HOW TO MAKE EXPLORATORY UNIT AMBIDEXTROUS?
NAVIGATING CONTRADICTIONS OF EXPLORATION

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ABSTRACT

Although exploratory units constitute a structural mechanism that buffer rigidity and inertia from firms' core businesses, tensions and challenges may arise when there is a changing strategy at the corporate level that misaligned with the initial purpose of the unit. In this paper, we explain how managers in spatially separated exploration units of an organization deal with the conflicting requirements of exploring emerging industries and senior executives' initiatives to align the organization around the temporal focus on restoration of core businesses. We uncover internal mechanisms that reveals how an exploratory unit become ambidextrous that enable them to maintain a strategic alignment with the main organization while ensuring required adaptability for exploration in emerging industry. Our findings draw on the longitudinal analysis of exploration activities of a business unit at a global telecommunication firm that responsible for pursuing opportunities in the emerging Internet of Things industry (IoT) between 2015 and 2019. This study contributes to extant literature by developing a link between contextual and structural ambidexterity at the business unit level, and particularly, by showing managerial approaches through which an organizational unit become ambidextrous.

INTRODUCTION

To achieve sustainable growth, established firms explore emerging industries that may complement their existing businesses (Benner & Tushman, 2003; March, 1991; O'Reilly, Harreld, & Tushman, 2009). Studies show that many firms organize their explorative endeavors as an independent unit which structurally separated from the core businesses (Jansen, Tempelaar, van den Bosch, & Volberda, 2009; O'Reilly & Tushman, 2004). The structural separation aims to provide freedom and flexibility for the exploratory units and protect them from the inertia and rigidity of existing businesses (Gilbert, 2005; Raisch & Tushman, 2016).

Literature has generally expected that once separated, exploration activities are insulated from the tensions of the main organizations (O'Reilly & Tushman, 2004; Tushman & O'Reilly, 1996). Prior studies have also implicitly assumed that tensions will only emerge at the later stages of exploration journey when the units have matured and ready to be reintegrated to their main organizations (Raisch & Tushman, 2016; Siggelkow & Levinthal, 2003). While prior studies predominantly focus on the tensions at the later stage of exploration, they have not yet formally analyzed the tensions and challenges that may arise when there is a changing strategy at the corporate level that significantly restricts exploratory searches. In such context, the exploratory units that are tuned for broad searches of new opportunities have to cope with the new direction of the organization which misaligned with the purpose of the unit.

Recent research that take a dynamic perspective shows that changes of environmental condition due to financial crisis or increase market competition, for instance, may shift firms' strategic orientation from ambidextrous toward a more focused strategy (Luger, Raisch, & Schimmer, 2018; Raisch, Birkinshaw, Probst, & Tushman, 2009). In the face of environmental pressure, senior executives may find it inevitable to align different organizational units towards

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the direction that support the existence of their core businesses (Boumgarden, Nickerson, & Zenger, 2012). Consequently, firms might redirect their exploration efforts to innovations that build on the firms' core capabilities and closer to the firms' existing market (Eisenhardt & Martin, 2000), which we labeled as "focused exploration". In this case, senior executives may introduce new logic actions that accentuate exploration through extensions of the core capabilities and leverage of existing resources, instead of building new ones. While this reorientation may fit well with some exploratory units, others may find themselves in a contradictory situation where the new direction is at odds with the vision of their unit (Gulati & Puranam, 2009). The focused approach might significantly constrain exploratory search and limit innovativeness for exploration in an emerging industry, given the fast pace and high ambiguity which characterized this industry (Eisenhardt, 1989; March, 1991). As a result, managers of an exploratory unit might face contradictory demands of maintaining strategic alignment with the focused approach, while ensuring requisite flexibility for exploration in emerging industry.

Prior studies have shown how senior executives navigate tensions between exploration and exploitation at the firm level (Andriopoulos & Lewis, 2009; Smith & Tushman, 2005). However, we do not have an in-depth understanding of how tensions within an exploratory unit are managed, especially when alignment with the existing businesses is highly expected. Moreover, prior studies have suggested an ambidextrous approach in exploring emerging industry where managers simultaneously leverage existing capabilities while also build new ones (e.g. Hill & Birkinshaw, 2014; Taylor & Helfat, 2009). Yet, the mechanisms in which managers navigate between this contradictory requirement are rarely discussed. Based on these gaps we address the following research question: How managers navigate contradictory demands related to organization's temporal focus on restoring the core businesses and the ongoing exploratory activities in their unit?

To address this question, we analyze an exploratory unit of TELCO (a pseudonym), a global network & telecommunication infrastructure provider, from 2015 to 2019. Since 2016, TELCO adopted a structural separation approach by forming a standalone unit devoted to exploring an emerging industry of *Internet of Things* (IoT). However, at the end of 2016, TELCO experienced one of the biggest financial loss in the firm's history which resulted in the lay of more than 10,000 employees followed by the change of its CEO. The new CEO introduced a restructuring program and a new strategy that focus on restoring the firm's core businesses. Despite the reorganization, TELCO kept its IoT unit as an independent unit, separated from the core businesses. Nevertheless, the firm introduces new strategic priorities that constrained the exploration initiatives (i.e. focused exploration strategy). We explore the process by which the unit manage exploration initiatives while the main focus of the firm is on the restoration of the core business. This enables us to shed the light on the management approaches to deal with the contradictions of explorations, and the outcomes that characterize ambidextrous behaviors for exploration of new businesses. Based on these preliminary findings, this study aims for several theoretical contributions.

First, this study complements our understanding on the internal mechanisms to pursue ambidexterity at the business unit level (Gibson & Birkinshaw, 2004; Zimmermann, Raisch, & Birkinshaw, 2015). Unlike most ambidexterity research that propose alternative approaches for balancing exploration and exploitation (O'Reilly & Tushman, 2004), we show how different modes of ambidexterity (i.e. structural and contextual) can co-exist within a single business unit and equally contribute in resolving contradictory demands. We further show that structural mechanisms can also be at work *within* organizational units. Second, we highlight the role of managerial framing as an important yet overlooked mechanisms for achieving ambidexterity. While literature has underscored the role of framing to enable employees to deal with contradictory

demands (e.g. Smith & Lewis, 2011), we show how framing can shaped senior executives' cognition to accept ambidextrous behaviors. Finally, we contribute to the emerging conversation about dynamic ambidexterity which focus on firms' temporal approach towards exploration and exploitation (Boumgarden et al., 2012) by showing that ambidexterity can be achieved at the business unit level even though firms move away from ambidextrous strategy.

THEORETICAL BACKGROUND

Exploration through Structural Separation

Growing new exploratory business alongside their mature core businesses is the key aspiration of most large and established firms to achieve sustainable growth (Gupta, Smith, & Shalley, 2006; O'Reilly & Tushman, 2004; Raisch & Tushman, 2016). Scholars have considered exploration of new businesses and exploitation of existing business as two contradictory organizational processes (Adler, Goldoftas, & Levine, 1999; Andriopoulos & Lewis, 2009; Benner & Tushman, 2003). While exploitation demand operational efficiency and incremental innovation for short-term performance, exploration entails search, variation, and experimentation efforts to generate novel knowledge for long-term sustainability (March, 1991). Prior studies have found that exploration might be inhibited by organizational contexts such as existing routines, strategy, and resource allocation, which might prevent path-breaking activities that have potential to achieve breakthrough innovations (Burgelman, 1983; Gilbert, 2005). To enable exploration, therefore, firms need to create a supportive strategy, structure, and context that prevent exploratory initiatives from inertia and rigidity of existing businesses (Gibson & Birkinshaw, 2004).

