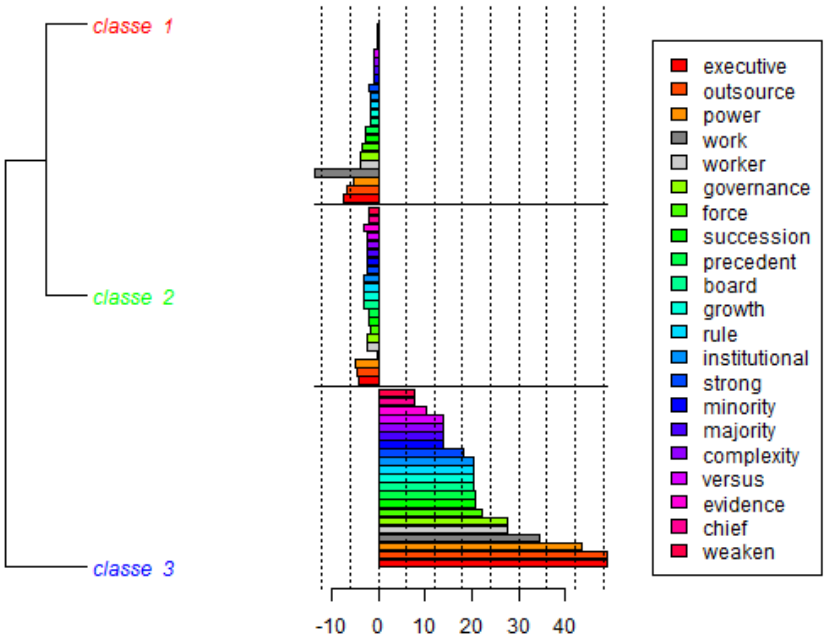

Figure 28 – Cluster 3 and associated words.

The main associated words are linked to corporate governance (governance, succession, board, etc.). A secondary, but also important aspect present, is the power balance and decision-making for it (power, force, rule, strong, weaken).

Cluster 3	**Power and Efficiency (in blue – 12.9%)**	**Main lemmas associated**
	Subject: Politics	executive, outsource, power, work, governance, force, succession, precedent, board, growth, rule, institutional, strong, minority, majority, complexity, versus, chief, weaken, reason, job, outsider, member, business, role
	Orientation: Ø	
	Actor: Stakeholders	
	Situation: Resources + Performance	

Table 15 – Cluster 3 abridged format

Contrary to other clusters, it does not display any affiliations according to the cognitive, behavioral or emotional types of decision, but rather focuses on stakeholders as generals. The main concerns of this cluster are the management of organizational resources as well as general performance.

These three clusters are linked to a cloud of words that are closely associated with the theoretical implications (see Figure 29)

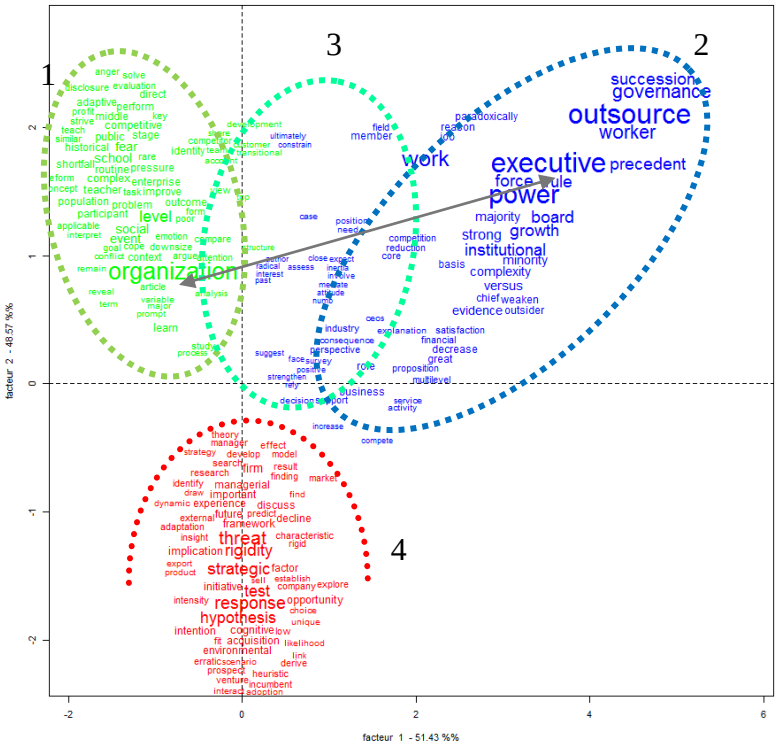

Figure 29 – Clusters and spatial distribution of content.

The cluster in red is the one that clearly centers in Threat Rigidity. It is worth mentioning that it is separate from the others. This could potentially mean that in the corpus in the analysis, inside the text the components of the TR concept are isolated from the rest of the text – it does not display a 'continuum', which is more common to see when two or more concepts are entwined. This happens between the green and blue clusters that share a common space, where words are more close to the centroids of the other clusters than to their own. This continuum moves from *organization* as a centroid to executive as *centroid* in the other.

