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Managing Persistent Tensions on the Frontline: A Configurational Perspective on Ambidexterity

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ABSTRACT Ambidexterity research has noted that firms' simultaneous pursuit of exploration and exploitation causes organizational tensions that are difficult to resolve. To make these tensions manageable, scholars have generally suggested that senior managers take the central role in designing organizational solutions, such as the structural separation or contextual integration of the exploratory and exploitative tasks. Yet, in an inductive study of ten corporate innovation initiatives, we find that our informants assigned far less importance to the senior managers' initial design choices than to the frontline managers' subsequent configurational practices. Frontline managers used these practices to constantly adapt and align their initiatives' organizational contexts, which allowed them to cope with persistent exploration-exploitation tensions in their daily business activities. Based on these empirical insights and drawing on paradox theory, we develop a configurational perspective on ambidexterity, where frontline managers play a more central, proactive, and strategic role than purported by the established design perspective on ambidexterity.

Keywords: ambidexterity, exploitation, exploration, frontline managers, organization design, organizational paradox, qualitative research

INTRODUCTION

Ambidexterity, the ability to explore and exploit simultaneously, is a fundamental driver of firm renewal and long-term performance (O'Reilly and Tushman, 2008; Raisch and Birkinshaw, 2008). This is because a one-sided focus on exploration (i.e., creating new-to-the firm capabilities) may enhance firms' ability to renew their knowledge bases, but can also trap them in an endless cycle of search and unrewarding change (Volberda and Lewin, 2003). Conversely, a one-sided focus on exploitation (i.e., leveraging existing firm capabilities) may enhance short-term performance, but can also result in

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competency traps, as firms lose their ability to respond to change (Ahuja and Lampert, 2001). Empirical studies have found rich evidence that links ambidexterity to higher firm growth (He and Wong, 2004), firm performance (Lubatkin et al., 2006), and business-unit performance (Gibson and Birkinshaw, 2004).

While ambidexterity may be beneficial, reconciling exploration and exploitation is challenging (March, 1991), because the two activities have contradictory organizational requirements regarding structures (O'Reilly and Tushman, 2008), contexts (Gibson and Birkinshaw, 2004), cultural foci (Carmeli and Halevi, 2009), target systems (Cardinal, 2001), and monitoring systems (McGrath, 2001). Duncan (1976), who first coined the term ambidexterity, suggested that exploration benefits from organic designs, while mechanistic designs support exploitation. Given these organizational tensions, researchers have developed a range of comprehensive organizational solutions. These solutions either focus on the structural separation of the exploration and exploitation tasks into differentiated units (Raisch and Tushman, 2016; Tushman and O'Reilly, 1996), or on the integration of the dual tasks within a single unit with an ambidextrous context (Carmeli and Halevi, 2009; Gibson and Birkinshaw, 2004).

Despite this variety of organizational solutions, the ambidexterity literature relies on the common assumption that senior managers are the key decision makers who set the direction, design organizational solutions to address the exploration-exploitation tension, and guide these solutions' organizational implementation (Gibson and Birkinshaw, 2004; Smith and Tushman, 2005). In contrast, frontline managers only play a tactical role, following the senior managers' guidance and the direction they set through the chosen organizational solution. The resulting image is one of frontline managers as uninfluential, peripheral, and reactive implementers, who are expected to explore and/or exploit, but are not involved in the development of ambidextrous strategies and the design of ambidextrous organizational solutions.

However, there is reason to believe that this view of frontline managers is not totally accurate. In a recent inductive study of four product development alliances, Zimmermann et al. (2015) found that frontline managers play a more proactive role in initiating ambidextrous strategies. This finding is in line with Burgelman's (1983) notion of frontline managers' autonomous strategic behaviour and Floyd and Lane's (2000) insight that lower-level managers do not merely follow top-down direction, but also engage in bottom-up experimentation and adaptation. Accordingly, we assume that ambidexterity may not arise directly from senior executives' design choices, but may also require frontline managers who actively shape organizational systems and processes to reconcile exploration-exploitation tensions. The purpose of this study is therefore to explore how frontline managers shape, or contribute to shaping, their organizational contexts to deal with the tensions that ambidexterity creates.

Given the lack of prior research on frontline managers' particular role, we used inductive methods (Eisenhardt, 1989; Glaser and Strauss, 1967) to examine ten corporate innovation initiatives at three multinational firms. We focused on initiatives that were launched to implement an ambidextrous strategy of either combining product exploration with market exploitation (i.e., a product development strategy), or market exploration with product exploitation (i.e., a market development strategy). These forms of cross-functional ambidexterity (i.e., combinations of exploration and exploitation across the product and market functions) are particularly close to the frontline (Voss and

Voss, 2013), allowing us to observe frontline managers and their active dealings with exploration-exploitation tensions.

From the ten corporate innovation initiatives in our sample, seven initiatives ultimately achieved ambidexterity, while three failed to realize their initial objective. Our rich case data showed that the frontline managers in the successful initiatives used three configurational practices (i.e., activities to adapt and align their initiatives' organizational contexts) to cope with persistent exploration-exploitation tensions. While two of these practices (configurational matching and configurational contrasting) allowed the initiatives to pursue their exploration and exploitation objectives in the product and market domains, the third practice (configurational exposure) helped them integrate across these domains, thus allowing ambidexterity to unfold.

Based on these insights and drawing on paradox theory (Schad et al., 2016; Smith and Lewis, 2011), we reframe organizational ambidexterity research by developing a *configurational perspective*, which differs from the established design perspective in terms of the assumed nature of the exploration-exploitation tension, the organizational process to manage ambidexterity, the managerial practices with which to achieve ambidexterity, and their intended outcome. This novel perspective has implications for future ambidexterity research. First, it suggests that ambidexterity may rely less on the design of stable solutions than on the dynamic shaping and reshaping of organizational contexts to deal with persistent exploration-exploitation tensions. Second, this perspective provides a better understanding of frontline managers' role in shaping ambidextrous contexts, thus calling for a more integrative view of the systemic interplay between senior executives and frontline managers' actions in the pursuit of ambidexterity.

RESEARCH METHODOLOGY

We undertook an inductive study, using ten in-depth case studies of three multinational companies' corporate innovation initiatives to examine how frontline managers deal with the tensions inherent in ambidexterity by shaping, or contributing to shaping, their initiatives' organizational contexts to reconcile exploration and exploitation. Given that we generally know little about how frontline managers contribute to ambidexterity, we opted for a grounded theory-building approach (Glaser and Strauss, 1967). Such field-based approaches are particularly useful for developing theory on *how* questions (Yin, 2008) that relate to complex organizational phenomena involving multiple organizational actors (Eisenhardt and Graebner, 2007).

Research Setting and Sampling

We started by screening news feeds for ambidextrous companies. In line with most prior studies, our focus was on large companies with a long-term record of sales and profit growth (Andriopoulos and Lewis, 2009) and a continuous stream of new product and service offerings (Tushman and O'Reilly, 1996). We opted for Central European firms, since their geographical proximity allows intensive qualitative data collection. The use of multiple cases from different companies provided comparative data, which yield more generalizable theory (Yin, 2008).

We identified three firms: (1) AUTOCORP, a leading global automotive manufacturer. Although the firm had grown profitably, it faced discontinuous technological change due to digitization and the rise of alternative fuel technologies, as well as shifting customer demands due to demographic change. (2) FOODGROUP, a global market leader in the food and beverage industry. The company faced a market shift towards health and nutrition, which increasingly demanded technology-driven product development. In addition, the group's expansion into emerging markets had led to entirely new customer demands. (3) ELECTROINC, a dominant global electrical engineering company. The company faced fast-paced change that quickly made its technical developments obsolete. Additionally, it experienced an emerging market trend towards sophisticated end-to-end solutions targeted at specific customer groups' engineering needs.

All these firms thus faced the challenge to explore new products and markets, but also to leverage their existing capabilities, in order to remain competitive. In other words, they strived to be ambidextrous. Since we were particularly interested in the frontline managers' role, our level of analysis was not the firm as a whole, but rather specific corporate initiatives. These initiatives attempted to contribute to the ambidexterity objective by pursuing either a product development strategy (combining product exploration and market exploitation), or a market development strategy (combining market exploration and product exploitation) (Voss and Voss, 2013). Through a series of initial interviews with corporate managers (Senior Vice Presidents and Vice Presidents responsible for functional domains), we identified each firm's total current portfolio of corporate innovation initiatives. We asked our informants to clarify whether the product and market functions of each initiative targeted exploration and/or exploitation.

We then conducted one focus group meeting per firm, which included most of the initial informants, to discuss inconsistencies in their assessment of the corporate innovation initiatives. We facilitated the discussion by providing and clarifying the theoretical definitions of exploration and exploitation for the product and the market functions (Sidhu et al., 2007; Voss and Voss, 2013). Based on our informants' input, we identified ten corporate innovation initiatives that had been launched with the clear strategic intent to combine either product exploration with market exploitation, or market exploration with product exploitation.