As a way to manage exploration activities, prior research has suggested the creation of organizational units dedicated for pursuing exploratory business that is distinct from the main organization (Benner & Tushman, 2003; Raisch et al., 2009; Tushman & O'Reilly, 1996). The

exploratory units are organized separately from the main organization with their own focus, cultures, and processes (Hill & Birkinshaw, 2014). This approach aims to support autonomous strategic initiatives (Burgelman, 2002) and to enable a systematic search for new opportunities (Siggelkow & Levinthal, 2003). In addition, structural separation reduces the need of alignment with the main organization until the later stage of exploration (O'Reilly & Tushman, 2004); therefore, avoid tensions that may arise due to contrasting demand between exploratory initiatives and the existing businesses (Andriopoulos & Lewis, 2009). Finally, structural separation enables the exploratory unit to adopt strategies and capabilities that are suitable with the new context without constantly challenging the existing strategy of the main organization (O'Reilly et al., 2009; Tushman & O'Reilly, 1996).

Empirical studies have shown the merit of structural separation for breakthrough innovations (O'Reilly & Tushman, 2004), exploring emerging businesses (O'Reilly et al., 2009), and achieving ambidexterity (Jansen et al., 2009). These research have focused on the mechanisms in which senior executives established organizational arrangements such as structural separation and contextual integration to support exploration of new businesses (Birkinshaw & Gibson, 2004; Gibson & Birkinshaw, 2004; Siggelkow & Levinthal, 2003). Despite the variety of organizational solutions, the majority of prior research lies in the common assumption that exploration tensions can be resolved once dual structures put in place (O'Reilly & Tushman, 2013; Zimmermann, Raisch, & Cardinal, 2018). This assumption, however, might oversimplify the complex relationship between exploratory units and their main organization (Raisch & Tushman, 2016). Research on organizational paradox argues that tensions between exploratory and existing businesses may persist over time (Schad, Lewis, Raisch, & Smith, 2016; Smith, 2014). A study by Friesl and colleagues (2018), for instance, shows how an explorative subsidiary experience

constant pressure from the parent organization to align with the organization's legacy. Therefore, a more processual and dynamic approach is needed to understand better how organizations experience and manage paradoxical tensions stemming from the exploration of new businesses (Friesl et al., 2018; Raisch & Zimmermann, 2017).

Managing Exploration Tensions

There is an emerging debate on the need for a more dynamic approach on exploration strategies and modes of organizing (Luger et al., 2018; Raisch et al., 2009; Raisch & Tushman, 2016), since firms have different emphasis on exploration of emerging businesses over time (Simsek Zeki, Ciaran, F., & David, 2009). Its proponent argues that changing environmental requirements shift firms' emphasis from exploratory business to exploitative core business (Boumgarden et al., 2012). Prior studies suggest that in the context of discontinuous innovation, an exploration-oriented strategy is an appropriate strategy than exploitation since firms' existing business has been devalued (March, 1991). In contrast, in the context of high turbulence such as financial crises or catastrophic events focus on exploiting existing knowledge and opportunities is desirable (Posen & Levinthal, 2012). In addition, a study by Luger and colleagues (2018) found how firms might gain a better performance by moving away from ambidextrous (i.e. exploration *and* exploitation) to focused strategy (i.e. exploration *or* exploitation) in discontinuous change context. Firms may, therefore, alternate between organizational arrangements that promote either exploration or exploitation (Boumgarden et al., 2012). Despite rich insights on why firms shift strategy from ambidextrous to focused strategy, little is known about the consequences of the change to the lower organizational unit, especially exploratory units. As O'Reilly & Tushman (2013: 326) argue current research is not "fine-grained enough to provide much insight" on how the shift look like and how it translates at the operational level.

Scholars have started to apply this dynamic perspective in the context of managing exploratory businesses in large and established firms. They analyze how exploratory units evolve as they gain legitimacy, scale-up, and re-integrate into parent organization (e.g. Boumgarden et al., 2012; Friesl et al., 2018; Hansen et al., 2018). These studies have highlighted the challenges and tensions between the exploratory units and their main organizations as the exploratory business mature (e.g. Raisch & Tushman, 2016; Simsek Zeki et al., 2009). While prior studies predominantly focus on the tensions at the later stage of exploration, they have not yet formally analyzed the tensions and challenges that may arise when firms at the corporate level shift towards more exploitation-oriented strategy, which result in a more constrained exploration activity.

Strategic changes literature suggests that changes at the corporate level may follow by the introduction of new logic of actions to lower organizational unit in order to support the implementation of new strategic priorities (Agarwal & Helfat, 2009; Burgelman, 2002). In the context of exploration effort, senior executives might introduce a top-down strategy that not necessarily align with the established logic of exploration, which relied autonomous initiatives (Burgelman, 1983; Mom, Van Den Bosch, & Volberda, 2007; Regnér, 2003). Consequently, managers may experience an increased need to maintain alignment with the main organization, while ensuring adaptability required for pursuing new opportunities (Birkinshaw & Gibson, 2004; Gibson & Birkinshaw, 2004). In this case, managers torn between the firms' new strategic priorities and their belief on the existing exploratory actions that are required to secure emerging opportunities (Zimmermann et al., 2015). This misalignment might result in a strategic role conflict between the new role they were asked to fulfill and what they believed need to be done (Floyd & Lane, 2000). A recent study by Zimmerman and colleagues (2015) has identified the tensions between frontline managers and senior executives that emerge when frontline managers

pursue new opportunities that are not aligned with the strategy from the top. This study shows proactive efforts of managers of frontline managers to convince senior executives in adopting a balance approach towards exploration and exploitation. However, the mechanisms in which managers reconcile tensions between alignment and adaptability due to strategic change at firms' level still underexplore. This study addresses this gaps by answering the following research question: *How managers navigate contradictory demands related to organizations temporal focus on restoring the core businesses and the ongoing exploratory activities in their unit?*

METHODS

In this study, we explore the dynamics of exploration strategy during strategic change. As the topic and the context has not been widely studied, we applied a longitudinal field-based case study approach that is particularly appropriate when addressing the "how" and "why" questions in management research and suitable for theory building (Eisenhardt & Graebner, 2007; Siggelkow, 2007; Yin, 2009). This approach allows us to examine the nuances of exploration activities as the context changes. Our focus is on one exploratory unit at TELCO that responsible for exploring the emerging industry of *Internet of Things* (IoT), and we study its activities between 2015 and 2019. The IoT unit was created to explore new market opportunities beyond TELCO's core customers (i.e. mobile service providers). However, a year later, the firm experienced the biggest loss in the firm history, which prompt the firm to focus in restoring their core businesses. This context, therefore, provides a fertile ground to understand the consequences of strategic change at the firm level to exploration strategy and the role of managers in ensuring a balance between strategic alignment and adaptability for exploration.

Research Context

TELCO is the global leaders in telecommunications infrastructure and services with a worldwide operation in 180 countries. Around 40% of the global wireless calls and data move through TELCO's network equipment. TELCO is among the first company which envisioned the potential of IoT to generate the new needs for connectivity and other related services from multiple industries. The CEO at the time saw IoT as the opportunity to go beyond TELCO's traditional customer base and to diversify the firm business portfolio. In 2016, the firm decided to establish a dedicated that focus on developing IoT product and services. The unit was given a high autonomy to pursue opportunities outside TELCO's core customer. The CEO at that time give the unit authority to "*Make decisions based on what makes the most sense for their specific business and customers*" (CEO letter, 2016). With such approaches, the unit has successfully developed several IoT offerings and secured a deal deals with a number of non-traditional customers such as utility companies, shipping companies and car manufacturer companies.

By 2017, however, changes in the whole business strategy led to a reassessment of the existing strategy towards IoT. In this time, the firm experienced a net loss after long years of profitability. The drastic performance decline prompted TELCO to introduce a new strategy that put emphases on cost-saving and a stronger focus on their core business in networks and radio-related businesses. This exploitation-oriented strategy has several implications for the IoT unit. First, the strategic intent for IoT was shifted from "*Diversify to new markets*" to "*Securing & Excelling TELCO's core business*". Second, the unit should prioritize TELCO's existing customers over the new customers (enterprises industry). Then, senior executives mandated that all IoT development activities should be centered around TELCO's core strength in connectivity and should promote the network standard that has been advocated by the core business unit. Finally,

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the unit need to change its product development and business model approach from customization-centric to a more standardized approach. Figure 1 provides an overview of the main events and Table 1 summarize the strategic change at TELCO and its implication to the IoT unit.