Although this needs further research, this finding suggests that while the TR concept does appear in strategy and organizational studies, it is not theoretically linked to the rest of the studies. This is another evidence for the high number in citations – i.e., TR is cited as a potential drive for decline or alternative scenario for poor decision making, but it does not go any further in theoretical terms.

The following Figure (30) is an analysis of similitude or communities. This means that words inside colored 'bubbles' are usually found together in the text and, as such, have semantic affinities.

Figure 30 – Similitude analysis (communities).

Although further analysis can also be performed on this graphic, I begin by analyzing the fact that, again, threat Rigidity is isolated from other concepts. The main, stronger TR link with other communities is through research, which demonstrates the much weaker use of TR in conjunction with other theoretical concepts. In comparison, *firm* represents a much larger community with several more key concepts associated, with strong links to *change* through *strategic*, as well as to *decision*, *manager* and *result* through *performance*. The other side of the similitude analysis focus on the organizational aspects of it, and have similar results.

Bibliometric study

Using the same database from the previous analyses, a few classical bibliometric analyses were also carried out.

While the number of published papers does not necessarily correlate with its relevance, it is an indicative of interest in its research. As seen in Figure 31, the number of publications that cite TR in its content has been amplified in the last decades.

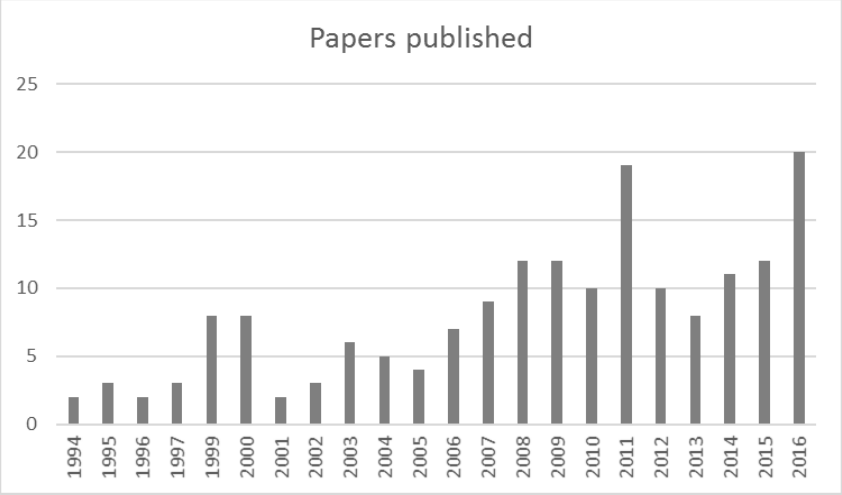

Figure 31 – Number of published papers.

However, there is no author with a large concentration of studies in TR. The authors most cited using TR in their own studies are Desai, Greve and Occasio (see figure 32). Even these authors have only published as far as three papers with the theory.

Author	Record Count	% (of 197)
Desai, V. M.	3	1.7
Greve, H. R.	3	1.7
Ocasio, W.	3	1.7
Palmer, T. B.	2	1.1
Sharfman, M. P.	2	1.1
Shepherd, D. A.	2	1.1
Sitkin, S. B.	2	1.1
Sutcliffe, K. M.	2	1.1
Zajac, E. J	2	1.1
Zhang, Y.	2	1.1

Figure 31 – Authors with most published papers dealing with TR

Next is an extracted map of the main co-citations (first author's name for clarity) (see Figure 32).

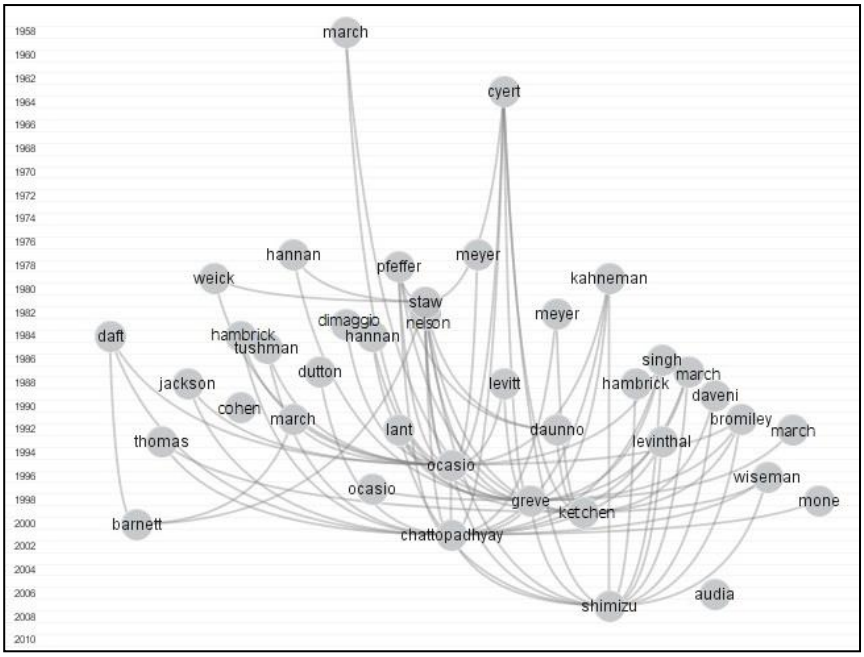

Figure 32 – Main co-citations.