Data Collection

We gained access to the full sample of ten corporate innovation initiatives and primarily collected data via semi-structured interviews. A total of 51 informants were interviewed, some several times, over three years (2006 to 2009). The interview process included two sets of informants: corporate managers, who informed us about the corporate initiatives' formal design and relationships with the corporate team, as well as initiative managers and team members, who were more knowledgeable about the initiatives' informal organization and inner workings. Selecting multiple informants at different levels helped mitigate informant biases (Miller et al., 1997) and provided a broader range of perspectives (Bourgeois and Eisenhardt, 1988). We collected data from between three and 12 informants per initiative until theoretical saturation was reached (Glaser and Strauss, 1967). For an overview of our sample, please refer to Table I.

Table I. Sample

Company	*Innovation initiative*	*Initiative description*	*Intended product strategy*	*Product strategy fulfilment*	*Intended market strategy*	*Market strategy fulfilment*	*Ambidexterity*	*Number of informants*
AUTO-CORP	AUTO-SMALL	Initiative to leverage existing product know-how to enter the small vehicle customer segment.	Exploit	+	Explore	+	Realized	6
	AUTO-CUST	Initiative to improve existing customers' driving experience via the use of radically new technologies	Explore	+	Exploit	++	Realized	3
	AUTO-IT	Initiative to introduce new information technology solutions into existing customer markets.	Explore	++	Exploit	++	Realized	3
	AUTO-COMP	Initiative to develop new technological components to better address existing customers' needs.	Explore	–	Exploit	++	Not realized	4
FOOD-GROUP	FOOD-WELL	Initiative to position existing products in a new health- and wellness- oriented customer segment.	Exploit	++	Explore	+	Realized	4
	FOOD-DIET	Initiative to leverage existing products to address new customer groups with special dietary needs.	Exploit	–	Explore	+	Not realized	4
	FOOD-CAT	Initiative to develop innovative new food processing technologies for FOODGROUP's current customers.	Explore	+	Exploit	+	Realized	3
	FOOD-SYST	Initiative to launch a new innovative beverage system for FOODGROUP's existing customer base.	Explore	++	Exploit	–	Not realized	6
ELECTRO-INC	ELECTRO-SEC	Initiative to combine existing products to integrated solutions for new, more demanding customer groups.	Exploit	+	Explore	+	Realized	12
	ELECTRO-TECH	Initiative to identify radically new technologies to gain innovation leadership in the core market.	Explore	+	Exploit	++	Realized	6

Notes: ++ Refers to a strong success in achieving the intended strategy; + refers to a moderate success in achieving the intended strategy, - refers to a failure in achieving the intended strategy (the assessment only refers to the fulfilment of the intended strategy, not the initiative's commercial performance).

With the exception of several follow-up telephone interviews, our interviews were generally conducted during site visits and usually lasted between 90 and 120 minutes. Most of the interviews were recorded and transcribed (Yin, 2008). A few informants did not wish to have their interviews recorded. In these cases, the interviewers took detailed notes, created a written summary immediately after the interview, and had the informants confirm that this reflected their responses. We used an interview guide structured into three sections. First, we asked the informants to provide general information on the corporate innovation initiative, which enabled familiarization with their terminology (Fontana and Frey, 1994). Second, we asked them to describe in detail the activities that they undertook to shape the organizational contexts of the corporate innovation initiatives. The final section comprised questions on the different exploration and exploitation activities that actually occurred within the initiatives.

In addition to our primary interview data, we examined multiple secondary data sources, such as internal documentation, project reports, and media articles, to further enrich our data and gain additional insights. While some of the materials were publicly available, our informants provided additional material. Triangulation of the data collected from the interviews and the archival data allowed us to crosscheck our findings, increasing their accuracy (Rowley, 2002). Furthermore, we sought to verify the archival sources by asking our informants related questions. We also challenged individual accounts by asking multiple informants similar questions. With these measures, we sought to reduce the risks of cognitive biases and impression management, which often relate to single data sources (Miller et al., 1997).

Data Analysis

As part of the data analysis process, we assessed the initiatives' success with achieving their initial ambidexterity objectives. Informant data from our interviews and focus group meetings helped us classify the initiatives into three broad categories (Table I): ++ refers to complete fulfilment of the intended product and market innovation strategies (e.g., with respect to product exploration strategy, this refers to the acquisition of entirely new product competencies in all the targeted product areas); + refers to partial fulfilment of the intended strategies (e.g., regarding product exploration strategy, this describes the acquisition of entirely new product competencies in some, but not all, of the targeted product areas); and – refers to failure to achieve the intended strategies (e.g., with respect to product exploration strategy, this suggests that the initiative did not engage in boundary-spanning search, but relied on existing firm competencies).

This classification of more and less successful initiatives refers exclusively to the match between the intended ambidexterity strategy and the realized outcome, and does not consider the initiative's commercial success or financial performance. Based on this classification, we found that seven of the corporate innovation initiatives had generally realized their ambidexterity objectives. Three of these initiatives had combined product exploitation and market exploration (AUTO-SMALL, FOOD-WELL, and ELECTRO-SEC), and four had matched product exploration with market exploitation (AUTO-CUST, AUTO-IT, FOOD-CAT, and ELECTRO-TECH). In contrast, the

remaining three initiatives (AUTO-COMP, FOOD-DIET, and FOOD-SYST) did not attain their initial objective of creating ambidexterity.

Thereafter, our data analysis objective was to describe how frontline managers shape their initiatives' organizational contexts to deal with exploration-exploitation tensions. In order to understand the broader context of these frontline activities, we initially examined how the senior managers designed structures and contexts to implement their initiatives' ambidexterity strategies. During this preliminary data analysis, we quickly realized that our informants assigned less importance to the senior managers' initial organization design choices than to the initiative managers' subsequent configurational practices. The latter refer to the initiative managers' activities regarding adapting and aligning their initiatives' organizational contexts in order to cope with persistent exploration-exploitation tensions. The first author followed a structured coding procedure by initially identifying a set of first-order codes, and then inducing second-order categories, which comprise multiple first-order codes and reflect established theoretical constructs (Strauss and Corbin, 1998). The process ended with the aggregation of the second-order themes into three non-redundant dimensions of configurational practices.

The first cluster of codes (Figure 1a) reflects the frontline managers' efforts to match the initiative's informal culture and its formal structure in order to realize its product-side innovation objective. We used Cameron and Quinn's (2011) categories of internal or external focus to capture the practices that shape this informal culture. In our context, an internal cultural focus relates to a close orientation towards collaboration with the existing businesses, while an external cultural focus emphasizes an orientation beyond the firm's boundaries. We aggregated the two patterns (an internal cultural focus matching the structural integration; an external cultural focus matching the structural separation) under the first dimension *configurational matching*.

A second cluster of codes (Figure 1b) refers to the frontline managers' efforts to counterbalance the initiative's formal structure with complementary supervision and monitoring systems to support its market-side innovation objectives. We related these activities to the established notions of goal/supervision autonomy and output/behaviour control (Cardinal, 2001; Kreutzer et al., 2015; McGrath, 2001). In our context, autonomy refers to the initiative's independent development of business plans, objectives, and procedures, while control suggests the mainstream businesses' close involvement in defining the initiative's targets and ways of working. The two emerging patterns (goal and supervision autonomy contrasting with the integrated structures; output and behaviour control contrasting with the separate structures) form the second aggregate dimension *configurational contrasting*.

The third aggregate dimension (Figure 1c), which we labelled *configurational exposure*, comprises a set of practices to develop combinative capabilities, which allow for integration across the product and market functions. We related these practices to Van den Bosch et al.'s (1999) established categories of system, socialization, and coordination practices for integrating knowledge across organizational domains. We observed similar practices as front-line-driven efforts to configure the initiatives' organizational contexts in order to support the implementation of their cross-functional ambidexterity strategy.

