Comment combiner agilité stratégique et robustesse de l'avantage stratégique? L'enjeu de la sensibilité aux ressources.

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Résumé :

Les recherches portant sur le concept d'Agilité Stratégique ont identifié plusieurs "méta-capacités" permettant aux managers d'assurer une adéquation entre la stratégie de l'entreprise et l'évolution de l'environnement. Cependant, les stratégies dites "agiles" amènent l'entreprise à s'engager dans des processus de reconfiguration des ressources à la fois rapides, répétés et complexes. Ce faisant, les stratégies "agiles" accroissent le risque et la complexité stratégique et rendre l'avantage concurrentiel plus difficilement soutenable. Cet article propose ainsi un conceptualisation étendue de l'agilité stratégique qui intègre une nouvelle méta-capacité, la "Sensibilité aux Ressources", qui vise à limiter ce risque stratégique. Pour comprendre comment la "Sensibilité aux Ressources" peut se développer au sein d'une organisation, nous nous appuyons dans cette communication sur une recherche-intervention menée en collaboration avec un constructeur automobile européen engagé dans une stratégie de reconfiguration profonde et rapide de ses ressources de R&D. Dans un premier temps, nous mettons en évidence comment l'entreprise, au travers de son management intermédiaire, puis de son sommet stratégique, a développé avec succès une "Sensibilité aux Ressources". Nous analysons et discutons ensuite les implications de ce cas en proposant un modèle enrichi de l'Agilité Stratégique.

Mots-clés : agilité stratégique, sensibilité aux ressources, apprentissage organisationnel, management de la R&D, analyse processuelle

Combining Strategic Agility and Sustainable Competitive Advantage: the need for Resource Sensitivity

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Summary:

Existing research on strategic agility has identified several « meta-capacities » necessary for managers to maintain a dynamic fit between the firm strategy and its competitive environment. But, as agile strategies imply radical decisions and complex processes of fast reconfiguration of resources, they also increase the complexity and risks of corporate strategies, and may make competitive advantage less sustainable. Accordingly, this communication proposes an extended model of strategic agility integrating resource sensitivity, a distinct meta-capacity enabling to mitigate these strategic risks. To understand how resource sensitivity can be developed and nurtured, this communication develops an in-depth embedded process study of a major European actor in the automotive industry, engaged in an agile strategy involving a profound reconfiguration of its R&D resources. We show how the firm, through its middle and top management, successfully developed resource sensitivity within the firm. We analyze the case and discuss the implications of our model for strategic agility.

Key words: resource sensitivity, strategic agility, organizational learning, global R&D management, process studies

Combining Strategic Agility and Sustainable Competitive Advantage: the need for Resource Sensitivity

Introduction

In a world where hypercompetition (D'Aveni, 1994), market turbulence and innovation become the norm, companies are searching for ways to develop dynamic capabilities (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997), make the organization more adaptable to change and less vulnerable to uncertainty (Eisenhardt, 1989). The literature on Strategic Agility (SA) has paid particular attention to such questions, by exploring the internal processes and organizational capabilities -or meta-capacities- necessary for the organization to become more agile, i.e. to "fasten the successful renewal of its business models" (Doz & Kosonen, 2008a, b).

To achieve SA, firms need to cope with two kinds of uncertainties. A first series of uncertainties is related to the external environment of the firm: managers must drastically increase their ability to scan competitive environments and make sense of weak signals, remain flexible and open to new developments, share assumptions and take relevant decisions to transform their business models. This task alone is particularly challenging, as a "bad" decision, stemming from a failure to perceive, understand and react to the external environment may quickly endanger the position of the firm. The SA literature has answered this issue by underlining the need to improve strategic sensitivity capabilities of top managers (Doz & Kosonen, 2010).

A second series of uncertainties is stemming from the internal environment of the firm. Fast changes in business models imply an ability to reconfigure the internal pool of resources and competences in fast and relevant ways. For a firm, a failure to consistently reorganize its internal resources and competences may question the whole relevance of an agile strategy. The SA literature addresses this problem by calling for the development of a second key capability: resource fluidity (Doz & Kosonen, 2008b; Doz & Kosonen, 2010). Resource fluidity is meant to boost the ability to transform and re-allocate strategic resources, and can take a variety of forms: promoting flexible workforce (i.e. individuals who are willing to

change and learn) or flexible organizations (by externalizing parts of the business, adopting modular systems, building strategic partnerships, etc.). In this way, companies could limit resource inertia, and instead manage a pool of freely reconfigurable resources.

In this article, we argue that while resource fluidity can be a desirable goal in several circumstances, it presents intrinsic limits, and can be risky and difficult to apply in some situations. Making resources more fluid also contradicts important findings of the Resource Based View of the Firm (Barney, 1991; King & Zeithaml, 2001; Kraaijenbrink, Spender, & Groen, 2010; Powell, Lovallo, & Caringal, 2006), as it may make competitive advantage less sustainable over time. As a result, we propose an extended theorization of SA by introducing the concept of resource sensitivity. Resource sensitivity refers to the ability of managers to perceive, be aware of and pay attention to the reaction of resources to new strategic developments. Resource sensitivity is critical to mitigate the risks of SA and make sure that agile strategies are internally sustainable, i.e. that they will increase the value of existing strategic resources instead of endangering it.

To understand how resource sensitivity can be developed, nurtured, and how it contributes to sustainable competitive advantage, we build an in-depth embedded process study within a major European actor in the automotive industry, engaged in a wide-scale business model transformation. This transformation involved a massive international expansion of its R&D resources. We describe how the process of internationalizing R&D generated unexpected and ambiguous outcomes, and identify stages showing how middle and top managers progressively developed resource sensitivity within the firm, helping to mitigate strategic risks.

The paper is organized as follows: the first section develops the limitations of current approaches to SA, and proposes an extended framework integrating the concept of resource sensitivity. In a second section, we present the empirical setting and the methodology of our case study. In the third section, we develop the case study. In the fourth section, we analyze the case and make propositions on how resource sensitivity can be developed and nurtured within the firm.