Insert Figure 1 about here

Insert Table 1 about here

The new strategic change has considerably challenged the IoT unit's mission and constrained the exploration initiatives. Nevertheless, the unit managed to find a balance between exploration of new businesses and alignment with the core businesses as shown by a number of successful deals with both new customers and existing customers. This paper analyzes the mechanisms in managing tensions between strategic alignment and adaptability required for exploration of emerging businesses.

Data Collection

Data on the exploration activities of the IoT unit were gathered from across four sources: (1) field observation from August 2017 to December 2018; (2) two rounds of semi-structured interviews with TELCO's engineer and managers working in IoT, the first between September 2016 and December 2016 and the second between October 2017 and December 2018; (3) internal documents; and (4) secondary data from analyst and media coverage. We draw or analysis on multiple sources and combine internal and external perspective to derive conclusions.

Field observation. Between 2017 and 2018, one of the authors spent 17 months as a non-participant observer. During this period, he attended 65 internal meetings consists of 19 divisional

meetings, 37 project meetings, 9 informal meetings in which IoT product development strategy and processes were discussed. He took field notes of what the topic being discussed and expanded his notes according to his reflection after each day in the field. These observational data provided us with a detailed account of TELCO's strategy before and after strategic change and enabled us to understand the tensions the IoT unit staff experienced and how they dealt with them.

Interviews. We conducted in total 29 semi-structured interviews with 20 informants, including project managers, senior engineers, product managers, and business development managers. The interviews were recorded and typically lasted between 45 and 60 minutes. Several informal interviews were conducted during field-observations. During these interviews, we asked informants about the projects they were working, the challenges they had encountered, and their opinion about the strategic change. These interviews were crucial to helping us better understand TELCO's strategy toward IoT, how the strategy was evolved, how it impacts the IoT unit, and how people dealt with the tensions arising from the new strategy.

Internal documents. We gathered around 75 documents consist of presentations, reports, and meeting notes. Non-disclosure agreements with all parties were signed to access some of the sensitive strategy documents. We also participated in an internal online strategic forum where managers and professionals discuss key strategic issues for TELCO. These documents enable us to gain a depth understanding of how the strategy toward IoT unfolds overtime and the strategic consideration underlying the changes.

Media Coverage. To complement interviews and observations, we collected analyst reports, press articles and commentaries. Insights from these data increase our understanding regarding the context of IoT industry and enable us to secure outsiders' view about TELCO's strategy on IoT.

Data Analysis

Given the complexity and multitude of our data sources, we took an iterative approach in which we traveled back and forth between the data and the theoretical model (Strauss & Corbin, 1990). We used content analysis technique to make sense of the data from multiple sources Below is the detail procedure used for the qualitative data analysis.

Step 1: Drawing a timeline of events and developing case narrative. We started our analysis by searching Ericsson's internal website to extract any documents relating to IoT initiatives during the period between 2015 and December 2018. This process enables us to identify the sequence of key events which could then be used as a basis for understanding how Ericsson's strategy towards IoT evolve over time (Langley, 1999). The data give a clear indication of strategic shifts towards IoT between the period of 2015-2017 and 2017-2018. Additionally, we created a detailed a chronological event list about the implementation of the new strategy (i.e. *focused exploitation strategy*) based on our observation notes, presentation slides, meeting transcripts, and minutes of meeting. The database of events allows us to identify new evidence and further substantiate and triangulate our analysis. Additionally, we developed descriptive narratives that captured the actions, experiences, and considerations of the middle managers based on their expressions and verbatim quotes.

Step 2: Understanding the response of managers and theory-building. We analyzed the interview transcripts, field notes, and other available data using open, axial, and selective coding procedures (Strauss & Corbin, 1990). First, we applied open coding to identify and cluster relevant concepts into categories. Secondly, we used axial coding to explore the connections between the existing categories. Then, the analysis was continued until we had a clear understanding of the relationship between categories. At this point, the first common theme that emerged was the shift

of overall corporate strategy which described by the CEO as '*refocus strategy*'. Evidence from the other data sources (i.e. internal presentations) showed how the new strategy resulted in the changed of strategic direction towards IoT. This lead to another common theme that emerged was what respondents described as a mismatch between "strategy and execution". This directed us to focus on middle managers action in dealing with the tensions of "Alignment and Adaptability" which. Then, we did extensive analysis of field memos based on observations on the internal meetings. This allowed us to investigate the drivers of such tension, and to explore the connections between emerging concepts in our theoretical model.

Step 3: Delineate the theory through additional data collection. We corroborate or refine our coding by asking follow-up interview questions and digging deep into our various sources of data. It was made possible since our data collection and analysis were progressing in parallel. In every iteration, the first author who had collected the data would cross-check the exploratory findings regarding the research question and theoretical lens being applied. Then, the other authors took the role as outsiders to question the understanding. We also presented the exploratory findings to Ericsson managers that involves in the IoT initiatives in several workshops and group discussions. As such, we were able to increase the validity of our interpretations. We concluded the analysis by validating core concepts and systematically connecting them to each other in order to form our data structure (Gioia, Corley, & Hamilton, 2013). We categorized the relevant raw data such as quotations, document excerpts, or field notes as the first-order concepts. The second-order categories were developed based on the first category in association with existing theoretical concepts. From this step, we found 5 aggregate dimensions around the category of "tensions", "management approaches", and "outcomes". Figure 2 illustrates our data structure including the

core concepts that emerged from our data. Table 2 shows representative quotes underlying second-order themes.

Insert Figure 2 about here

Insert Table 2 about here

FINDINGS

In this section, we describe in detail how the strategic shift at the firm level trigger the emergence of tensions of strategic alignment and adaptability at the business unit level, and how managers resolve the tensions. Combining these insights with existing literature informs a model of ambidextrous approach for exploration, as depicted in Figure 3.

Insert Figure 3 about here

Key Issues and Experienced Tensions

The IoT unit was created with the main intention to find new growth opportunities at the emerging IoT industry. The refocus strategy introduced by the new CEO resulted in new strategic priorities in which the unit had to also support the core business by leveraging existing markets and capabilities of the established network businesses. Managers of the IoT units considered the new strategic directions constrained the exploration initiatives and substantially "*change 180^0 the way we handle IoT*". The new mandated to explore for new businesses while maintaining alignment with the established businesses was indeed created tensions at the middle and operational level.

We observed two strategic issues that arise from the tensions of strategic alignment and adaptability for exploration of new businesses: Product-market design and Strategy making.

Product-market designs. The first tension arises from different prioritization between existing technology & customers and new technology and customers. The new strategy mandated the unit to only sell *to* or *through* TELCO's existing customer, i.e. mobile operator, and support the network standard that has been advocated by the core business unit. The new direction was contradictory with the initial strategy of the IoT unit that focuses on exploration beyond the traditional customers. Changing the direction of exploration activities was proved to be difficult since historically the majority of IoT initiatives had been focusing on enterprises (e.g. logistics, cities, transportation, utilities). As illustrated by one of IoT manager:

> *"Our message had been: You go for new enterprises solution, the enterprise's come buy, forget operators don't even support them. If they come, tell them No we don't have time. Now: Don't speak with enterprises don't touch this. If they call, tell them to talk with operators, and help the operators."*

In addition, the decision to only focus on the mobile operators and favoring a particular technology standard was considered to substantially constrained the development of IoT products/services. The mobile operators were not the end users of any IoT products and they were considered to be immature and slow in pursuing the IoT industry. Focusing on only selling to or through mobile service providers also limit the addressable market since the majority of market spend in the IoT industry come from enterprise customers. The challenge of exploration through existing customers highlights by a project manager:

> *"They decided that we should only work with the mobile operator, but it does not really make senses because we have to work with the enterprises. In this case, the operator only provides radio connection and the sim card, that's it. How do you sell this with the operator? Many of the mobile operators they don't have proper enterprise organization."*

Product-market design decisions further raised tension between short and long-term orientation. The development teams aimed for emerging opportunities and experiment continuously with different partners and customers. However, the new strategy required them to fulfill short-term requirements and maintain a tight relationship with the existing customers. As such, the managers need to balance customers' current needs and requirement for the future. As illustrated by a product manager:

"We are very-much driven by customers (operators) now. They put perfectly legitimate requirements. But if we obey all their orders, we will not be doing things that required for future development. I mean how do you balance existing business against new business."

