



Exploring the role of micro-level origin of dynamic capabilities in fostering innovation: the case of financial institutions

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Résumé :

L'approche par les capacités dynamiques constitue un des piliers de la recherche en management stratégique. Plus précisément, la capacité d'identification des opportunités dans le marché, de saisie et de reconfiguration permet de s'adapter et représente un concept de premier ordre, tel qu'introduit par Teece (2007). Cependant, les microfondations sous-jacentes à ces capacités dynamiques y compris les comportements, les processus et les structures organisationnelles, restent largement non spécifiées, en particulier celles qui sont en lien avec l'innovation des entreprises. Notre approche empirique de type qualitative s'appuie sur trois études de cas d'institutions financières innovantes, dans un contexte très changeant et une grande menace des Big Tech (Facebook, Apple, Amazon, etc.). Nos résultats montrent que les microfondations se trouvent aux niveaux de l'individu, du processus ainsi que la structure. Plus précisément, les processus d'intelligence stratégique basés sur des approches formelles et informelles, ainsi que les approches de recherche d'informations dirigées et non dirigées sont des microfondations importantes pour l'identification des opportunités d'innovation. Deuxièmement, la diversité des réseaux individuels et les processus d'intégration sociale sont des microfondations de la capacité à saisir. Enfin, la structure organique et l'auto-évaluation centrale, interagissent pour expliquer les capacités d'innovation.

Mots-clés : capacité dynamique; microfondations; innovation; intelligence stratégique, étude de cas.



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Résumé : Resources and dynamic capabilities are among the main conceptual pillars of strategic management literature. More precisely, sensing the environment, seizing opportunities and reconfiguring resources to avoid rigidities, together represent the first-order dynamic capabilities described by Teece (2007). However, the underlying microfoundations that give rise to such dynamic capabilities including behaviors, practices and organizational components remain largely unspecified, particularly those affecting firm innovation. Our empirical qualitative approach is based on three case studies of innovative financial institutions. Three companies were selected to explore their innovation challenge in the context of environmental threats from the Big Tech (Facebook, Apple, Amazon, etc.) threat development. Our results show that microfoundations are found at the individual, group and firm levels along with their interactions across and within each of these levels. More specifically, formal and informal strategic intelligence processes as well as directed and undirected information research approaches are critical microfoundations of sensing. Second, individual internal and external network diversity and social integration mechanisms are microfoundations of seizing, to better capture innovation opportunities. Finally, we propose how reconfiguration microfoundations, namely organic structure interact to explain innovation capabilities.

Mots-clés : dynamic capabilities; microfoundations; innovation; strategic intelligence, case studies.



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1. INTRODUCTION

Organizational performance is rooted in individual, processual and firm microfoundations (including their interactions) that shape behaviors and firm heterogeneity (Bojesson and Fundin, 2020; Abell et al., 2008; Gavetti, 2005); research in strategy remains underdeveloped (Vogel et Guttel, 2013; Felin et al., 2012). Moreover, as innovation is a central concern to a firm's strategic drive for growth, the conditions, behaviors and contextual antecedents to innovation continue to solicit much debate.

Innovation is as a firm's capability to create new (or augment existing) value propositions through new products, services, processes, technologies, ways of organizing, markets, resources and/or competencies (Schumpeter 1934). The relationship between innovation and dynamic capabilities finds its roots in Schumpeter's (1934) conceptualization of innovations: new combinations of resources that lead to a continually changing environment. With many markets in constant evolution, subject to increasing global pressures and diversity of innovations, a firm's ability to adapt rests with its dynamic capabilities – a firm's ability to integrate, build and reconfigure its internal and external competencies to respond to a rapidly changing environment (Teece et al., 1997, p. 516).

While there has been an increasing interest in dynamic capabilities and innovation, antecedent relationships and linkages remain elusive (Vaccaro et al., 2012; Hai Fen Lin et al., 2016; Kim et al, 2014). Extant research, for the most part, has looked at macro-organizational factors (e.g. CEO and board degrees, innovation efforts) and coarse measures of innovation (e.g. relative R&D spending), eschewing to investigate how the underlying managerial structure and behaviors– the microfoundations - play a role in nurturing innovation (Abell et al., 2008; Powell, 2014). While most microfoundation studies are interested in understanding the role of individuals and their interactions through formal and informal organizational and intra-organizational structures and relations (Felin et al, 2012; Foss, 2011), few were interested on innovation. While the importance for firm innovation is widely acknowledged by academics and industry, the lack of research may reflect the challenges in operationalizing individual,



processual and structural constructs; managers also struggle to identify, understand and evaluate these innovation-yielding microfoundations (Eriksson, 2013).

Individual research has focused on psychological characteristics like motivation (Jansen et al., 2009) or cognitive capabilities (Laamanen and Wallin, 2009) and their influence on strategic decision-making and firm performance (Adner and Helfat, 2003). Process research has mostly focused on organizational learning and their impact on dynamic capabilities (Abell et al., 2008; Foss, 2011). However, the interaction within and across different levels and their influence on innovation remain unresolved (Fainshmidt and Frazier, 2017; Helfat and Peteraf, 2015).

How can dynamic capabilities through their microfoundations stimulate innovation? More specifically, how do microfoundations interact with dynamic capabilities and what are the underlying mechanisms that allow dynamic capabilities to spur innovation?

Our paper explores the relationships between innovation and Felin et al.'s (2012) approach to microfoundations by integrating with Teece's (2007) broad dynamic capabilities of sensing, seizing and reconfiguring. In order to gain an in-depth understanding of these microfoundations, a qualitative approach was followed (Yin, 2003). Three cases studies of financial institutions were analyzed.

In the following sections, we will detail first the conceptual framework based on the innovation concept, the dynamic capabilities perspective and the microfoundations approach. The second part of the paper presents the methodology used for the selection of the case studies, and the data collection and analysis. The third part discusses the main results and the conceptual model developed to highlight the main microfoundations of innovation within companies. Finally, the contributions and conclusions are presented and discussed in part five.