1. Strategic agility and resource sensitivity

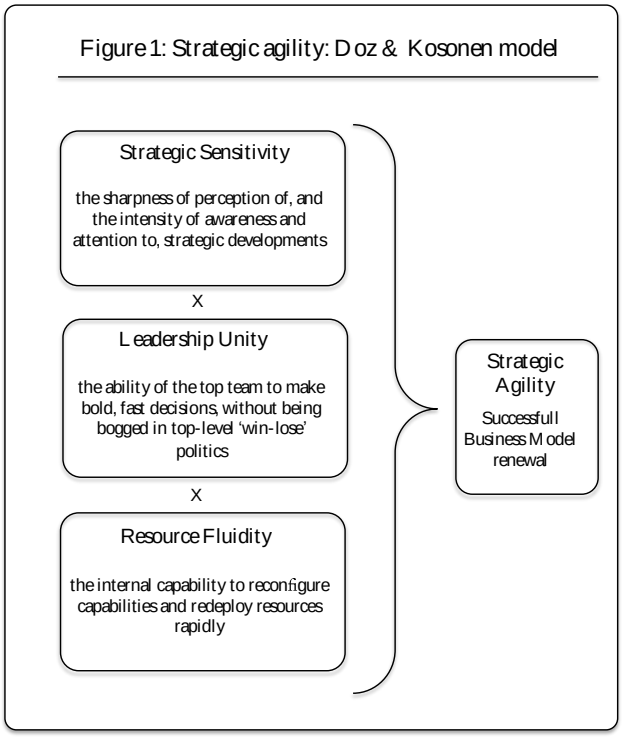
Before becoming a concept within corporate strategy, the concept of agility entered academic and practical circles through the notion of organizational agility, referring to the need to increase flexibility within organizations and manufacturing systems. As Charbonnier Voirin (2011) describes it, the concept of organizational agility was coined in the early 1990s by four researchers, in a report commissioned by the American Congress to explore industrial strategies for the 21st century. The report was mainly concerned with manufacturing, and underlined the need to go beyond mass production and enhance operational flexibility to face competition from Asia (Goldman, Preiss, Nagel, & Dove, 1991). Organizational agility subsequently developed into the fields of manufacturing and supply chain management -in parallel with the rise of network organizations and global value chains- (Sharifi, Barclay, Colqhoun, & Dann, 2001; Van Hoek, Harrison, & Christopher, 2001; Yusuf & Adeleye, 2002), strategic human resource management –with the rise of flexible workforce and the issue of innovation- (Dyer & Shafer, 1999, 2003; Mates, Gundry, & Bradish, 1998; Shafer, Dyer, Kilty, Amos, & Ericksen, 2001), and information technologies (Goldman & Nagel, 1993). Because of its focus on continuous change, innovation, and organizational adaptation to market uncertainties, the concept of organizational agility has received considerable managerial attention from consultants and companies, but the concept of strategic agility has been lacking systematic definition in the field of strategy until the work of Yves Doz and Mikko Kosonen (Doz & Kosonen, 2008a, b; Doz & Kosonen, 2010), who define strategic agility as the capability to "successfully renew their business models", in a context surrounded by market uncertainties and intensive innovation. Their approach to strategic agility share many common tenets with the literature on dynamic capabilities (Eisenhardt & Martin, 2000) and hypercompetition (D'Aveni, 1994). However, the literature on strategic agility is specific in its orientation towards specifying organizational competencies and practical orientations to implement agile strategies (Amos, 2000). As Doz & Kosonen have developed a comprehensive model of the construct, we will center our discussion on their approach to SA.

1.1. Strategic agility : Doz & Kozonen's model

Following Doz and Kosonen, strategic agility can be conceptualized as the capability to successfully renew business models. According to the authors, strategic agility is the result of

a 'thoughtful and purposive interplay between three core meta-capabilities (2010: 371) -cf.Figure 1-:

Figure 1: Strategic agility: Doz & Kozonen model



- Strategic sensitivity: the sharpness of perception of, and the intensity of awareness and attention to, strategic developments. This meta-capability is meant to increase top managers awareness to external dynamics

- Leadership unity: the ability of the top team to make bold, fast decisions, without being bogged in top-level 'win-lose' politics. This meta-capability is meant to increase top managers' ability to build cohesive decision-making processes.

- Resource fluidity: the internal capability to reconfigure capabilities and redeploy resources rapidly. This meta-capability is meant to decrease the time required to reconfigure internal resources in a process of strategic change. The logic behind resource fluidity is straightforward. Resources are often a source of rigidity. In hypercompetitive environments, they can be slower to adapt than the rate of environmental change and quickly become obsolete. In such contexts, management should explore every possibility to make resources more fluid to maintain a tight and dynamic fit between internal resources and the firm competitive environment. The fluidity

of internal resources can be enhanced through various means, such as quickly reallocating financial resources between organizational units, making resources less coupled and interdependent, modularizing business systems, using market mechanisms to externalize parts of the activity, or acquire new resources and competencies on the market.

1.2. The risks behind strategic agility and resource fluidity

In hypercompetitive environments, a firm failing to adapt its strategy and reconfigure resources adequately will quickly loose its competitive advantage. However, if it is not performed carefully, strategic agility can also increase strategic risks and reduce the sustainability of firm competitive advantage. Some empirical observations support such an argument. For example, Probst & Raisch have shown that, in an in-depth analysis of the 100 largest organizational crises in US and Europe between 1998 and 2003, most cases involved "companies that grew and changed too quickly, had too powerful managers and nurtured an excessive success culture" (2005: 90).

The way strategic agility is currently framed is not likely to address such problems. In particular, we believe that, even if resource fluidity is a major priority in hypercompetitive environments, it can have dangerous implications for the sustainability of competitive advantage. As presently theorized, resource fluidity partially contradicts some important contributions from the Resource Based View of the firm (RBV). Increasing resource fluidity presents intrinsic limits, can be risky and difficult to apply in some situations. As Doz and Kosonen write it, "making resources more fluid may well have toxic side effects" (2008: 97).

These risks come from the fact that next to market uncertainties, there are also resource uncertainties: managers may overestimate or underestimate the strategic value of resources, or misunderstand how –and to what extend- such resources can be reorganized or fluidified. Such difficulties are common and have largely been documented by the Resource Based View of the firm (Barney, 1991; Barney, 1986; Lado, Boyd, Wright, & Kroll, 2006): managers frequently overestimate their capability to develop into new markets, to conduct successful post-mergers integration or to learn from failures (Baumard & Starbuck, 2005; Starbuck, 2009). In many situations, strategic resources are causally ambiguous (King, 2007; Powell et al., 2006; Reed & DeFillippi, 1990): it is very difficult for managers to identify and agree on the most strategic resources, or to understand how resources evolve, develop, and contribute to compet-

itive advantage. For example, Rouse and Daellenbach (2002) relate the case of a linen company where managers planned to externalize their distribution to reduce costs, just before realizing –by chance- that their distribution channel was one of their most valuable assets. Any mistake related to a bad understanding of resources may be particularly harmful for the firm, because resources are path dependent, and develop cumulatively (Nelson & Winter, 1982; Penrose, 1959). And, as the literature on externalization has shown it, it is usually much more costly and time consuming to re-internalize resources and functions than to externalize them (Jacobides & Winter, 2005; Quélin & Duhamel, 2003; Whitten & Leidner, 2006).

In such situations of causal ambiguity, quick reallocation of resources between organizational units can be harmful and destabilize whole areas of competencies within the firms, if managers make mistakes because of wrong representations about the link between resources and competitive advantage. In such contexts, it is particularly important for managers to mitigate the risk to take internal decisions that could harm the value of the firm resource pool. And, as the consequences of decisions on resources are never fully predictable, it is also important to be capable of reacting quickly to unexpected reactions once new strategic orientations are taken.

Secondly, all resources should not necessarily be made more "fluid". For example, externalization provides fluidity for the externalizing firm, but, at the same time, it decreases the level of managerial control and differentiation related to the externalized components (Williamson, 1994). As fluidity requires making resources more explicit and substitutable, it facilitates the ability of competitors to use and replicate these resources. As a result, there is a risk that making strategic resources more fluid may reduce their strategic value. As the RBV literature has shown it, strategic resources that contribute to the sustainability of competitive advantage are characterized by their "stickiness", non-tradeable character, and imperfect mobility (Dierickx & Cool, 1989; Wernerfelt, 1984). When resources and competencies are tacit and highly specific to an organization, they cannot easily be imitated by outside actors because competitors cannot acquire skills or recipes for success.

As a result, there is a limit to the idea of making key strategic resources more fluid, and the firm must identify some key resources and competencies which will remain company specific and cannot be completely fluidified.

In the end, managers face a paradox: while strategic agility is becoming a condition for survival in increasingly turbulent environments, it may also threaten the value of the resources and competencies of the firm, and potentially increase the risks related to strategic choices.

In such a situation, top-managers face difficult questions: are the resource and competences flexible enough to perform radical strategic changes? How to get a better understanding of the degree of adaptability of internal resources? How fast is it possible to go? Where is the limit between bold strategic action and unrealistic demands on internal resources and competencies?

