



Ambidexterity in servitizing SMEs: A longitudinal study

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Résumé :

Dans cette recherche, nous souhaitons répondre aux deux questions suivantes : comment les PME industrielles utilisent-elles l'ambidextrie pour soutenir leur stratégie de servicisation ? Quels sont les antécédents organisationnels de l'ambidextrie dans ce contexte ? Nous nous appuyons sur une étude de cas longitudinale approfondie et explorons la manière dont une PME manufacturière française de l'industrie des biens d'équipement a combiné des activités d'exploitation et d'exploration pour développer au fil du temps une large gamme de services. Les résultats montrent que (1) le développement des activités de service repose sur une ambidextrie contextuelle, et (2) les antécédents de l'ambidextrie sont principalement liés à la structure formelle et au leadership. Cette étude contribue à la fois à la littérature sur la servicisation et à la littérature sur l'ambidextrie dans les PME.

Mots-clés : Exploitation, exploration, ambidextrie, servicisation, PME



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INTRODUCTION

Vandermerwe and Rada (1988: 314) defined the “servitization of business” as “the increased offering of fuller market packages or “bundles” of customer focused combinations of goods, services, support, self-service and knowledge in order to add value to core product offerings”. Since then, service growth in product firms has become a dynamic research domain, and has attracted interest from a variety of disciplines, including innovation management (Kowalkowski *et al.*, 2017).

While service innovation is recognized as becoming more and more important to manufacturing firms worldwide (Baines, 2015), literature on service innovation in servitizing firms remains sparse (Johansson *et al.*, 2019; Story *et al.*, 2021). Especially, very few studies have investigated the underlying role of exploitation, exploration and organizational ambidexterity (OA) in servitization. Furthermore, these studies barely address the antecedents of OA, that is the environmental, organizational, and managerial conditions that prompt an organization’s inclination to explore and/or exploit (Lavie *et al.*, 2010). Yet, exploitation and exploration are considered as different and possibly complementary learning processes, leading to different forms of ambidexterity (Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008). Moreover, OA, defined as the ability of an organization to both explore and exploit, is considered as uneasy to implement, since it forces companies to cope with dual, more or less competing objectives. Managing these tensions may be even more challenging for small and medium-sized enterprises (SMEs), which are more resource-constrained (Abebe & Angriawan, 2014; Bierly & Daly, 2007; Lubatkin *et al.*, 2006). Due to limited human and financial capital, smaller organizations may have to settle for contextual ambidexterity (i.e. exploration and exploitation activities are taken on in the same place by the same people) or sequential ambidexterity (i.e. exploitation and exploration activities are sequenced over time), whereas larger organizations may be able to afford structural ambidexterity (i.e. exploration and exploitation activities are separated in different business units) (Busola Oluwafemi *et al.*, 2020).



The aim of this paper is therefore to investigate the way manufacturing SMEs use exploitation, exploration and ambidexterity to sustain their servitization strategy, as well as the antecedents and conditions that influence, enable, or promote ambidexterity in that specific context. This issue is important since exploration, exploitation and OA are considered as critical capabilities for service-oriented business model innovation. Servitization requires ambidexterity, which involves accomplishing continuous management of the co-existence of product- and service-centric capabilities (Kohtamäki *et al.*, 2020; Kowalkowski *et al.*, 2017). Thus, firms willing to servitize should embrace ambidexterity in synergizing the co-existence of capabilities to manufacture products and offer service (Khanra *et al.*, 2021).

We rely on an in-depth longitudinal case study and explore how a French manufacturing SME in the capital goods industry (hereinafter Equipmentor) has combined exploitation and exploration activities to successfully develop over time a wide range of services. More specifically, we frame the following two research objectives:

- To investigate how this manufacturing SME combined exploitation and exploration activities to develop its service business; and
- To explore the organizational antecedents that influenced and supported ambidexterity (contextual, structural or sequential) in this case organization.

By investigating the above research objectives, we aim to extend the current understanding of ambidexterity and its antecedents in the specific context of servitizing SMEs. Our contribution lies in presenting a longitudinal analysis in the context of a French manufacturing SME that allows us to uncover and present a nuanced view of ambidexterity in SMEs, and to underline organizational antecedents that support combining exploitation and exploration activities in service business development. This rich research context provides us with insights on how this SME exploited its knowledge and competences to reinforce its service business, whilst engaging in exploratory activities to develop new service offerings.

The remainder of the paper is structured as follows. The next section discusses the relevant literature on ambidexterity in SMEs and in the specific context of servitization. It synthesizes the structural, contextual, and individual antecedents of ambidexterity in SMEs that have been suggested in the literature. This is followed by our research design, which offers details of the case study organization and the data analyzed. Thereafter, we present our findings, which we critically link to the extant literature and then conclude by highlighting the contributions and limitations of our study.



1. AMBIDEXTERITY IN SERVITIZING SMES

1.1. ORGANIZATIONAL AMBIDEXTERITY IN SMES

OA rests on the premise that it is crucial for an organization “to engage in sufficient exploitation to ensure its current viability, and, at the same time, to devote enough energy to exploration to ensure its future viability” (Levinthal & March, 1993: 105). Since the seminal work from March (1991), a substantial amount of empirical work has been carried out on OA in large, multiunit firms. Even if in recent years, research on OA has begun to focus more on SMEs, our understanding of the interplay of exploratory and exploitative activities in such companies remains limited (Abebe & Angriawan, 2014). Thus, SMEs must largely rely on prescriptions tested with large firms to manage their ambidexterity initiatives (Chang & Hughes, 2012). Nonetheless, SMEs differ from larger firms in many ways, and their exploitative and exploratory activities are also likely to differ, for two main reasons (Abebe & Angriawan, 2014). The first one is their greater resource constraints and lack of slack resources, which may hinder combined explorative and exploitative activities (Abebe & Angriawan, 2014; Bérard & Fréchet, 2020; Busola Oluwafemi *et al.*, 2020; Chang & Hughes, 2012; Prajogo & McDermott, 2014; Soto-Acosta *et al.*, 2018). The second one relates to their hierarchical administrative system (Abebe & Angriawan, 2014; Bérard & Fréchet, 2020; Bierly & Daly, 2007; Lubatkin *et al.*, 2006; Prajogo & McDermott, 2014). Indeed, SMEs have fewer hierarchical levels, and their top managers are more likely to play both strategic and operational roles (Lubatkin *et al.*, 2006). This can influence the way SMEs manage the tensions between exploration and exploitation, and thus affect their attainment of ambidexterity (Prajogo & McDermott, 2014).

Overall, research on OA in SMEs underline the greater challenges they face compared to larger firms in managing the contradictions and tradeoffs associated with explorative and exploitative activities (Bérard & Fréchet, 2020; Chang & Hughes, 2012). Exploration and exploitation form a paradoxical relationship as they require substantially different structures, processes, strategies and capabilities (Koryak *et al.*, 2018). Research has suggested three main organizational alternatives to solve this paradox, that lead to three modes of OA (Foss & Kirkegaard, 2020: 2):

- Temporal separation: sequential ambidexterity consists in “switches between periods of exploration and exploitation by shifting structures over time”;
- Structural separation: structural ambidexterity “is achieved by structural separation of exploration and exploitation into different units”;



- Shaping a supportive organizational context: contextual ambidexterity “occurs at the level of individual employees and how they allocate time and attention to exploitation and exploration activities”.