2. CONCEPTUAL FRAMEWORK

2.1 INNOVATION DRIVERS: A DYNAMIC CAPABILITIES APPROACH

Innovation may manifest itself in different ways – new products, technology, processes and/or organizational form – or emerge from different organizational resources and capabilities. Individuals, groups, and organizations may all contribute to innovation through formal and informal structures, planned or accidental efforts, and internal or external sources. Research and development or interactions across various external networks – suppliers, customers, competitors, and alliances – may all bring innovations. Moreover, innovation may be either incremental or radical, initiating evolutionary or profound organizational transformations.



Notwithstanding the nature of the innovation, its rhythm or degree, the organizational context and capabilities play a critical role.

Dynamic capabilities (Teece et al., 1997) has emerged as an extension, buttressing the resource-based view that has been criticized for being tautological, static and having limited prescriptive implications (Priem & Butler, 2001), particularly in turbulent environments (Kraaijenbrink et al., 2010). In an innovation context, dynamic capabilities have sought to identify the specific organizational abilities that lead not only to innovations but also to innovate persistently.

A number of dynamic capabilities definitions have as a starting point Teece et al. (1997) seminal definition: the firm's ability to sense (identifying opportunities through environmental scanning), seize (managing firm activities that allow for exploiting opportunities) and reconfigure (create, modify and acquire the necessary resources and capabilities) to address rapidly changing environments. Notwithstanding how various authors (Winter, 2003; Eisenhardt & Martin, 2000) have operationalized the definition, there has been an unequivocal determination, not surprisingly, that dynamic capabilities are positively related to innovation either directly (Teece et al., 1997; Zollo & Winter, 2002) or indirectly (Eisenhardt & Martin, 2000; Eriksson, 2014). However, these approaches have taken on a macro-organizational context while the mechanisms of how dynamic capabilities are created and evolve (Fallon-Byrne & Harney, 2017; Barreto, 2010) to influence innovation remain elusive (Eriksson, 2014). For example, Wang and Ahmad (2007) argue that innovation capability is a *sine qua non* condition of dynamic capabilities. However, Eisenhardt and Martin (2000) argue that innovation capability is a dynamic capability in itself. These approaches reflect that difficulty in both easily unravelling the tautological limits of the resource-based view (Priem & Butler, 2001) and in operationalizing it. Others flatly reject the dynamic capabilities concept and argue that other existing concepts are able to explain the innovation phenomena, including knowledge management, learning and adaptation (Arend & Bromiley 2009).

By opening the dynamic capabilities black box through a microfoundations approach, and by deconstructing these macro-level factors into their more granular capabilities (Felin et al., 2012; Teece, 2007; Foss, 2011) we will be able to identify those microfoundations that may influence innovation.



2.2 MICROFOUNDATIONS: SPECIFYING THE DYNAMIC CAPABILITIES-INNOVATION LINK

Teece (2007) suggests that microfoundations (first order) are the specific fundamental activities for higher-order dynamic capabilities (second order) - a more general framework - of sensing, seizing and resource reconfiguration that allow firms to respond to market threats and opportunities, to ideally gain a competitive advantage. With respect to dynamic capability creation, extant literature has investigated organizational processes (Eisenhardt & Martin, 2000; Zollo & Winter, 2002), individuals' characteristics, including motivation (Jansen et al., 2009), cognitive ability (Laamanen & Wallin, 2009), entrepreneurial spirit and creativity (Teece, 2007), and managerial experience, social capital and decision-making mental models (Adner & Helfat, 2003; Teece, 2007), among others. These microfoundations influence the behavior of firms and explain their heterogeneity (Abell et al., 2008; Gavetti, 2005).

Drawing on the behavioral theory of the firm (Winter, 2003; Felin et al., 2012) present a framework for disentangling microfoundations into individual, process and structural levels, highlighting that capacity building requires coordinated development within and between these levels as direct, mediating or moderating influences, consistent with Felin et al. (2012).

Little understanding exists of how individual and organizational levels interact to explain innovation adaptation (Fainshmidt & Frazier, 2017; Helfat & Peteraf, 2015), as in the cases of individual managerial experience and firm capabilities (Rodenhof & Brettel 2012) or how individual absorptive capacity influences the organization (Lowik et al. 2017). Overall, microfoundations remain generally underdeveloped and unintegrated (Bendig et al., 2017; Vogel & Guttel, 2013), particularly with respect to innovation.

Microfoundations allow for individual, organizational, and structural considerations to be considered, helping us to go beyond the more general resource reconfiguration argument (Eisenhardt & Martin, 2000) that ignores the underlying factors that allow for reconfiguration to happen in the first place. While the seminal conceptualization of microfoundations rests with Teece (2007), Felin et al. (2012) extend to where individuals are microfoundations themselves and that interactions among other microfoundations are also to be considered. Thus, integrating Teece's three-dimensional conception of dynamic capabilities (Teece, 2007) and the deeper and more granular approach by Felin et al., (2012) allow for a better understanding of the nature of the relationship between dynamic capabilities and innovation.



3. METHODOLOGY

For this research project, we undertook a qualitative approach to better understand the main antecedents of strategic innovation within companies (Yin, 2003). Three financial institution case studies were selected to explore their innovation challenge in the context of environmental threats from the Big Tech (Facebook, Apple, Amazon, etc.) and financial technology threat development.

3.1 CASE SELECTION

Information was collected from three financial services organizations in Canada: Two banks, namely Alpha and the Beta and one insurer, Gamma (Table 1). In recent years, these financial services institutions have had to accelerate their efforts to digitize and enrich their offers with disruptive financial and technological solutions (Zalan & Toufaily, 2017). Being more innovative has become a major challenge especially in a pandemic (Covid-19) situation where customers are more and more asking for online services.