Strategy making. The second tension emerges due to misalignment between senior executives' strategic directions and managers' belief on what needs to be done to maximize their exploration efforts. The new strategy was considered as a more "*guided*" approach toward IoT where the managers & developers must follow. In this case, efforts made by engineers/developers to act in the best interests of the IoT unit may run counter to the senior executives' expectations about what behaviors are appropriate. This condition challenged the freedom and the flexibility of the engineers and developers to experiment for new value propositions, as described by a project manager:

"I mean the main restriction was the change to focus on operators and that introduced big restrictions on the number of industry partners that we could talk to. We had to get permission to continue talking to industry partners, and before we hadn't had any restriction."

Managers perceived a considerable gap between senior executives' direction and the industry condition. In one of project meeting, for instance, a project manager considered the direction to leverage the firm's existing technological competences as "*underestimate the maturity of technology*". Nevertheless, managers could not openly violate the direction as failure to comply

will naturally undermine their position as managers. At the same time, managers felt the need to be flexible and open with emerging opportunities due to high uncertainty in the IoT industry. For instance, while managers understand the importance of engaging with the existing customers and leverage existing technology, they also acknowledge the value of experimentations and engagement with a new type of customers (i.e. manufacturer, auto makers) and to secure future applications of IoT. The need to be disciplined with the strategy while also remain flexible, illustrated by one of project manager:

"The challenge is you need to be disciplined with the strategy. You should not spread too much. But, in this new industry we don't know what we don't know. So, we also need to fail a lot in this market. Fail fast and learn fast."

Furthermore, managers felt that they were facing contradictory demands of implementing the strategy from top management and promoting bottom-up initiatives that potentially deviate from the firm's strategy. In this case, managers often experienced dissonance between the new role they were asked to fulfill (as strategy implementor) and their previously established role (as entrepreneurs and innovators).

Management Approaches

We analyzed how middle-level managers responded to tensions between alignment with the new exploitation-oriented strategy and maintaining adaptability for exploration. Rather than followed senior executives' directions completely, the managers resolve the tension by bringing an ambidextrous orientation which enables the unit to align with the focused exploration strategy, while maintain requisite adaptability for exploration in emerging industry. In this section, we described four management practices introduced by the middle-level managers to achieve ambidexterity: (1) Reframing strategic direction; (2) Legitimizing deviating behavior; (3) Structurally separating innovation activities; and (4) Introducing integration mechanisms.

Reframing strategic direction. At first, engineers and developers perceived the new strategy as conflicting with their previously established exploration logic where the focus was to explore opportunity outside TELCO's traditional customers. Interestingly, we observed that several middle managers often communicating the new strategy as *complementary* with their existing strategy that will not fundamentally change their existing approaches. The managers tried to circumvent the 'trade-off' perceptions within employees by framing the engagement with existing customers as interrelated exploration activities that are equally important for the IoT businesses, as stated by the head of product portfolio:

> *"Now, our focus is to help our core businesses excel. But, do not forget we are responsible to find new growth areas. That is our dual strategic intent with IoT"*

In addition, middle managers used rhetorical devices such as analogy and metaphor to convince engineers and developers to work with mobile operators' despite their immaturity in the IoT industry. For example, several middle managers in this study interpreted the strategy to engage with existing customers as a short-term strategy that must not prevent their long-term oriented innovation activities, as noted by a senior project manager:

> *"We should not interpret the strategy in the way that we only work with (mobile) operators. It is a bit subtle I think but the strategy says we are not selling to industries. But, we like to talk to industries and enterprises to work through the ecosystems so that we can say to operators: Look if you sign up here for our platform then directly you have business with enterprises."*

Similarly, some middle managers that we interviewed distinguished the senior executives' as a "*Primary*" and "*Secondary*" rules. The *primary* rules were interpreted as the main directions that should be strictly followed, while *secondary* rules were considered to be more negotiable. For example, the new direction of "selling *to* and *through* mobile operators" was supposed to make mobile operators as the only sales channel. Nevertheless, managers interpreted the essence of the

direction was to have a close collaboration with mobile operators not merely making them the only party to sell the products to. By reframing the strategic directions, middle managers ensured alignment to the senior executives' direction, while avoiding the tensions of strategic change.

Legitimizing deviate behaviors. We found that middle level managers did not completely follow directions from the top. Instead, they proactively support bottom-up initiatives that were not necessarily aligned with senior executives' expectations. In some cases, middle managers supported "deviate" behaviors of and tried to reframe them in a way that indicates compliance with the strategic direction. Although the direction is to focus on the existing technology and the core customers, the middle managers saw the merit of having trials and experimentations with industrial players for long-term strategic agenda. We observed that managers convinced senior executives that both activities can co-exist together and bring more value to the firm. They tried to gain senior executives' buy-in by showing the success-story and by referring to the competitors' strategy. For instance, in one of project meeting, the project manager questioned on their decision to engage with an industry player instead of mobile operator in an IoT project. The manager then tried to justify his action by framing the engagement as a "*proof of concept*" activity with the main intention to "*bring industry expertise to the mobile operators*". In that way, the manager showed how the engagement can also benefit the ongoing relationship with the existing customers.

We observed that middle managers also engaged with issue selling activities (e.g. Dutton, Ashford, O' Neill, Hayes, & Wierba, 1997) in order to make the senior executives' aware with the challenges arising from the implementation of their directions and to receive '*exemption*' from them. In IoT for manufacturing project, for example, the project manager found that only limited number of devices were supported by the network standard that had been advocating by the main business unit (i.e. network business unit). The managers then involved with a series of negotiation

activities through formal (i.e. meeting & presentation) and informal (i.e. coffee chats) to convince the executives to have more flexibility with the technological choice.

However, not all deviate behaviors were supported by the managers. In order to maintain discipline and alignment with senior executives' direction, the IoT unit introduced an "exception rule" in order to regulate the deviate behaviors. For instance, in the internal strategy presentation it was highlighted that the industrial partners (outside mobile operators) that may be engaged with should follow three criteria: (1) Relevant to mobile operators; (2) Credible, and have leadership position within their area, and (3) Complementary to TELCO's existing portfolio. With these exception rules, any engagement with industrial partners will eventually support the core customers. As such, managers can ensure alignment with senior executives' direction, while at the same time allowing improvisations that are required for exploration in the emerging industry.