Following Lubatkin *et al.* (2006), most authors in OA research in SMEs suggests that, due to their resource constraints, such companies are not able to afford structural ambidexterity, and should rather settle for contextual or sequential ambidexterity (Busola Oluwafemi *et al.*, 2020; De Clercq *et al.*, 2014; Prajogo & McDermott, 2014). According to Zimmermann *et al.* (2020: 2), harmonic ambidexterity, that is “ambidexterity within a single organizational unit” is particularly prominent in SMEs. On the other hand, Chang & Hughes (2012) assert that SMEs create and maintain a balance of explorative and exploitative activities through a combination of structural, contextual and leadership conditions. Overall, researchers acknowledge that there is a need for further research on the antecedents of OA in the specific context of SMEs (Soto-Acosta *et al.*, 2018), in order to get a better understanding of “the underlying mechanisms, architectures and dynamics by which organisations can achieve both exploration and exploitation” (Turner *et al.*, 2013: 179). Therefore, a number of antecedents of OA in SMEs have been studied in the literature, which are split into three categories “organizational structures, behavioral contexts, and leadership processes” (Raisch & Birkinshaw, 2008: 380).

1.2. ANTECEDENTS OF AMBIDEXTERITY IN SMEs

We performed a literature review on antecedents of OA in SMEs, which is synthetized in Table 1. Most studies adopt a leadership theory lens and investigate the role of top-managers in supporting OA in SMEs, focusing on the characteristics of the top-management team (Koryak *et al.*, 2018; Lubatkin *et al.*, 2006; Venugopal *et al.*, 2020), on ambidextrous leadership behaviors (Busola Oluwafemi *et al.*, 2020; Saibi, 2016), on managers’ orientations (Abebe & Angriawan, 2014; Mammassis & Kostopoulos, 2019), or external capabilities (Alcalde-Heras, *et al.*, 2019). Other studies adopt a perspective based on knowledge or innovation management, and underline the role of absorptive capacity (Limaj & Bernroider, 2019), IT and KM capabilities (Soto-Acosta *et al.*, 2018), or intellectual capital (Mahmood & Mubarik, 2020). Andriopoulos & Lewis (2009) insist on the supportive social context created by top-managers using a combination of integration and differentiation management approaches. Organizational design is also used as a possible lens to study OA in SMEs, with studies focusing on antecedents such as organizational structure (Prajogo & McDermott,


Table 1. Research on antecedents of OA in SMEs

STUDY	ANTECEDENTS OF OA				THEORE- TICAL LENS	METHODO- LOGY	KEY FINDINGS
		Structure	Context	Leadership			
Abebe & Angriawan (2014)	Manager's orientations			X	Leadership theory	Survey of 55 U.S. manufacturing SMEs	Market and entrepreneurial orientations have strong association with exploratory and exploitative activities
Alcalde-Heras <i>et al.</i> (2019)	Managerial external capabilities			X	Leadership theory	2,150 Spanish SMEs	Top managers' uncertainty awareness and capabilities for promoting external cooperation contribute to ambidexterity during economic recession periods
Andriopoulos & Lewis (2009)	Integration and differentiation tactics		X	X	Innovation and knowledge management	Field study in 5 consultancies	Integration and differentiation offer complementary tactics for fostering ambidexterity
Bérard & Fréchet (2020)	Structural & resource attributes	X			Organizational design	Survey of 522 French SMEs	Empowerment and financial slack are levers for ambidexterity
Busola Oluwafemi <i>et al.</i> (2020)	Ambidextrous leadership			X	Leadership theory	Survey of 98 high technology SMEs in the UK	Opening and closing leadership behaviors function interdependently to foster employee ambidextrous innovation behaviors
Chang & Hughes (2012)	Structure, internal context, & leadership style	X	X	X	Organizational design Leadership theory	Survey of 243 SMEs in Scotland	SMEs can achieve a close balance of explorative and exploitative innovations through shaping right organizational structures and adopting appropriate leadership styles
Koryak <i>et al.</i> (2018)	Top-management team (TMT)			X	Leadership theory Attention-Based View	Survey of 422 SMEs in the UK	Larger and more heterogeneous TMTs enhance a firm’s capability for exploration whereas strategic vision favors a firm’s ability to develop its exploitation skills
Limaj & Bernroider (2019)	Absorptive capacity (AC), cultural balance		X		Knowledge management	Survey of 138 SMEs	AC positively affects exploratory and exploitative innovation Organizations that have a high-balanced culture perform better at producing exploratory and exploitative



							innovation
Lubatkin <i>et al.</i> (2006)	Behavioral integration of the top-management team (TMT)			X	Leadership theory	Survey of 139 US SMEs	SMEs with behaviorally integrated TMTs are better able to jointly pursue an exploratory and exploitative orientation
Mahmood & Mubarik (2020)	Intellectual capital (IC)		X		Knowledge management	217 SMEs from the manufacturing sector in Pakistan	IC and its components (human structural and relational capitals) have a profound influence on ambidexterity
Mammassis & Kostopoulos (2019)	CEO goal orientations			X	Leadership theory	Survey of 156 Greek SMEs	CEOs' learning goal orientation contributes to firm ambidexterity
Mothe & Bogaert (2020)	Organizational plasticity	X			Organizational design	Field study in a Belgian SME in the bio-tech industry	The SME combined different types of ambidexterity through organizational plasticity
Prajogo & McDermott (2014)	Organizational structure	X			Organizational design	Survey of 196 Australian service SMEs	Formalization and connectedness show a positive relationship with exploitative innovation
Saibi (2016)	Ambidextrous leadership			X	Leadership theory	Field study in a French SME in the bio-tech industry	The entrepreneur's ambidextrous leadership behavior is a source and facilitator of ambidexterity
Saibi & Naji (2020)	Technological gatekeeper		X		Innovation management	Field study in a French SME	The "technological gatekeeper" acts as a lever of ambidexterity
Soto-Acosta <i>et al.</i> (2018)	IT & KM capabilities, environmental dynamism		X		Knowledge management	Survey of 429 Spanish SMEs	IT capability, KM capability and environmental dynamism are positively associated with ambidexterity
Venugopal <i>et al.</i> (2020)	Behavioral integration of the top-management team (TMT)			X	Leadership theory	Survey of 78 SMEs in India	Behavioral integration processes mostly enhance combined (vs. balanced) ambidexterity
Zimmermann <i>et al.</i> (2020)	Leadership, contextual, & structural drivers	X	X	X	Organizational design Leadership theory	Survey of 88 German SMEs	Formal structural drivers and informal contextual drivers do not demonstrate complementarity, but rather act at cross-purposes with each other



2014), organizational plasticity (Mothe & Bogaert, 2020), or structural and resource attributes (Bérard & Fréchet, 2020).

Finally, only a few studies adopt a pluralist perspective and try to analyze OA's antecedents in a comprehensive way, considering at the same time leadership capabilities, informal context, and formal structure (Chang & Hughes, 2012; Zimmermann *et al.*, 2020). But while Chang & Hughes (2012) show that SMEs can achieve OA through adopting both appropriate organizational structures and leadership styles, Zimmermann *et al.* (2020) claim that the three drivers do not demonstrate complementarity but rather act as substitutes for one another.