Several of these authors are known for their strategy and organizational studies. This may be a consequence of what was discussed before, that TR is cited among other theories as an explanation for organizational decline, learning or decision-making, but may be more of a shallow type of theoretical interference in the studies.

Threat rigidity studies are also concentrated in the United States (see Figure 32).

Country	Record Count	% (of 197)
USA	111	61
Canada	15	8.1
England	9	5
Netherlands	9	5
China	8	5
Australia	8	4.4
Germany	7	3.8
France	5	2.7
Italy	5	2.7
Sweden	5	2.7

Figure 32 – Main co-citations.

As expected, except for one Canadian university, the universities that most published about Threat Rigidity are all in the United states.

University	Record Count	% (of 197)
Northwestern University	7	3.8
Pennsylvania State University	6	3.3
University of Colorado	6	3.3
Harvard University	5	2.7
Arizona State University	4	2.2
Stanford University	4	2.2
University of Michigan	4	2.2
University of Oklahoma	4	2.2
University of Wisconsin	4	2.2
University of Western Ontario	3	1.7

Figure 32 – Main co-citations.

Also as expected, TR studies are mostly published in management journals ranging from strategy to organizational studies

Journals	Record Count	% (of 197)
Administrative Science Quarterly	9	4.9
Journal of Management Studies	7	3.8
Strategic Management Journal	7	3.8
Academy of Management Journal	5	2.7
Academy of Management Review	5	2.7
Organization Science	5	2.7
Journal of Management	4	2.2
British Journal of Management	3	1.6
Industrial and Corporate Change	3	1.6
Strategic Organization	2	1.1

Figure 33 – Main journals for TR research publication.

Finally, I present a short list of papers, whose importance for Threat Rigidity is high and are among the most cited TR studies, and an in-depth analysis.

Reference	Comments
March & Simon, 1958	In this classical work, March and Simon endeavor to do an extensive review of the extant literature on organizations to date (1958). They have organized their review in three main phases (p. 5): the focus on the employee, as a living machine that serves only the purpose of work, devoid of any emotions, needs and abilities; the introduction and management of emotional and affective aspects as well as motivational behavior; and finally, the addition and study of cognitive processes. This last phase was Simon's main research topic, which led him to receive a Nobel prize on his Bounded Rationality theory, also present in the last part of this work. It is clear from the introductory part of their argumentation that the search for empirical evidence eventually puts to test much of the previous research, most of which was anchored in personal experience rather than being the focus of careful academic examination.
Salancik & Pfeffer, 1978	Salancik and Pfeffer amplify March's and Simon's bounded rationality paradigm by emphasizing the rationalizing aspect of action choices (or justification). According to this idea, the individual traits and attributes determine observable behavioral outcomes, moderated by need fulfilling, frustration and, mainly, commitment to the action as a binding or crystalizing mechanism – or, as they write "a rational reason for doing something is merely rationalizing done within socially acceptable bounds" (1978:235). These attitudes are influenced by two other aspects that are directly quoted by Staw, Sandelands and Dutton (1981) - the salience and relevance of information available at the time of a decision-making situation. This is a powerful argument for the idea that during stress information is restricted, reduced in its accuracy, scope and source. In that sense, they believe the need for individual satisfaction at a task is the trigger to "dispositional explanations for behaviors" (1978:226), in itself a reasoning for Threat Rigidity to be understood as a *positional* theory. Although their work concentrates on the social and behavioral aspects of task commitment, their paper is a treasure when it comes to understanding antecedents in cognitive processing for organizational performance. In it, both availability and source of information play an essential role, just as well as the social environment affects the attentional processes and the interpretation of the environment itself. They also contribute to the future Threat Rigidity thesis by defining that perception in decision making is utterly influenced by retrospective processes (they call attention specifically to "recollection" and "reconstruction") and the complexity in the stimuli needed (or "multidimensional components" present in a decision). Cleary, Salancik and Pfeffer provide an ample