1.3. Integrating resource sensitivity

Strategic agility is a double-edged sword for managers: the difficulty is to simultaneously cope with market uncertainty and resource uncertainty. To defend a sustainable competitive advantage through strategic agility, top managers must combine, with an equal level of dexterity, external and internal consciousness. Accordingly, we propose an extended model of strategic agility that includes resource sensitivity, a meta-capability that mirrors strategic sensitivity but is focused on the internal dimensions of the firm (Figure 2).

Figure 2: Strategic agility and resource sensitivity

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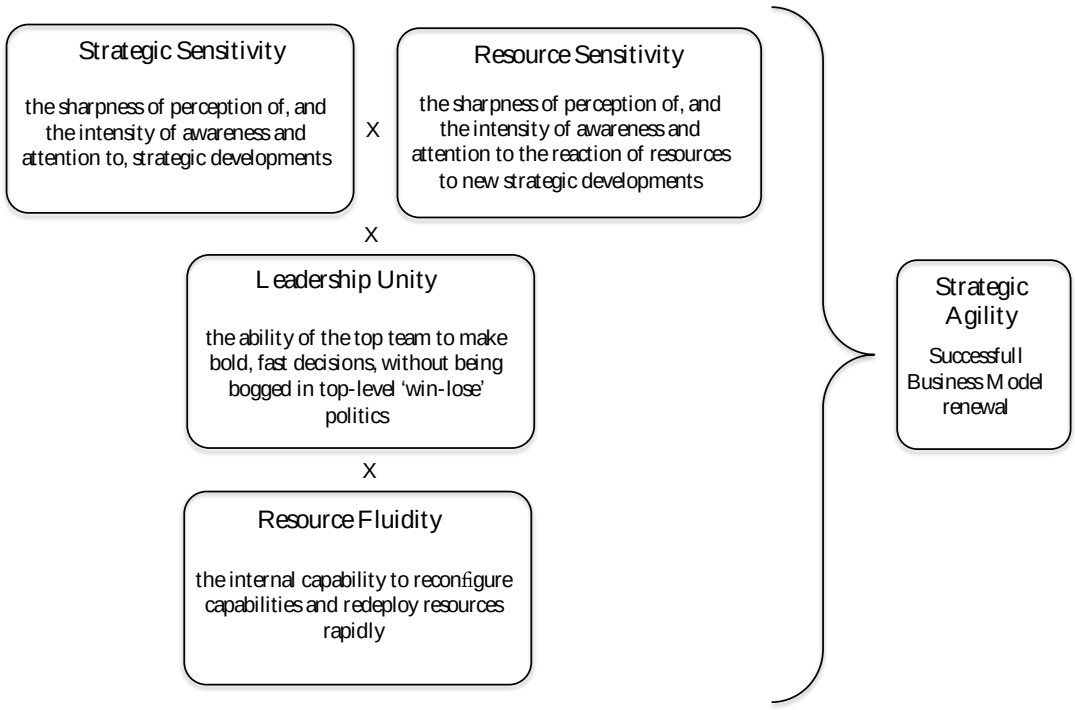

We define resource sensitivity as the sharpness of perception of, and the intensity of awareness and attention to the reaction of resources to new strategic developments.

If successfully implemented, resource sensitivity should mitigate the risks managers face when making resources more fluid and help combine strategic agility and sustainable competitive advantage. Resource sensitivity is based on three specific capabilities:

A projective capability: to anticipate how business model orientations are likely to affect the pool of resources and competencies of the firm.

A perceptive capability: to perceive weak signals related to the reactions of resources during processes of strategic change.

A cognitive capability: to systematically inquire and search causes when unexpected phenomenons occur while implementing change within the organization.

By integrating resource sensitivity into an extended model of strategic agility, managers are more capable to handle the potential risks associated with the renewal of their business mod-

els. In the remainder of the article, we will use this extended framework to explore how a major automotive manufacturer achieved strategic agility and developed resource sensitivity.

2. Empirical context and methodology

2.1. Empirical context and relevance

Motor Corp.1 is a major European actor in the automotive industry. In terms of volume sales, the company is one of the three leading brands in Europe, and among the ten biggest automotive firms worldwide. Its market can be considered as a hypercompetitive one2, as the automotive market has experienced major organizational and market transformations over the last decades. In the nineties, organizations have been deeply transformed by the introduction of project management and the use of digital collaborative tools for design/R&D activities. These trends have dramatically improved quality, reduced the time to market, by dividing the length of project-development by more than a factor of two. Market has also undergone major changes, as actors are engaged into a simultaneous race for product innovation and cost leadership. Technological innovation has become relentless over the last few years, through the introduction of electronics, and the quest for green technologies (new motor technologies, electric and hybrid cars) for reducing the ecological footprint of the industry. New business models are currently being explored in western countries through initiatives to shift from product to service, around urban mobility and car rental/sharing. Simultaneously, and as western markets are now mature markets with lower opportunities for growth, actors engage into geographic diversification in developing countries. New actors have entered emerging markets with radically new concepts (such as ultra-low cost vehicles), although with different success. As a result, todays' landscape is more and more complex for actors in the automotive industry. In order to survive in such turbulent markets, companies are relentlessly exploring ways to develop their product faster and faster, at a lower cost, and to boost technological and market

[1] For anonymity reasons, the company name of the company is kept confidential in the article. However, the company formally validated data related to the case.

[2] The automotive sector is taken as an example of hypercompetitive environments in R. A. D'Aveni, *Hypercompetition* (New York: Free Press, 1994).

innovation. As in any hypercompetitive environment, strategic agility becomes a major managerial issue in the automotive industry.

Motor Corp. is no exception within this landscape. The company has undergone dramatic changes over the last decades. The company has turned from a mostly domestic actor to a true international player with strong ambitions in emerging markets. To this end, it has developed innovative financial and technological alliances with Asian manufacturers at the beginning of 2000. The company is also strongly involved into the development of new technologies and product concepts related to energy and ecological efficiency. Sensing the need to address low cost markets, it has also developed a specific line for low-cost vehicles that constitutes a major commercial success in developed and developing countries.

The ability to perform such transformations relies on major capabilities for organizational transformation, in particular related to R&D activities, in charge of the process of designing products. Since 2006, the company has engaged into the latest major reconfiguration of its design process: the internationalization of its R&D capabilities. The idea behind internationalizing R&D is to transform its design process from a unique national R&D center to an internationally distributed base, where R&D centers located in different countries interact with each other. As this process is both a large-scale initiative to make resources more fluid, and presented many unexpected events, it is particularly illuminating about how resource sensitivity can be developed and nurtured within top management. Consequently, the case study will focus on the process of internationalizing R&D, and the related development of resource sensitivity within middle- and top management.

2.2 Methodology and data collection

This paper wishes to understand the importance of resource sensitivity in agile strategies. Resource sensitivity is temporally embedded, involves managerial perceptions about strategic resources and it is produced by interactions and mutual shaping between managers. According to Langley (1999), such concept are likely to be best analyzed through process studies, involving thick description and rich qualitative data rather than variance studies.