While recognizing that OA is essential for servitization, the literature does not provide more meaningful insights on how SMEs create and maintain a balance of explorative and exploitative activities, and under which structural, contextual and leadership conditions.

1.3. AMBIDEXTERITY IN SERVITIZATION

Servitization is widely considered as an innovative strategy (Baines, 2015; Kindström *et al.*, 2013; Visnjic Kastalli *et al.*, 2013), and exploration, exploitation and OA are considered as critical capabilities for service-oriented business model innovation. Servitization does require ambidexterity, which involves accomplishing continuous management of the co-existence of product- and service-centric capabilities (Kohtamäki *et al.*, 2020; Kowalkowski *et al.*, 2017). Firms willing to servitize should embrace ambidexterity in synergizing the co-existence of capabilities to manufacture products and offer service (Khanra *et al.*, 2021). However, very few authors have addressed the role of exploitation, exploration and OA in the servitization process, and the findings from extant research remain fragmented (Table 2).

For instance, Fischer *et al.* (2010) assert that exploitation and exploration are two distinct approaches for service business development. Based on a field research in five large companies, they propose that “companies can either approach the service business through exploitation or exploration, but the majority of companies most likely chooses exploitation” (Fischer *et al.*, 2010: 616). On the contrary, Coreynen *et al.* (2020) assume that firms emphasizing exploration are more likely oriented towards servitization than firms emphasizing exploitation. However, the results of their empirical analysis contradicts this hypothesis showing that not only explorative but also exploitative firms are oriented towards servitization. They find a significant and positive correlation between exploration and exploitation, suggesting that both capabilities are complementary rather than



substitutes. Baines *et al.* (2020) consider exploration and exploitation as stages in the servitization process: the manufacturer willing to develop advanced services will firstly focus on exploration, “searching and finding out about the concept and the implications of competing through advanced services”, then on engagement (seeking to evaluate and demonstrate services) and expansion (increasing the scale and speed at which services are innovated and implemented), and finally on exploitation “seeking to optimise innovation and delivery of an advanced services portfolio” (Baines *et al.*, 2020: 5).

Kohtamäki *et al.* (2020) insist on the paradox between exploitative and explorative learning that arises, since the exploration of new integrated product-service solutions must be implemented in parallel with traditional product and service delivery.

Finally, Gebauer *et al.* (2017) and Fain *et al.* (2018) more explicitly focus on OA. Gebauer *et al.* (2017) consider OA as a one of the seizing capabilities that product companies need in order to develop pay-per-use services. They suggest that structural ambidexterity, defined as the separation of product and service business, could limit new market creation, and advocate for temporal ambidexterity in which companies “allocate their time between exploiting the existing service business and exploring new markets” (Gebauer *et al.*, 2017: 929). Fain *et al.* (2018) consider ambidexterity as an enabler of sustainable service provision. They suggest an “ambidextrous service provision approach” consisting in integrating exploration and exploitation activities within the new product development process in order to encapsulate life-cycle management related services in existing products.

Table 2. Summary of selected research on exploitation, exploration and OA in servitization

STUDY (YEAR)	RESEARCH FOCUS	THEORETICAL LENS	METHODOLOGY	KEY FINDINGS
Baines <i>et al.</i> (2020)	Servitization as an organizational transformation process	Organizational change	Field research in 14 large companies	Exploration and exploitation are stages in the servitization process
Coreynen <i>et al.</i> (2020)	Organizational drivers of digital servitization	Dynamic capabilities Contingency perspective	Survey of 139 Belgian firms	Exploitation and exploration are positively associated with servitization
Fain <i>et al.</i> (2018)	Sustainable servitization of long life-cycle products	Dynamic capabilities	Illustrative case of a Scottish manufacturing company	Ambidexterity as an enabler of sustainable service provision
Fischer <i>et al.</i> (2010)	Role of dynamic capabilities in service business development	Dynamic capabilities	Field research in 5 large companies	Exploitation and exploration are two distinct approaches for service business development
Gebauer <i>et al.</i>	Seizing capabilities	Dynamic	Field research in 17	Temporal ambidexterity



(2017)	for pay-per-use services in B2B sectors	capabilities	companies	as a seizing capability
Kohtamäki <i>et al.</i> (2020)	Practices to cope with the servitization paradoxes	Paradox lens	Field research in 4 global Finnish companies	Companies face a paradox related to ambidextrous innovation

Overall, research on OA in servitization is drastically limited, both in number and in depth. Moreover, these studies do not focus on SMEs but rather on large firms, thus ignoring the possible peculiarities of OA in SMEs. Indeed, some authors have suggested that firms' size may affect service business development. With their limited size and resources, SMEs may approach service business development based on different and specific tactics, regarding organizational design (Gebauer, Paiola, & Edvardsson, 2010), capability development (Paiola, Gebauer, & Edvardsson, 2012), or business relationships (Kowalkowski, Witell, & Gustafsson, 2013). As suggested by research on OA in SMEs, such companies may not be able to afford structural ambidexterity, and rather choose contextual or sequential ambidexterity. This leads to two research questions:

- 1) How do manufacturing SMEs combine exploitation and exploration activities, and do they rely on contextual, structural or sequential ambidexterity to develop their service business?
- 2) What are the organizational antecedents that support ambidexterity, and especially what is the role of formal structure, informal context, and leadership capabilities in sustaining OA in servitizing SMEs?

2. RESEARCH METHODOLOGY

Our objective is not generating completely new theory, but to capture and deepen our understanding of exploitation, exploration and ambidexterity in the specific context of servitizing SMEs. Given the need for detailed information to capture ambidextrous practices, we considered appropriate an in-depth study in a single organization (Yin, 1994). Indeed, the adoption of a single case study is appropriate as it permits for a deep research enquiry and to come as close to the research phenomena as possible. Moreover, one in-depth case study is more reliable and valid than multiple superficial case studies since with a single case, the researcher is better able to capture complex interactions, whereas investigating a large number of cases may produce more replicable but potentially surface results (Dyer & Wilkins, 1991). This approach is particularly suited to OA research since “in-depth studies of individual



companies examining how ambidexterity plays out over time” are valuable to create a cumulative body of research (O'Reilly & Tushman, 2013). Furthermore, adopting a longitudinal processual approach is needed to undertake an in-depth investigation of exploitation, exploration and ambidextrous practices in the organization. Longitudinal case study research is particularly suitable for process-related research answering the resulting ‘how’-type questions, that can only be understood by looking into context-specific developments occurring over a period of time (Eisenhardt & Bourgeois, 1988; Yin, 1994).

2.1. RESEARCH SETTING AND DATA COLLECTION

Equipmentor is a French mid-size company that designs, manufactures and sells equipments and production lines mainly for the food industry. It is a world leader on some market areas, facing competitors that are large multinational firms. Its turnover is around 60 million euros per year, 80% of which comes from exports; the company has eleven subsidiaries and trade offices abroad, and customers from more than 90 countries. For the past decade, it has been in a phase of steady growth and now employs around 300 people, in France and abroad¹. The service business generates revenue equivalent to half of total turnover.