	cognitive basis for the development of Threat Rigidity.
Dimaggio & Powell, 1983	DiMaggio & Powell revisit Weber's concept of iron cage, from an institutional point of view. They provide an extensive literature review to demonstrate that the main motive organizations become similar is not the competition in the market itself, but subtler – and powerful – institutional mechanisms. They define three main shapes isomorphic changes may have. Coercive isomorphism is related to the structuring process of a field, mimetic isomorphism deals with organizations imitating organizational models they perceive as more successful, and normative isomorphism is based on definition of professional activities organizations need to function. While the three forms of isomorphic change contribute significantly to organizational rigidity, normative isomorphism displays a number of problems related to the Threat Rigidity thesis: one – organizations are created from a "guild"-like mentality that does not grant much liberty to the decision-making outside the box; two – the standardization of backgrounds, formation and professional experience in top management makes organizational decision making an autistic process (Muurlink et al., 2012), with severe disabilities in their inner capacity of judging scenarios and define problems (while in good financial times this may not be crucial, the definition of crisis makes the need for out-of-the-box think incredibly salient); three – what Karter (1977) calls "homosexual reproduction of top management" makes board members unable or at least more prone to ignore external stimuli and reduces their discriminative abilities. DiMaggio & Powell offer a significant contribution to the Threat Rigidity thesis by providing organizational stiffness arguments and antecedents.
Singh, 1986	Following Salancik & Pfeffer (1978), Singh attempts a new integration of organizational decline theories. First he bases his idea on March and Simon (1958) and Cyert and March (1963), and relates it to Prospect Theory (Kahneman & Tverky, 1979), as well as Threat Rigidity. He attempts to integrate these three ideas, but his focus is on the reaction to risk and level of (absorbed and unabsorbed) slack. While he is successful in highlighting the internal relations among both kinds of slack and risk, some finer points of the Threat Rigidity thesis seep through. First, his choice of top management as a measurement target for centralization may not be the best, since top management may not be entirely aware of the severance in top-down communication – as he himself points (p. 580). Second, at least apparently, his hypotheses that poor performance and presence of high absorbed slack reduce decentralization (i.e., increases constriction in control) are essentially confirmations of the effect of CIC. Third, the Threat Rigidity thesis is a *positional* theory – the starting position *before* a threat marks the decline, and what strategies will be used or reused are the outcomes. Such results can only be gauged from scales (where items capture this idea) or from

	longitudinal data – and as such, no data were collected (he cites the lack of longitudinal data in the limitations). Either way, he definitely contributes to the Threat Rigidity literature by providing interesting insights for psychological properties of slack presence (especially absorbed) and the stakes it plays on decision-making.
March & Shapira, 1987	This work is primarily a literature review on the managerial stand about risk taking and assessing. March and Shapira draw from a large body of literature to make a chronological review of the extant literature in strategy dealing with risk, especially from a qualitative standpoint. They start by reviewing classical works such as Simon and March (!958) or Cyert and March (1963), but quickly change from a critique on the rational paradigm / satisficing approach to a broader psychological-behavioral approach to understanding risk. They also focus their analysis on the individual point of view rather than organizational definition, and, as such, concentrate on top management. They attempt to demonstrate that top management do not use full rational risk assessing, but employ general rationalizations (justifications) for their risk choices, or rather, how they are affected by framing of risks and also how self-deceit (individual self-framing) or even denial play an important role on top management reaction to risks. Several ideas scattered on their paper have influential impact on the Threat Rigidity thesis. Among these, the fact that risk is not assessed as a probability but rather than the amount (or volume) of losses associated to a choice or outcome is paramount. In addition, they manage to elicit a plausible explanation for the general conservativeness towards risk in top management decisions – that is, survivorship bias makes randomized survival on top management to pay off in the long run, i.e., risk-conservative managers may survive long enough so that this is standard behavior. Another advantage of their qualitative work is that through interviews, certain facts about how managers really asses risk come to light – such as the fact that decision delay and delegation are tactics to avoid dealing with negative outcomes or frame risk as controllable to other stakeholders. Finally, they provide an accurate scenario for real-world risk assessing, by affirming that "managers see themselves as taking risks, but only after modifying and working on the dangers so that they can be confident of success". While integrating risk theories may prove useful to the development of strategy literature, this quotation alone offers enough proof of social desirability to make all rational and rationalizing claims to be always taken with a grain of salt.
Cohen & Levinthal, 1990	The authors develop the concept of 'Absorptive Capacity', i.e., the ability of an organization to be permeable to external knowledge, use it as substratum to gain more knowledge about a field, refine its sensibility and gauge its value while recursively assimilating it to develop its own innovation portfolio. Although they do not directly draw from the Threat Rigidity theory, they do posit that the ability to be permeable to