In terms of data collection and methodology, one of the co-authors of this article has been conducting research with Motor Corp. from 2005 until today, as a collaborative researcher

whose mission was to accompany the internationalization process from an operational point of view, and to provide feedback to middle and top management on the process. This article is primarily built on data collected between 2005 and 2008. During this period, the researcher followed in depth the process of internationalizing the firm's largest R&D department (roughly 10% of the R&D staff, about a thousand engineers). The researcher enjoyed broad access to the various stakeholders (management, heads of services, designers) and the relevant strategic and operational documents. He took part in most operational and strategic meetings (more than 90 meetings over 3 years, gathering various actors from all hierarchical and operational positions) related to the process of internationalizing R&D resources within the department. He also interacted with middle managers and operational actors during their day-to-day activities, representing hundreds of hours of participatory observation. In line with collaborative-research methodology (Hatchuel & David, 2007), he actively participated in the collective learning processes and in the identification of managerial solutions to these problems. He also enjoyed extensive access to internal documentation related to R&D internationalization (consulting reports, documents from internal strategic committees, etc.). Supervised by a senior researcher who had conducted research with this department for more than ten years, the author collected detailed data, four days a week during three years. Active participation in internal debates, heading task forces and compiling files afforded him extended access to detailed and rich data.

Although time consuming, the choice of a collaborative research methodology is particularly relevant for collecting rich data, enabling to develop rich and thick process-studies. It is also a way to develop research that is not only centred on organizations but that takes place in organizations (Rouse & Daellenbach, 1999), in close collaboration with practitioners, offering rich contextual understanding on how strategy is actually performed (Langley, 2007). While generally considered as producing interesting insights and results, such studies remain underdeveloped in strategy research (Bartunek, Rynes, & Ireland, 2006; Hitt, Boyd, & Li, 2004; Langley, 2007; Russell Crook, Bratton, Street, & Ketchen Jr, 2006) and within research focused on strategic resources (Rouse & Daellenbach, 1999). As Rouse et Daellenback (1999, 2002) point out, by affording close contact with practices and inside knowledge of the organization, detailed longitudinal studies of specific firms seem to be a particularly relevant methodologi-

cal choice – if we consider that the sources of this advantage are partially unknown to the actors, are debated within the organization, concern tacit knowledge, or are socially situated.

We now develop a longitudinal description of the case, in order to describe how resource sensitivity was progressively developed within Motor Corp.. We treated the data using a narrative approach and a temporal bracketing strategy (Langley, 1999). We identified three stages enabling to understand how RS was developed. Each stage involves a different configuration of actors and logics within our framework of strategic agility and resource sensitivity.

3. Strategic agility and resource sensitivity: internationalizing R&D at Motor Corp.

In 2006, the company developed a new strategy and engaged into a major reconfiguration of its design process: the internationalization of its R&D capabilities. In this empirical section, we develop the case by showing how resource sensitivity developed after the new strategy was designed and implemented. We organize the case study around three stages, each revealing different patterns in terms of SA. We present the data to show the evolution of the business model, in parallel with the four components of our model of strategic agility – strategic sensitivity, resource sensitivity, leadership unity, and resource fluidity -. We show how each dimension of the model changed throughout the process, moving towards a full-fledged model of SA.

3.1 Stage 1 (2005 - 2006): Renewing the business model

3.1.1. Developing strategic sensitivity

In early 2005, a new CEO was appointed at the top of the Motor Corp.. This change was no surprise, as it had been planned years ago and progressively organized. One of the strengths of the CEO was to combine a good knowledge of the internal assets of the company (as he had worked most of his career inside the firm), and a strong international background (as he had taken management positions in foreign subsidiaries, and had played a key role in bringing back international partners back to profitability).

In spite of its leadership position in Europe, Motor Corp.. was facing increasing competitive pressure. As a result, as soon as he was appointed, the new CEO engaged in a process meant to develop strategic sensitivity within the firm. Top management conducted a collective analysis of the competitive positioning of the firm, in order to develop a common understanding of the situation and agree on new directions for the coming years. This process involved both external consulting firms and internal managers from all business and functions, who analyzed in details the firm evolution and business perspectives. This collective diagnosis emphasized the gradual erosion of the firm's operating margin, and stressed that its recovery was a matter of survival in an extremely competitive environment. As a result, strategic sensitivity played a central role in the definition of the new business model.

3.1.2. The new Business Model

The strategic plan was officially presented to the company's employees and shareholders in early 2006. The goal was to make the company the most profitable European vehicle manufacturer in its category.

The renewal of the firm business model was based on two complementary actions: the growth of sales, and the reduction of costs. Concerning growth, the firm wanted to boost time to market, and to strengthen its position in fast-growing areas outside of Europe. The commercial developments intended for emergent markets were perceived as one of the firm's main growth opportunities, and the objective was to increase international sales by 80% over three years. To this end, the company wished "to centre [its] products better on customers' needs and expectations, whether […] European, South-American or Asian. That [was the] main priority: to offer each customer, wherever they may be in the world, the most attractive, most appropriate cars" (announcement of the Plan by the CEO, 2006: 5). The aim was also to accelerate the launch of new models, to reinforce and enlarge the product range, and thus to make the firm's sales less dependent to a few number of models. On an annual basis, this meant doubling the number of new products launched, as compared to the period 1998-2005.

Concerning the reduction of costs, strategic benchmarks revealed that there were many opportunities for improving investment competitiveness, making operational improvement and efficiency gains in production and R&D. As a result, the firm embarked on a crosscutting pro-

gram to cut operating costs and to optimize its investments. While these cost reductions concerned all the functions of the firm, they were especially ambitious for R&D departments, with the aim of keeping the R&D budget to 11% of the turnover while doubling the number of projects. Internationalizing R&D resources constituted a central way to meet such ambitious objectives (see below).

3.1.3. Leadership unity

The strategic plan was the outcome of a collaborative process among various functions. When the plan was communicated, there was a shared feeling of the need for change within the firm, and a collective impetus within the firm, both within top managers and operational actors.

More importantly, the internal dimension of the new business model had been the object of important debates and dialogues between managers, in order to build a common representation of how to internationalize R&D activities. To this purpose, the firm's general management mandated a strategic task force (STF) in early 2005 to examine the internationalization of engineering and make sure a common understanding was shared among executives. This group was composed of managers at the head of R&D services, business functions (human resource management, finance, management control, etc.). For this group, "performance requirements and the increased engineering load resulting from the international development of the company imply a devolution and decentralization of design activities" (internal report, 2005).

Although the consensus was not entire on every aspect of the new business model, the decision making process was time constrained. However, each actor expressed their views, representations and concerns, and there was eventually a strong collective endorsement of the final decisions.

3.1.4. Making R&D resources more fluid

While the strategic plan engaged all of the firm's functions, its implementation implied a massive reorganization of R&D resources. In this respect, internationalizing R&D was an important part of the whole strategy. As a result, resource fluidity, as the ability to reconfigure

capabilities and redeploy resources rapidly, was a major condition for achieving strategic agility.

> Heavy demands will be placed on engineering […], as much by the development of products and technologies as by their localization […]. To accompany this movement while controlling costs, engineering will be partially decentralized to our industrial sites abroad, by developing large bases in [Eastern Europe] and [Asia], and strengthening its presence in [South-America].
>
> Press conference by the CEO, February 2006

Within Motor Corp., R&D activities had long been centralized on a single site3, in charge of all new vehicle development, and employing more than 10 000 engineers (about 10% of the total workforce). In the new competitive context, internationalizing R&D appeared as a logical and necessary follow-up to the company former developments abroad. Within the company, internationalizing R&D was seen as a way to reconfigure resources according to the strategic priorities. First, it was expected that design centres closer to final markets would meet local expectations better. Second, the firm wanted to develop a new range of low-cost vehicles. For such vehicles, economic profitability would more easily be reached by locating design in emerging countries with lower labour costs. Creating foreign design centres in emerging countries also enabled the firm to reintegrate less complex design activities, which had been previously externalized. Finally, the collaboration with an Asian manufacturer made the firm aware of the respective strengths and weaknesses of each partner, and enabled it to envisage a geographically distributed approach to design, in which each centre would build on its best expertise.

