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The Theoretical Case of Agile Ambidexterity

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Abstract

We examine the case of agile ambidexterity, which we conceptualize as the organizational capability to simultaneously deploy agile and traditional linear innovation and development methodologies successfully. The utilization and balance of these methodologies is an increasingly important firm capability that can foster growth, sustainable development, and firm survival in a digitized environment. Specifically, we develop four propositions suggesting how structural differentiation, connectedness, and contextual ambidexterity affect agile ambidexterity. We conjecture that structural differentiation, connectedness, and contextual ambidexterity mechanisms have positive effects on agile ambidexterity, but that structural differentiation has a negative influence on connectedness. We highlight important theoretical and managerial implications.

Keywords

Strategy, Agility

1. Introduction

Agile approaches have come to the forefront of managerial attention over the past decade (e.g., Bott and Mesmer, 2020; Sutherland and Sutherland, 2014). This has been further accelerated by the pandemic-driven digitization of major traditional industries (Anand et al., 2021). Most industries are facing a paradigm shift that requires balancing the use of more agile development approaches to manage increasingly volatile, uncertain, digital requirements and the use of more traditional linear approaches to support the development of physical product components. Recent examples of this include several automotive original equipment manufacturers (OEMs) and their first-tier suppliers that need to manage traditional lean manufacturing hardware processes while also implementing ad-

vanced software capabilities. These software capabilities, e.g., vehicle safety and diagnostics software, autonomous driver systems, and fleet and sustainability systems, are typically implemented using agile methodologies. However, the digital product components need to be integrated with existing physical product components that are often developed and deployed using more linear processes. The successful integration of the digital and physical product components that are typically developed utilizing different development methodologies, require organizations to obtain a balance between agile and traditional development approaches. We refer to this organizational capability to simultaneously deploy agile and traditional linear innovation and development methodologies successfully as agile ambidexterity. While this capability is increasingly important, potential antecedents and microfoundations are largely unexplored.

Generally, agile ambidexterity is a novel and relatively under-explored area in the literature, though the ability to simultaneously realize contradictory objectives has received recent focus in social cognition theory (e.g., Heavey and Simsek, 2017) as well as the attention-based view of the firm (e.g., Koryak et al., 2018). This literature has examined organizations' ability to simultaneously realize contradictory objectives, such as alignment and adaptability (Gibson and Birkinshaw, 2004), exploratory and exploitative innovation (Jansen et al., 2006), search and stability (Rivkin and Siggelkow, 2003), and organizational continuity and radical change (Huy, 2002). Recent research (e.g., Úbeda-García et al., 2020) has also examined various anteceding factors to organizational ambidexterity and the mechanisms that enable and facilitate the realization of paradoxical activities. Firms may, for example, create mechanisms that facilitate the realization of contradictory objectives in separate organizational units (e.g., Benner and Tushman, 2003), create an internal context characterized by a combination of stretch, discipline, support, and trust to facilitate ambidexterity within a single organizational unit (Gibson and Birkinshaw, 2004), or sequence exploitation and exploration activities over time (Venkatraman, Lee, and Iyer, 2007).

We conjecture that for agile ambidexterity, it is particularly important for organizations to have mechanisms that not only facilitate ambidexterity across different organizational units but also within each unit. When pursuing ambidexterity at the organizational level across multiple separate and distinct organizational units, structural differentiation allows organizations to assign different tasks and objectives to different organizational subunits. By using structural differentiation, i.e., "dual structures", some subunits can focus more on exploitation while others focus more on exploration activities. For example, the Volkswagen group has started to centralize many of its software-related research and implementations in a separate unit, i.e., CARIAD, while continuing physical development activities in, for example, its engine factory sites. Organizations that pursue ambidexterity within single business units need also to establish appropriate processes and systems that enable individuals to manage conflicting de-

mands (Gibson and Birkinshaw, 2004).

However, research that focuses on the strategic structure of ambidexterity suggests that there is significant tension between pursuing ambidexterity using multiple separate organizational units and pursuing ambidexterity within a single organizational unit (e.g., Jansen, Tempelaar, van den Bosch, and Volberda, 2009; Gibson and Birkinshaw, 2004; Birkinshaw and Gibson, 2004). Hence, examining this tension relating to agile ambidexterity is important.