	external knowledge is quintessential to survival in the long term. This, albeit marginally, touches a cornerstone of the Threat Rigidity theory – facing threats, organizations engage in (a sometimes undeliberate) reduction of sensibility to peripheral stimuli (Muurlink et al., 2012). On the other hand, Cohen and Levinthal's work deal with organizations *actively* pursuing interests in innovation from both internal efforts through R&D and actively scouting for external opportunities (Chattopadhyay, Glick and Huber, 2001 revisit this concept in their threat/opportunity directionality idea). Nonetheless, this theoretical juxtaposition is merely partial – as the Threat Rigidity theory postulates it may appear in any organization during critical situations, whereas organizations not actively developing innovations fall short of the Absorptive Capacity definition and scope. Even in the case an organization is actively exploring external possibilities, it still is prone to falling into Threat Rigidity's repression of discriminative abilities' trap – i.e., crises may distort the reconnaissance process to the point where the organization may use faulty procedures and end up making riskier decisions. To support their claims, they develop their Absorptive Capacity concept based on cognitive premises – much as the likes of Threat Rigidity. Thus, Absorptive Capacity is a consequence from the memory management in an organization – the more they know about a technical field, the more they are able to gain knowledge (by comparing and filling in the gaps) and recalling it as and when needed. This is precisely the same foundations of Threat Rigidity's reverting to overlearned behavior clause (Muulink et al., 2012), but with opposite effect – the problem-solving heuristics facilitate acquisition in opportunities but also serve as a trap during threats. While Cohen and Levinthal's work focuses on the positive aspects of overlearned behavior as a step to further advance innovation, Staw et al.'s Threat Rigidity target the negative aspects of isolating into the internal knowledge and seeking refurbished internal strategies to counter threats. Despite not citing Cohen and Levinthal as a source, Barnett and Pratt (2010) may have used this idea in their Threat-flexibility model, according to which, after the recognition of a threat, an organization deliberately opens up to external stimuli and generation of knowledge (more on that on their paper's comments).
Milliken & Vollrath, 1991	They start by identifying a significant gap in the research on strategic formulation. Different teams lead more and more complex decision-making processes in several stages of their process, each with its own configuration, team needs and commitment, not to mention (arguably) selfish, locally based interests in the final decision outcomes (which, in turn, is better developed in Leventhal & March's (1993) notion of nested team conflicts). This is a paradox as this complexity is still under the rationalist approach to strategy (also more detailed in Kay, McKiernan & Faulkner, 2006) and it

	employs a problem-solving modular approach (typical of the modern microfoundations' approach (Felin et al., 2012)), yet evidence points in other directions. This apparently allows for precision in the decision-making process but fails to balance the needs of a dynamic, fast-changing system, as if all outcomes would eventually amount to the same. Such paradox becomes obvious as the literature demonstrates repeatedly that the supposed advantages of the rationalist approach are actually met with behaviors that blatantly go against it ("managers often skip steps, use relatively unsophisticated methods for formulating strategic problems, satisfice when searching for alternatives, and frequently do not make decisions in a linear way", 1991:1231). This is also the reason why Ocasio (1995) believes decision-making is actually based on mental 'schemas' rather than true rationality. However, Milliken and Vollrath advert this compartmentalized, task-based approach is still at large present due to the umbrella effect of the rationalist paradigm but also because it is actually manageable in daily activities and it allows for control of processes. Since this work deals with performance of small groups, it deals with a long area of overlapping with Cohen and Levinthal's (1990) and Levinthal and March's (1993) ideas in that the internal mechanisms of information gathering, knowledge generation, absorption and reuse are vested in the individual-, group- and environment-level characteristics of group interaction processes. Also in this sense, they also offer preliminary concepts to what Csikszenmihalyi (1996) calls 'Flow Theory'. They posit that the environmental scanning will be more effective if larger, more heterogeneous groups are involved (due to scale and different perspectives) and also if there is not interaction phase (discussion of each other's ideas and scanned concepts due to what they call 'process losses'). This offers an insight about the flexibility needed to overcome crises generated by heterogeneity and sheer numbers in contrast to Threat Rigidity's repression of discriminant abilities and reduction of sensibility to peripheral cues (Muurlink et al., 2012). During crises, top-management decision-making groups tend to get smaller, more homogeneous and cut downwards vertical communication as well as external scanning, while focusing on the stock of available past strategies. This also contradicts Milliken and Vollrath's idea that the cognitive capacity needed to proper render the environmental scanning to ideal environmental interpretation depends on multiple points of view in juxtaposition to assemble mental schemes (much like Ocasio's (1995) 'schemas'). Logically, this involves a cognitive impairment in the final mental model of environmental interpretation, especially during crises, leading to Levinthal and March's (1993) temporal and spatial myopias and to Bourgeois's (1985) finding that economic performance correlates diversity of points of view in top management decisions. Contrary to Levinthal and March's (1993) group conflict idea, they cite

	Janis's (1982) concept of group concept convergence, in which a group left to debate their own findings on the scanning stage will gradually develop a unified interpretation of the environment leading to the loss of significant variety and endogenous solutions to problems. They also believe that the perception of the environment as being analyzable will lead to groups to be heterogeneous and use structured problem formulation methods in order to find a 'right' answer, and in case it is deemed unanalyzable, to compose a group chosen because of political affiliations and representation to reach consensus. In addition, they believe that in the analyzable case, heterogeneity will lead to choosing effective solutions, and that only through careful mediation and political control and external input (such as consultants) will the group find acceptable solutions. Finally, they posit that decentralization is a key factor in the scanning and interpretation stages, as well as in the strategy implementation phase.
Bromiley, 1991	The relationship between risk taking and performance is fundamental to understanding strategies. The author tested two different models (one anchored in risk and the other in performance). Although not being able to dismiss fully any doubts about their relationship, both models find compelling evidence. As for the risk model, only the expectations level could not be confirmed as influencing the decrease in risk – they actually do not display any linear relationship, and while slack seemingly reduces risk taking, low performance is a much more consistent explanation for driving risk taking strategies. Audia & Greve (2006), albeit in a more sophisticated format, revisit this idea in their Shifting-Focus Model of Risk Taking. The second model they tested (performance) provides evidence for three main assumptions: risk diminishes performance; aspirations have a positive effect on performance while expectations do not; and slack enhances performance. Whereas these assumptions may seem common sense, previous research did not provide sufficient evidence for their confirmation.
Levinthal & March, 1993	Using the comparison between bounded rationality and classical models of rationality (Simon, 1957) – a poorer, older decision making paradigm – as an analogy, Levinthal and March describe that the same cognitive limitations and structures of the environment also apply to organizational learning. As such, calculated rationality was the basis for decision-making processes and for the organizational learning. Although still all-present in the management literature, this paradigm suffers from clear problems, mainly associated with availability, absorption of information and the preference axiom of rationality – this is perhaps why data science has been having success in helping decision makers counter these data-insensitivity deficiencies (Berends et al., 2016). Levinthal and March follow the paradigm first introduced by March & Simon (1958) and they define the problems and limitations of organizational learning according to behavioral aspects but also in terms of reaction to prospect