The orientation taken in the new business model was to keep R&D staff resources stable within the central site, and to provide growth through international R&D centres. Strong recruitments where planned abroad, with 3000 recruits in R&D over the 4 coming years.

Consequently, resource fluidity constituted a key dimension of the new business model.

3.1.5. Resource sensitivity

[3] In 2005, only small engineering entities were located within factories all around the world.

Resource sensitivity was naturally limited during this first stage. Anticipating how R&D resources will adapt is next to impossible, as this was the first time the company decided adopt an international organization for its R&D activities. And, although benchmarking the company with its competitors was possible, it remained inherently limited. Indeed, various actors in the automotive and other industries had internationalized part of their design process (Galabrese, 2001), but each initiative followed different timeframes and differed considerably in scope and ambition. What is more, there are still heavy controversies within academic circles about the economic and strategic advantages from such internationalization processes (Manning, Massini, & Lewin, 2008; Miller, 1994).

In a context where uncertainty is unavoidable, the company tried to develop resource sensitivity by developing projective capabilities through various mechanisms.

The first way was to develop formal exchange and knowledge between actors, through the strategic task force (STF), set up in early 2005. The purpose of the task force was to "propose, clarify, formalize and test the modalities of functioning of global engineering" (internal document). More specifically, the STF explored the possible and most relevant roles for decentralized R&D groups4. It also identified the countries where international design centres would be hosted (in Eastern Europe, Asia, and Latin-America). Finally, it established the degree of centralization and the rules for coordination between central engineering and the international design centres.

The results of the STF were reported to the board several times in the second semester of 2005, during the preparatory stage for the strategic plan, which was going to define the firm's future orientations.

Yet, given the strong time constraints weighing on the task force, several points had been identified but were still to be explored at the time of the definition of the new business model:

A comparative study of industrial actors still had to be completed, to examine various R&D internationalization strategies and their time frames.

Managerial issues related to human resources were identified but still had to be investigated. These issues were numerous. They concerned local recruitment strategies, the way to create

[4] Support groups for factories and for elementary design activities, and actors actively involved in the design of more complex parts of the vehicle

teams and develop skills locally, the way central and international R&D centers will interact in terms of technical supervision, the required number of expatriates during the initial stage of competency-building, the impact of internationalization on the ability of the central level to maintain and develop its own competencies, etc.

To a large extent, the STF had been working without anticipating the level of ambition of the strategic plan, in terms of growth objectives. As a result, the group underestimated the forthcoming increase of the global engineering workload of the company resulting from the strategic plan.

Even if these issues were formally identified by the STF, they were imperfectly shared and understood among top management, and were not seen as major problem. Doubts and questions were seen as inevitable and tended to become of secondary importance, as the company engaged into wide-scale change.

A second strategy adopted within operational teams was experimentation. Before internationalization became a process common to all R&D activities in 2006, the major engineering department decided to internationalize small parts of its activities as early as 2004 in Eastern Europe. But when the strategic plan was elaborated, it was still too soon to systematically understand how resources would react to a massive process of internationalization.

Consequently, although the company used various strategies to anticipate the way R&D resources would adapt to the new business model, resource sensitivity was limited and heterogeneous during this stage.

3.2. Stage 2 (2006 – 2007): Implementing the new business model, and developing resource sensitivity within middle management

This second stage explores the implementation of the business model. As the business model and strategic sensitivity were not affected during this stage, we will mostly focus on the early surprises experienced by managers while internationalizing R&D, the subsequent development of resource sensitivity within middle management and its impact on leadership unity.

3.2.1. An early weak signal

While internationalization became a corporate policy applied to all R&D activities in 2006, some R&D managers had anticipated the movement and parts of engineering and international engineering teams had been developed as early as 2004 in Eastern Europe. The managers of this engineering department sensed that they engaged into a process that was both complex and would soon become strategic for the firm. They asked for a collaborative research team (one of the co-authors was the main researcher) to help them analyze the process and favor organizational adaptation. This local experiment played a crucial role in the ability of the company to learn about the organizational conditions required to internationalize its R&D activities.

Within this unit, a first formal warning appeared in February 2006, just after the strategy was announced. A local designer alerted his management of the worrying level of staff-turnover in his own team (about ten people). He was responsible for the technical supervision of a small "calculation team" of ten people in Eastern Europe, dedicated to the development of computer models to evaluate the safety (crash tests) and endurance performance of the car. Two-thirds of the staff recruited in 2004 had already left the team in less than two years, and the remaining third was threatening to follow suit. Furthermore, engineers of the central engineering site complained about the poor quality of the work performed by the unit in Eastern Europe.

This early signal generated diverging reactions and interpretations within middle managers. Although the director and managers of the R&D department recognized it as a serious issue, they also perceived it as a local problem, specific to the calculation team, rather than a more general risk weighing on the entire internationalization strategy. For these middle managers, the high level of turnover was first interpreted as a sign that financial incentives were too low, or in terms of socio-cultural characteristics of emerging countries. In addition to these, the local manager added that some reasons for these resignations also concerned the complexity of the content of work and the resulting stress for inexperienced recruits, as well as the difficulties of training them.

3.2.2. Inquiring and reframing the problem of staff-turnover

As the research team considered it was important to explore more systematically the causes of staff-turnover, the director of the engineering department mandated the team to explore this

specific problem. In February and May 2006, two waves of interviews were held with actors from central R&D and the majority of the managerial and technical staff in the Eastern-Europe unit (with ten-days of participative observation in the international unit, and a total of 52 interviews, including people working in the calculation team and the other employees within the unit).

In light of the interviews, the research team developed a different explanation than the ones that had prevailed within management until then. In particular, interviews revealed that financial incentives and cultural differences between the home country and Eastern Europe were not the most critical dimensions at play. Instead, two dimensions appeared to explain the level of turnover: the simple or complex nature of the work, and the quality of technical supervision. As the interviews showed it, complex professions that had inadequate technical supervision were the most strongly affected by staff-turnover.

The interviews also showed that turnover was only the top of the iceberg, and revealed a more fundamental problem related to skills, common to all local teams. Because they were not able to acquire the required skills fast enough, the majority of young recruits and local teams were largely unable to perform their tasks, and contribute efficiently to product design. As a result, the problem needed to be reframed from a single, local problem of turnover, to a collective problem of building a collective competence.

3.2.3. The development of resource sensitivity within middle management

The first presentation of the causes for such resignations, which examined the difficulties of developing a collective competence, was made within the engineering department at the end of 2006. As more problems related to international R&D centres began to materialize, several middle managers began to realize the need to pay more attention to the time and organizational constraints required to develop functional R&D teams abroad.

As a result, resource sensitivity began to develop within middle management, in specific parts of the organization. was not fully accomplished yet, as the causes and mechanisms behind the problems were not always precisely understood. However, such managers increasingly felt that international R&D resources were harder to develop than initially expected. Some indi-

viduals were even concerned that a strict adherence to the new business model may actually make R&D resources more fragile instead of making them more competitive.

However, such managers were still a minority within the firm. Attention to resources was not widely shared by the majority of middle and top-managers. Indeed, many managers had not been confronted to these problems yet, did not perceive them, or did not consider them as critical. And the diffusion of such concerns was limited for various reasons. First, because managers felt doubts and concerns, but lacked robust, systematic and general explanations. In our model, resource sensitivity was mostly materialized through a perceptive capability (increased attention and concern for weak signals related to resources) but lacked its cognitive dimension (there was no complete understanding for these problems). As internationalizing R&D was a major strategic objective for the firm, such feelings were not compelling enough to raise these problems to top management. Resource-sensitive managers were aware that, due to the strategic and political dimension of the question, questioning the feasibility of such a process on the mere basis of doubts could be interpreted as a lack of managerial motivation, a plea for inertia, or a lack of support to corporate strategy5. As a result, better formalization and understanding of the problems were required pass them on to the upper level of the firm.