We argue that connectedness, i.e., the density of a social network in a firm (Nahapiet and Ghoshal, 1998; Sheremata, 2000), may play an important role on the interplay between the above mentioned tensions. For example, when pursuing ambidexterity through structural differentiation where each organizational unit is configured to the specific needs of its task environment, the organization seeks to integrate and align the tasks and objectives of the separate units towards the overall objective of the firm (Gibson and Birkinshaw, 2004; Lawrence and Lorsch, 1967). We conjecture that connectedness can facilitate this integration and alignment. That said, research on connectedness is less conclusive and not often examined in the ambidexterity literature (e.g., Novoselova, 2022). For example, Jansen et al. (2009) emphasize that structural differentiation may be detrimental to informal social relations and call for additional research on the direct relationship between structural differentiation and connectedness in the ambidexterity context.

With a focus on organizational ambidexterity that is pursued in one unit, Gibson and Birkinshaw (2004) show that management systems that facilitate and support the simultaneous achievement of alignment and adaptability are preceded by a supportive environment. In such an environment, the social context, comprising trust and support, interacts with a performance management context to enable contextual ambidexterity. While this finding substantiates the importance of a cohesive social network for ambidexterity in general and contextual ambidexterity in particular, empirical research, combining structural antecedents and contextual ambidexterity mechanisms remains scarce. It is particularly unclear how structural differentiation and contextual ambidexterity mechanisms are related and how structural differentiation influences agile ambidexterity, when considering the effect of connectedness.

We contribute towards theory building that explains how organizations can pursue agile ambidexterity and examine the relationships among structural differentiation, contextual ambidexterity mechanisms, and agile ambidexterity. Specifically, our research objective is to further understand different antecedents of agile ambidexterity. We seek to answer three important research questions. 1) Which are potential relationships between structural differentiation and agile ambidexterity and between connectedness and agile ambidexterity? 2) How does structural differentiation impact connectedness? 3) What is the relationship between contextual ambidexterity and agile ambidexterity?

2. Theoretical Case

2.1. Structural Differentiation and Connectedness

Structural differentiation refers to "the state of segmentation of the organizational system into subsystems, each of which tends to develop particular attributes in relation to the requirements posed by its relevant external environment" (Lawrence and Lorsch, 1967: pp. 3-4). Structural differentiation not only creates tangible "pragmatic boundaries" through spatially separating subunits (Carlile, 2004), but also fosters the development of individual identities and thought worlds (Fiol, 1995). These boundaries increase the subunits' divergence and may lead to the sovereign existence of previously connected subunits. Induced by ownership and freedom (Burgers, Jansen, van den Bosch, and Volberda, 2009), separated subunits have the possibility to develop individual cultures, orientations, and objectives (e.g., Golden and Ma, 2003), which, on the downside, exacerbate collaboration with other organizational units (Lawrence and Lorsch, 1967) and interrupt existing social relations (Hogg and Terry, 2000). Hence, Jansen, Tempelaar, van den Bosch, and Volberda (2009: p. 808) conclude that structural differentiation has an important influence on connectedness, the density of a firm's social network (Nahapiet and Ghoshal, 1998; Sheremata, 2000). The rationale is that "it becomes more difficult to develop and maintain informal social relations between organizational members across differentiated […] units." Additional barriers that result from structural differentiation and exacerbate informal social relations include personality differences, contradictory thought worlds, and, in particular, physical barriers such as spatial distance (Song, Montoya-Weiss, and Schmidt, 1997). Since structural differentiation reduces the density of a firm's social network through disrupting informal relations, we propose:

Proposition 1: *Structural differentiation is negatively associated with connectedness*.

2.2. Structural Differentiation and Ambidexterity

Contextual ambidexterity mechanisms are processes and systems that enable individuals to manage conflicting demands (Gibson and Birkinshaw, 2004). Agile ambidexterity is the organizational capability to successfully deploy agile and traditional linear innovation and development methodologies simultaneously. We next discuss how does structural differentiation affect contextual ambidexterity mechanisms and agile ambidexterity.

Structural differentiation defines the extent to which an organization is separated into subunits with distinct objectives. The spatial separation of organizational units is accompanied by the development and implementation of competencies, systems, incentives, processes, and cultures within each independent subunit (Benner and Tushman, 2003), so that each organizational unit is configured to the specific needs of its task environment (Lawrence and Lorsch, 1967).