Structurally separating exploration searches. In pursuing new opportunities in IoT, the head of IoT unit decided to create two different subunits that focus on either '*focus exploration*' or '*fully exploration*' activities. The focus exploration subunit focuses on leveraging existing technology and collaborating with the existing customers for a short-term target, while the fully exploration subunit focus on developing new IoT applications with ecosystem partners including industry partners, device manufacturers, and application developers. The head of IoT unit described the value of further structural separation to achieve both short-term and long-term goals:

> *"What I want to cater for is that we have an organization that can actually handle all different aspects of the strategy. I need a unit that has a much more classic Telco's way of working with tight relationship with the mobile operators. They will understand the requirements, put demands (from mobile operators), and deliver. Then, I need another unit that will work in different ways. Looking at identifying use cases, thinking how we create an ecosystem that beneficial for us and for our customers."*

Moreover, the new strategic direction prompted the IoT unit to engage with multiple innovation and experiment approaches. In one hand, they need to experiment with the key customers that were more incremental and sales-oriented. On the other hand, exploring the emerging IoT industry requires them to experiment with more diverse players in the ecosystem that are more long-term oriented. The innovation processes with the existing customers and with new industrial partners were perceived as distinct but equally important. As such, a dual structure was considered to be essential to simultaneously manage two contrasting innovation approaches. As noted by the head of IoT technology and solution:

> *"That's a very-very different approach (experiment with key customers and industrial partners). The fact that we were using the same organization, the same competences, the same contacts, the same processes, makes it very difficult for us to do. Therefore, we need to organize it differently (as two different units)".*

Integration mechanisms. Although the IoT unit pursued innovation opportunities through structural separation, both subunits were not fully isolated from the rest of the business unit. A tight and close collaboration was pursued between the middle-level managers (i.e. the head of sub units). The head of IoT unit initiated a culture where employees can openly share their achievements, progress, and challenges in a regular basis. The unit created a digital platform (i.e. SharePoint and Yammer group) where each subunit can update their experiments, trials, and workshop result. We observed that the sharing practices often resulted in collaborative projects among different subunits. This sharing and collaboration culture was considered to be the best among other units in TELCO according to one of manager:

> *"We are we are acting as one team in the unit (i.e. IoT). We don't differentiate between where you're sitting in the organization we act like one team. This is in one of the best cooperation I ever seen in TELCO when it comes to people sitting in different units. We are really trying to foster this kind of good collaboration."*

In addition, the head of IoT unit appointed a senior project manager with the responsibility to oversee both focus and purely exploration activities and to ensure alignment with the senior executives' direction. This manager expected to work across sub-units, filling the gaps of different strategic issues, and maintaining coordination. For some development project that involve both mobile operators and industrial partners as well as other business units, a *steering committee* was often created. The steering committee was a group of senior managers that represent their business units or sub-units to oversee a certain cross-unit project. This committee served to provide guidance and to build understanding and agreement regarding strategic issues such as resource allocation, products ownership that may emerge from cross-unit collaboration. The committee serves as an interface among different groups that have different interests and perceptions. In general, these integration functions enable synergy between two distinct sub-units.

Ambidextrous Exploration

We found that middle managers' proactive practices to reconcile the tensions in strategy making and product-market design result in ambidextrous behaviors toward exploration. We defined ambidextrous exploration as a balance approach between leveraging core capabilities and developing new value for long-term growth.

The four management practices were intended to generate a balance between the pressure for alignment with senior executives' exploitation-oriented directions and exploration for new growth opportunities. We observed that the first two mechanisms of reframing strategic direction and legitimizing deviating behaviors have provided a cognitive framework for the employees and lower-level managers to pursue a seemingly contradictory demand (Smith & Lewis, 2011). The reframing activities performed by middle managers have successfully changed the perception of 'trade-off' into dual goals that are equally important. This evidently reduced the perceived tensions

of strategic change at the firm level. Moreover, Lower-level managers and employees valued the focused exploration approach for the success of the overall firm. Managerial framing has also increased the perceived importance of "*balancing act"* and "*think simultaneously*" between exploration for the existing businesses and new businesses.

The legitimizing actions in the form of issue selling and reframing of deviant behaviors have also encouraged bottom-up initiatives while maintaining strategic alignment with senior executives' expectation. Middle-managers have successfully maintained freedom and flexibility to innovate by allowing and regulating improvisations that were not necessarily aligned with the strategic directions. They proactively convinced senior executives to take exemptions for the matter that seemingly violate the initial direction, yet, might be essential for exploration in the long run. As such, the unit can maintain a coherence with the firm overall strategy, without eliminating divergent thinking and emergent initiatives that are essential for exploration in a new industry.

In addition, the structural separation and integration mechanisms allowed the IoT unit to simultaneously performed two innovation activities that were fundamentally different. Our informants suggest that the creation of two subunits based on the type of customers involved (i.e. existing vs new customers) gave them a "*strategic focus*" and allow them to adopt new ways of working without "*contaminated by the legacy of existing innovation process"*. Overall, integration mechanisms in the form of collaborative culture and integrative roles provide a platform that keeps multiple exploration initiatives aligned.

In general, our data suggest that the cognitive framework resulted from middle managers reframing activities provided a supportive context for the unit to explore the emerging IoT industry with both existing and new customers. The ambidextrous organizational design introduced within the IoT unit provided a conducive structure and process to simultaneously engage with two

different innovation activities. As depicted in Figure 3, both cognitive framework and organization structure reinforce each other to fuel ambidextrous behavior for exploration in the emerging industry. Such ambidextrous behaviors reflected on the ability of the IoT unit to simultaneously draw on and extend their existing assets and capabilities for pursuing new business opportunities. The outcomes of such ambidextrous approach might be difficult to measure with certainty. Nevertheless, a number of commercial deals with both mobile operators and industrial customers (e.g. automakers, manufacturers, and mining companies) that has been successfully secured by the IoT unit might indicate the successful adoption of ambidextrous exploration approach.

DISCUSSSIONS

Firms setting up a separate "exploratory unit" to explore new business opportunities without being contaminated by the legacy of their existing businesses. Although exploratory units constitute a structural mechanism that buffer tensions from the main organization, the units may deal with strategic tensions when firms decided to shift away from ambidextrous orientation toward a more focused strategy that favor exploitation. In such case, the units need to align with the firms' new strategic orientation while still maintaining a high level of adaptability required for exploration in emerging businesses. This study investigates managers' strategy to achieve ambidextrous exploration – a balance between building new capabilities for the firm while simultaneously leveraging its existing capabilities. Our findings contribute to the literature in several ways.

First, this study complements a research stream that concerned with understanding the internal mechanisms of achieving ambidexterity at the business unit level (e.g.Gibson & Birkinshaw, 2004; Zimmermann et al., 2015). In contrast with prior ambidexterity research which considered structural separation and contextual ambidexterity as an alternative approach (O'Reilly & Tushman, 2013; Raisch et al., 2009), our case study shows a combination of structural and

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contextual approach being employed simultaneously by the IoT unit. This finding indicates that different approaches can co-exist within an organizational setting and might equally essential in resolving contradictory requirements. We show that the structural approach enables the unit to simultaneously engage with contrasting innovation approaches, while contextual approach provides individuals with cognitive framework that empower them to pursue ambidextrous behavior, especially when such behaviors were not necessarily expected by senior executives. By showing the interplay between two approaches of ambidexterity, we support scholars who advocate for multiple organizational approaches to achieve ambidexterity (Papachroni, Heracleous, & Paroutis, 2016; Stettner & Lavie, 2014).

Our research also suggests managerial framing as an important yet overlooked mechanism for achieving ambidexterity. Literature has underscored the role of managerial framing to gain senior executives' support for new businesses by promoting bottom-up initiatives (Burgelman, 1994), reducing the fear of "disruption" and "cannibalization" (Gilbert, 2006), and ensuring complementarity with the core business (Raisch & Tushman, 2016). In this study, we show how managerial framing was utilized by the middle managers in promoting ambidextrous behavior to both senior executives and employees. Our findings suggest that middle managers involved in a series of issue selling and framing activities to legitimate their ambidextrous behaviors. It was shown that how middle managers package and frame certain issues have shaped senior executives' cognition to accept both exploitation and exploration activities. In similar notes, middle managers manage tensions and promote ambidextrous behaviors to the lower level managers and employees by reducing the perception of "trade-off" towards dual goals. Our findings suggest that managerial framing in the form of rhetoric and discourse may help employees to accept the existence of contradictory goals and encourage them to engage with complementarity knowledge process that

promotes ambidexterity. Therefore, our research in line with strategic paradoxes literature which highlight the role of cognitive interventions to deal with contradictory demands (e.g. Lewis, 2000; Smith & Lewis, 2011).