At this point, the second author, who was blind to the initial procedure, recoded the data. There was strong interrater agreement. The few remaining disagreements were

resolved through intensive discussion and mutual coding. We then explored the three deviating cases by means of a similar data analysis process and compared the findings to those of our main cases. The variation between the two types of cases allowed us to use

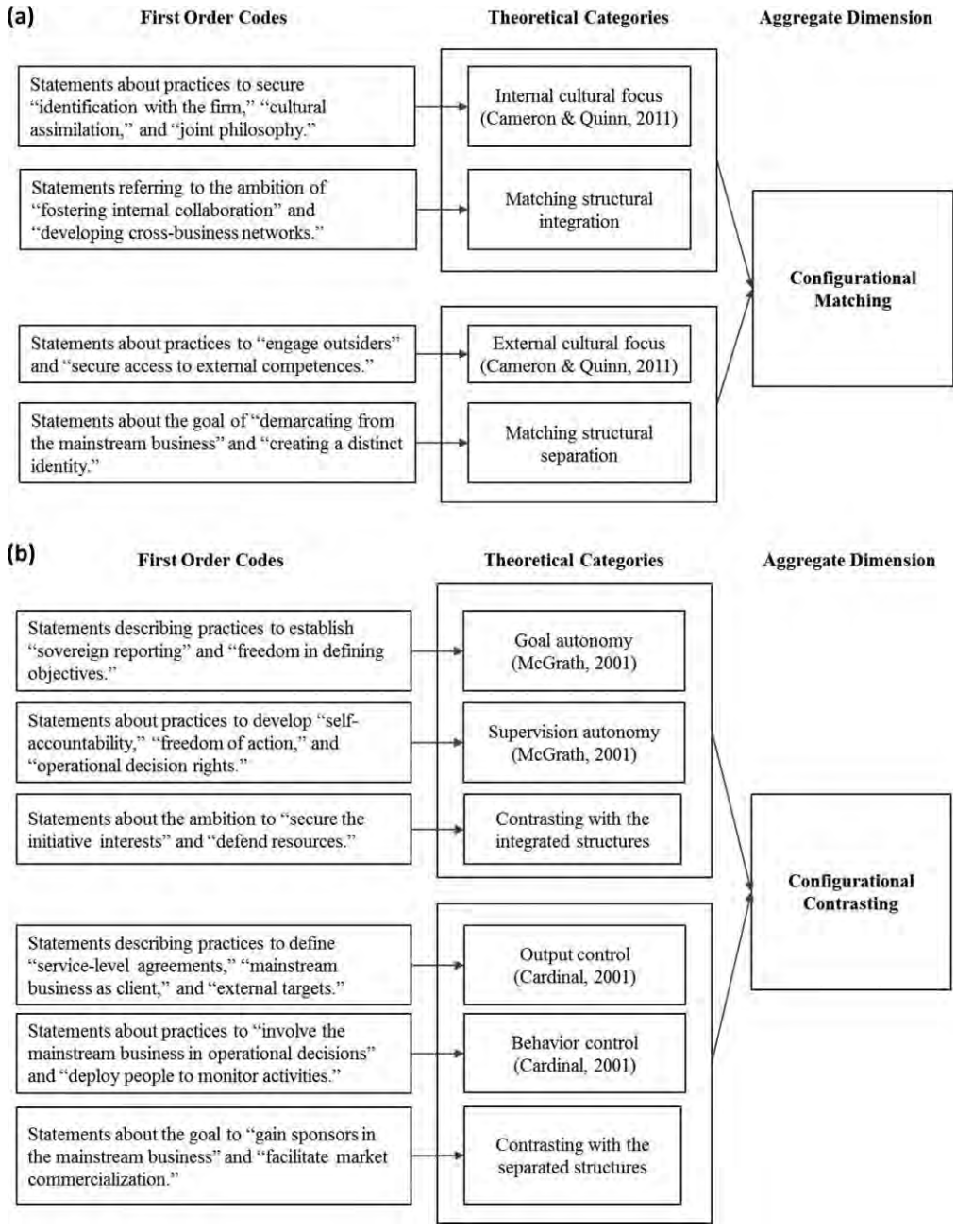

Figure 1. (a) Data structure – configurational matching. (b) Data structure – configurational contrasting. (c) Data structure – configurational exposure

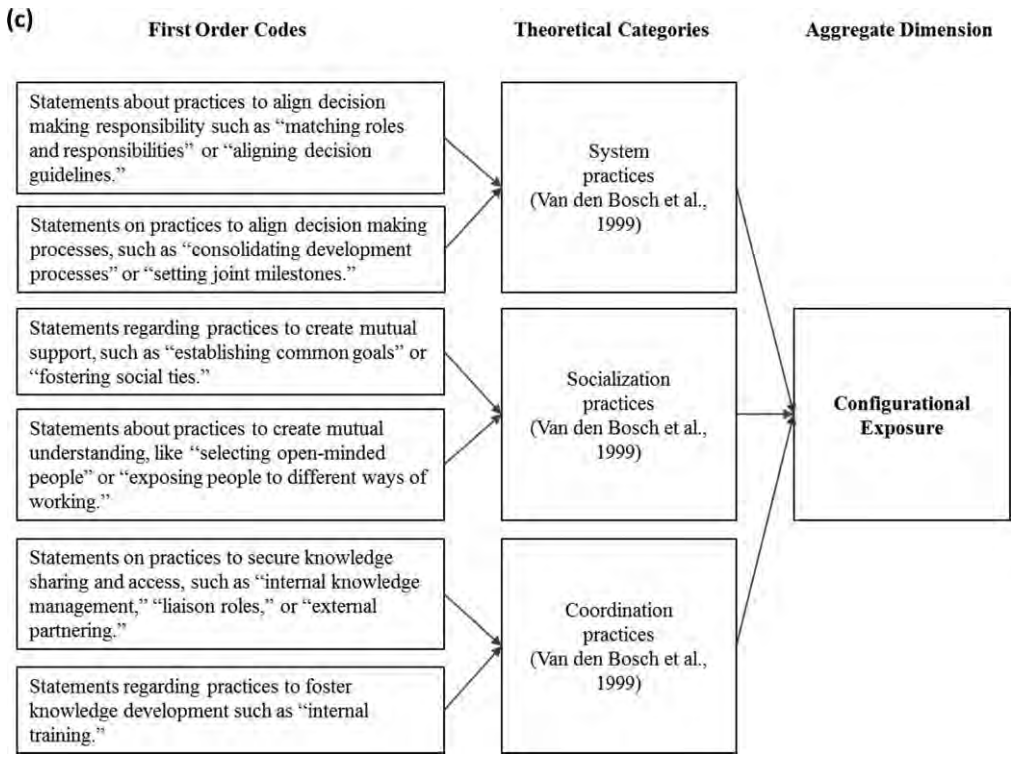

Figure 1. Continued

theoretical replication logic (Yin, 2008) to challenge our findings and to present contrasting results.

FINDINGS

Our initial data analysis revealed that senior managers had chosen different organization designs, depending on the corporate innovation initiatives' specific exploration and exploitation objectives in the product and market domains. The four initiatives pursuing a market development strategy (AUTO-SMALL, FOOD-WELL, FOOD-DIET, and ELECTRO-SEC) were designed as integrated networks to facilitate the inclusion of the existing product knowledge. The senior managers granted these initiatives some leeway and emphasized their goal of targeting new markets. In contrast, the six initiatives with a product development strategy (AUTO-CUST, AUTO-IT, AUTO-COMP, FOOD-CAT, FOOD-SYST, and ELECTRO-TECH) were set-up as separate structures to facilitate experimentation with new product knowledge. The senior managers specifically highlighted these initiatives' alignment with the existing customer markets' needs.

While these initial findings were informative, we observed that the truly interesting stories started to unfold after the senior management had put the initial organization designs in place. The initiative managers on the frontline continued to experience persistent tensions in their everyday business activities. We therefore focused our analysis on

these frontline managers' implementation activities. Based on our data, we identified three configurational practices that helped the frontline managers implement their ambidexterity strategies. Configurational matching practices supported the implementation of their initiative's product exploration or exploitation objective, configurational contrasting practices enabled the realization of their market exploitation or exploration objective, and configurational exposure practices helped integrate the exploration and exploitation activities across the product and market domains.

We next provide detailed descriptions of these configurational practices in respect of two successful cases – AUTO-SMALL (pursuing a market development strategy) and ELECTRO-TECH (following a product development strategy). We then use the three adverse cases to provide additional insight into how the absence of some of these practices contributed to these initiatives' inability to realize ambidexterity. Tables IIa and IIb provide further evidence in the form of illustrative quotes with respect to the five cases not presented in detail. Subsequently, we conceptually develop the practices that emerged from our case data and anchored them in prior research.

Product Side: Configurational Matching Practices

AUTO-SMALL. AUTOCORP launched the AUTO-SMALL initiative to leverage its extensive product development and production capabilities (product exploitation) in order to diversify into the small vehicle segment (market exploration). The AUTOCORP senior managers set up AUTO-SMALL as an integrated network spanning multiple internal departments, such as production, R&D, and sourcing, which gave the initiative direct access to the company's existing product knowledge. The integrated network structure meant that AUTO-SMALL engineers sat side-by-side with their counterparts from other AUTOCORP development projects.