Table 1 : Description of cases and data source

| Case | Beta | Alpha | Gamma (Insurance) |
|--------------------------------|---|--|--|
| Core business | Personal and Commercial, Wealth Management, Financial Markets and U.S. Specialty Finance and International. | Retail banking, products and services related to insurance, real estate, venture capital funds and brokerage. | Group insurance coverage (Life Insurance, Accidental Death & Dismemberment Insurance, Disability Insurance, Health Insurance, etc.) |
| Main innovations | Digitization of services, development of data connectivity technology. | Investments in new technological solutions to support its clients, offers new customers access to an online investment platform and courses and purchases a behavioral banking solution. | Development of innovation tools in the field of insurance including an incubation program, collaborative platforms, and laboratories |
| Data sources | Interviews, annual reports, press documents, company website | | |
| Total files stored in Nvivo 12 | 11 | 16 | 8 |
| Total number of Nvivo codes | 45 | 50 | 40 |

3.2 DATA COLLECTION

Data collection was based on annual reports, press documents, company website and semi-structured interviews between 2020 and 2021. A total of 9 interviews (continued data collection until saturation) were conducted with senior managers (VP and CEOs), lasting an average of one hour. The interview protocol comprises three main themes: i) main innovations ii) the (internal and external) actors that played a role in the development of innovation projects ; and iii) the activities and levers that serve to sense and seize opportunities and to reconfigure



resources. The interviews, which constitute the primary source of data, were supplemented by internal (activity reports, meeting minutes, memos, etc.) and external (specialized press documents from the Factiva and Eureka databases, industry reports, and private publications) secondary data as described in Table 2. We could thus triangulate the data sources (Scandura and Williams, 2000), given the multidimensional nature of the concepts used. The primary and secondary data focus on current and retrospective organizational activities, actions, and processes (Eriksson, 2014).

3.3 DATA ANALYSIS

The processual nature of our study led us to focus on the events, activities, and choices that took place within organizations. Thus, the data analysis is also processual (Kouamé and Langley, 2017), and we used a deductive-inductive approach in which the theoretical framework guides the empirical work (Miles & Huberman, 2004). The Gioia et al, (2013) method was used using coaxial coding and thematic analysis to identify 1st order terms, 2nd order themes and aggregate dimensions from which a data structure was created. Figure 1 shows the coding process in the data analysis. Nvivo 12 was used to identify codes. We adopted Shenton's (2004) aspects of trustworthiness as described in Table 2.

Table 2 : Aspects of trustworthiness

| | Actions |
|-----------------|--|
| Transferability | Using the same data collection methods for the three cases, descriptive informations |
| Credibility | Triangulation, prolonged time spent with participants –2020-2021, researcher with extensive knowledge in the financial service industry, two researchers were involved in data analysis. |
| Dependability | Explanation of how the data was collected, and the interpretation and presentation of the finding. |
| Confirmability | Triangulation and weak generalizability was mentioned in the limitations |

4. FINDINGS AND DISCUSSION

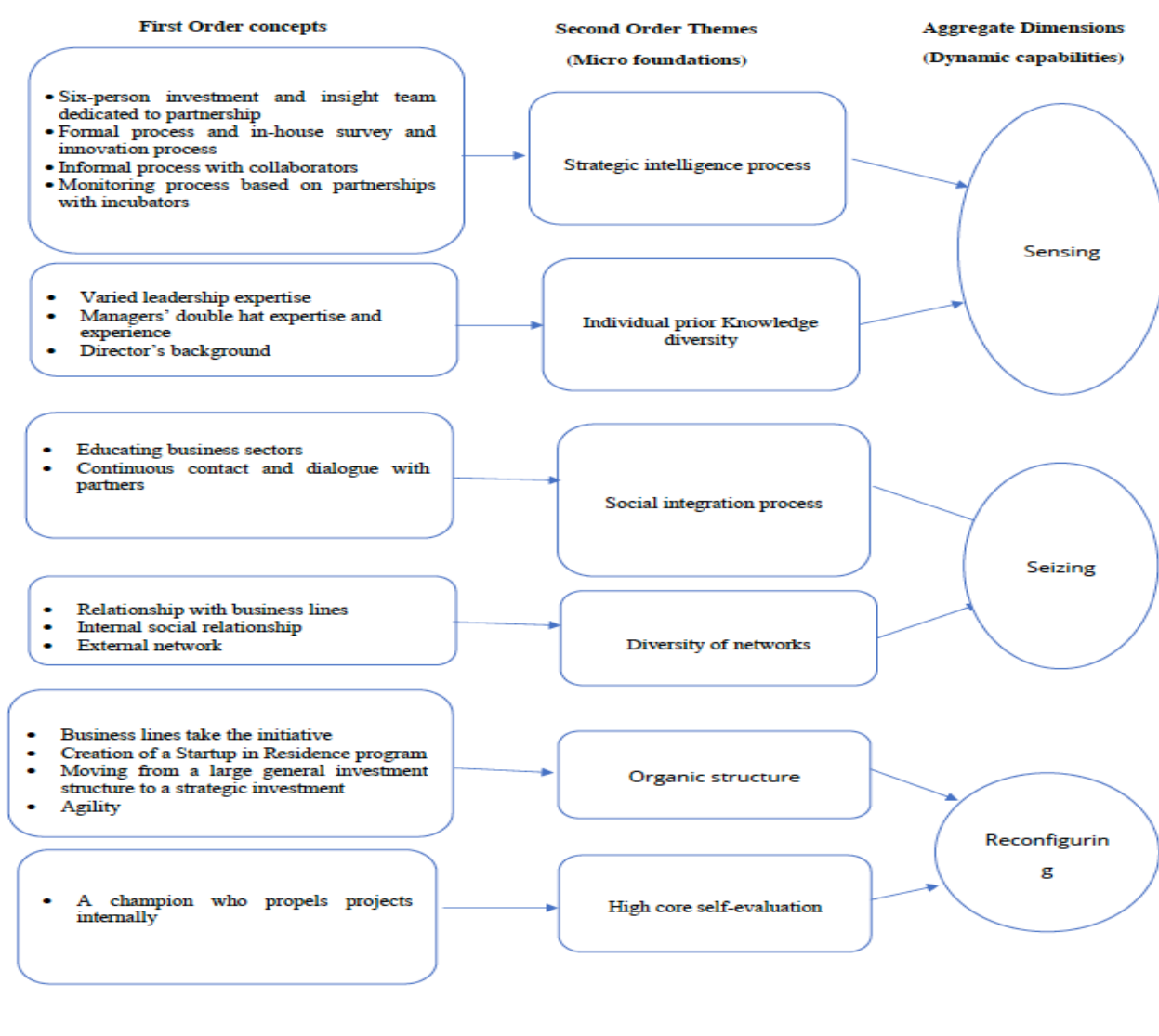
This section presents the finding of the analysis of primary and secondary data. Figure 1 presents the coding structure based on Gioia (2013) method. Several respondents expressed