The data source for our study comprise of (a) qualitative data generated from semi-structured interviews with key personnel; and (b) numerous archival data including corporate documents, press articles and releases, annual reports and other presentations. We conducted 18 semi-structured interviews between June and December 2017. The interviews lasted between 45 and 90 minutes, and were all recorded and transcribed to ensure reliability (Eisenhardt & Bourgeois, 1988; Yin, 1994). In order to catch as many as structural, contextual and leadership-related antecedents to OA as possible, we chose to interview both top-managers, middle-managers (e.g. subsidiary managers, service manager) and executives (e.g. project managers, salesmen). Indeed, selecting multiple informants at different levels provides a broader range of perspectives (Eisenhardt & Bourgeois, 1988), and helps mitigate informant biases (Miller *et al.*, 1997) and increase the reliability and validity of informant reports (Kumar *et al.*, 1993). We used an interview guide structured into three sections (Appendix 1). First, we asked the informants to provide general information on their job position. The second section comprised questions regarding the development of company's core activities

¹ This size is over the upper limit used in E.U. to define SMEs (250), but below the upper limit used in the U.S. (500) and considered by Abebe & Angriawan (2014), Lubatkin *et al.* (2006), Prajogo & McDermott (2014) and Zimmermann *et al.* (2020).



(products and technology). Third, we asked them to make a focus on service activities (offerings, organization, and development). The archival data gathered covers a period from 1998 to 2021; overall, 134 documents were analyzed. The archival data helped us complement the data gathered from the interviews, and specify the way product and service activities were developed over time. Their analysis also allowed us to triangulate our understanding of Equipmentor's development of service activities. The use of secondary data gathered ex post but reflecting real-time information limits social desirability bias, ex post rationalization, and retrospective errors (Miller *et al.*, 1997).

2.2. DATA ANALYSIS

The data analysis occurred in three steps, and was supported by the use of NVivo 11 software and Excel spreadsheets. We sought to identify the in-case conceptual patterns across the primary and secondary data through coding and organizing the data into fragments (Miles *et al.*, 2013).

In line with longitudinal processual approach (Dawson, 1997; Pettigrew, 1997), we first developed a chronological evolution of the Equipmentor, from its origin in the 1950s to its current state. Through examining all the collected data, we noticed the main events regarding products, services, and the company as a whole. This also allowed us to familiarize ourselves with the data.

The second step of analysis was done to uncover exploration and exploitation activities regarding product and service. We used an initial a-priori coding structure based on the definitions of exploitation and exploration from the literature. We based on Raisch & Birkinshaw (2008: 376) who quote (March, 1991: 102): "Whereas exploitation is associated with activities such as "refinement, efficiency, selection, and implementation," exploration refers to notions such as "search, variation, experimentation, and discovery". To further specify exploitative and explorative service activities, we used Fischer *et al.* (2010), Ortiz de Guinea & Raymond, (2020) and Prajogo & McDermott (2014): exploitative service activities refer to extensions, refinements, and incremental improvements of current service offerings; explorative service activities refer to new service creation and pursuit of new service opportunities in the spirit of invention and experimentation.

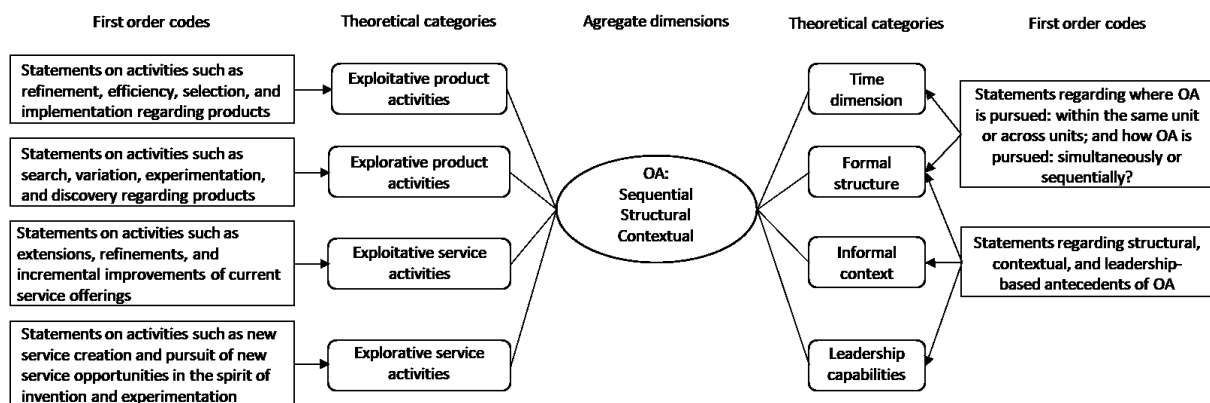
In the third step, we sought to unfold patterns of OA at Equipmentor's. To specify the nature of OA, we proceeded in two stages. First, we used Simsek *et al.* (2009)'s dimensions of OA



and went back to our data to analyze where and how has ambidexterity been pursued. This allowed us to identify structural, sequential, and contextual modes of OA at Equipmentor's. Then, we went back again to the data and sought for formal, contextual and leadership-based antecedents for each identified OA pattern. There, we used an hybrid approach, mixing deductive and inductive coding (Fereday & Muir-Cochrane, 2006): we used an a-priori list of antecedents stemming from the literature on OA (e.g. ambidextrous leadership, ambidextrous informal context...), but also emergent codes when a driver for OA appeared that was not explicitly mentioned in the literature (e.g. structural antecedents such as external growth or internationalization).

The overall data structure is presented in figure 1.

Figure 1. Data structure



3. FINDINGS

3.1. EXPLOITATIVE AND EXPLORATIVE ACTIVITIES AT EQUIPMENTOR'S

Equipmentor's life has clearly been punctuated by explorative and exploitative activities regarding both products and services (Table 3).

The company was set up in 1956 with the acquisition of a license to produce a new kind of equipment for the plastics and chemical industries. *"Equipmentor pioneered this technology, which proved itself to be more cost-effective and productive than traditional [one] while using less energy, water and polluting reagents"* (website). During the fifteen following years, *"Equipmentor has exploited this application, for example by selling to [a customer] machines intended to manufacture PVC profiles or polyamides"* (press article).

In the 1970s, the company tried to apply its core technology to food through a collaboration with the technical center of grain companies. This led to the creation a new food product, and


Table 3. Exploitative and explorative product and service activities at Equipmentor's

YEAR	EVENT	PRODUCT		SERVICE	
		EXPLOR.	EXPLOIT.	EXPLOR.	EXPLOIT.
1956	Acquisition of a license to produce equipment for the plastics and chemical industries	X			
1970	Creation a new food product Entry on the food market	X			
1983	Establishment in the U.S.		X		
	Creation of an internal research center with pilot equipment	X			
1985	Establishment in China		X		
1988	Co-development of a tri-party patent Entry on the pulp market	X			
1992	Creation of a specific department dedicated to services				X
1995	Launching of technical expertise and auditing services			X	
1996	ISO 9001 certification		X		
1998	Launching of a new range of equipment		X		
	Launching of repair of wearing parts and of training			X	
2002	Acquisition of an expert in food production lines		X		
	Establishment in Chile		X		X
2003	Launching of remote support services			X	
2004	Launching of upgrading and second-hand equipment			X	
2005	Launching of a new range of equipment		X		
	ISO 14 001 certification		X		
2006	Establishment in Algeria		X		X
	The service department becomes a division, reporting directly to the board				X
2008	Acquisition of a Danish company Establishment in Russia		X		X
2009	Establishment in Australia and Morocco		X		X
2010	The service activities are no longer pooled into a division, but are split between the commercial and the operations divisions				X
2011	Patent deposit for a new powder production process	X			
2012	Establishment in Brazil and Vietnam		X		X
	Acquisition of a Chilean subcontractor		X		
2014	Launching of a new range of equipment		X		
2016	Official opening of a European Research Center on powder production	X			
2017	Establishment in India and Indonesia		X		X
2018	Launching of maintenance agreements			X	

to a “*breakthrough introduction in the food industry*” (website). Equipmentor's former President summarizes: “*We started as a manufacturer of [équipement] for the plastics industry [...]. In the 1970s, we were the first company to take the useful technology to the*



food industry. At that time, we designed a completely new processing line [...]. It was a groundbreaking development that marked our entry into the food industry.” (press article).