Despite the integrated setup, the AUTO-SMALL product team initially struggled to gain access to the AUTOCORP competencies they required. The reason for this was that the senior managers had given the AUTO-SMALL initiative substantial leeway to adapt to its new target markets' specific needs. For example, the initiative managers used a distinct brand and recruited external market managers with different skillsets. As a result, the long-tenured AUTOCORP engineers perceived the initiative as distant from what they were doing and remained reluctant to engage in collaboration. An AUTO-SMALL manager recalled, *'When I first started working at AUTO-SMALL, it was not easy for us to gain the necessary resources and attention for product development. We were regarded as a sort of reclusive island within AUTOCORP. Nevertheless, we were supposed to rely on engineers from AUTOCORP's product development function. In the beginning, they were not always open to providing us with the dedicated people we needed'.*

To overcome these challenges, the initiative managers strived to foster a more aligned and collaborative culture. An AUTORCORP senior manager recounted, *'AUTO-SMALL was initially perceived as a special model with a different product development mindset and stronger time and cost pressures. The initiative managers then decided to adopt the classic AUTOCORP product line mindset, which enabled the two sides to work together'.* An AUTO-SMALL manager explained how this change was subsequently incorporated into the initiative's daily product development activities and defined its relationship with AUTOCORP, *'The*

Table IIa. Additional Evidence for Market Development Initiatives

Initiatives	*Configurational matching*	*Configurational contrasting*	*Configurational exposure*
Market development initiatives			
FOOD-WELL	'FOOD-WELL's functioning is based on working internally with FOODGROUP employees. That means working across all the food and beverage businesses'. (FOOD-WELL Manager) – *structural integration* 'Our network of (internal) wellness champions helps us speak the same language and share the same motivation as the other FOODGROUP businesses'. (FOOD-WELL Manager) – *internal cultural focus*	'We certainly need sufficient resources for and buy-in to our initiative to make change happen. (. . .) But it is also our mission to set direction to achieve our goals. We are working together with operations to define clear objectives for the markets and for the business units'. (FOOD-WELL Manager) – *goal autonomy* 'We are the owners of our development and market processes (. . .) we also have the role of tracking and measuring implementation'. (FOOD-WELL Manager) – *supervision autonomy*	'FOOD-WELL has established a new standard process and methodology to assess the consumer preference for all products, while ensuring that these products bring superior nutrition value where relevant'. (Internal FOOD-WELL Documentation) – *system practice* 'We have set up regular physical meetings between the product and market people here in our building where we talk about and further develop our joint strategy, discuss how to implement it, and track its progress.' (FOOD-WELL Manager) – *socialization practice* 'One of our objectives this year was to provide the right nutritional training for the right people. Whether it is the product community or the market community, there are different knowledge deficiencies that require specific trainings.' (FOOD-WELL Training and Development Manager) – *coordination practice*

Table IIa. *Continued*

Initiatives	*Configurational matching*	*Configurational contrasting*	*Configurational exposure*
ELECTRO-SEC	'In the ELECTRO-SEC initiative, businesses from across ELECTROINC collaborate because they can increase their individual revenues and profits, but also help each other out like good neighbors do, even if they do not benefit equally'. (ELECTROINC Corporate Manager) – *structural integration* 'The secondary structures had to be invigorated by a culture of internal collaboration (. . .) Managers defined a common language for realizing ELECTRO-SEC's objectives. Key terms were developed, defined, explained, and related to existing company language'. (ELECTRO-SEC Project Report) – *internal cultural focus*	'ELECTRO-SEC autonomously develops yearly business plans that specify and coordinate the business units' investments in the initiative. (. . .) This helps us ensure that ELECTRO-SEC receives the funds and the access to the products that make up our market solutions'. (ELECTRO-SEC Project Head) – *goal autonomy* 'ELECTRO-SEC is responsible for identifying the opportunities, for lead-sharing, bundling, and the integration of offerings. We [in the corporate center] have a more passive role'. (ELECTROINC Corporate Manager) – *supervision autonomy*.	'The common guidelines and decision rules were important. As simple as they are, they make our work much easier. (. . .) Clear standards mean we no longer have to negotiate and fight about everything all the time.' (ELECTRO-INC Corporate Manager) – *system practice* 'The overarching strategic goals made everyone aware of the need for cross-business collaboration. Even our product people started thinking about cross-selling. They now recognize opportunities they did not pay attention to before. (. . .) In the future, people will need to have good reasons for not pursuing cross-business opportunities'. (ELECTRO-SEC Manager) – *socialization practice* 'Sales training is a major success factor for the ELECTRO-SEC initiative. Account managers have to be trained to sell solutions. The selling approach is different from the sale of normal products. It requires consulting skills. We improve our performance by highly recommending a training curriculum that helps build these skills'. (ELECTRO-SEC Manager) – *coordination practice*

Table IIb. Additional Evidence for Product Development Initiatives

Initiatives	*Configurational matching*	*Configurational contrasting*	*Configurational exposure*
Product development initiatives			
AUTO-CUST	'We founded a dedicated company for the AUTO-CUST initiative.'"(AUTOCORP Corporate Manager) – *structural separation* 'We strive to be inventors and creators. (. . .) This is made possible through the strong external orientation, which comes from our own, unique network that connects us with universities, research institutions, and the experts at our suppliers'. (Head of AUTO-CUST) – *external cultural focus*	'We have set up an integrated consumer lab to present the radical innovations coming from AUTO-CUST to a panel of expert users. This allows AUTO-CUST managers and us to jointly assess whether these technological innovations make sense for the customers'. (AUTOCORP Corporate Manager) – *output control* 'By following the principles of collaborative research, we ensure that all the relevant corporate departments (e.g., production, sales, and marketing) are involved in the project from day one'. (Internal AUTOCORP Documentation) – *behaviour control*	'The contractual differences became a big issue when the product developers started working more closely with the market managers, as they had different salaries, broader decision rights, and different hierarchical roles. Therefore, we aligned the contractual standards in 2003 to secure a smooth go-to-market process'. (AUTO-CUST Manager) – *system practice* 'To avoid a not-invented-here syndrome, you have to get people excited about what you do. As soon as an innovation 'turns' for the first time, we build mixed (product-market) teams with the joint goal of proving the projects' realizability in the market'. (AUTOCORP Corporate Manager) – *socialization practice* 'We learned that changing the leadership of an innovation project creates an artificial rupture between pre-development and serial development. (. . .) While handovers work for incremental innovations, we have learnt that the leaders of radical product innovation projects should remain on board until the market launch. That way, we ensure that product know-how spills over into the market activities.' (AUTOCORP Corporate Manager) – *coordination practice*

Table IIb. *Continued*

Initiatives	*Configurational matching*	*Configurational contrasting*	*Configurational exposure*
AUTO-IT	'AUTO-IT is a software company (. . .) and a wholly owned subsidiary of AUTOCORP'. (AUTO-IT Company Profile) – *structural separation* 'One of two AUTO-IT team members is a newly recruited Master or PhD graduate. This way we create and maintain an open climate and always have access to innovative ideas'. (Head of AUTO-IT) – *external cultural focus*	'AUTO-IT usually demands a detailed mandate from the corporate sourcing department to pursue a development project'. (AUTOCORP Corporate Manager) – *output control* 'The close supervision (through AUTOCORP) and the competitive bidding process ensure that AUTO-IT always retains its strong customer orientation'. (AUTOCORP Corporate Manager) – *behavior control*	'Processes have to follow products and not vice versa. They cannot be an end to themselves, but need to optimize the development process regarding the outcomes' realizability. Therefore, AUTO-IT designs its processes to allow for an interplay of market requirements, technological conditions, and practical constraints'. (Internal project report) – *system practice* 'Dealing with people in such a setting can be quite a challenge. For some time, the market people saw the software developers as living on the island of the blessed. (. . .) We then developed a joint vision, in which everybody was included and felt to be part of'. (Head of AUTO-IT) – *socialization practice* 'We delegate engineers who enable their colleagues for the market launch. (. . .) It is important that all development steps are thoroughly documented and effectively transferred. Otherwise, the software engineers develop a nice prototype, but it cannot be used'. (Head of AUTO-IT) – *coordination practice*

Table IIb. *Continued*

Initiatives	*Configurational matching*	*Configurational contrasting*	*Configurational exposure*
FOOD-CAT	'The FOOD-CAT initiative involves several hundred dedicated people and I report directly to the CTO who is a member of the FOODGROUP management board' (Head of FOOD-CAT) – *structural separation* 'Our research organization was set up to bring together our fundamental inhouse research competence with corporate venture funds as well as external research partnerships with businesses and universities'. (Internal FOODGROUP documentation) – *external cultural focus*	'The innovative concepts we develop at FOOD-CAT are regularly presented in application group workshops, where the country representatives meet our engineers and marketing people. (. . .) If the country representatives are not interested, we prioritize other concepts'. (Head of FOOD-CAT) – *output control* 'As I always say, "Technology is global; food is local". (. . .) The FOODGROUP market representatives are therefore closely involved in the adaptation and fine-tuning of our new technologies'. (Head of FOOD-CAT) – *behavior control*	'We have started to integrate the product and market development activities through process development. I am convinced that this is one of the cornerstones for success, as it creates a close proximity between the ways our product developers, our marketing people, and the operating businesses work'. (FOOD-CAT Manager) – *system practice* 'It is important that the market people have a technical mindset. (. . .) We try to involve them in our engineering projects. It is a bit like a technical brainwash, so that they better understand how we work and can then more easily apply new ideas in the future'. (FOOD-CAT Head) – *socialization practice* 'We have developed so-called innovation acceleration teams – groups of people with strong technical skills and business acumen. Whenever we face problems with rolling out technological innovations in the markets, we use these teams to help bridge the gap between R&D and the commercial side of the business. For example, they help develop business plans or design communication campaigns.' (FOOD-CAT Manager) – *coordination practice*

development work at AUTO-SMALL was (thereafter) guided by the 'new interpretation rule,' which meant that developers were encouraged to first explore what existed internally (within AUTOCORP) before building something new from scratch'. Owing to this rule, the initiative's informal culture became more internally focused, which facilitated access to the existing product knowledge. An AUTO-SMALL product team member explained, *'In the beginning, we had a start-up mindset, which distinguished us from the rest of AUTOCORP. Today, it is more a philosophy of collaboration with AUTOCORP that determines the way we work. As a consequence, our partners in the group functions have become much more open and willing to provide us with the resources we need'*.