similar views and no contradictory opinions were expressed. We attempt to clarify the underlying microfoundations of innovation (Kyrgidou & Spyropoulou 2013). Our findings illustrate how financial institutions harness their microfoundations to generate new innovations opportunities in products, services, and markets. These innovations were possible because of the firm organizational processes, such as strategic intelligence, that allowed them to identify early the threat of Fintech and Big Tech. Secondly, managers' individual abilities and characteristics along with its collective social integration process allowed innovation through timely and accurate interpretation of early warnings that were signaling the shift in the financial service market.

Based on our finding, our objective, in the following sections, is to introduce specific propositions that hypothesize linkages between dynamic capabilities of sensing, seizing and reconfiguring (Teece, 2007) and their microfoundations rooted in organizational process, individual cognition, as well as organizational structure and their interactions (Felin et al., 2012).

Figure 1: Data coding and findings



4.1 THE MICROFOUNDATIONS OF SENSING AND INNOVATION

Our findings show that the three companies (Alpha, Beta and Gamma) developed some sensing capabilities leading to specific outcomes such as an ability to identify customer's changing needs, and especially, the shifting technological landscape in the financial service market. The results of this research demonstrate that the three companies enrich their offers with disruptive financial and technological solutions. New partnerships with technological start-ups resulted in new types of services and a new way of designing and producing strategic innovation. The data analysis from the three case studies allowed us to identify specific elements, namely, first-order processes, structure and individual characteristics that enable financial institutions to sense opportunities for these strategic innovation.



4.1.1 The role of strategic intelligence process

The financial institutions studied have created specific structures that help them identify opportunities and threats. For example, one bank has launched a startup investment fund that represents an important source of market information, derived from links established with Canadian and US investment funds. This fund also has a strategic mission to advise top management on key external market issues and trends. This structure puts forth a huge collective effort to sense promising opportunities to collaborate with a financial startup.

Some financial institutions implement formalized monitoring and benchmarking processes in Canada and even internationally. *“Gamma uses a formalized process to identify opportunities, particularly in the area of innovation, and has its own digital marketing firm to survey the market and develop products and markets.” (Interview excerpt, Gamma).*

The goal is to sense opportunities, particularly those related to innovation, while capitalizing on existing digital offers. This is the case of one large institution studied. Other financial institutions have gone beyond strategic intelligence to develop teams dedicated to partnerships and investments in startups. It scans the market to target the best partners. Another bank has opted to invest in structures by creating a development center that provides a focal point for financial technology initiatives. In addition to this mechanism and a continuous monitoring approach, one of the financial institutions studied has allotted ample resources to seeking out innovations in the market of technological financial solutions and to responding to well-targeted needs through calls for tenders. Although the mechanisms of sensing opportunities for innovation differ, the focus is invariably mainly on establishing a monitoring process to analyze the external environment. A large innovation competition for startups was co-organized. This initiative strengthens the ability of the financial services institutions to sense opportunities in that it provides information on potential collaborators, customers, and suppliers that are active in innovation. *“In 2019, Beta in association with a Fintech, organized the innovation competition, which runs for six months, and involved fintech startups...This competition provides information on potential collaborators, customers, suppliers who are active in innovation activities.” (Canadian Bankers Association, 2021).*

The three financial institutions employed a systematic and purposeful practice of formal and informal strategic intelligence process related to the technology developments in the industry. Their sensing capabilities seemed to support their innovation. Zollo and Winter (2002) argue that the accumulation of knowledge allows for innovation in routines over time and the identification of new opportunities in products, services, markets, process or organizational



design (Short et al, 2009). However, for new knowledge to emerge, firms must be structured to source and analyze a steady flow of information through institutionalized strategic intelligence Lowik et al. (2017). The adoption of a particular type of intelligence structure and process depends on the nature of the firm environment such the level of its complexity or uncertainty and the firm specificities such as its size or organizational structure (Cohen, 2009).

The strategic intelligence process is a deeper microfoundation that encompasses interactions among individuals, processes, structure and other organizational components (Calof and Smith, 2010). While there are multiple approaches to perform strategic intelligence, only 30% of firms engage in formal intelligence while 46% engage in one of the other four forms described below, as conceptualized by Abreu and Castro (2011):

1. Undirected scanning: general exposure to the information without any predefined needs, purpose/objectives and the sources of information are varied and unknown in advance.
2. Conditioned or Directed scanning: direct exposure to specified type of information sources but without any predefined search needs, purpose, objectives, or goals
3. Informal Search: predefined search needs with objectives, and goals but no established sources or structured procedures to gather information.
4. Formal Search: Predefined needs, goals and objectives with formal sources, structured procedures, methodology and resources to gather information.