Then, in the 1980s, the company collaborates with the technical center for paper and a third-party company. Together they develop a tri-party patent that opens up the pulp market to Equipmentor: *“Following a three-year co-development, we filed a tripartite patent [...]. Thanks to the patent and to this exemplary cooperation with this first client, we have succeeded in taking almost three quarters of the world market in the manufacture of [this kind of] pulp”* (press article). Finally, in the 2000's, the company collaborates with Australian and New Zealand partners and patents a new powder production process in 2011.

Alongside with these explorative activities, Equipmentor has also undertaken exploitative product-related activities, which can be noticed especially through:

- Launching of new ranges of equipment (1998, 2005, 2014): *“The renewal of the range of [equipment] with a new generation of more efficient machines presented in 2014 as a means of accelerating the growth of the company [...].”* (press release, 2014).
- ISO certifications (1996, 2005): *“Equipmentor is certified ISO 9001 (1996) / 14001 (2005). Both certifications have been constantly maintained since then”* (corporate presentation, 2020)
- Progressive internationalization: *“We set up in the United States from 1983 and in China in 1985. But it is especially during the last ten years that we have multiplied our subsidiaries and offices abroad [...]. Out of 275 employees, 227 work in France and 48 abroad [...]. The share of our turnover in exports increased from less than 50% in 1990 to 84% in 2010”* (press article, 2013).
- External growth operations, in order to acquire additional and/or complementary competences: acquisition of an expert in food production lines (X) (2002), and of a Chilean supplier (Y), specialized in stainless steel assembly and sheet metalwork (2012): *“In the takeover of X, there was the engineering skill and there was the drying skill [...]. when we bought them, we launched a development project, which we led with their teams to make our first range of dryers which gave birth to the dryer range”* (XB, top-manager). *“We bought a small company which was initially a subcontractor to us, which worked in the stainless steel [...]. We realized that there were economic interests because Chile has a large number of free trade agreements with the entire American continent, with China, etc. it was interesting for us to make a local production of equipment because*



once we had the Chilean certificate of origin, we could sell our equipment in Brazil for instance” (LL, middle-manager).

Despite we got less archival data regarding the earliest development of services, some explorative and exploitative activities can nevertheless be identified.

Regarding exploration, we can notice that new services have regularly been launched: technical expertise and auditing services (1995), repair of wearing parts and training services (1998), remote support services (2003), upgrading and second-hand equipment (2004), and maintenance agreements (2018). *“Since 1995, faced with growing demand, Equipmentor’s experts have carried out technical audits for customers” “Equipementor has developed a Training Service. Training can take place at the user or at Equipmentor’s” (Newsletter, 1999). “Equipmentor has developed a new service aimed at reducing wear costs, increasing the service life of screw elements through repair. This new service marks a new stage in Clextral’s constant efforts in the field of wear.” (Newsletter, 1998). “We are pleased to present you a novelty: Equipmentor, a major player in the second-hand market. Since the beginning of 2004, we have indeed developed new means to satisfy all customers around the world interested in second-hand equipment, peripherals and even spare parts” (Newsletter, 2004).*

Exploitative service activities, that is incremental improvements, extensions and refinements to existing services, have also been identified: *“Equipmentor is renovating its remote assistance service to better meet the needs of its customers. This service is not new to Equipmentor since this remote diagnostic technology has already been used for several years to troubleshoot certain customers.” (Newsletter, 2011). “This is a service that has been completed as well. Before, [the client] was obliged to take care of the logistics of customs clearance, today he places an order with me, he pays in reals, so somewhere, the exchange risk is assumed by me, not him. I take care of the logistics, he is delivered door to door” (AL, middle-manager).*

Internationalization also played a role in broadening and improving service activities: *“How to improve responsiveness and speed of intervention on Equipmentor’s equipment in operation on the other side of the planet in the Asia-Pacific region? The solution adopted by Equipmentor was to strengthen its commercial presence in place for two years, through a technical presence.” (Newsletter, 1999). “Equipmentor strengthens its presence in Shanghai [...]. Equipmentor has decided to refocus and develop its Asian activities in Shanghai. Its*



after-sales service will serve the entire Asia Pacific region from this location.” (Newsletter, 2004). The acquisition of a Danish company in 2008 which was specialized in repair services also appears as a mean to sustain service development: “To continue its development and strengthen its international network, Equipmentor acquired the Danish company [K] at the beginning of 2008. [K] specializes in solutions for reloading screws, repairing [equipments] and spare parts and its expertise will enrich Equipmentor’s local service offer for the Scandinavian region.” (Newsletter, 2008).

Furthermore, the service organization has regularly been updated in order to better support service activities. In 1992, a specific department dedicated to services is created: *“We set this specific organization in order to no longer consider after-sales service (in the broad sense) at the margins, but to make it clearly visible. I think that at that time, we had reached a critical mass of installed base which allowed us to have a dedicated organization; we also had had specific and structured requests from certain structured international customers”* (GM, top-manager). Then, in 2006, the service department becomes a division, reporting directly to the board. The newsletter mentions the *“Birth and development of Equipmentor Services Group, which will henceforth bring together all the resources, skills and services expertise of all our activities. We are convinced that this reinforced and versatile “Services” team will give you complete satisfaction”*. Finally, in 2010, the service activities are no longer pooled into a division, but are split between the commercial and the operations divisions, especially in order to strengthen service marketing and sales. As a top-manager says: *“We adapt the organization to the reality of the company's size and business”* (GM, top-manager).

Overall, Equipmentor has regularly undertaken both exploitative and explorative activities, regarding products and services. We have thus explored how Equipmentor has combined exploitation and exploration activities.

3.2. OA AT EQUIPMENTOR’S

When analyzing the aforementioned identified exploitative and explorative activities, we can state that the development of product activities has relied on sequential and structural ambidexterity, whereas the development of service activities has rested on contextual ambidexterity.