ELECTRO-TECH. ELECTROINC launched the ELECTRO-TECH initiative to identify radically new technologies (product exploration) and introduce them to its established customer markets (market exploitation). The ELECTROINC senior managers set up ELECTRO-TECH as a separate structure with three dedicated innovation hubs in Asia, Europe, and the USA. These hubs hired their own manufacturing, marketing, and R&D experts, who contributed new product skills.

Despite the fresh expertise, our informants recounted that the ELECTRO-TECH initiative had initially struggled with its exploratory efforts in the product domain. The reason for this was that the ELECTROINC senior managers had designated the established business divisions as internal customers for ELECTRO-TECH to ensure the new products' alignment with the existing customer markets' needs. However, being subject to the business divisions' oversight limited the initiative's ability to identify and experiment with new technologies. An ELECTRO-TECH product manager recounted, *'We quickly realized that we could not just sit and wait here at our Headquarters in Europe until new technologies happened to find us. When we finally noticed them, they had already matured so much that they were threatening our business. We therefore needed to move closer to the global hotspots, like Silicon Valley, to see whether any new technologies had emerged that could help us'*. A related problem was that ELECTRO-TECH continued to think and act like a corporate player. An informant added, *'We were always thinking on a large scale. Small disruptive technologies did not stand a chance with us. We definitely needed to become better at developing exciting early-stage topics and technologies'*.

To overcome these challenges, the ELECTRO-TECH initiative managers fostered the development of external networks as a means of creating an open mind-set and gaining access to innovative communities. An initiative manager maintained, *'It is very easy to sit in your quiet office and say everybody around us is stupid. This is why we now work with networks of start-ups. Taking part in these networks allows our people to constantly learn about new topics and experience the speed at which others approach these topics. This is a self-reinforcing process, as the people directly involved engage others by telling them about the exciting ideas out there'*. The emerging entrepreneurial culture helped ELECTRO-TECH experiment with new technologies and involve external players no one had thought about before.

AUTO-COMP. Contrary to AUTO-SMALL and ELECTRO-TECH, AUTO-COMP was one of the initiatives that did not realize its initial ambidexterity objective. AUTOCORP launched this initiative to develop innovative vehicle components (product exploration) to better address existing customers' needs (market exploitation). Similar to the ELECTRO-TECH initiative, AUTOCORP senior managers had set up the

AUTO-COMP initiative as a separate structure, in this case with a dedicated R&D team focused on core innovation themes.

The frontline managers at AUTO-COMP reported initial difficulties with the product exploration. The reasons were that the AUTOCORP senior managers had specified that the corporate R&D department would oversee the initiative to ensure that its components were aligned with the group's customer requirements. However, the R&D department's corporate mentality and oversight hindered the team's product exploration efforts. Similar to the ELECTRO-TECH initiative, the AUTO-COMP managers initially tried to generate a more open and entrepreneurial culture to strengthen the initiative's exploratory efforts. An AUTOCORP publication highlights these attempts, claiming that AUTO-COMP, *'has adopted an empathic approach to sensing (new ideas), utilizing its various innovation satellites around the world. This strategy allows for understanding opportunities by participating in them rather than by simply reviewing market research'*.

Contrary to ELECTRO-TECH, however, the frontline managers' initial attempts to promote a more open culture ultimately failed. While operating in a separate structure, the AUTO-COMP initiative managers relied primarily on engineers from the corporate R&D department. Most of these engineers were only delegated to the initiative for a limited time, which made it difficult for the initiative managers to truly change their mind-sets. An AUTOCORP senior manager explained, *'Initially, the initiative leaders tried to install an open and democratic approach, with all the team members openly sharing their ideas and taking decisions together. However, this did not really take off'*. An initiative manager added, *'Our R&D teams were not able to develop and maintain their own strong identity'*. A corporate manager argued that the lack of cultural distance made it difficult to counterbalance the corporate oversight, which led to the initiative's gradual reintegration, *'The R&D department heads felt that it would make more sense to take over full control of the initiative. (. . .) First, one of the department heads was appointed as the initiative leader, then he was assigned final decision-making authority, and, ultimately, the teams were reintegrated into the hierarchy'*. Consequently, the initiative's ability to explore truly novel technical solutions never really materialized and the AUTO-COMP development teams gradually refocused on recombining the existing components. Accordingly, AUTO-COMP pursued a pure exploitation strategy rather than realizing its initial ambidexterity objective.

Configurational Matching Practices. Our combined observations suggest that the frontline managers promoted ambidexterity by engaging in configurational matching practices, which refer to their attempts to match the initiative's informal culture with its formal structure to realize its product-side innovation objective (see also Tables IIa and IIb).

The senior executives had initially created formal structures that were aligned with the initiative's product-side exploration or exploitation objective. Prior literature already established that separate structures enable exploration, while integrated structures promote exploitation (Raisch, 2008; Tushman and O'Reilly, 1996). However, our case evidence suggests that the structures alone did not allow the initiatives to achieve their product-side objectives. In the initiatives striving for product exploitation, tensions arose due to the senior managers having granted the integrated networks significant leeway to adapt to their new target markets. While such autonomy may have enabled market exploration, it also made it more difficult for the initiatives' product teams to collaborate

closely with and draw on the main organizations' existing resources. The frontline managers therefore started to reinforce the integrative network structures with internally focused cultures (Cameron and Quinn, 2011). By matching the informal culture with the formal structures, they ensured the required internal collaboration in terms of product exploitation.

In contrast, in initiatives striving for product exploration, tensions emerged from the senior managers' attempts to ensure a fit with the existing customers' needs. While such oversight may foster alignment and collaboration on the market side, it made engaging in truly exploratory activities difficult for the initiative's product team. The frontline managers therefore started reinforcing their initiatives' separate structures with externally focused cultures (Cameron and Quinn, 2011). This promoted stronger demarcation from the main organization, which enabled and reinforced product exploration (O'Reilly and Tushman, 2008).

The frontline managers' matching of their initiatives' informal culture to the top-down assigned formal structures follows the insight that organization designs can better generate outcomes (such as exploration and exploitation) if the informal organization supports the formal structures (Gulati and Puranam, 2009; McEvily et al., 2014). The observed configurational matching practices show that front-line managers play an important role in ensuring this interplay.

Our deviating case shows that the absence of configurational matching can jeopardize ambidexterity's success. In the AUTO-COMP case, the initiative managers' inability to match the informal with the formal design, triggered the initiative's gradual reintegration into the main organization. Configurational matching may thus be a first condition for ambidexterity to emerge. However, as we describe next, the frontline managers in the successful initiatives were not satisfied with configurational matching, but engaged in further configurational practices.

Market-Side: Configurational Contrasting Practices

AUTO-SMALL. As presented above, the AUTO-SMALL initiative was set up as an integrated network structure and relied on configurational matching practices to enable product exploitation. However, these activities reinforced AUTO-SMALL's alignment with AUTOCORP even further, which made exploring new customer markets challenging. An initiative manager describes the renewed tensions on the initiative's market side, *'AUTO-SMALL just has to tick differently, because our customers want different things. If you spend 80 per cent of your day talking to AUTOCORP and then try to immerse yourself into the AUTO-SMALL world for the remaining 20 per cent, you will not achieve the required change in mindset'*. The market team therefore demanded greater autonomy with regard to their objectives and how they conducted their activities. This demand was not easy to fulfil. An initiative manager explained, *'It is a continuous fight to defend our right to set goals and convince our AUTOCORP colleagues that we sometimes have far greater requirements than they have, because our customers want different things'*.