Formal intelligence processes improve the quality and reliability of the information gathered, better converge information, feed planning and decision-making processes and provide better data protection (Gilad and Gilad, 1986). However, formal processes also entail higher administrative and training costs. As for informal intelligence processes, they offer a wide range of information sources, low administrative and training costs, access to weak signals across firm and individuals' networks, etc. On the other hand, the duplication of the information sources, the collection of random information, the use for planning and decision-making purposes, etc. Finally, there is no evidence from extant research that formal or informal intelligence processes were more efficient (Cohen, 2009). Innovation is multifaceted in its nature, sources, object and impact. As such, its identification requires a combination of both formal and informal strategic process as well as directed and undirected approaches as categorized by Abreu and Castro (2011). Given the discussion above, we propose:



Proposition 1: As a microfoundation of sensing, a strategic intelligence process that combines formal, informal, directed and undirected approaches will positively affect innovation.

4.1.2 The role of individual prior knowledge diversity

Our findings show that the main individual factors played a considerable role in sensing innovation within the banks and insurers is prior knowledge and experience. More specifically, the interviews demonstrate that past experience, a broad range of skills (from purely technical to finance, sales and marketing) and diversity of knowledge enables financial institutions to detect and sense innovation opportunities in their industry. Senior leaders, at large financial institutions, play a central role in orienting the entire organization toward sensing innovation opportunities to face Big Tech companies. Executives' role, based on their motivations, knowledge, and experience contributes identifying new technological and financial services. Thus, individual prior knowledge and expertise is crucial (e.g., the famous “double hat”) during the strategic intelligence process established by the three companies.

More specifically, the financial institution's sensing process is reinforced by their managers' and executives very rich diversified background, their experience and openness to international relations, combined with the fact that they sit on boards of directors of other companies, which makes it easier for them to sense (and sometimes create) new opportunities for strategic innovation. The management team members' dual expertise in insurance and technology facilitates the identification of innovation opportunity.

“The Managing Director, a Chartered Professional Accountant in Canada, he launched and led the business integration and separation department for one of the Big Four accounting firms. He also practiced for several years in the United States, France, Latin America and New Zealand. In addition, he sits on the board of various companies. As an entrepreneur, he has already built a consulting firm.” (Beta)

Individuals having diverse prior knowledge may affect their ability to assimilate new knowledge and consequently affect innovation. Diverse prior knowledge refers to the variety of knowledge possessed by an individual, arising from education, previous work and life experiences. Individuals' prior knowledge diversity have an effect on their ability to recognize the potential value of new knowledge and opportunities, especially when they connect them to their prior knowledge (Lowik et al, 2017).

On the other hand, individuals tend to search information in areas they are familiar with and where they have achieved earlier successes (Zahra & George, 2002). Moreover, prior



knowledge diversity affects the locus of the search (Lowik et al, 2017), while a given expertise in a very specialized field of knowledge allows individuals to search more in depth for new, related knowledge. However, those with highly diversified prior knowledge or « generalists» will tend to open up the scope of their search, which will increase the potential identification of innovation opportunities. Innovation is, by its nature, a knowledge-intensive activity. Thus, knowledge among intellectual human capital, especially the recruitment of scientists, may be a unique source of learning and innovation (Rothaermel and Hess 2007).

Proposition 2: As a microfoundation of sensing, individual prior knowledge diversity will positively affect innovation.

4.2 THE MICROFOUNDATIONS OF SEIZING AND INNOVATION

Seizing refers to a firm's ability to manage its resources (Barney, 1986), capabilities (Teece et al, 2007) and routines (Nelson & Winter, 1982), allowing for new opportunities (Teece, 2007). As a second-order capability, seizing requires that a firm identify and select new product-service opportunities, adopt new technologies, and rapidly allocate the necessary financial, human and other organisational investments to seize innovation opportunities.

4.2.1 The role of social integration process

Regarding banks and insurers, our results show the gradual introduction of a formal and informal decision-making process. In order to seize opportunities, it is important for institutions to invest heavily in technologies and models that can increase the acceptance of the opportunity in the market. The selection of decision-making protocols must prevent both bias and decision errors (Teece, 2007).

Organizational processes must also foster employee motivation, loyalty, participation, and creativity, together with responsiveness to technological changes in the market (Wilden et al., 2013). *“At a large company like ours, budgets are made 18 months in advance. The projects are all tangled up and suddenly someone comes up with a new idea. We say that would be great, but it's going to mess up the business lines a little bit, so that's the first goal, so we're going to go work very closely with the business lines, that's the easiest way to do it.”* (...) Beta

Accordingly, our results show that employees of financial institutions are also called collaborators.



In addition, major financial institutions have put in place communication mechanisms to help developers engage in knowledge transfers with both the business sector and The financial technology startup. These tools also strengthen the ties between the two partners.

“It’s the entrepreneurs’ background, two young, very digital insurance brokers who understand financial planning... We trusted them.” (Interview excerpt, Gamma Assurances).

“We kept an open mind because of the research and innovation team, to meet companies that were a little less mature, but had good solutions” (Excerpt from interview 2, Alpha).

Organizations face challenges regarding the creation of common frames of reference, resolving divergence between individual, and negotiating issues of collective action (Barron, 2000). While organizational processes nurture the motivation, creativity and loyalty of firm members, they also enhance their reactivity to technological and market changes (Wilden et al., 2013). Pablo et al. (2007) found that trust is essential in creating a climate of learning, which nurture the development of dynamic capabilities (Ambrosini and Bowman, 2009). Social integration mechanisms improve mutual knowledge and learning, and as a microfoundation, they may therefore facilitate the development of certain capabilities (Ryan et al, 2018). Furthermore, social integration mechanisms that improve connectedness, common codes of communication and knowledge exchanges (Zahra & George, 2002) or employee enthusiasm for work (Wooten & Crane, 2004) are central in understanding emergent dynamic capabilities (Lowik et al, 2017).