This led to a situation of internal fragmentation among middle managers, and between middle and top management. This heterogeneity in resource sensitivity tended to reduce leadership unity. Even if no problem was officially raised, leadership unity was reduced to an apparent cohesion, but masked significant -and unresolved- divergences of perspectives between managers.

[5] Lovallo and Kahneman (2003) have widely documented how, in many situations, psychological and organizational factors create pressures for over-optimism and reduce the ability of the firm to integrate divergent thinking and debate.

3.3. Stage 3 (2007 – 2008): resource sensitivity at the top

Although problems were now apparent for several middle managers, and although the first bricks of explanation had been developed within a specific R&D department, it was unclear if such patterns could be formalized and generalized to all R&D activities. It became clear that formalizing, abstracting and gaining generality was a precondition for raising such problems within top management. As a result, between January and April 2007, the researchers developed a formal model to simulate how new R&D groups abroad acquire skills and develop a collective competence. This model was the outcome of intense interaction with both engineers from central and international R&D groups, middle managers (heads of departments) and operational managers (local technical supervisors). While it is largely simplified for the purpose of the article, the model gathers two important variables:

In order to acquire skills and increase the collective know-how, a minimum ratio of technical supervision is required (which varies according to the complexity of the related design activities). If that ratio is not respected, the training of new inexperienced recruits becomes less effective: individual cannot acquire the necessary skills and cannot play their role in design projects.

Skills acquisition is a path-dependent process for individuals. If the recruit in a foreign unit is un-experienced (i.e. has never performed similar tasks in a similar company), it takes at least eight years to become autonomous in his or her professional field of activity – i.e. able to develop without any support from technical supervisors.

When applied to all R&D, the model revealed apparent paradoxes. For example, it was initially anticipated that high levels of recruitment abroad would fasten the development of international R&D capabilities and reduce the overall R&D costs. The model altered that optimism, by showing that in low cost countries where the company could hire only junior engineers, new recruits needed to be supervised and trained by a significant amount of experts. For all countries without pre-existing automotive R&D activities (where labour costs were the lowest), it proved impossible to recruit such experts locally, and the only solution available for the company was to expatriate its own experts, from central R&D. Actually, massive recruitments of junior engineers without sufficient and tight technical supervision (as had been planned by the business model) could constitute the worst scenario for the firm: international R&D centres could become unproductive burdens, with international centres

becoming more and more costly (because of the new recruits) but failing to develop a collective and valuable R&D competence. Within several international R&D centres, middle managers had already begun to adapt to this reality by slowing down recruitments. At the end of 2007, the staff in Eastern Europe – in a country where the firm was unable to recruit qualified experts and where it had to train all its new employees – were way behind the initial plan objectives. In other countries, where labour costs where higher but automotive R&D activities already existed before, it was easier (and cheaper) for the firm to develop functional teams with a valuable and collective competence.

Ultimately, the model challenged the feasibility of the new business model and the whole strategy. In particular, it questioned several initial assumptions related to resource fluidity (concerning both the pace of internationalization and its ability to provide a cost advantage to the firm). However, once they were expressed in a formal and general model, these results were rapidly passed up to top-management. In mid-2007, they were first presented to the director of the R&D department that had commissioned the research, who then presented them a month later to the Group's full executive committee. As these results echoed and explained similar difficulties encountered by other R&D departments engaged in the internationalization process, they were brought up to light as a general concern for the company and eventually discussed within top management. Following their presentation, the firm decided in the second part of 2007 to double the number of expatriates initially planned for in low-cost emergent countries, and to reduce the pace of local recruitments in every country. Both decisions were meant to better sustain the development growth of the new R&D centers, and to take into account a more sustainable pace for the learning processes within foreign centers.

Table 1 summarizes the evolution of strategic agility within Motor Corp. between 2005 and 2008 according to our framework.

	Stage 1 (2005-2006): Renewing the business model	Stage 2 (2006 – 2007): Implementing resource fluidity	Stage 3 (2007-2008): resource sensitivity at the top
Business model	Business model orientations: Achieving growth in developing markets Doubling the number of new products Reducing costs	Implementing the new business model	Adapting the internal dimensions of the business model, as a result of the development of resource sensitivity at the top: Reducing the pace of R&D recruitment abroad Reinforcing technical supervision and expatriation
Strategic sensitivity	Strong New CEO with international experience and good knowledge of the industry New business model resulting from a collective effort gathering all major functions	Strong (No significant modification)	Strong (No significant modification)
Leadership unity	Strong Common impetus for change within the firm Setting-up Strategic Tasks forces for exchanging positions and representations related to internal dimensions of the business model	Weakening More fragmentation as some actors, within middle management, doubt about the feasibility of the internal feasibility of the business model Increase fragmented because of diverging representations of resources, and lack of integrated discussion	Strong when resource sensitivity is developed within top management and decisions taken accordingly
Resource fluidity	Presumably strong Major reconfiguration of R&D resources through internationalization. Major decisions related to: The location of new R&D centres The amount and pace of recruitments	More difficult than expected The firm engages into the process of internationalization: New recruitments abroad First weak signals (staff turnover & resignations)	better understood Adapting key variables in the process of internationalizing R&D: Recruitments profiles and numbers Technical supervision expatriation policy
Resource sensitivity	Limited and heterogeneous Efforts to anticipate how R&D resources will adapt and develop internationally (projective capability)	Increasing but still heterogeneous Efforts engaged by the biggest R&D department to interpret problems related to turnover and resignation Perceptive capability increases resource sensitivity increases within middle management, but is harder to share with top management	Strong Development of a formal model Full model of Res. Sensit.: projective, perceptive and cognitive capabilities Resource sensitivity is shared at all levels

In comparison to the two preceding stages, the company had now developed a much stronger approach to resource sensitivity. First, because actors had now developed a full-fledged approach to resource sensitivity, combining a perceptive capability (the necessity to pay attention to weak signals related to resources), a cognitive capability (the ability to systematically inquire the causes and consequences of unexpected events) and projective capability (the ability to anticipate how business model orientations are likely to affect the pool of resources of the firm). Secondly, and most importantly, resource sensitivity had become shared through all levels of the organization. As a result, it was possible to quickly adapt the business model according these new elements. The ability to integrate such problems and take bold decision according to resource sensitivity enabled to rebuild leadership unity.

4. Analysis and implications

In this section, analyze the case study by exploring how resource sensitivity can be developed and nurtured within the organization and identify directions for future research. We then discuss the implications of the notion of resource sensitivity, both for the strategic agility and the Resource-Based View of the firm.

4.1. Analysis: how to develop and nurture resource sensitivity within the organization?

The case of Motor Corp. suggests that resource sensitivity is a fundamentally dynamic, provisional, relative and situated capability. Redesigning business models implies an ability to cope with uncertainty and learn through experience. When new business models imply resource breakthrough, or innovative ways to reconfigure resources (such as internationalizing R&D for Motor Corp.), it is impossible to predict how current resources will react. As a result, a significant part of resource sensitivity (its cognitive and projective dimensions) has to be recreated each time new business model are explored.