It was therefore important to counterbalance the strong product-side alignment with greater autonomy on the market side. The initiative managers used the leeway that the senior managers had given them to strengthen the market team's autonomy. An

AUTO-SMALL manager recounted, *'We identified some particularly independent executives across AUTOCORP and made them part of what we called the "virtual management team" (. . .) Despite AUTO-SMALL not being a stand-alone unit, it needed such a dedicated strategic brand leadership team. This team now has the objective (. . .) to position the AUTO-SMALL brand in a new segment and create a different (brand) image'*. Another manager described how the initiative leaders helped the market team defend its autonomy in the daily business, *'AUTO-SMALL market managers (. . .) focus fully on what is best for the initiative when taking everyday decisions. (. . .) We make sure that they feel far less obliged to adhere to the corporate standards and objectives'*. An AUTO-SMALL market team member described how they experienced this support, *'AUTO-SMALL is a great place for young and hungry marketing people. The initiative leaders give us objectives that are a bit too big for us and that AUTOCORP would usually assign to someone one or two levels higher up in the hierarchy. It is then up to us to earn this responsibility by using all our dedication, motivation, and talent to get the job done'*. An AUTOCORP senior market manager added, *'Granting responsibility is one of their main sources of motivation. People feel that they can shape a new and upcoming brand and make a real difference in terms of how the brand is developed'*.

ELECTRO-TECH. The market team at ELECTRO-TECH also faced market-side tensions, in this case with achieving its exploitation objectives. These tensions were rooted in the initiative's structurally separated design and its externally oriented culture. An ELECTROINC corporate manager emphasized, *'When you have full autonomy, you risk becoming one of those Silicon Valley labs of the 1970s that never developed anything that made it to the market'*. The senior managers had therefore encouraged the business units' involvement to help the initiative target existing customers. However, one initiative manager stressed that this measure alone was insufficient to ensure success on the market side, *'In the past, the responsible corporate people did not really know our initiative and how to deal with us or use us for their purpose. At the same time, we did not know our corporate customers well. As a result, collaboration with ELECTROINC did not work too well in the beginning'*.

To address these challenges on the market side, the ELECTRO-TECH initiative managers began to formally involve the ELECTROINC business units in assessing the market potential, setting targets, and defining controls for the initiative. A frontline manager explained, *'When innovations emerge, there are many obstacles in their path toward commercialization. Our ELECTROINC partners assess the market potential of the technology and we leverage their expertise to determine the best path toward commercialization'*. Involving the core business more closely in the go-to-market process helped share and apply the existing market know-how. An ELECTRO-TECH initiative market manager explained, *'Some of our engineers have never met an end-customer personally. Through discussions with the business unit representatives, they learn, for example, how a large railway operator works, what problems these firms have, and what their technical realities are. Someone who has spent 20 years with these clients can tell you what the true challenges are that you have to address. (. . .) It is through these exchanges that we develop targets and redefine our activities to ensure we meet market needs'*.

FOOD-SYST. FOOD-SYST was one of the initiatives that did not realize its initial ambidexterity objective. FOODGROUP had launched the initiative to develop innovative beverage systems (product exploration) for its existing customer base (market exploitation). The senior managers had created FOOD-SYST as a separate company, which,

together with its externally focused culture, had allowed them to explore new technological solutions.

FOOD-SYST experienced market-side tensions similar to the above-described ELECTRO-TECH tensions. While FOODGROUP's senior managers had initially asked the group's market zones to oversee the initiative, maintaining its initiative's alignment with the zones' market goals became increasingly challenging given FOOD-SYST's separate structure and externally oriented culture. One issue was that FOOD-SYST did not just develop beverages, but entire beverage systems, including the machines. In an interview with a newspaper, the CEO of FOOD-SYST explained, *'This was entirely new for FOODGROUP. We had to sell machines, but were not known for such things. (. . .) While the initial idea was to sell our products through FOODGROUP's (existing) network of retailers, we later realized that we had to have direct customer contact and not only sell beverages, but also service the machines'*. FOODGROUP's limited experience with hardware sales and direct distribution made it very difficult for the group's market zone managers to effectively set goals and monitor activities. FOOD-SYST therefore continued to increase its search for external input and outside guidance. The head of marketing recounted, *'We needed a different marketing spirit to make FOOD-SYST a success. When we got the mandate to hire additional resources to reinforce our marketing competencies, we brought in marketing experts from luxury companies. They repositioned our solution as a premium offering, which was a much better fit with our type of product'*.

The FOODGROUP market zones eventually gave up their initial efforts to control the FOOD-SYST initiative's activities. Ultimately, FOODGROUP decided to grant the initiative full autonomy as a global business with its own objectives, strategy, and sales functions.

Configurational contrasting practices. Our observations suggest that the frontline managers promoted ambidexterity by engaging in configurational contrasting practices, which refer to counterbalancing the initiative's formal structure with complementary supervision and monitoring systems that support its market-side objective (see also Tables IIa and IIb). Prior studies found that control systems enable market exploration or exploitation (Cardinal, 2001; Kreutzer et al., 2015). More specifically, McGrath (2001) found that goal and supervision autonomy are beneficial in exploratory business development projects, while exploitative projects benefit from greater control along these dimensions. Consistent with these findings, our informants explained that frontline managers used their goal and supervision autonomy to promote market exploration, as well as using output and behaviour controls to enable market exploitation.

A new insight from our case studies is that configurational contrasting allows frontline managers to complement product exploration (or exploitation) with market exploitation (or exploration) to realize ambidexterity. Rather than striving for consistent configurations (O'Reilly and Tushman, 2008), the frontline actors in our corporate innovation initiatives actively fostered inconsistencies between the formal and informal design on the one hand and the target and monitoring systems on the other hand. In the structurally integrated and internally oriented market development initiatives, the frontline managers configured autonomous target and monitoring systems to increase the responsiveness to new customers' demands. In contrast, the frontline managers of the

structurally separated and externally oriented product development initiatives set output and behaviour controls to align their initiatives with the existing customers' demands.

Overall, we observe that the frontline managers in the successful initiatives combined configurational matching practices to enable product exploration or exploitation, with configurational contrasting practices, which in turn enabled complementary market exploitation or exploration. Our deviating cases indicate that failure to engage in either of these practices can harm an organization's ability to realize ambidexterity. The AUTO-COMP case presented above shows the risks associated with an initiative's lack of configurational matching, specifically its failure to engage in product exploration, which promoted a shift from ambidexterity to pure exploitation. The FOOD-SYST case in this section shows that a lack of configurational contrasting can hinder market exploitation, causing a shift from ambidexterity to pure exploration. Consequently, neglecting either configurational practice runs the risk of one domain's activities taking the upper hand, which harms the other domain's activities. As we will see next, the frontline managers in successful initiatives complemented these practices further with a third and final set of configurational practices, which allowed them to integrate their activities across domains.

Product-Market Integration: Configurational Exposure Practices

AUTO-SMALL. While the pursuit of configurational matching and contrasting practices helped the AUTO-SMALL initiative exploit the product domain and explore the market domain, it also resurfaced the tensions between these functions. An AUTO-SMALL market manager recounted, *'Our customers want us to be fashionable, while the traditional AUTOCORP buyer expects perfect engineering. If we want to be successful in this segment, we always need to ride the next wave and catch the latest trends even if the technical solutions are not yet perfect. Therefore, speed-to-market is much more important for us than for other AUTOCORP segments. The hinges, which were an appealing new design, but would never have made it into an AUTOCORP vehicle, are a great example'.* These market exploration activities created tensions with the product side, which aimed at exploiting AUTOCORP's engineering competences.

The frontline managers had to reconcile the conflicting orientations. An AUTO-SMALL manager explained, *'We faced the issue that the product developers followed the standard AUTOCORP product development process. The market managers constantly complained about that process's lack of flexibility, high costs, and duration. Our solution was to create a streamlined development process that followed AUTOCORP guidelines, milestones, and clearance, but simultaneously allowed some of the flexibility the market managers needed'.*

Despite the common processes, however, the challenge remained to connect the market and product teams. Developing a shared platform for open discussion and problem solving fostered integration. A market manager explained, *'We have established a jour fixe once a month during which we express our needs, and the product engineers state their needs. We then discuss how our different requirements fit together and how we can solve divergent interests. This regular exchange is important to ensure that we act as one unit'.*

While the common processes and personal links fostered exchange, the initiative managers also had to make sure that the product engineers understood the customer requirements better. An AUTO-SMALL manager reported, *'Our products and the*

customers' expectations come together at the point of sales and we realized that our customers were on average less satisfied with this experience than the traditional AUTOCORP buyers, because they expected something different. (. . .) This is why we established benchmarking points of sale, for example, in Singapore, where we now involve our engineers to show them first-hand what type of brand experience we want to create and how our customers experience and respond to their products'.

The ability to link and better coordinate the exploitation-oriented product function and the exploration-oriented market function eventually paid off. While AUTO-SMALL benefits from AUTOCORP's technological skills and scale, it has established itself as a distinct brand that contributes new growth to the group. Today, AUTO-SMALL is the driving force behind AUTOCORP's move into mobility services, a major growth area for car manufacturers.