Another key feature of our study was to highlight the role of middle managers in pursuing ambidexterity at the business unit level. Ambidexterity literature had mostly underscored the role of senior executives in setting the strategy and designing organizational solutions to address exploration-exploitation tensions (Gibson & Birkinshaw, 2004; Smith & Tushman, 2005). The role of middle managers was commonly perceived as the implementor of ambidextrous strategies that have less involvement in designing ambidextrous organizational solutions. Yet, our findings suggest the key roles of middle managers in initiating ambidextrous strategy and in introducing organization context and structures for ambidexterity. In our case, middle managers were the one who acknowledged the persistent tensions at the operational level and promotes ambidexterity to the senior executives. The middle managers' efforts to counterbalance senior executives' strict directions with a flexible approach towards experimentations, enable the unit to balance between strategic alignment and adaptability. By showing middle managers' actions in initiating ambidexterity, we respond to the prior calls for a multilevel understanding regarding the sources of organizational ambidexterity (e.g. Lavie, Stettner, & Tushman, 2010; Zimmermann et al., 2015).

Our focus on middle managers' action also has a theoretical implication for the broader literature on strategy process (Burgelman, 1983; Wooldridge, Schmid, & Floyd, 2008). Prior research has tended to assume that the role of managers of an exploratory units is mainly to champion entrepreneurial activity to the top management (Burgelman, 1983). In this context, middle managers were perceived as *boundary spanners* with the main focus to develop new organizational knowledge through autonomous initiatives (Regnér, 2003). However, our case

study suggests that middle managers of an exploratory unit also play a role in implementing induced strategy from the top management. We found that middle managers proactively linked autonomous initiatives to the firms' broader strategic agenda We encourage future research to consider how middle managers strike a balance between autonomous and induced strategy making in different contexts and over longer period of time.

In addition, we contribute to the emerging conversation about dynamic ambidexterity which underscore firms' temporal approach towards exploration and exploitation (Boumgarden et al., 2012; Luger et al., 2018; Raisch & Tushman, 2016). Prior studies suggest that a firm may vacillate between exploitation and exploration by changing its organization structure (Boumgarden et al., 2012). The case of TELCO shows that firms might not completely shut down exploration activities when moving to a more exploitation focused. Instead, firms may maintain their structural separation approach for exploration, but introduce new strategic priorities to the exploratory unit that prefer for the use of existing capabilities and assets rather than the development of new capabilities. In such ways, firms can maintain their long-term focus on both exploitation and exploration while temporally readjusting their activities to cope with changing environmental conditions (Luger et al., 2018).

Finally, we describe specific tensions that arise towards exploration initiatives when a firm shift towards a more exploitation focused strategy. We highlighted tension between strategic alignment and adaptability that if not manage properly can lead to a strategic dissonance (Zimmermann et al., 2015). However, we argue that ambidexterity can still be achieved at the business unit level even though firms move away from ambidextrous orientation. In this case, ambidexterity relies on the managers' ability to adapt with senior executives' changing expectations towards exploitation or exploration and to implement appropriate structures, contexts,

and process to balance both activities. In fact, the exploratory unit in our case study benefited from simultaneously exploring opportunities with new partners and exploiting existing capabilities with the core customers. This finding concurs with Hill & Birkinshaw's (2014) study that show a positive relationship between ambidexterity and corporate venturing survival. We would argue further that ambidextrous approach can be more effective for exploration in emerging industries, since nascent knowledge more likely result from recombination of existing and new resources (Galunic & Rodan, 1998). Future research might empirically examine the relationship between ambidexterity and success in entering emerging industries.

LIMITATIONS

This study has its limitations. This research focused on one in-depth case study at the specific period in its history. Although our study complicates our understanding of the dynamic of ambidexterity, we only covered a period when the firm shifted from being ambidextrous to a more focused exploitation strategy. Longitudinal studies with a longer time frame could also explore the consequences of firms' temporal approach on ambidexterity to businesses unit that has a focused (i.e. either exploitation or exploration) charter. Our research focus has been on how managers within specific business unit resolve tensions using structural and contextual approach to response a changed strategic context. Further research could complement current understandings and provide evidence on how ambidexterity built at the business unit level might contribute to organizational adaptations to discontinuous change (Birkinshaw, Zimmermann, & Riasch, 2016). Overall, this study contributes to the growing stream of literature that argues for a more granular understanding of the internal mechanisms through which business units achieve ambidexterity. However, multi-case studies and cross-sectional evidence could further substantiate the insights of our research.

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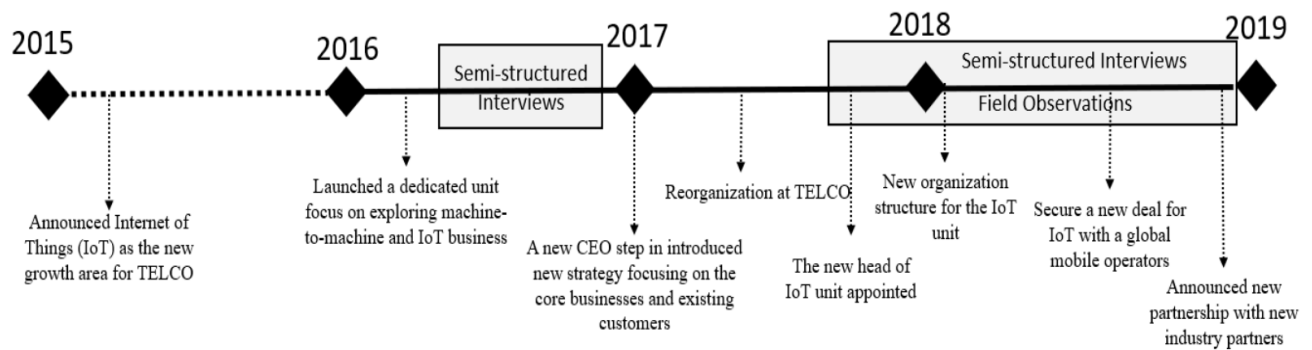
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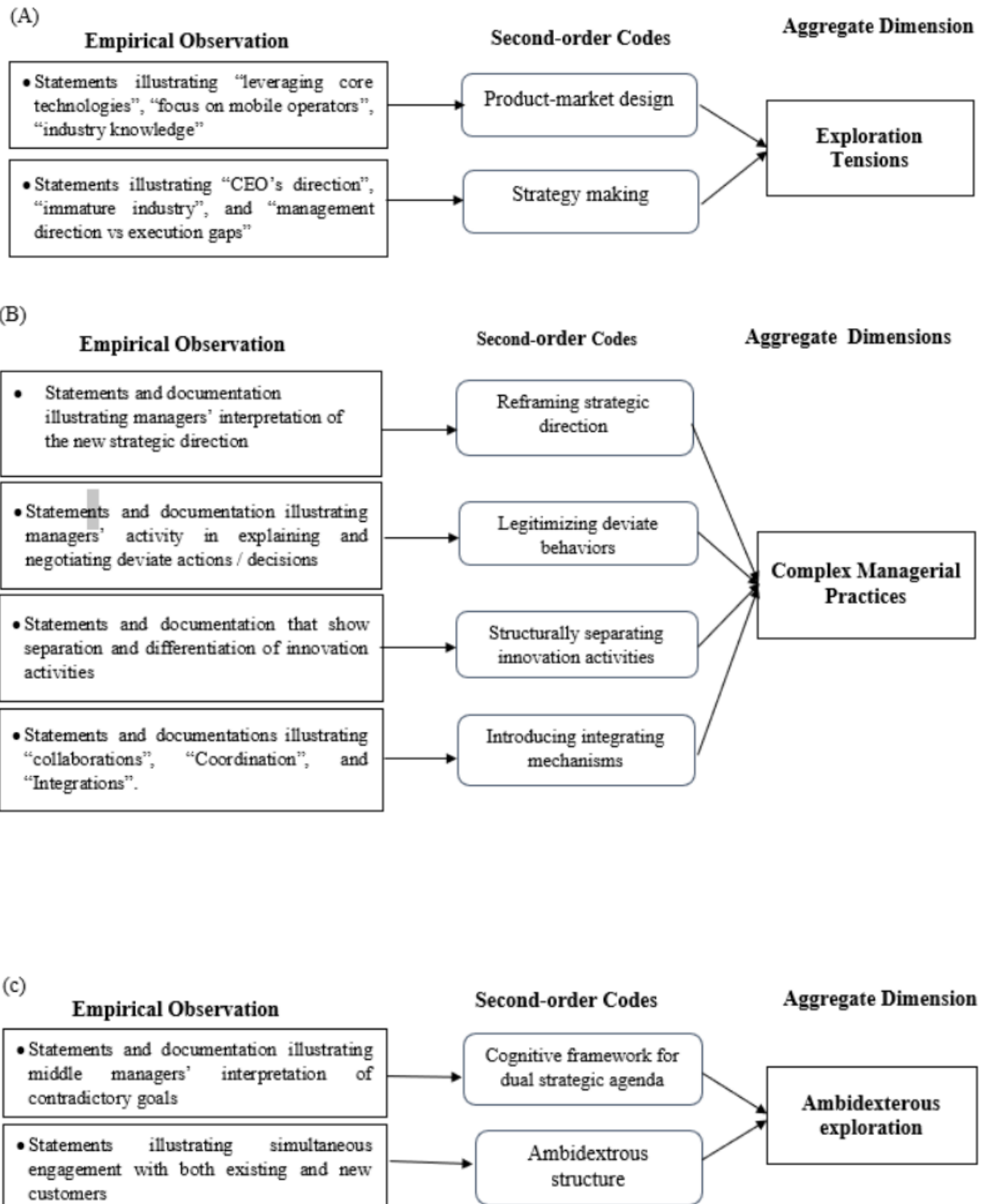
Timeline of Events and Data Collections