	market position loss and economies of scale in knowledge acquiring (the more an organization learns, the more it leads to automatized behavior and efficiency ensues). However, learning from trial and error is not the best method as it takes long to master processes and there is the all-pervasive pitfall of reaching local optima and actively desisting of finding better performance. Learning from experience depends on inference, under the restraints of information availability, and memory, which can be distorted though according to time and space framings and needs a whole set of different abilities to be put to use again. The author take these aspects in consideration as they divide their paper in three main parts: the discussion of three decision-making problems that affect organizational learning; two main mechanisms of organizational learning; and three forms of organizational myopia. The three decision-making problems (ignorance, conflicts and ambiguity) are actually restrictions that limit the capacity organizations have to frame organizational learning problems and goals. These could be interpreted as a new rendition of Strategical Problem Formulations (Lyles & Thomas, 1988), as there is a high level of overlapping between the areas (temporal, causal, and scope restraints). As for the two mechanisms of organizational behavior (simplification and specialization), they could be regarded as precursors to what Ocasio (1995) call 'schemas' and, as such, could also be interpreted as strategical renderings of psychological constructs and heuristics. Their third and final component is the main block of concepts: the three forms of organizational myopia (temporal, spatial and failure). The first of the three, temporal myopia, deals with the choices in strategy that trade long-term for short-term performance. As an organization becomes adapted to its environment, it mimics internally the slight changes in the environment and by doing so, it defines clearer limits to their learning mechanisms, akin to the 'field' that Cohen and Levinthal (1990) designate as starting point for absorptive capacity. Consequently, when abrupt, unforeseen changes occur in the environment, the absorptive and its twinned learning capacities play the role of drawbacks that refrain strategical flexibility to take place. The adaptation to the environmental space organizations fill is also the cause of the spatial myopia. It is built upon a burdensome, costly and time-consuming commitment to occupy such space and this long-fought for position is seen as a counterpart for the organization itself, which may lead to the active downfall of organizational components (sub-units for instance) in order to allow the organization to withstand significant environmental changes. The last myopia focuses on the ability of an organization to filter failures selectively from their learning processes, although it should not be interpreted as a deliberate display of denial (Pearson & Mitroff, 1993). In this sense, it provides at least a partial scenario for processes leading to Threat Rigidity, since organizational overconfidence is actually a

	form of organizational autism (Muurlink et al., 2012). Albeit innovative in their reasoning, they fail to acquiesce, at least in a clear way, that the problems, mechanisms and forms of organizational learning they identified could be potentially paired to several psychological decision-making heuristics. Among others, the survivorship, hindsight, choice-supportive, confirmation, conservatism (belief revision) and expectation biases are potential explanations to why organizational learning as a reaction to crises could be, after all, just herd mentality.
Ocasio, 1995	The first work on the comparison and contrast between Behavioral Theory of the Firm (through its possible Prospect theory explanation) and Threat Rigidity Theory. Ocasio believes that during economic adversities, the organizational attention shifts to the problemistic search, and, therefore, two main outcomes may arise: failure-induced change and threat rigidity. His reading of the theories boils down to failure-induced change being equaled to non-inertial strategies (actively seeking a way out of the problem) while threat rigidity plays the role of inertial-strategies (shutting down all external stimuli and returning to core activities). Whereas these two concepts are indeed integral parts of the original theories, both are oversimplifications and present some overlapping – corrective managerial action / structural change may be part of the overlearned solution stock (having successful past outcomes) and thus being part of Threat Rigidity, but the contrary path (rigidity as some form of change) not necessarily. This problem may reside in the fact that the Threat Rigidity theory displays a clear amount of vagueness in its dispositions, circumstances leading to it and organizational triggers, and the fact that any given strategical approaches fit the 'reverting to overlearned behavior' clause if tried and successful before. Ocasio warns, though, that the boundary condition between these two strategies is not clear in the literature (when does one organization choose one instead of the other). This may lead to understanding (according to Simon's theories) that reaction to adversity strategies are not, indeed, part of an entirely rational process of threat modeling and comprehension, but rather a very fuzzy process of heuristic shifting, since both are heavily anchored in cognitive foundations. Ocasio believes that this shifting is due to a complex system of organization attention allocation that includes "individual cognition and information processing, organizational cultures, interpretative frames, institutionalized rules and procedures, social process (labor division), group formation, social identities and political coalitions" (1995:4). In fact, this may just as well be a more intricate, refined version of March and Simon's (1958) understanding of organizations – i.e., if an organization could fully monitor all its internal and external variables it would be able to have a much deeper understanding of its choices and heuristics for such choices (much like it would happen under the classical, naïve