ELECTRO-TECH. Similar to AUTO-SMALL, ELECTRO-TECH experienced persistent tensions between the product and the market functions. A frontline manager described the initiative's struggle to *'find a middle way between using the degrees of freedom that our independent setup provides, while keeping a close link with the business units that sponsor our activities'*. He suggested that the structural independence and the externally focused culture created *'centrifugal forces pushing us away from ELECTROINC'*, while the market team continued to strive for closer alignment with the main organization.

These tensions were addressed in different ways. First, the systems and processes in the product and market functions diverged, because the product team was more flexible and autonomous, and the market team was more formalized. An ELECTRO-TECH manager explained how they developed a process that ensured smoother integration, *'We apply different process logics in different phases. We start with a demonstration project, where we work as in a start-up, very hands-on, without any formal processes. (. . .) Gradually, we start to introduce ELECTROINC processes, which allow the innovators to adapt their technologies to our market context, while the market side is also expected to make concessions'*.

In addition, the initiative managers established cross-functional implementation teams, which were held accountable for the common goal to transfer the new ideas to the established markets. While the integrated processes and the cross-functional teams helped increase the willingness to collaborate, ELECTRO-TECH also needed to secure access to the necessary know-how. An initiative manager clarified, *'We organized what we call "brainpool sessions", where we bring together innovators and market managers to discuss specific topics. This drives exchange, but also promotes networking, so that everybody knows whom to approach with questions'*. The ability to integrate product exploration and market exploitation activities effectively helped ELECTRO-TECH, and ELECTROINC as a whole, not only outpace small and highly innovative start-ups, which often lacked the power to bring their ideas to the market, but also rival incumbents, which were often too slow to adapt to newly emerging technologies.

FOOD-DIET. FOOD-DIET was the third initiative that did not realize ambidexterity. FOODGROUP created the FOOD-DIET initiative to leverage its existing product development and production capabilities (product exploitation) for new customer groups with special dietary needs, such as athletes, infants, and patients (market exploration). Similar to AUTO-SMALL, the FOODGROUP senior managers set up FOOD-

DIET as a network structure. The FOOD-DIET frontline managers initially engaged in configurational matching and contrasting practices, which enabled product exploitation and market exploration. Nevertheless, the strong tensions between the product and market domains remained, which made the integration of the exploration and exploitation activities across the domains difficult. The main challenge was that the autonomous market managers explored entirely new markets, whose needs were so different that it was difficult to address them by means of FOODGROUP's established product competencies.

The initiative managers initially attempted to align the product development processes, but these efforts ultimately failed. A FOOD-DIET manager explained, *'As the market launch of our (dietary) products followed a very different pattern compared to the launch of traditional food products, we also needed different testing methodologies, different standards for project initiation, and the novel ability to act as a global unit'*. It was therefore difficult for FOOD-DIET to find or develop the necessary product know-how internally. An initiative manager recalled, *'Today, our core capability is that we behave more like a pharma company than a food company. We have very little synergies with FOODGROUP in terms of R&D and production skills'*.

FOOD-DIET increasingly retreated from its original integrated set-up, establishing its own dedicated production sites and research centres. A FOOD-DIET manager explained, *'We used to have a production line within a FOODGROUP factory, such as a baby cereal unit within a larger cereal factory, or we relied on a milk-powder-making facility that we shared with other FOODGROUP businesses. (. . .) Today, we primarily rely on over 30 dedicated factories that exclusively make our products'*. The increasing separation on the product side eventually led to the establishment of an entirely separate global business unit for dietary products. Although the unit's pure (product and market) exploration strategy is successful today, FOOD-DIET did not realize its original ambidexterity objective.

Configurational exposure practices. Our case observations suggest that integration across product and market functions is a challenging task, because it has to cope with the persistent tensions that the two functions' different processes, mind-sets, and competencies cause. In the successful cases, the frontline managers engaged in configurational exposure practices, which refer to their efforts to develop combinative capabilities that allow for integration across product and market functions (see Tables IIa and IIb). Van den Bosch et al. (1999) distinguish three types of such combinative capabilities, labelling them system, socialization, and coordination practices, which closely resemble the practices we observed.

First, Van den Bosch et al. (1999) argue that formal systems facilitate the subsequent integration of explicit knowledge by providing individuals with formalized rules about what to do at which stage. In our cases, the product and market functions' divergent incentives, procedures, and processes hindered effective integration across the domains. The front-line managers in the successful initiatives therefore decided to integrate the two domains by designing overarching processes and assigning responsibilities.

Second, Van den Bosch et al. (1999) argue that socialization practices facilitate the integration of tacit knowledge and therefore complement system capabilities, which foster the integration of explicit knowledge. Cultural differences hindered effective integration across the product and market functions in our cases. The exploratory function

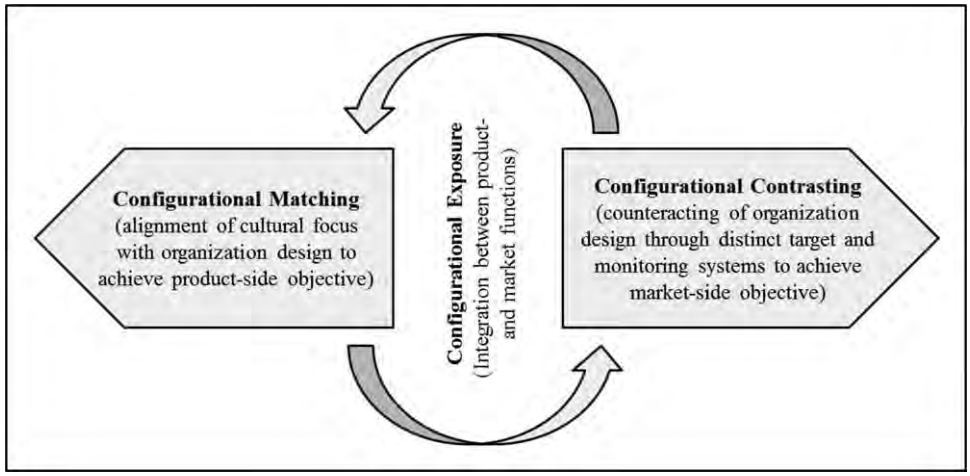

Figure 2. Interplay of configurational practices

regularly complained about the exploitative function's inertia, or lack of flexibility. In the successful cases, the frontline managers used socialization practices to expose the different mind-sets, create mutual understanding, and set common objectives that motivated the two sides to overcome their narrow perspectives.

Finally, Van den Bosch et al. (1999) argue that coordination processes ensure that both sides have access to the knowledge they require. In our cases, the challenge was that exploration in one functional domain also had implications for exploitation in the other functional domain, which often meant that the exploitative functions needed to understand what the exploratory functions did. However, the exploitative functions generally lacked the necessary expertise. The line managers therefore configured coordination processes, such as joint training programs, to ensure that both sides had access to the necessary knowledge.

Table III. Design perspective vs. configurational perspective on ambidexterity

	Design Perspective	*Configurational Perspective*
Nature of Exploration-Exploitation Tension	Stable and uniform challenge	Dynamic, constantly evolving challenge
Organizational Process to Manage Ambidexterity	Linear process of initiation, contextualization, and implementation	Recursive process with continuous cycles of contextualization and implementation
Managerial Practices to Achieve Ambidexterity	Top-down design practices to reduce tension and individually manage it	Bottom-up configurational practices to nest tension and collectively manage it
Intended Outcome	Convergence and stability	Co-evolution of convergence and divergence

While Van den Bosch et al. (1999) have discussed these practices in an interorganizational setting, our data suggest that similar practices may also help coordinate and integrate activities within the organizational boundaries. Our deviating case further indicates that a lack of configurational exposure can harm an organization's ability to realize ambidexterity. The FOOD-DIET initiative did not create the necessary system, socialization, and coordination practices to prevent a growing distance between the product and market domains. Ultimately, the initiative's ambidexterity objective was abandoned. Configurational exposure may thus be the third and final condition for ambidexterity to emerge and persist.

DISCUSSION

We began this study by noting that ambidexterity research had emphasized the role of senior executives in designing organizational solutions to address exploration-exploitation tensions (Gibson and Birkinshaw, 2004; Smith and Tushman, 2005). Empirically, however, we observed that these designs did not solve the exploration-exploitation tension, and that frontline managers continued to experience persistent tensions in their daily activities.

To cope with these tensions, frontline managers in the successful initiatives engaged in three types of configurational practices: They pursued configurational matching and contrasting practices to achieve their initiatives' exploration and exploitation objectives. Configurational matching refers to frontline managers' efforts to match their initiative's informal culture (Cameron and Quinn, 2011) with its formal structure in order to realize its product-side exploration or exploitation objective. Configurational contrasting, on the other hand, describes these managers' efforts to counterbalance the initiative's formal structure with complementary supervision and monitoring systems (Cardinal, 2001; McGrath, 2001), which support its market-side exploitation or exploration objective. In addition, frontline managers engaged in configurational exposure practices to develop combinative capabilities (Van den Bosch et al., 1999), which allowed integrating their exploratory and exploitative activities across the product and market functions.