FIGURE 2:

Data Structure

(A)

Empirical Observation	Second-order Codes	Aggregate Dimension

- Statements illustrating "leveraging core technologies", "focus on mobile operators", "industry knowledge" → Product-market design
- Statements illustrating "CEO's direction", "immature industry", and "management direction vs execution gaps" → Strategy making

Product-market design, Strategy making → **Exploration Tensions**

(B)

Empirical Observation	Second-order Codes	Aggregate Dimensions

- Statements and documentation illustrating managers' interpretation of the new strategic direction → Reframing strategic direction
- Statements and documentation illustrating managers' activity in explaining and negotiating deviate actions / decisions → Legitimizing deviate behaviors
- Statements and documentation that show separation and differentiation of innovation activities → Structurally separating innovation activities
- Statements and documentations illustrating "collaborations", "Coordination", and "Integrations". → Introducing integrating mechanisms

Reframing strategic direction, Legitimizing deviate behaviors, Structurally separating innovation activities, Introducing integrating mechanisms → **Complex Managerial Practices**

(c)

Empirical Observation	Second-order Codes	Aggregate Dimension

- Statements and documentation illustrating middle managers' interpretation of contradictory goals → Cognitive framework for dual strategic agenda
- Statements illustrating simultaneous engagement with both existing and new customers → Ambidextrous structure

Cognitive framework for dual strategic agenda, Ambidextrous structure → **Ambidexterous exploration**

FIGURE 3:

Theoretical Model for Ambidextrous Exploration
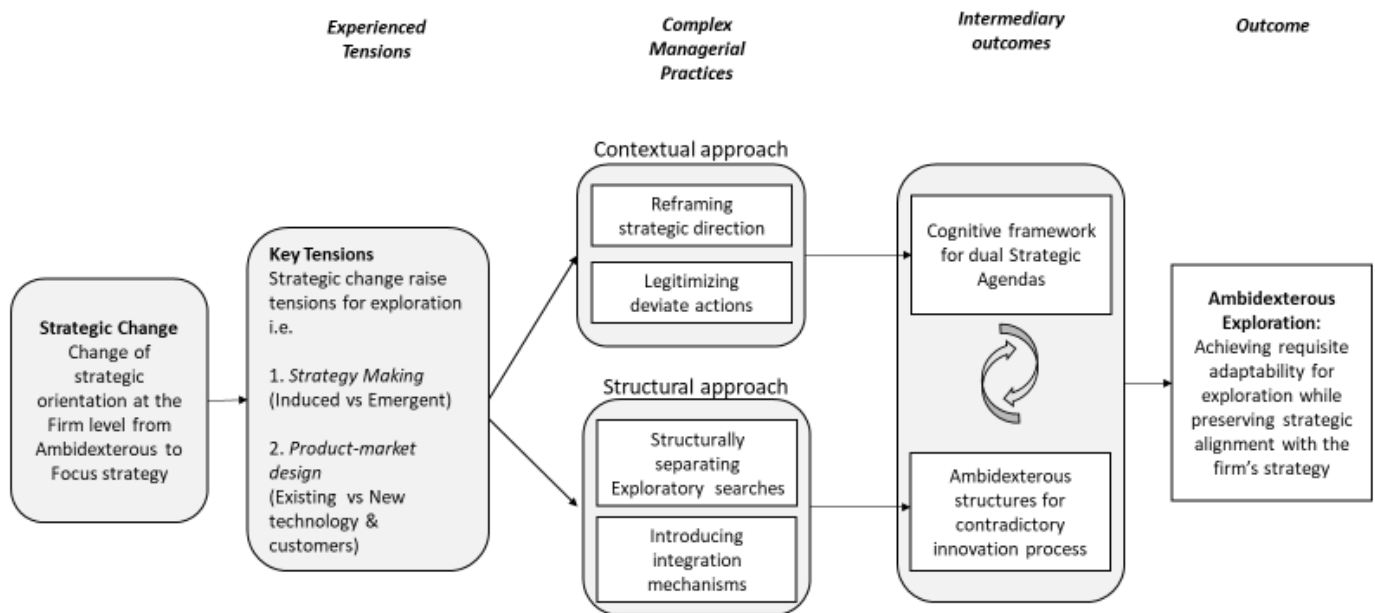
TABLE 1:

Representative Quotes for Strategic Change at TELCO

Themes	Representative Quotes
Strategic change at TELCO	• *"Now we (will) refocus in our core business, gain better efficiencies and better profitability"* (CEO Letter, 2017) • *"We found ourselves to be challenged, we see that we are struggling to grow. We see our profitability coming under pressure. So, it is called for an action where we need to take steps forwards. That is why we launched our new strategy, a more focused strategy where we prioritize our (Core Businesses) Networks, our Digital services, and our Managed Services."* (CEO Letter, 2017) • *"(In) this term we will prioritize profitability over growth. Healthy profitability is the base for long-term success and will give us the freedom and resources to invest for the long term."* (CEO speech, 2017) • *"We (are) going to limit certain markets, no longer offer stand-alone field services and institute stricter sales directives. We plan to either exit, renegotiate or transform 42 of almost 300 contracts by 2019."* (Vice President, 2017)
Strategic implications to the IoT Unit	• *"Following the focused strategy,* we *change 180^0 the way we handle IoT"* (Senior Managers, 2017) • *"(Now) Our IoT strategy is built on our core strength in connectivity and network. The focus is to make sure that operators and 3GPP (a telco standard) are relevant also to the IoT."* (Head of IoT, 2017) • *"We should prioritize service providers and complemented them with only few industrial partners with whom we co-develop things to explore new market."* (Vice President, 2017) • *"The assets we create in the scaling, we need to make them reusable. This is a very big change from before where the focus was very much: how do we provide industry users or customers what they need. Now, we have turned it around and said: Okay, what kind of reusable assets can we create."* (Head of IoT, 2017). • *"The company decided we double down on service providers as our customers. Leave the enterprise market. That impacted us in that okay we kept having the two offerings, but then the application level and platform offering was decided only to offer to operators. It reduced our addressable market substantially."* (Product manager, 2018)