Regarding product activities, each stage of exploration was followed by a stage of exploitation. At its very beginning in 1956, the company acquired a license, which was exploited during the next twenty years. Then in the 1970’s, Equipmentor tried to use its



technology in another area, created a new food product, and entered on the food market. From this moment, the company has exploited this application, and food & feed is nowadays its main market. The company did the same in the 1980s: applying its technology to pulp production, entering the pulp market, and from then has been exploiting this new market area. Regarding the powder production process that was patented in 2011, the company is still in an exploration stage, and explorative activities are carried out in a dedicated research center. Thus, Equipmentor relied on sequential ambidexterity, that is inter-temporally balanced exploitation and exploration by sequentially shifting from exploitative to explorative modes. Structural ambidexterity is when exploitation and exploration activities are carried out in different organizational units. This is the case for product activities, since exploration has mainly been performed within the company's research centers: *"In 1985, we created a research center, with pilot machines but also accessories that made it possible to make small production lines, so as to reassure customers about the feasibility of their products, or even to produce in small quantities to test new markets. Quite quickly, we built a second research center on the same model in the United States, so that major American accounts could have the same tools. Our third research center opened in Australia in 2010 to develop a new [powder production] process"*. (Press article)

Exploitative and explorative service activities appear as more intertwined, and rather rest on contextual ambidexterity. Indeed, service exploration and service exploitation have been carried out simultaneously, both from a temporal and a structural point of view. From a temporal perspective, there is no clear separation between phases of exploration and phases of exploitation. New services are regularly launched, while existing services continue to be exploited and refined. From a structural perspective, service exploration is not separated from service exploitation, and both are pursued within the whole organization. Service exploration is neither pooled with product exploration: R&D centers are in charge of identifying new applications for products, but do not integrate services into their mission.

3.3. ANTECEDENTS OF OA AT EQUIPMENTOR'S

We can assert that formal structure has played a major role in implementing OA at Equipmentor when it comes to product-related activities. Regarding services, formal structure played a role mainly in supporting exploitative activities, through three elements: the service organization in itself (which is regularly updated to better fit the market needs), the



internationalization (with the settlement of subsidiaries and offices which are in charge of developing service activities abroad), and the external growth (with the acquisition of a Danish company that enabled Equipmentor to strengthen competences that are useful for service development).

The development of service activities has mainly relied on contextual ambidexterity, and Equipmentor's top-management has been a major support for this contextual ambidexterity. In 2001, Equipmentor's president claims: *"We will of course continue our current service policy, seeking to be even closer to our Customers, particularly geographically. We will also develop new services, on which we have already been working for a few months and which we will unveil very soon"* (Newsletter, 2001). Other top-managers claim: *"We have seen the evolution of the business, we have been doing standard parts, more and more premium parts; tomorrow maybe we will rent parts"* (GM, top-manager); *"For the first time, we are talking about renting wear parts, we have never done that"* (XB, top-manager).

Contextual ambidexterity has not only relied on top-managers, but also on middle-managers and executives, who are totally aware of the need to balance exploitation of existing service offerings, and exploration of new opportunities in the service business. The following verbatim, from the same middle-manager, is especially illuminating, since he suggests both new service opportunities that could be seized, and ways to improve existing services: *"In terms of services, in the possibilities, there are things that we have already thought about, but which are undoubtedly very difficult to set up, it is done in some industries, it is to sell kilos of products instead of machines. You tell someone, I'll sell you 1000 kg/h of products, it'll cost you this. We thought about it, selling tonnage rather than selling machines. "And here I am thinking of a particular point, when you sell second-hand machines that you have bought back, and that you fix up, it is turnover that goes into the service business. Developing a form of subcontracting in this area would mean entrusting the repair of these used machines to a third party so that it costs less and we can increase the margins"* (PP, middle-manager).

On the whole, two overarching findings stem from Equipmentor's study:

- OA in the product area is of sequential and structural modes, whereas in the service area, OA is more of a contextual mode;
- Antecedents of OA that could be identified mainly relate to formal structure and leadership.



In the following section, we present the key insights gathered and develop propositions based on the study's aims: (1) to investigate how servitizing SMEs combine exploitation and exploration activities; and (2) to explore the antecedents and drivers of OA.

4. DISCUSSION

4.1. OA IN SERVITIZING SMEs

The first finding of our study shows that servitizing SMEs may rely on a combination of modes of OA.

Whereas in literature, sequential, contextual and structural ambidexterity are implicitly seen as mutually exclusive (Foss & Kirkegaard, 2020), Equipmentor's case shows that servitizing SMEs may engage in "blended ambidexterity". "blending" modes of ambidexterity implies the co-presence of structural and contextual ambidexterity such that, for example, employees outside of dedicated explorative units (which must be present under structural ambidexterity) can also engage in exploration" (Foss & Kirkegaard, 2020: 3). This is the case at Equipmentor's since explorative service activities are held by top and middle-managers and executives who are outside of the research centers.

According to Foss & Kirkegaard (2020), blended ambidexterity is not just the result of organizational path-dependencies or a transitioning between modes, but a deliberate choice. Especially, they suggest that the configuration of blended ambidexterity, that is the degree of structural/contextual ambidexterity, is related to innovation outcomes: contextual ambidexterity is prevalent when innovation outcomes are more radical and customer-oriented, while structural ambidexterity dominates when what is sought is more incremental innovation along well-defined trajectories. This is not supported by our results, which are more in line with previous studies, and show that structural ambidexterity is related to radical innovation purpose in the product area, whereas contextual ambidexterity is associated with more incremental innovation in services.

Moreover, our findings show that servitizing SMEs may rely on different modes of OA for product and for service activities. In Equipmentor's case, exploitation and exploration in the product area have worked as competing forces, which led to structural or temporal separation, whereas in the service area, exploitation and exploration have operated as more complementary. In this respect, these results reinforce those from Coreynen *et al.* (2020), who found exploration and exploitation capabilities to be complementary rather than substitutes.



On the contrary, our results contradict previous studies that found that exploitation and exploration were distinct approaches for service business development (Fischer *et al.*, 2010), or stages in the servitization process (Baines *et al.*, 2020).

Based on these results, we propose that:

Proposition 1: Servitizing SMEs adopt a blended ambidexterity approach, with different modes of OA for product activities and for service activities. Especially, exploitation and exploration in services occur simultaneously, while they rather are substitutes in product activities.

4.2. ANTECEDENTS OF OA IN SERVITIZING SMEs

The literature on OA puts forward three sets of antecedents: leadership capabilities, informal context, and formal structure. Our results show that formal structure and leadership capabilities were the major drivers of OA in Equipmentor's case.

Equipmentor's case shows that formal structure played a role both in the product and in the service areas, but that this role was different. In the product area, formal structure was used to support both explorative activities, through the research centers, and exploitative activities, through the subsidiaries and offices abroad. On the contrary, in the service area, formal structure was used only to support exploitative activities, in order to reinforce service business efficiency. When the service business reached a critical size, a formal department dedicated to services was first created; then it was transformed in an autonomous division, reporting to the board; and finally the service activities were split between the commercial and the operations divisions, in order to strengthen their marketing and sales. In other words, the service business was first formalized; then the centralization of decision was reinforced; and afterwards, there was a decentralization movement, the decision being shared between two divisions.

These findings are consistent with Prajogo & McDermott (2014) who found formalization to be positively associated with exploitative innovation and centralization to be negatively related to exploratory innovation. In Equipmentor's case, formalization was first used to foster exploitative service activities, and decentralization was used in a second step to allow for more explorative activities, stimulating contextual ambidexterity. This is also in line with (Zimmermann *et al.*, 2020) who assert that the engagement of frontline staff (e.g. salespeople) in exploratory activities, such as sensing, is increased when decision-making is decentralized.