	definition of microfoundations of strategy). His proposed model integrating Failure-induced Change and Threat Rigidity derives from what he calls 'schemas' (whose definition is almost entirely coincidental with heuristics in the psychological sense), acting as filters for the enactment of economic adversity. He believes its main effect is the putting forward of an increased process of attention and effort which, in turn, has three byproducts: adversity framed as loss, narrowing of attention and use of available schemas (here the amalgamation of the theories). Finally, he develops his ideas throughout a vast set of assumptions, comprising three main areas: effects of individual-level information processing, cognitive perspectives on organizational actions, and organizational structures, processes and routines.
Chattopadhyay, Glick & Huber, 2001	Since much of the extant literature deals with environmental changes and organization's maladaptive reactions, the authors question whether an organization truly notices such changes, what it perceives from the change (scope accuracy) and how it will react, in terms of directionality. As for directionality, they believe, although not using the psychologically related terms, the operant conditioning is the source and explanation for organizational reactions (especially positive and negative reinforcements). To demonstrate this, they draw from both Threat Rigidity and Prospect theories as possible underlying models for reactions and argue that these two bodies of literature are contradictory, while it is not necessarily so. They read Threat Rigidity as a two-way lane in which threats make organizations look inward and the opposite happens when they face opportunities. It may not be their fault, as they clearly affirm, "the arguments made by authors advocating the threat-rigidity model, however, are not as clear" (p. 940) as an explanation for their directionality-driven hypotheses (see Research Agenda for more on this). Consequently, they present a shallow reading of the theory – as Muurlink et al. (2012) point out, there is a sharp interruption in internal communication and a clear isolation from the environment but it is not necessarily a problem of mere directionality. In addition, the whole concept of reinforcement of overlearned behavior should have been taken into account as well – since successful past overlearned behavior can take form in any organizational form or place, it may as well happen externally, therefore it is not necessarily internally-driven during crises. Another aspect worth mentioning is that the variables chosen to measure 'control-reducing threat' / 'control-enhancing opportunity' are based on the premise that both threat and opportunities come from the outside – which contradicts their own reasoning in the introduction. As such, much of the argumentation of this paper is somewhat misplaced on the question of directionality. Finally, instead of Prospect theory, one may argue that Regulatory Focus could be a better explanation for the reactions to threats in hypothesis 1B. Although I believe their initial claims are

	partially inadequate, as I tried to argue, their results are not invalid – they support partially both Threat Rigidity and Prospect theories when it comes to reaction to risk, but no evidence was found that opportunities raise the same amount of salience. As a limitation, they deliberately left aside any companies that did not react to threats. This could have shed light on how organizations perceive the existence and how they make sense of what a threat is.
Greve, 2003	This serves as an introduction to Audia and Greve's (2006) study on risk taking approaches, low performance and slack resources – using the same industry (shipbuilding) as scenario. Their starting point is Cyert and March's (1963) Behavioral Theory of the Firm, under which they focus on the Problemistic Search and R&D components of the Search Phase as well as Slack Search component of Performance Evaluation (1963:127). Their underlying belief is that the launching of any innovations is an opposition between innovation itself, organizational stability, legitimacy and mainly risk aversion. Consequently, they find compelling evidence for their hypotheses – that performance decreases both the rate and intensity of R&D. In addition, they demonstrate that absorbed slack (rather than unabsorbed or potential slack) increases the rate of innovations launched and that performance beyond the aspiration levels decreases innovation much faster than performance below aspiration levels increase innovation. Three aspects of R&D expenditure cited in his study are relevant for the emergence of Threat Rigidity in R&D intensive organizations: the return to overlearned behavior, the role and importance of R&D for the decision-making process and the role of the decline of market share in the triggering of R&D intensive expenditure strategies. As cited above, hypothesis 3B (rate of innovation increase/decrease based on the comparison between aspirational levels and performance) may be the source for Audia & Greve's (2006) framework providing a structured explanation for the conjoint role of slack resources, performance and aspiration levels in the risk-taking approaches.
Audia & Greve, 2006	Two different theories clash – underperforming organizations may take both increased and decreased risk-taking courses of action (seemingly explained by Behavioral Theory of the Firm and Threat Rigidity theory). The authors believe this is due to the assessment of the critical event as being possibly repairable (or not) and that resource slack is the main watershed between the two strategies. They endeavor to demonstrate their belief based on the analysis of data from factory expansions in shipbuilding industry. They provide evidence that supports Threat Rigidity and contrary to both Prospect Theory and Behavioral Theory of the Firm. However, firm size is an important component and it modifies risk behavior. In addition, they also demonstrate that low performance is not necessarily equal to crisis in terms of triggering restrictive