All three configurational practices work together in a system (see Figure 2). Given their opposing directions, the configurational matching and contrasting practices create centrifugal forces within the initiative, causing a constant tug-of-war between the exploration and exploitation priorities. In contrast, the configurational exposure practices create centripetal forces to integrate and balance exploration and exploitation across domains. Our observations from the adverse cases suggest that the absence of any one of these practices reduced the initiatives' ability to balance exploration and exploitation. We therefore conclude that the interplay between the three configurational practices enables ambidexterity.

Towards a Configurational Perspective on Ambidexterity

Our key theoretical contribution is reframing ambidexterity as a topic of significant theoretical and practical relevance by developing a configurational perspective on how frontline managers cope with persistent exploration-exploitation tensions. From this configurational perspective, ambidexterity arises from lower-level managers' continuous

shaping and reshaping of the organizational contexts they face. Table III summarizes the key characteristics of this novel configurational perspective and contrasts it with the established design perspective.

The first difference between our findings and the dominant view in the ambidexterity literature refers to the nature of the exploration-exploitation tension. Most prior ambidexterity studies described a uniform and relatively stable tension between exploration and exploitation's organizational requirements (Jansen et al., 2006; O'Reilly and Tushman, 2008; Raisch and Birkinshaw, 2008). In contrast, we observed persistent organizational tensions on the frontline that *evolved* across domains. In the product domain, the senior managers' initial ambidextrous design solutions caused tensions that affected the initiatives' product exploration (or exploitation) activities negatively. The frontline managers' use of configurational matching practices to address these tensions triggered renewed tensions in the market domain, which hindered market exploitation (or exploration). Finally, the dual use of the divergent configurational matching and contrasting practices caused tensions between the product and market domains. Aligned with recent paradox theory insights (Schad et al. 2016; Smith and Lewis, 2011), we thus conclude that the exploration-exploitation tension is less stable and uniform than the prior ambidexterity literature generally assumed. Frontline managers experience dynamic and constantly evolving tensions, which create varying challenges across space and time.

The second point of difference refers to the organizational process to manage ambidexterity. Prior research has mostly assumed a linear process where, once an ambidextrous strategy is adopted, an organizational design solution is put in place, which then facilitates the subsequent efforts to balance exploration and exploitation. Raisch and Zimmermann (2017) conceptualized this process theoretically along the stages of initiation, contextualization, and implementation. However, in practice we observed a less straightforward process. Since tensions evolve, the nature of the challenges that frontline managers experience evolves as well. Frontline managers therefore continuously shape and reshape their initiatives' organizational contexts to address the evolving tension. They engage in configurational practices, return to their exploration and exploitation work, and use the learnings to reconfigure their context. Accordingly, the process of managing ambidexterity on the frontline is not linear, but agile and *recursive* with continuous cycles of contextualization and implementation. Frontline managers use a broad arsenal of configurational practices that allows them to both align and adapt their contexts.

Thirdly, we observed substantial differences in the managerial practices to achieve ambidexterity. Prior ambidexterity research largely focused on senior managers who design organizational solutions to reduce tensions, for example, by creating separate units for exploration and exploitation (Tushman and O'Reilly, 1996), or by developing an organizational context that enables all employees to pursue both tasks (Gibson and Birkinshaw, 2004). In this design view, individuals hold the remaining tension – either senior managers who coordinate across exploratory and exploitative units, or lower-level employees who themselves decide which time to allocate to exploratory and exploitative tasks. In our empirical cases, however, frontline managers did *not* strive to hold the tension. Instead, they used configurational practices to incorporate the tension into the collective systems and processes. Since the configurational practices involve the

whole initiative to manage the tension collectively, frontline managers assume much of the burden individuals would otherwise bear. This difference is important, as prior research repeatedly warned that individuals are easily overwhelmed when they have to deal with paradoxical challenges on their own (Smith and Lewis, 2011; Smith and Tushman, 2005). By showing how exploration-exploitation-tensions can be nested in organizational context configurations, we extend prior paradox research, which described paradoxical tensions as nested across organizational levels (Andriopoulos and Lewis, 2009).

Finally, the two views also differ in terms of their intended outcome. Prior studies assumed that ambidextrous organizations move towards a state of consistency and balance between exploration and exploitation, and that all organizational activities should be aligned in order to achieve and defend this balance (O'Reilly and Tushman, 2008). The third practice that we observed – configurational exposure – is broadly consistent with this dominant view, since it strives to reconcile or balance exploration and exploitation. However, the two remaining practices – configurational matching and contrasting – have a different intent. Rather than striving for convergence, they create divergence by constantly pushing the organization out of equilibrium (see Figure 2). The *interplay* between the forces of divergence and convergence allows dynamic adaptation to and alignment with the changing nature of the exploration-exploitation tension. We therefore observe organizations pursuing dynamic equilibrium (Smith and Lewis, 2011) rather than striving for a more stable equilibrium.

Our empirical insights into the configurational perspective on ambidexterity originate from a specific research context, where ambidexterity is achieved by combining product exploration with market exploitation, or product exploitation with market exploration (Voss and Voss, 2013). The advantage of this research context was that it combines a strong need for differentiation between exploration and exploitation with a strong need for integration across these frontline tasks. This context is therefore particularly valuable to study how frontline managers contribute to ambidexterity. While our findings are limited to this empirical context, we nevertheless expect to see similar practices in different contexts. We encourage future research to study the potential similarities and differences between our case accounts and those from other contexts.

Implications for Future Research

The configurational perspective on ambidexterity provides two particularly exciting avenues for future research. First, the ambidexterity literature generally speaks of organizational *solutions* (e.g., Birkinshaw et al., 2016; Raisch et al., 2009; Zimmermann and Birkinshaw, forthcoming), which suggests that the exploration-exploitation tension can be, at least in part, resolved. Research on organizational paradox, however, argues that such tensions may be temporarily dormant, but they always persist and resurface at a later stage (Schad et al., 2016). This view is closely aligned with that which we observed in practice. Consequently, ambidexterity should not be regarded as a stable state or static balance (Lavie et al., 2010), but rather as a continuous process. Given this process perspective, it is important to explore how this process unfolds over time. While recent research has studied the initiation phase of ambidexterity (Zimmermann et al., 2015),

less is known about the implementation phase. This study built an important stepping-stone in this direction, providing a first insight into the frontline practices to implement ambidexterity. However, further qualitative and quantitative research is needed to develop a more comprehensive understanding of ambidexterity's implementation processes, their triggers, patterns, and boundary conditions.

Second, our study emphasizes the central role of frontline managers. Nevertheless, it goes without saying that senior executives and their designs also play a decisive role in developing ambidexterity. As we show, senior managers' ambidextrous designs provide the foundation and reference point for frontline managers' configurational practices. However, in some of our adverse cases, we observed that senior executives also decided to change the formal top-down organization design, partly in response to what had happened on the frontline. While this was not the focus of our research, it would be promising to study the interactions between senior executives and frontline managers, thus combining and reconciling the design perspective with the configurational perspective developed in this study. It may well be the senior executives and the frontline managers' interdependent actions that collectively determine ambidextrous organizations' long-term success. From this perspective, ambidexterity may not arise from specific induced or autonomous behaviours, but from the orchestration of such distributed initiatives and their integration into concerted, firm-wide action.

Managerial Implications

Given the nature of our qualitative study, we cannot draw strong conclusions regarding the effects of the practices we observed in respect of corporate initiatives' economic success. Instead, the cases provide rich illustrative examples that could help frontline managers achieve their innovation objectives. Across all three companies in our sample, it became clear that the key driver behind configurational practices' effective use was the frontline managers' empowerment. First, frontline managers had the autonomy to make organizational decisions and shape their systems and processes (i.e., configurational flexibility). Second, frontline managers had the competence and willingness to engage in configurational activities (i.e., configurational ability). The latter is quite different from cognitive and behavioural abilities (Carmeli and Halevi, 2009; Jansen et al., 2009), which may enable a few exceptional managers to think and act ambidextrously (Tushman et al., 2011). Since tensions are nested in the systems and processes and then pursued collectively, frontline managers' organizational and teambuilding skills become more important than individuals' ambidextrous abilities. This, in turn, has implications for the staffing of such corporate initiatives and the broader human resource management and leadership development practices (Probst et al., 2011).

CONCLUSIONS

We conclude with a call for further research into the crucial question of *how* organizations reconcile exploration and exploitation tensions through a dynamic and continuous interplay between senior executives and frontline managers. In this study, we directed attention to the frontline's previously neglected role and showed that lower-level

managers experience and cope with exploration-exploitation tensions in very different ways than senior executives do. The logical next step is to integrate these two perspectives. Future research can build on our insights to further expand our theoretical and practical understanding of ambidexterity.

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