Proposition 2: Formalization is essential to support exploitative service activities; and some degree of decentralization in decision-making is needed to stimulate explorative service activities and foster contextual ambidexterity.

Many studies on OA in SMEs underline the role of leadership. Leadership drivers refer to the capacity of the senior leaders to achieve a balance between exploration and exploitation through their own actions, and shape the actions of individuals operating on the front line (Zimmermann *et al.*, 2020). Since in SMEs, the senior leaders have a more direct line of sight and influence, this mechanism is likely to be particularly salient in this context.

Equipmentor's case confirm the essential role of top-managers in injecting OA within the service business. They clearly expressed their willing of both exploiting existing service offerings and exploring new service opportunities. But our study also shows that they also managed to infuse their vision throughout the organization, resulting in a shared willing among middle-managers and executives. They were able to manage the conflicting demands of exploitation and exploration, and to enact ambidexterity. Middle-managers thus played also a role in contextual ambidexterity, suggesting new service opportunities on their own. In line with (Zimmermann *et al.*, 2015), we can consider here that the initiation of contextual ambidexterity is both a mandated (top-down) and emergent (bottom-up) process: senior executives identify the need to be ambidextrous, and frontline managers take the initiative to adopt an ambidextrous orientation in their part of the organization. As underlined by (Zimmermann *et al.*, 2015: 1119), "this emergent process is important because it enables frontline managers to respond in a timely manner to changing requirements of which senior executives are still unaware".

Proposition 3: Contextual ambidexterity in services is supported both by top-managers, in a mandated approach, and by middle-managers and executives, in an emergent approach.

CONCLUSION

The aim of this study was to provide insights on OA in the specific context of servitizing SMEs. Based on the longitudinal study of Equipmentor's case, we could unfold some characteristics of OA in servitizing SMEs that led us to a set of three propositions.

This study meets the need for a fine-grained understanding of exploration, exploitation, and OA in specific contexts (Wenke *et al.*, 2021), and contributes both to the literature on servitization, and to the literature on OA. First, while servitization is widely considered as an



innovative strategy, research on OA in servitization remains scarce. This study shows that service business development relies on explorative and exploitative activities, which are intertwined and carried out simultaneously, in a contextual ambidexterity approach. Second, this study reinforces the relevance of the “blended ambidexterity” concept, showing that servitizing SMEs can rely on a combination of OA modes. It also contributes to calls by Raisch & Birkinshaw (2008) for multi-faceted research into innovation ambidexterity to understand its antecedents. Especially, we showed that in our case structural and leadership-based antecedents were of particular importance for OA.

Since we based our insights on a unique case study, we cannot claim any direct generalizability of our findings. Moreover, despite a rich data set comprising a significant number of interviews, it was difficult to investigate and identify antecedents related to the “behavioral context”, for instance a supportive informal organizational context characterized by an interaction of performance management and social support (Zimmermann *et al.*, 2020), the This does not mean yet that these antecedents do not exist, and further studies should pay them a deeper attention, for instance through real-time observations. However, we claim that this study yields potentially falsifiable insight, and call for further research on OA in the specific context of servitizing SMEs.

In terms of managerial implications, our study underlines the primordial role of managers and executives, especially salesmen, in supporting OA for servitization in SMEs. When implementing a servitization strategy, SMEs’ top-managers should behave in an ambidextrous way, focusing simultaneously on explorative and exploitative service activities. Further, they also have to convey this awareness to other managers and executives, and especially to frontline ones.

REFERENCES

- Abebe, M. A., & Angriawan, A. (2014). Organizational and competitive influences of exploration and exploitation activities in small firms. *Journal of Business Research*, 67(3), 339–345.
- Alcalde-Heras, H., Iturrioz-Landart, C., & Aragon-Amonarriz, C. (2019). SME ambidexterity during economic recessions: the role of managerial external capabilities. *Management Decision*, 57(1), 21–40.
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4), 696–717.
- Baines, T. (2015). Exploring Service Innovation and the Servitization of the Manufacturing Firm. *Research-Technology Management*, 58(5), 9–12.



- Baines, T., Bigdeli, A. Z., Sousa, R., & Schroeder, A. (2020). Framing the servitization transformation process: A model to understand and facilitate the servitization journey. *International Journal of Production Economics*, 221, 107463.
- Bérard, C., & Fréchet, M. (2020). Organizational antecedents of exploration and exploitation in SMEs: The role of structural and resource attributes. *European Business Review*, 32(2), 211–226.
- Bierly, P. E., & Daly, P. S. (2007). Alternative Knowledge Strategies, Competitive Environment, and Organizational Performance in Small Manufacturing Firms. *Entrepreneurship: Theory and Practice*, 31(4), 493–516.
- Busola Oluwafemi, T., Mitchelmore, S., & Nikolopoulos, K. (2020). Leading innovation: Empirical evidence for ambidextrous leadership from UK high-tech SMEs. *Journal of Business Research*, 119, 195–208.
- Chang, Y. Y., & Hughes, M. (2012). Drivers of innovation ambidexterity in small-to medium-sized firms. *European Management Journal*, 30(1), 1–17.
- Coreynen, W., Matthyssens, P., Vanderstraeten, J., & van Witteloostuijn, A. (2020). Unravelling the internal and external drivers of digital servitization: A dynamic capabilities and contingency perspective on firm strategy. *Industrial Marketing Management*, 89, 265–277.
- Dawson, P. (1997). In at the deep end: Conducting processual research on organisational change. *Scandinavian Journal of Management*, 13(4), 389–405.
- De Clercq, D., Thongpapanl, N., & Dimov, D. (2014). Contextual ambidexterity in SMEs: The roles of internal and external rivalry. *Small Business Economics*, 42(1), 191–205.
- Dyer, W. G., & Wilkins, A. L. (1991). Better Stories, Not Better Constructs, To Generate Better Theory: A Rejoinder to Eisenhardt. *Academy of Management Review*, 16(3), 613–619.
- Eisenhardt, K. M., & Bourgeois, L. J. (1988). Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory. *Academy of Management Journal*, 31(4), 737–770.
- Fain, N., Wagner, B., & Kay, N. (2018). Driving innovation through ambidextrous service provision — long life cycle products in manufacturing contexts. *Technological Forecasting and Social Change*, 130, 3–13.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating Rigor Using Thematic Analysis : A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *International Journal of Qualitative Methods*, 5(1), 80–92.
- Fischer, T., Gebauer, H., Gregory, M., Ren, G., & Fleisch, E. (2010). Exploitation or exploration in service business development? *Journal of Service Management*, 21(5), 591–624.
- Foss, N. J., & Kirkegaard, M. F. (2020). Blended ambidexterity: The copresence of modes of ambidexterity in William Demant Holding. *Long Range Planning*, 53(6), 102049.
- Gebauer, H., Haldimann, M., & Saul, C. J. (2017). Competing in business-to-business sectors through pay-per-use services. *Journal of Service Management*, 28(5), 914–935.
- Gebauer, H., Paiola, M., & Edvardsson, B. (2010). Service business development in small and medium capital goods manufacturing companies. *Managing Service Quality*, 20(2), 123–139.
- Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47(2), 209–226.
- Johansson, A. E., Raddats, C., & Witell, L. (2019). The role of customer knowledge development for incremental and radical service innovation in servitized manufacturers. *Journal of Business Research*, 98, 328–338.