Creating resource sensitivity is not only an issue for top managers: it is a collective process involving all levels of the hierarchical line. As the case of Motor Corp. has shown it, resource sensitivity needs to be shared and developed all along the organization to be effective. At Mo-

tor Corp., middle and operational managers were extremely important in the development or resource sensitivity, as they initiated experimentations, took the lead to explore problems and develop robust explanations, and spread information up to top management. In this case, developing a full approach to resource sensitivity involved the combination of three dimensions:

- Local managers able to perceiving and interpret complex problems
- Middle managers able to transfer information to top management and allocate resources
- Top management able to react quickly and adequately (in terms of decision making and resource allocation processes), according to such information

Such conditions are demanding (and Motor Corp. had the chance to have them met at the same time) but can be enhanced and organized by various means. At the top, promoting a mindset where strategic resources are seen as complex and fragile will boost top management attention to these issues, and make information easier to share. In most favorable situations, it may turn into a cultural frame favoring sustained attention for the reaction of resources to new strategic developments, and a sensitivity for weak signals related to the process of resource reconfiguration. Down the hierarchical line, specific actions can also be taken to fasten the development of resource sensitivity. Such actions can take various forms: the creation of dedicated roles and groups within the organization, in charge of managing and analyzing the reconfiguration of resources; the development of experimentation before business models are generalized to larger parts of the organization; the development of collaborations with external actors such as researchers or consulting firms; or a combination of these possibilities. Using larger samples and variance theory, further research could examine how these organizational traits of resource sensitivity affect strategic risks, and identify behavioral patterns as well as organizational characteristics of companies likely to make strategic agility compatible with and sustainable competitive advantage (Miller, 1992; Probst & Raisch, 2005).

Because it is a dynamic, collective, and situated process, resource sensitivity is also a fragile capability that cannot easily be stored within organizational memory. It can be lost quickly, though changes at the top of the company, new strategic orientations, the withdrawal of human or financial resources within middle management, or increased staff turnover within the firm, change in culture, etc. Finding ways to nurture resource sensitivity is key for maintaining

a form of strategic agility that is safe and sustainable for the firm and should be the object of further research.

Lastly, the case of Motor Corp. is helpful to explore the role of resource sensitivity in the specific context of a large and historic firm, operating in mature markets facing strong market transformations. Single case studies are praised for their contextual richness, but their results are recognized as harder to generalize and replicate (Langley, 1999). This limitation calls for future research to explore how the patterns identified in our case study are likely to be at play in other settings and situations of, such as smaller firms operating in emerging markets.

4.2. Implications for Strategic Agility and the Resource-Based View

This article has argued for an extended approach to strategic agility that integrates a distinct meta-capability: resource sensitivity.

One may believe that resource sensitivity stands in contradiction with resource fluidity. This would be a misunderstanding of our model. We do not deny the need to reconfigure resources in turbulent environments. No firm could survive in turbulent environments without transforming its resources and competencies. But, as resource fluidity is a risky process, it needs to be framed and backed by resource sensitivity. Resource sensitivity enables top managers to identify relevant and sustainable ways for achieving resource fluidity. As we have shown in the case, resource sensitivity interacts with the three other meta-capabilities composing strategic agility. Strategic agility is only fully achieved and compatible with sustainable competitive advantage when the four meta-capabilities are combined (as was the case during stage 3 of the case).

By integrating Resource Sensitivity into an extended model of Strategic Agility, we aim to bridge a theoretical gap between SA and the RBV literature. Classical perspectives of SA tend to consider resources as sources of inertia that should be made more fluid. They lean towards a representation of the ideal firm as a set of freely reconfigurable assets that could be managed as contractual arrangements (Jensen & Meckling, 1976; Williamson, 1985). Although this perspective has gained some support among managers and academic researchers, others have denounced its tendency to downplay collective learning dynamics (Kogut & Zander, 1992)

and endanger trust within organizations (Ghoshal & Moran, 1996). Making resources more fluid and less firm-specific may also contribute to dilute strategic advantage of the firm (King & Zeithaml, 2001). By contrast, Resource Sensitivity constitutes a call for redirecting managerial attention to the complexity of internal complexities of strategic agility. Integrating Resource Sensitivity offers a much different perspective of the firm competitive advantage. As Resource Sensitivity recognizes the complexity of strategic resources, the value of intangible assets, the imperfect understanding of competitive advantage by firms, the necessity to cope with ambiguity and the need to pay attention to and manage their evolutionary dynamics, our extended framework of SA is much more compatible with the premises and insights of the RBV.

Reciprocally, we believe that taking into account Resource Sensitivity can also add to the Resource Based View in general, and research on causal ambiguity more specifically. Recent research dealing with causal ambiguity is moving into a more differentiated approach to causal ambiguity (King & Zeithaml, 2001). This has led King (2007) to differentiate intra-firm ambiguity (causal ambiguity among managers in a focal firm) and inter-firm ambiguity (i.e. between industry competitors). This stream of research suggests that sustainable competitive advantage results from differences in the way firms understand the Resource – performance link in comparison with competitors of the same industry (Ambrosini & Bowman, 2005). It is now agreed that competitive advantage relies on the quality of understanding of the value of strategic resources and their development processes (Powell et al., 2006). RBV research has explored ways to measure causal ambiguity, but has paid insufficient attention to the local managerial processes and skills necessary to reduce intra-firm ambiguity and develop better understandings than competitors (Garbuio, King, & Lovallo, 2011). Because of its focus on inter-firm managerial interactions between middle and top managers, and its concern with actual practices and skills inside the firm, we believe resource sensitivity offers an important methodological and theoretical contribution to the research on causal ambiguity.

Conclusion

Although strategic agility represents an increasing managerial issue in high velocity environments, we believe present theorizations of strategic agility need to be extended to account for the entire complexity of such strategies. While present theorizations have explored market

complexities and the need to develop market sensitivity, we argue they may have gone to far looking at the competitive environment, and may have bypassed some of the internal complexities of agile strategies. We have argued that the recommendation to increase resource fluidity may actually increase strategic risks and end up destabilizing the firm strategic advantage. Accordingly, this article has proposed to bridge this gap by proposing the notion of resource sensitivity, which is likely to mitigate the risks related to resource fluidity and conciliate strategic agility and sustained competitive advantage. Because our perspective restores the inherent uncertainty, complexity and risks that strategic officers have to face, we believe it offers a workable and more balanced approach to the practice of strategy and its responsibilities.

References

Ambrosini, V. r., & Bowman, C. 2005. Reducing Causal Ambiguity to Facilitate Strategic Learning. Management Learning, 36(4): 493-512.

Amos, J. 2000. Agility as an organizational competence. In S. R., & H. A. (Eds.), Advances in Applied Business Strategy: Implementing competence-based strategies: 1-31. Greenwich, CT: JAI Press.

Barney, J. 1991. Firm Resources and Sustained Competitive Advantage. Journal of Management, 17(1): 99-121.

Barney, J. B. 1986. Strategic Factor Markets: Exepectations, Luck, and Business Strategy. Management Science, 32(10): 1231-1241.

Bartunek, J. M., Rynes, S. L., & Ireland, R. D. 2006. What Makes Management Research Interesting, and Why does it Matter? Academy of Management Journal, 49(1): 9-15.

Baumard, P., & Starbuck, W. H. 2005. Learning from failures: Why it May Not Happen. Long Range Planning, 38(3): 281-298.

Charbonnier-Voirin, A. 2011. The development and partial testing of the psychometric properties of a measurement scale of organizational agility. M@n@gement, 14(2): 120-154.

D'Aveni, R. A. 1994. Hypercompetition: Managing the Dynamics of Strategic Maneuvering: The Free Press.

Dierickx, I., & Cool, K. 1989. Asset Stock Accumulation and Sustainability of Competitive Advantage. Management Science, 35(12): 1504-1511.