	strategies matching Threat Rigidity. Their main contribution, although indirect, to the study of Threat Rigidity resides in their explanation to the threshold between (in my words) 'significant threat' and 'critical threat' (crisis). Their rationale is that whenever the performance drops, two reference points are taken into consideration: a) the distance between the performance and the minimum survival resource level and b) the distance between the performance and the desired aspiration level. If a < b the focus of attention lies in the organizational survival and conservation of resources is necessary. On the other hand, if a ≥ b, the focus shifts to the aspirational level and the risk can be considered as a possible alternative.
Cyert & March, 1963	Cyert and March, continuing Simon's (1948) tradition, have bequeathed the world with a different kind of understanding about organizations. Although some of its content is quite outdated, some of their ideas are still present in the way researchers understand the relation between the organization and its fit with the environment. The most important aspects of their theories is that they interpret the coalition of people inside an organization not from the purest, traditional mathematical and economic approaches, but from the cognitive standpoint – as if organizations mirrored their human internal counterparts. In this sense, it is a firm basis for the development of the Threat Rigidity thesis, since the main three cognitive aspects present in their theory are also the main cognitive biases present in TR. First, there is the notion of satisficing – managers cannot absorb and process all information about the organization, about the environment or the dynamic changes due to the actions of all actors together (which is basically the notion of Nash's equilibrium), and when confronted with highly stressful situations, the need of satisficing becomes more important and the time and scope spent on finding an adequate solution becomes shorter and narrower. Second, the idea of search – and all search procedures stop iterating when an adequate answer arises (Gavetti et al., 2012) – which becomes even more limited under stress. And third, the prevalent notion of rules (although stricter in Cyert and March's book) as general guidelines instead of a full-rational decision-making process is also the basis for the 'overlearned behavior' side of TR. From this, one may argue that TR is merely a restricted, narrower version of Cyert and March's decision-making premises.
Hannan & Freeman, 1977	Hannan and Freeman's idea of ecology applied to organizational environment was a fresh approach, drawing from evolutionary theories and interpreting organizations as beings in interaction. In this sense, much of the selection and adaptation concepts from evolutionary fields also apply to organizations. On may compare Hannan and Freeman's approach to DiMaggio and Powell's (1983), in which the first looks organizations in interaction from a bird's view perspective, while the former attempts to understand how the external selection and adaptation forces organizations to

	become more similar. A third theory, bridging the individual and the whole is the Threat Rigidity Theory, in which it provides a solid foundation to understand situations under which organizations fail do adapt to the environment, and, therefore, are unable to survive. The three main pillars of Hannan and Freeman analyze the environment from their birth and death cycles (in this sense predicting future approaches such as Van de Ven and Poole, 1995), but also the interaction between organizations and the environment.
Shimizu, 2007	Shimizu attempts to integrate theories that deal with organizational reactions and behaviors. He focuses on comparing and amalgamating Prospect Theory, Behavioral Theory and Threat Rigidity. Subsequent works such as Greve (2003) and Audia and Greve (2006) do the same but not with same theories. Shimizu believes that the assumptions each theory presents on risk are the main differences for their apparently opposite outcomes. While prospect theory (Kahneman & Tversky, 1979, 1992) makes no clear assumption about the weight, scope or range of the potential losses, Behavioral Theory (Cyert & March, 1963) clearly stresses that its triggers are short-term, incremental, non-ruinous losses. Threat Rigidity is the opposite to Behavioral Theory – it is initiated by sudden, short-term, ruinous, large losses. As interesting and promising as it sounds, integrating these three concepts is not an easy task. Prospect theory deals with individual-level decisions, whereas Behavioral Theory and Threat Rigidity focus on an organizational-level decision-outcome circular process. He attempted to fully integrate Prospect theory, but testing this proved difficult. Technically speaking, Prospect theory could be better inserted in the model by becoming a moderating variable, especially if data were collected from the top management (individual decision that affect the whole organization). However, Shimizu develops his data collection from secondary databases where this would be impossible – general data on business units' divestiture. Another difficult problem at hand is that Threat Rigidity is imminently a *positional* theory – the rigidity leads organizations to return to overlearned behavior. It is usually impossible from secondary data to gauge what is the standard strategic behavior an organization has and how it goes back to it when facing threats. Shimizu does a good job compensating this effect using certain proxies, but even he admits its difficulty in quantitatively evaluating it. In addition, prospect theory could potentially be complemented with Regulatory focus. – i.e., while Prospect theory defines the general behavior towards risk people will usually display (prevention), some people will take the opposite way and seek risk for gains. Regulatory Focus may provide a better explanation for this interaction. Although not the focus of this paper, Shimizu incidentally raises awareness of ambiguity in dealing and interpreting risky situation (which is analogous

	to both Reduction of Discriminative Abilities and Reduction of Peripheral Stimuli).