Therefore, shaping an environment that favors dense social interactions, and consequently, the identification of innovation opportunities, depends on formal coordination mechanisms and communication (Dougherty, 1992). Although formal communication mechanisms support knowledge sharing, much is also shared informally through relational learning channels (Ryan et al, 2018). Thus, communication among members, be it formal or informal, will encourage trust and facilitate the sharing of knowledge (Ryan et al, 2018). Moreover, when these dense social interactions occur across horizontal and vertical organizational levels, they reinforce the positive effects (Milano Mayan and Rouby, 2019). This leads to our next proposition:

Proposition 3: As a microfoundation of seizing, dense social interaction process will positively affect innovation

4.2.2 The role of individual internal and external network diversity



The first individual seizing microfoundation refers to the internal and external individuals' networks. The quality of the relationship between a senior executive and a manager of partner firms can confer a degree of influence that helps negotiate among different stakeholders. This is particularly the case for one of the banks, which has established an extensive personal network with some startup The financial technology startup. Trust and friendship between the leaders and the presence of trusted people in this network of contacts help financial institutions to sense opportunities. Consequently, this network based on close links with The financial technology startup helps both banks to seize opportunities and develop innovative financial solutions online. Moreover, the president of another institution examined in a case study is viewed as a strategic leader who encourages the seizing of innovation opportunities by playing a strategic role of a promoter who acts as intermediary between the external partners and the business units of the banks. Thus, the leader's internal and external network diversity represents an important source to seize opportunities with other stakeholders such as the financial technology startup.

"We know the inside of the bank. We get to champion projects inside the bank. Because of my position, I've been able to build relationships with the business lines and the executive vice president. It also allows me to pull the right strings. (...) But second, we can find solutions that are out of the box, that no one had thought of adopting" (Interview excerpt, Beta). Specifically, the diversity of internal social relationships allowed individuals to promote and advance their projects across business lines and thus seize innovation related opportunities that will engender new products, processes, or services.

Rosenbloom (2000) argue that the capability of CEOs to create a context for a collective learning culture is an antecedent of dynamic capabilities, including the building of loyalty among employees (Eriksson, 2014) through networks and social capital. Unlike external social capital, internal network diversity (Adler and Kwon, 2002) - the heterogeneity of contacts with colleague's members from different knowledge fields (Lowik et al, 2017) - favours knowledge renewal (Dougherty, D. 1992). Individuals with a diverse internal network are also more likely to enhance effective problem-solving (Cross and Cummings, 2004) and positively impact innovation (Cross and Cummings, 2004; Lowik et al (2017). Quoting Felin et al., 2012 relational ability may affect the outcome of a capability, such as innovation: *"An individual's ability to engage or interact with other individuals (relational ability) or to integrate different elements such as knowledge or artefacts (integration ability) may affect the execution and outcome of a routine or capability"*. (Felin et al, 2012, p 1361). Additionally, Grant (1996)



argue that integration of knowledge from multiple individuals from different fields is critical to innovation outcomes. Thus, we propose that an individual's internal and external network diversity influence positively seizing capability and contribute to a improve innovation.

Proposition 4: As a microfoundation of seizing, individuals with a high internal and external network diversity positively influence innovation.

4.3 THE MICROFOUNDATIONS OF RECONFIGURATION AND INNOVATION

The acquisition, transformation, and elimination of resources (Sirmon et al., 2007) are tied to the acquisition and integration of knowledge (Zollo & Winter, 2002), allowing for the enhancement of existing capabilities or the creation of new ones (Sirmon et al., 2007). This process serves as the basis for exploiting new opportunities through innovation. Accordingly, our results show that transformation is maintained through individual leadership initiatives and appropriate organizational arrangements.

4.3.1 The role of individual high core self-evaluation

Our analyses clearly show that senior leaders at large financial institutions play a central role in transforming resources and the orientation of the entire organization toward innovation. *“Me, I prefer to be more active on the files. Yes, there are business lines, silos, a big structure, but at the end of the day, behind it all are individuals. And the individual who starts a project, he wants to take the benefits and be a hero at the end of the day. My project worked. I had a good idea. I pushed it forward.”* (Beta)

“We were very lucky to have the strong support of the president. (...) He's the one who asked us to launch the The financial technology startup investment fund.” (Beta)

CEOs, having a deep emotional stability, are very confident about their ability to perform well and react to the change in the environment, and have a positive assessment of their worthiness (Judge et al., 2003). This high level of core self-evaluation positively influences dynamic capabilities (Chang et al., 2012). A CEO with a high core self-evaluation level worries little about risky decisions and actions (Von den Driesch et al 2015); they may nevertheless make the right based on limited information, thus, seizing opportunities, timely, and quicker than CEOs with low core self-evaluation (Hiller & Hambrick, 2005; Von den Driesch et al, 2015). Further, CEOs with a high core self-evaluation are convinced of their ability to make the needed change to foster innovation (Hiller & Hambrick, 2005; Von den Driesch et al, 2015). We therefore propose:



Proposition 5: As a microfoundation of reconfiguring, the individual high core self-evaluation has a positive impact on innovation.

4.3.2 The Role of organic organizational structure as a microfoundation of reconfiguration

Our analyses point to a significant change in banks' internal processes that has enabled innovations projects. Some financial institutions have put in place learning and knowledge management mechanisms based on the trial-and-error approach, due to the complexity of their structure. In fact, not all ventures with partners have been fruitful. However, these experiences engender learnings and internal changes based on a reconfiguration of the resources already in place. *"We learned that to create that relationship and especially not kill the start-up, it took experts in sales, marketing, business relationship development, branding lawyers, psychologists, kinesiologists, so we partnered with a bunch of experts to help these startups, but also to support the founders. We said to ourselves, it's not just the technology we're interested in, it's the human...we really changed our mindset."* (Excerpt from interview 1, Alpha).