Doz, Y., & Kosonen, M. 2008a. The Dynamics of Strategic Agility: Nokia's Rollercoaster Experience. California Management Review, 50(3): 95-118.

Doz, Y., & Kosonen, M. 2008b. Fast Strategy: How Strategic Agility will help you stay ahead of the game. Wharton: Pearson / Wharton School Publishing.

Doz, Y. L., & Kosonen, M. 2010. Embedding Strategic Agility: A Leadership Agenda for Accelerating Business Model Renewal. Long Range Planning, 43(2/3): 370-382.

Dyer, L., & Shafer, R. A. 1999. From human resource strategy to organizational effectiveness: Lessons from research on organizational agility. In M. A. Wright, L. Dyer, J. Boudreau, & G. Milkovich (Eds.), Strategic human resource management in the 21st century, Research in Personnel and Human Resource Management: 145-174. Greenwich: CT: JAI Press.

Dyer, L., & Shafer, R. A. 2003. Dynamic organizations: Achieving marketplace and organizational agility with people. , Working paper. Cornell: Cornell University.

Eisenhardt, K. M. 1989. Making Fast Decisions in High Velocity Environments. Academy of Management Journal, 32(3): 543-576.

Eisenhardt, K. M., & Martin, J. A. 2000. Dynamic Capabilities: What Are They? Strategic Management Journal, 21(10/11): 1105-1121.

Galabrese, G. 2001. R&D globalization in the car industry. International journal of automotive technology and management, 1(1): 145-159.

Garbuio, M., King, A. W., & Lovallo, D. 2011. Looking Inside: Psychological Influences on Structuring a Firm‚Äôs Portfolio of Resources. Journal of Management, 37(5): 1444-1463.

Ghoshal, S., & Moran, P. 1996. Bad For Practice: A Critique of the Transaction Cost Theory. Academy of Management Review, 21(1): 13-47.

Goldman, S. L., & Nagel, R. N. 1993. Management, technology and agility: The emergence of a new era in manufacturing. International Journal of Technology Management, 8(1-2): 18-38.

Goldman, S. L., Preiss, K., Nagel, R. N., & Dove, R. 1991. 21st Century Manufacturing Enterprise Strategy: An Industry-Led View (2 vol.). . Bethlehem, PA: Iacocca Institute at Lehigh University.

Hatchuel, A., & David, A. 2007. Collaborating for Management Research: From Action Research to Intervention-Research in Management. In A. B. Shani, S. A. Mohrman, W. H. Pasmore, B. Stymne, & N. Adler (Eds.), Handbook of collaborative management research: Sage Publications.

Hitt, M. A., Boyd, B. K., & Li, D. 2004. The State of Strategic Management Research and a Vision of the Future Research Methodology in Strategy and Management(1): 1-31.

Jacobides, M. G., & Winter, S. G. 2005. The co-evolution of capabilities and transaction costs: explaining the institutional structure of production. Strategic Management Journal, 26(5): 395-413.

Jensen, M. C., & Meckling, W. H. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. Journal of Financial Economics, 3(4): 305-360.

King, A. W. 2007. Disantangling Interfirm and Intrafirm Causal Ambiguity: a Conceptual Model of Causal Ambiguity and Sustainable Competitive Advantage. Academy of Management Review, 21(1): 156-178.

King, A. W., & Zeithaml, C. P. 2001. Competencies and Firm Performance: Examining the Causal Ambiguity Paradox. Strategic Management Journal, 22(1): 75-99.

Kogut, B., & Zander, U. 1992. Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. Organization Science, 3(3): 383-397.

Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. 2010. The Resource-Based View: A Review and Assessment of Its Critiques. Journal of Management, 36(1): 349-372.

Lado, A. A., Boyd, N. G., Wright, P., & Kroll, M. 2006. Paradox and Theorizing Within the Resource Based View. Academy of Management Review, 31(1): 115-131.

Langley, A. 1999. Strategies for Theorizing from Process Data. Academy of Management Review, 24(4): 691-710.

Langley, A. 2007. Process thinking in strategic organization. Strategic Organization, 5(3): 271-282.

Manning, S., Massini, S., & Lewin, A. Y. 2008. A Dynamic Perspective on Next-Generation Offshoring: The Global Sourcing of Science and Engineering Talent. Academy of Management Perspectives, 22(3): 35-54.

Mates, G., Gundry, J., & Bradish, P. 1998. Agile Networking: Competing through the Internet and Intranets. Upper Saddle River, NJ: Prentice Hall.

Miller, D. 1992. The Icarus paradox: How exceptional companies bring about their own downfall. New-York: Harper Collins.

Miller, R. 1994. Global R&D networks and large-scale innovations: the case of the automobile industry. Research Policy, 23(1): 27-46.

Nelson, R., & Winter, S. 1982. An evolutionary theory of organizational change. Cambridge, MA: Harvard University Press.

Penrose, E. T. 1959. The Theory of the Growth of the Firm. New York and Oxford.

Powell, T. C., Lovallo, D., & Caringal, C. 2006. Causal Ambiguity, Managerial Perception, and Firm Performance. Academy of Management Review, 31(1): 175-196.

Probst, G., & Raisch, S. 2005. Organizational crisis: The logic of failure. Academy of Management Executive, 19(1): 90-105.

Quélin, B., & Duhamel, F. 2003. Bringing Together Strategic Outsourcing and Corporate Strategy: Outsourcing Motives and Risks. European Management Journal, 21(5): 647-662.

Reed, R., & DeFillippi, R. J. 1990. Causal Ambiguity, Barriers to Imitation, and Sustainable Competitive Advantage. Academy of Management Review, 15(1): 88-102.

Rouse, M. J., & Daellenbach, U. S. 1999. Rethinking research methods for the resource-based perspective: Isolating sources of sustainable. Strategic Management Journal, 20(5): 487-494.

Rouse, M. J., & Daellenbach, U. S. 2002. More Thinking on Research Methods for the Resource-Based Perspective. Strategic Management Journal, 23(10): 963-967.

Russell Crook, T., Bratton, V. K., Street, V. L., & Ketchen Jr, D. J. 2006. Has Strategic Management Shed the Normal Science Straightjacket?: Revisiting Bettis' (1991) Critiques. Journal of Managerial Issues, 18(3): 409-423.

Shafer, R. A., Dyer, L., Kilty, J., Amos, J., & Ericksen, J. 2001. Crafting a human resources strategy to foster organizational agility: A case study. Human Resource Management, 40(3): 197-211.

Sharifi, H., Barclay, I., Colqhoun, G., & Dann, Z. 2001. Agile manufacturing: A management and operational framework. Journal of Engineering Manufacturing, 215(6): 857-869.

Starbuck, W. H. 2009. Cognitive Reactions to Rare Events: Perceptions, Uncertainty, and Learning. Organization Science, 20(5): 925-937.

Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic Capabilities and Strategic Management. Strategic Management Journal, 18(7): 509-533.

Van Hoek, R. I., Harrison, A., & Christopher, M. 2001. Measuring agile capabilities in the supply chain. International Journal of Operations and Production Management, 2(1-2): 126-147.

Wernerfelt, B. 1984. A Resource-based View of the Firm. Strategic Management Journal, 5(2): 171-180.

Whitten, D., & Leidner, D. 2006. Bringing IT Back: An Analysis of the Decision to Backsource or Switch Vendors. Decision Sciences, 37(4): 605-621.

Williamson, O. E. 1985. The economic institutions of capitalism: New York : Free Press.

Yusuf, Y. Y., & Adeleye, E. O. 2002. A comparative study of lean and agile manufacturing with related survey of current practices in the UK. . International Journal of Production Research, 40(17): 445-456.