- Khanra, S., Dhir, A., Parida, V., & Kohtamäki, M. (2021). Servitization research: A review and bibliometric analysis of past achievements and future promises. *Journal of Business Research*, 131, 151–166.
- Kindström, D., Kowalkowski, C., & Sandberg, E. (2013). Enabling service innovation: A dynamic capabilities approach. *Journal of Business Research*, 66(8), 1063–1073.
- Kohtamäki, M., Einola, S., & Rabetino, R. (2020a). Exploring servitization through the paradox lens: Coping practices in servitization. *International Journal of Production Economics*, 226, 107619.
- Koryak, O., Lockett, A., Hayton, J., Nicolaou, N., & Mole, K. (2018). Disentangling the antecedents of ambidexterity: Exploration and exploitation. *Research Policy*, 47(2), 413–427.
- Kowalkowski, C., Gebauer, H., & Oliva, R. (2017). Service growth in product firms: Past, present, and future. *Industrial Marketing Management*, 60, 82–88.
- Kowalkowski, C., Witell, L., & Gustafsson, A. (2013). Any way goes: Identifying value constellations for service infusion in SMEs. *Industrial Marketing Management*, 42(1), 18–30.
- Kumar, N., Stern, L. W., & Anderson, J. C. (1993). Conducting interorganizational research using key informants. *Academy of Management Journal*, 36(6), 1633–1651.
- Lavie, D., Stettner, U., & Tushman, M. L. (2010). Exploration and exploitation within and across organizations. *Academy of Management Annals*, 4(1), 109–155.
- Levinthal, D. A., & March, J. G. (1993). The Myopia of Learning. *Strategic Management Journal*, 14, 95–112.
- Limaj, E., & Bernroider, E. W. N. (2019). The roles of absorptive capacity and cultural balance for exploratory and exploitative innovation in SMEs. *Journal of Business Research*, 94, 137–153.
- Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, 32(5), 646–672.
- Mahmood, T., & Mubarik, M. S. (2020). Balancing innovation and exploitation in the fourth industrial revolution: Role of intellectual capital and technology absorptive capacity. *Technological Forecasting and Social Change*, 160, 120248.
- Mammassis, C. S., & Kostopoulos, K. C. (2019). CEO goal orientations, environmental dynamism and organizational ambidexterity: An investigation in SMEs. *European Management Journal*, 37(5), 577–588.
- March, J. (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2, 71–87.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis: a methods sourcebook* (3rd ed.). Thousand Oaks, CA, US: Sage Publications.
- Miller, C. C., Cardinal, L. B., & Glick, W. H. (1997). Retrospective Reports In Organizational Research: A Reexamination Of Recent Evidence. *Academy of Management Journal*, 40(1), 189–204.
- Mothe, C., & Bogaert, J.-C. (2020). Ambidextrie adaptative et environnement dynamique : étude longitudinale d'une PME. *Management International*, 24, 109–124.
- O'Reilly, C. A., & Tushman, M. L. (2013). Organizational Ambidexterity: Past, Present and Future. *Academy of Management Perspectives*, 27(4), 324–338.
- Ortiz de Guinea, A., & Raymond, L. (2020). Enabling innovation in the face of uncertainty through IT ambidexterity: A fuzzy set qualitative comparative analysis of industrial service SMEs. *International Journal of Information Management*, 50, 244–260.
- Paiola, M., Gebauer, H., & Edvardsson, B. (2012). Service Business Development in Small-



- to Medium-Sized Equipment Manufacturers. *Journal of Business-to-Business Marketing*, 19(1), 33–66.
- Pettigrew, A. M. (1997). What is a processual analysis? *Scandinavian Journal of Management*, 13(4), 337–348.
- Prajogo, D., & McDermott, C. M. (2014). Antecedents of Service Innovation in SMEs: Comparing the Effects of External and Internal Factors. *Journal of Small Business Management*, 52(3), 521–540.
- Raisch, S., & Birkinshaw, J. (2008). Organizational Ambidexterity : Antecedents, Outcomes, and Moderators. *Journal of Management*, 34(3), 375–409.
- Saibi, M. A. (2016). Vers un modèle d'ambidextrie au sein des PME : les enseignements d'une étude de cas. *Gestion 2000*, 33(1), 53–84.
- Simsek, Z., Heavey, C., Veiga, J. F., & Souder, D. (2009). A Typology for Aligning Organizational Ambidexterity's Conceptualizations, Antecedents, and Outcomes. *Journal of Management Studies*, 46(5), 864–894.
- Soto-Acosta, P., Popa, S., & Martinez-Conesa, I. (2018). Information technology, knowledge management and environmental dynamism as drivers of innovation ambidexterity: a study in SMEs. *Journal of Knowledge Management*, 22(4), 824–849.
- Story, V. M., Zolkiewski, J., Burton, J., & Raddats, C. (2021). Manufacturers' Service Innovation Efforts: From Customer Projects to Business Models and Beyond. In M. Kohtamäki, T. Baines, R. Rabetino, A. Z. Bigdeli, C. Kowalkowski, R. Oliva, & V. Parida (Eds.), *The Palgrave Handbook of Servitization* (pp. 419–436).
- Turner, N., Swart, J., & Maylor, H. (2013). Mechanisms for managing ambidexterity: A review and research agenda. *International Journal of Management Reviews*, 15(3), 317–332.
- Vandermerwe, S., & Rada, J. (1988). Servitization of Business: Adding Value by Adding Services. *European Management Journal*, 6(4), 314–324.
- Venugopal, A., Krishnan, T. N., Upadhyayula, R. S., & Kumar, M. (2020). Finding the microfoundations of organizational ambidexterity - Demystifying the role of top management behavioural integration. *Journal of Business Research*, 106, 1–11.
- Visnjic Kastalli, I., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, 31(4), 169–180.
- Visnjic Kastalli, I., Van Looy, B., & Neely, A. (2013). Steering manufacturing firms towards service business model innovation. *California Management Review*, 56(1), 100–123.
- Wenke, K., Zapkau, F. B., & Schwens, C. (2021). Too small to do it all? A meta-analysis on the relative relationships of exploration, exploitation, and ambidexterity with SME performance. *Journal of Business Research*, 132, 653–665.
- Yin, R. K. (1994). *Case study research. Design and methods* (2nd ed.). London: Sage Publications.
- Zimmermann, A., Hill, S. A., Birkinshaw, J., & Jaeckel, M. (2020). Complements or substitutes? A microfoundations perspective on the interplay between drivers of ambidexterity in SMEs. *Long Range Planning*, 53(6), 101927.
- Zimmermann, A., Raisch, S., & Birkinshaw, J. (2015). How is ambidexterity initiated? The emergent charter definition process. *Organization Science*, 26(4), 1119–1139.



Appendix 1. Interview guide

I. The interviewee

- What is your job position, your responsibilities and role within the company?
- How long have you been in this company?

II. The company

- How would you present your company? Could you recount its history and development?
- What are the core activities of your company? How were they developed?
- Who are your main customers and competitors?

III. Services

- What are the current service offerings of your firm?
- When/how were they developed and launched?
- How are service activities organized and what is your specific role in that organization?
- What do you think would be useful regarding improvement of current service offerings and/or future service development?