Once resource transformation is under way, large financial institutions put in place a knowledge management structure that allows them to capitalize on their past experiences in order to learn and better adapt internally to future collaboration in innovation projects. Another bank emphasizes decentralization and decomposability at the structural level to allow managers in business lines to gain access to varied information. These results underscore the importance of decentralization and the development of analytical learning. *"You have to have that agility to be able to push projects as efficiently as possible. So I really have a piecemeal strategy. I think that our success today is precisely because we have been able to adapt to each business line."* (Interview excerpt, Beta)

"We think mentally we're in an agile philosophy by project management ... We are already an of agile culture of innovation from 2015- 2016." (Gamma)

The structure of an organization is typically defined as *"the total sum of the ways in which it divides its labor into distinct tasks and then achieves coordination among them"* (Mintzberg, 1979, p. 2). Different organizational structures set the context for facilitating or constraining interactions, activities and learning processes within the firm (Felin et al., 2012;



Park & Harris, 2014). They also support effective information processing, knowledge development and sharing or knowledge governance (Park & Harris 2014).

Structures can be classified using a mechanistic-to-organic structural dimension (Burns & Stalker, 1961). Mechanistic structures are characterized by centralized decision-making, higher formalization, lower internal and external communication and strict control of information flows (Nicholson, 1990). In contrast, organic structures are related to decentralized decision-making and are characterized by open communication, organizational adaptiveness, and de-emphasis on formal rules and procedures (Wilden et al 2013). While some scholars suppose a positive relationship between organic structures and firm adaptability (Zahra & Covin, 1995), others found that formal and systematic planning and mechanistic structures enhance performance (Wilden et al 2013). As innovation needs, to be developed, access to internal and external information through open communication (Schminke et al., 2000), we posit that:

Proposition 6: Organic structure as a microfoundation of reconfiguration will positively affect firm innovation.

In addition, the interviews highlighted the relevance of structural mechanisms that strengthen the capacity of financial institutions to sense and seize opportunities for innovation. Some organizations have formed specialized departments and investment committees, while others have opted for steering committees. Institutions have evolved their internal cultures by emphasizing the human aspect. They thus seek to facilitate exchanges between actors involved in the sensing activities, whose needs, objectives, and sizes vary.

“At Gamma, employees, also known as collaborators, are immersed in a culture of challenging change, modifying work processes and organizational responsibilities. Thus, working on a project with an agile partner such as the The financial technology startup is a natural part of the change management process that Gamma employees are used to.” (Gamma interview)

We found that organizational structure foster employee participation and creativity, together with responsiveness to technological changes in the financial service industry. These mechanisms facilitate the engagement of different actors in the sensing of strategic innovation opportunities.

In order to seize collaborative opportunities, financial institutions have created minority financial ownership structures that foster partner commitment, and limit alternative financing from competitors. Our analyses highlight another structural factor that the financial institutions



have put in place to facilitate innovation projects, namely the transversal structure of an internal The financial technology startup investment department that is in close contact with all the bank's vice-presidents. Once approved by the investment fund, the financial technology startup collaboration file is transferred to the risk management committee. The bank's CEO then makes the final decision. The objective is to guide the decision-making process for investments in external funds and direct strategic funds in Canada and internationally. Thus, the selection of decision-making protocols must prevent bias and decision errors (Teece, 2007).

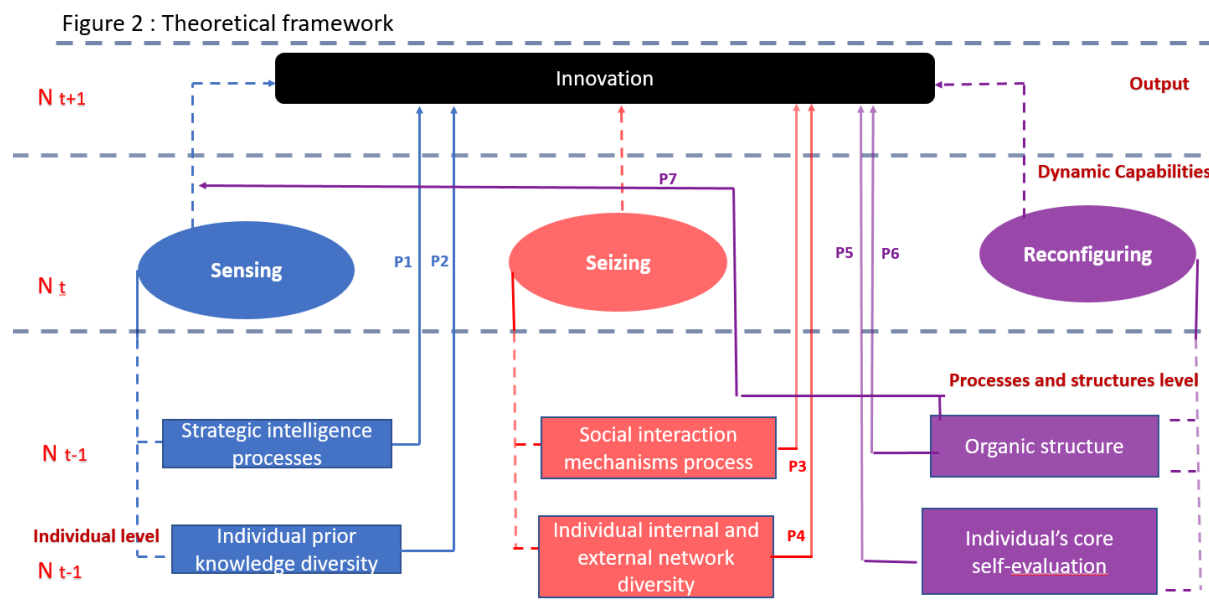
Structures define the conditions that empower, constrain individual and collective actions, and form the context for interactions within an organization (Felin et al, 2012). Rindova and Kotha (2001, p. 1264) suggest that *«organizational form is related to the dynamic capabilities and can be used as a strategic tool to support the rapid changes in strategy required to compete in dynamic environments»*. Thus, organizational structures influence firms' responses to change (Teece et al, 1997) and act as a contextual moderator that conditions the extent to which dynamic capabilities influence innovation (Kaplan 2008).