TABLE 2

Representative Quotations for Second-order Themes

Aggregate Dimension	Second-order Codes	Representative quotes (in-between brackets) and selection of evidences
Exploration Tensions	Strategy making	• *"To build new businesses, you need to have perseverance because you need to proceed for a few years to succeed. I think that's the biggest challenge for us that we are changing strategy all the time"* (Business development manager, 2018) • *"There is a big gap between the top management direction and the execution. IoT will support CAT-M and NB-IoT but the technology is immature. You can promote it through marketing or on that soft promotional stuff, but if you cannot demonstrate it is not real."* (Project manager, 2018) • *"I think the ambition level was decreased all the time. First, we saw Industry & Society, our focus was derailing down even with lower focus in the value chain back to the connectivity or even smaller."* (Business development manager, 2018). • *"It (the strategy) is change a little bit too much and too many times. It's difficult since all the ecosystem and partnership activities are take time."* (Partnership & ecosystem manager, 2018) • *"Now, we have to bringing the ugly kids (mobile operators) to the table in every discussion with industrial partners"* (Program Manager, 2017)
	Product-market design	• *"IoT is a completely new type of business for mobile operators and 70% of mobile operators do not have a clear strategy on IoT"* (Head of Marketing for Europe, 2018) • *"It's quite strict that we're doing that and it's quite strict that when it comes to other areas like smart manufacturing, we are not going directly. We are struggling with that setup I mean it's not proven that it is a good idea, because we have the operators that needs that, as we talked about, they are in the middle. They need to be able to sell to manufacturers else we will not succeed."* (Head of IoT Technology & Solution, 2018) • *"I heard enterprises saying when we suggest we should bring a CSP into the conversation, why? What value do they bring? because normally the connectivity is the last thing you buy."* (Partnership & ecosystem manager, 2018). • *"It changed very much how we look at solution development because now we have to look at okay is this solution will be interesting for operators to sell, because now we should use them as a channel. That's a bit tricky because we don't want to build a lot of applications where the biggest value is, because the biggest value is on the application part."* (Program manager, 2018). • *"The problem that we have today is not figuring out where to go, it is to have the ability to cope with the market requirements. Those market requirements they are very diverse. I don't think we have problems in finding business case for any of them"* (Product manager, 201)

Aggregate Dimension	Second-order Codes	Representative quotes (in-between brackets) and selection of evidences
Complex Managerial Approaches	Reframing strategic direction	• *"By focusing with mobile operators, we actually have a comparative advantage than our competitor. I would say we are the most operator-friendly vendor in the market."* (Head of marketing, 2018) • *"She communicates the short-term strategy that is very clear. Let's go to operators that's what Ani (Head of emerging business) communicating don't lose focus now. But, then when you speak to Ani in smaller context that she is very clear that she is a few steps ahead in her thinking say okay if we succeed here, how can we then start to move up the value chain, but we need to consolidate on the horizontal. Ani definitely have been thinking about these things".* (Senior program manager, 2018) • *"The unit will (still) be very independent. However, in order for us to achieve our targets and be an important part of the Ericsson family, my expectation is that we need to collaborate both very much with the different business units and the regions."* (Head of IoT, 2017)
	Legitimizing deviant behavior	• *"We have blessing to test this model to have an industry partner as a channel partner. We have sort of blessing to trial that model. I mean the main line is that we need to have an operator involved. That's how we build to the business right now."* (Ecosystem and partnership managers, 2018) • *"Operators will never be able to serve this segment, it needs to be industry channel partners including large integrators and OEMs like ABB, Siemens, GE. They are the ones that already sell things to this. That's why we're thinking about how we can see if we can get the triple combination here. (That's why), we decided to use licensed spectrum mainly because of the Ericsson's focus and the main direction".* (Ecosystem & partnership manager, 2018). • *"I mean it's also what is the definition of an operator okay, if you have your own spectrum then you are your own operator, I would say yeah in some way. mean it's at least if they're large enough and they would bargain and say we have our own spectrum, we would like to buy this for all our factories, I don't see that that top management would say no."* (Business development manager, 2018) • *"We called it a middle model called 'Direct Touch' where we go out to the manufacturers we work with them and as soon as we have convinced them that a specific solution is needed, then we hand them over to the operators."* (Head of IoT Technology & Solution, 2018)
	Separating Exploratory searches	• Two new units were established: System management and Ecosystem and use cases. The *System management* unit focused on the product development for telco customers and other IoT connectivity related applications, while the ecosystem and use cases unit focus on building IoT applications for different industry use cases (November 2017) • *"That's very-very different approach. The fact that we were using the same organization, the same competences, the same contacts, the same processes, makes it very difficult for us to do. Therefore, we need to organize it differently (as two different units)"* (Portfolio manager, 2018) • *"We organize this in two different units, yet very flat, fluid, and highly integrated. Imagine like you have two legs, the left and the right, which help us running faster"* (Program manager, 2018)

Aggregate Dimension	Second-order Codes	Representative quotes (in-between brackets) and selection of evidences
Ambidextrous Exploration	Introducing integration mechanisms	• A committee steering was established to coordinate product development efforts. The committee consists of senior managers from the core business unit (i.e. Network and Digital services), program managers from the IoT unit, and senior manager from strategy & portfolio department (October 2017) • *"We share success stories, portfolio updates, program, and showing the eight focus customers that we are trying to get closed."* (Head of IoT technology and solutions, 2018) • *"We have decided to create a 'board' for our Independent Operating Unit, is where we really doing the business in which Jorge will chair and we have three others ET member on that board to make sure we secure the important funding to invest in the new opportunities."* (Head of Emerging Business, 2017).
	Cognitive framework	• *"We feel that we are all co-owners of TELCO. We need to have synergy with the firm without losing our vision as a unit"* (Program manager, 2018). • *"That is why we feel that we are not breaking any rules here from the IoT space. It's not that we are really understood what the model means."* (Partnership & ecosystem manager, 2018) • *"Long term we also want to capture both we and the service provider want to capture and climb up in the value chain and capture more value of the total IOT cake. Then of course for us it's also broadening the customer base in the long run. So, we're not only supplying to service providers but they also expanding the customer base beyond that. That's of course a healthy thing to do in the long run."* (Portfolio manager, 2018)
	Ambidextrous organizational design	• *"Although we sit in different unit, we are working extremely close together. We are acting as one team. don't differentiate between where you're sitting in the organization we act like one team. This is in one of the best cooperation I ever seen in TELCO when it comes to people sitting in different units. We are really trying to foster this kind of good collaboration"* (Head of IoT technology & Solution, 2018) • *"The market areas are very collaborative when it comes to IoT because opportunity future growth for everyone. So, everyone I feel that market area is receptive to what we have to say, what we have to do."* (Sales manager, 2018) • *"We called it a middle model called Direct Touch where we go out to the manufacturers we work with them and as soon as we have convinced them that a specific solution is needed, then we hand them over to the operators."* (Head of IoT Technology & Solution, 2018)
	Exploration Outcomes	• Introduction of IoT platform for mobile service provider (January 2018) and Commercial partnerships for the development of IoT products and solutions with new industrial partners in automotive, mining, and manufacturing (November 2018) • *"While at the same time contributing significantly to basically saving cost for the company by refocusing from the previous Industry & Society verticals approach to our new IoT approach. Should also recognize the IoT team did a great job in helping us refocus our Go-to-Market."* (CEO, 2018)

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		• *"I think we are gaining. We are getting good traction according to analysts. Even if you look at IDC and Gardner and other people who track and rank us in terms of a platform. We are ranked very well."* (Director of IoT engagement and marketing, 2018)