In organizations with high levels of structural differentiation, each subunit becomes more specialized with a narrower set of activities and objectives. Organizational units that use agile development and management methods, such as software development units, specialize in rapid development, high levels of customer input, iteration with short cycle, and flexibility. Units that follow more linear development approaches are often related to a firm's ongoing development and manufacturing of physical assets. They instead emphasize refinement, efficiency, incremental improvement, predictability, and stability (Benner and Tushman, 2003; Burgers et al., 2009; March, 1991). To support each unit in the pursuit of its specific goal, structural differentiation not only provides the tangible, structural foundation that separates the units, it also fosters the development of an environment within the subunit that is favorable for each activity. Structural differentiation, which enables some subunits to focus on agility and others to focus on linear development, thus, can help the organization to achieve agile ambidexterity. However, the separation of units accompanied by the specialization of tasks and objectives simultaneously reduces the flexibility of individuals and the extent to which they can adjust to conflicting demands. Individuals and their performance are often assessed against one-dimensional goals of their respective sub-unit. They are neither exposed to conflicting demands to which they have to adjust, nor is behavior incentivized, which would allow them to experiment with conflicting solutions. Hence, we propose:

Proposition 2: *Structural differentiation is negatively associated with contextual ambidexterity mechanisms* (*H2a*) *and positively associated with agile ambidexterity* (*H2b*).

2.3. Connectedness and Ambidexterity

As opposed to structural differentiation, connectedness signifies an informal governance mechanism that is directed towards integration (Hansen, 2002; Jansen et al., 2009; Jaworski and Kohli, 1993; Sheremata, 2000; Tsai, 2001). The higher the degree of connectedness, the more employees engage in informal social relations with mutual trust and support (Lubatkin, Simsek, Ling, and Veiga, 2006; Rowley, Behrens, and Krackhardt, 2000). These close social relations stimulate knowledge sharing, joint problem solving, and mutual learning processes among employees. Prior research suggests that connectedness enables an organization to develop radical and incremental innovation capabilities (Jansen, Tempelaar, van den Bosch, and Volberda, 2009; Subramaniam and Youndt, 2005) and simultaneously demonstrate alignment and adaptability within business units (Gibson and Birkinshaw, 2004). Further, Kelley (2009: p. 487) highlights the central role of connectedness by pointing out "that programs introducing high uncertainty and risk into mature corporate environments are highly flexible systems that maintain organizational connectedness as they evolve". There is also general consensus that close social relationships enable contextual ambidexterity and innovative capacity (Gibson and Birkinshaw, 2004; Jansen,

Tempelaar, van den Bosch, and Volberda, 2009). Prior literature further supports a generally positive influence of integration on ambidextrous behavior (e.g., Raisch, Birkinshaw, Probst, and Tushman, 2009). Based on this discussion we conjecture that connectedness has positive effects on both contextual ambidexterity mechanisms and agile ambidexterity:

Proposition 3: *Connectedness is positively associated with contextual ambidexterity mechanisms* (*H3a*) *and agile ambidexterity* (*H3b*).

2.4. Contextual Ambidexterity Mechanisms and Agile Ambidexterity

Birkinshaw and Gibson (2004: p. 49) emphasize that contextual ambidexterity is a culture and prioritization-driven type of mechanism that allows "employees to use their own judgment as to how they divide their time between adaptation-oriented and alignment-oriented activities". On an organizational level it "can be defined as the collective orientation of the employees toward the simultaneous pursuit of alignment and adaptability" (Birkinshaw and Gibson, 2004: p. 49). We argue that contextual ambidexterity can also be seen as an underlying foundation of agile ambidexterity. Schmitz et al. (2018: p. 32) highlight that larger scale projects are "tailoring and blending agile techniques into a traditional project framework". Individuals and development teams that work in an environment supporting contextual ambidexterity are able to pursue both more adaptation-oriented agile activities and more alignment-oriented linear development activities and thus are able to blend and balance agile and traditional development techniques.

Noll and Beecham (2019) highlight that firms confronted with large-scale implementations often aim to balance agile and traditional techniques at an organizational level. Anand et al. (2021) then emphasize several transformational elements for agility, including managing interdependencies, integrating senior leaders, driving cultural adaptations, and scaling agility. The management, balance, and integration of agile and non-agile techniques requires a dual capability set at the individual (and organizational) level. For example, the integration of rapid software development with hardware products that have large planning horizons, joint agile/non-agile team integrations, and traditional milestone and KPI integrations around agile projects requires senior leadership support to facilitate collective alignment and help prioritize and catalyze major components in the development and execution processes. While scaling agility beyond small teams is challenging, several organizations attempt to manage agile teams with traditional program offices that have oversight, conflict resolution capacity, and responsibility for building strategic prioritizations. These and other similar contextual ambidexterity mechanisms that work at the organizational level as well as individual level mechanisms provide the foundations for agile ambidexterity. Building on the above arguments, we develop the following proposition and overarching model (see **Figure 1**).