Mechanistic structure may hinder flexible information-processing behaviors such as sensing and seizing opportunities, which form the basis for dynamic capabilities (Wilden et al 2013). In contrast, structures with low formalization improve innovation by using new information and seizing opportunities (Deshpande & Zaltman, 1982). Flat structures can confer autonomy, facilitate wide information access, and inspire employee motivation, loyalty, participation, and creativity, as well as responsiveness to changing market conditions (Schminke et al., 2000). Moreover, organic structures encourage risk taking, creativity and the quest for innovation (Ryan et al, 2018). By allowing significant levels of decentralization, managers could allocate firm's resources to meet opportunity, thereby improving agility (Teece et al, 2016). Seizing opportunities requires timely investment decisions (Teece, 2007). Thus, flexibility in structures and rule systems allows for combining improvisation with formal rules (Davis et al., 2009). Moreover, the dispersion of power is necessary for the development of innovation projects (Thompson, 1965). Park and Harris (2014) suggest that the adoption of innovation is easier when organizations have organic rather than mechanistic characteristics. Thus, we propose that:

Proposition 7: Organic structure as a microfoundation of reconfiguration will positively moderate the effect of sensing and seizing microfoundations on innovation.



We present in figure 2 our theoretical framework that highlight, through our propositions, the main relationships, and interactions between microfoundations at the individual, organizational and dynamic capabilities levels.



Our model extends the proposition of Felin et al., (2012) regarding the interaction between micro factors located across different levels within the firm and their effect on the development of dynamic capabilities.

5 CONTRIBUTIONS, LIMITS AND EXTENSIONS

Combining Felin et al. (2012) approach to microfoundations with Teece's (2007) three-dimensional dynamic capabilities of sensing, seizing and reconfiguration, our paper attempts to respond to longstanding calls for greater reflection on the underlying microfoundations of dynamic capabilities (Ryan et al, 2018; Von den Driesch et al, 2015). More specifically, we clarify how resources are created, allocated and deployed, and how they directly and indirectly influence innovation (Kyrgidou & Spyropoulou 2013). As microfoundation literature is highly fragmented (Fainshmidt et al., 2016; Bendig et al. 2018), our integrative approach seeks to advance understanding of how dynamic capabilities further innovation.

Filling a gap in the literature, we attempt to show how strategic intelligence (formal and informal) and its information search (directed and undirected) processes, as well as individual knowledge diversity may be considered as a microfoundation of sensing, impacting firm innovation. Our model describes also how, organic structure, individual core self-evaluation' may influence a firm's resource reconfiguration capability.



Our conceptual model identifies individual and organizational behaviors, processes and structures that may affect innovation and builds upon extant innovation research that has generally focused on only one level of analysis, leading to heterogeneity in finding. (Rothaermel and Hess, 2007). We show how individual internal and external network diversity, social interaction process, as microfoundations of seizing, better capture innovation opportunities. In this way, we respond to the multiple calls for a better understanding of the antecedents of innovation (Kim et al, 2014; Rothaermel & Hess 2007).

Individual behavior and actions are generally neglected in strategic management (Salvato, 2011). However, *«even in highly routinized environments, the origins of heterogeneous routines are fundamentally at the individual level»*, (Foss and Foss, 2005, p 450). In undertaking a microfoundations approach, our model develops and identifies individual and firm-level behaviors of recurring organizational routines (Becker, 2004) and responds to the need for greater insight in this specific area of dynamic capabilities (Fainshmidt & Frazier, 2016). We therefore strengthen the importance of individuals and their interactions with organizational components to explain firm heterogeneity and outcomes (Felin et al, 2012).

We substantially expand Teece's (2007) sensing-seizing-reconfiguring framework and discuss ways in which specific propositions attempt to link innovation to the some important and understudied microfoundations such as strategic intelligence and governance (first-order capabilities) that underlie dynamic capabilities (second-order). Moreover, and as noted by Teece (2010, p. 7), the dynamic capability *«postulates relatively complex relationships among discrete variables but is often silent as to how these various elements interact»*. Our work allows the identification of relevant actions and interactions that constitute dynamic capabilities (Sprafke, 2015).

An ongoing critique of the resources and capabilities literature is its inability to inform practice (Foss, 2011). Admittedly, "microfoundations" are likely not in the vocabulary of managers. However, managers do recognize the need to develop behaviors and structures that allow their firms – comprised of individuals, groups and the organization as a whole – to innovate and perform. Our research outlines some concrete behaviors and structures that allow companies to develop and reconfigure capabilities to innovate more effectively by opening this organizational black box. In doing so, we try to make our model relevant for managers and mitigate critiques about reflecting on issues that are not relevant to practitioners (Powell 2014).

While we tried to highlight the role played in nurturing innovation by some understudied microfoundations, such as strategic intelligence processes or social interaction mechanisms, we



recognize that we could further deconstruct and contextualize to encompass other microfoundations. For example, we could explore under upper echelon theory (Hambrick et al., 1993) how retirement horizon (Matta & Beamish, 2008), and the predisposition towards risk could influence innovation.

A second challenge with our model is the need to explore further the nature of the realized innovation. Incremental innovation is associated with products and processes while more radical innovation is often found in value chain. Our model may require further refinement in order to determine which microfoundation and capabilities favor one type of innovation over another.

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