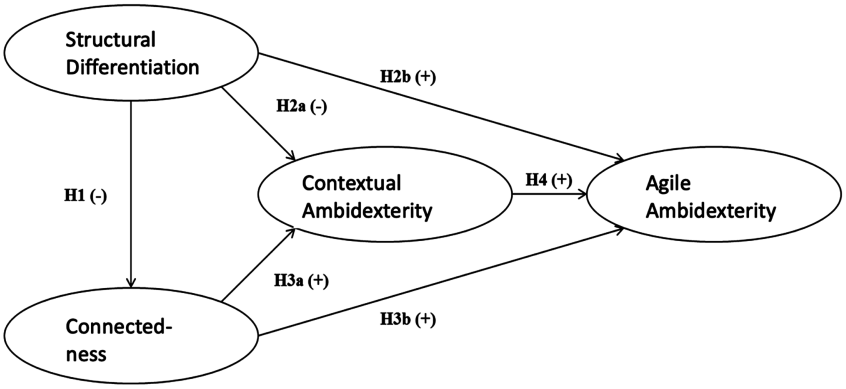

Figure 1. Conceptual model.

Proposition 4: *Contextual ambidexterity is positively associated with agile ambidexterity*.

3. Discussions and Implications

3.1. Theoretical Implications

First, our study introduces the concept of agile ambidexterity. We aim to theoretically embed agile ambidexterity in the wider ambidexterity literature. In addition, we provide testable propositions on several antecedents of agile ambidexterity and specifically emphasize the important interplay among structural differentiation, connectedness, and agile ambidexterity.

Further, we highlight the important partial mediating role of contextual ambidexterity mechanisms in the pursuit of agile ambidexterity. Building on earlier work of Birkinshaw and Gibson (2004), we argue that contextual ambidexterity is an enabling microculture and mindset within the organization that highlights personal judgment and responsibility in regard to achieving a sustainable balance between agile and non/agile methodologies in an organization. Here, Carmeli and Helavi (2009) also stress the imperative role of top management teams and strategic balances in decision-making in the pursuit of contextual ambidexterity. Integrating and driving awareness among different leadership levels in the organization is therefore necessary when managing internal cultural adaptations towards contextual ambidexterity.

Third, our study provides additional testable propositions as well as theoretical embedding on the interplay between structural differentiation and connectedness in the pursuit of contextual ambidexterity. We argue that structural differentiation can disrupt informal relations and thus potentially reduce the density of a firm's social network. We also highlight how connectedness enables agile ambidexterity. Here, connectedness acts as an informal governance mechanism that fosters integration (Hansen, 2002; Jansen et al., 2009; Jaworski and Kohli, 1993; Sheremata, 2000; Tsai, 2001) and builds mutual trust and support (Lubatkin, Simsek, Ling, and Veiga, 2006; Rowley, Behrens, and Krackhardt, 2000). In addition, we emphasize the positive influence of connectedness on or-

ganizational learning and knowledge sharing, which we argue are important microfoundations of successful agile ambidexterity implementations.

3.2. Managerial Implications

There are several key managerial implications to our study. First, agile ambidexterity is dependent and thus needs embedding into a wider ambidextrous framework within the organization. For example, agile ambidexterity has several important drivers, such as contextual ambidexterity, which nurtures the individual and organization level of ambidexterity in the organization. Contextual ambidexterity thus provides the internal cultural micro-foundation for emphasizing employee judgment and decision making that eventually positively influences agile ambidexterity.

Second, we highlight that the integration of agile and non-agile techniques in the organization requires senior leadership involvement and careful management of interdependencies and interfaces. For example, in automotive OEMs, senior leaders need to be well versed in agile scaling methodologies that integrate large software solutions, intelligent battery systems, or self-driving capabilities into the more linear hardware and chassis manufacturing processes. This requires a high level of empathy, conflict resolution aptitude, and strategic prioritization capability.

We also accentuate further micro-foundations of agile ambidexterity that originate in contextual ambidexterity characteristics on the individual and the organizational level. From a managerial perspective, we therefore propose the appointment of agile ambidexterity champions in the organization that help facilitate the integration of agile and non-agile techniques. These champions require a dual capability set along advanced agile and non-agile techniques and methodologies. We also argue that these champions specifically need to focus on managing interaction points and interfaces of agility that may result in high managerial friction and therefore may necessitate increased communication and coordination as well as require organizational transformation. Further, agile ambidexterity requires the ability to scale and balance agility beyond small teams. Approaches could include traditional program offices that have conflict resolution capacity as well as responsibility for building strategic prioritizations, while managing individual modules in more agile methodologies.

Finally, connectedness is managerially important for agile ambidexterity, since it fosters social relations, joint problem solving, and trust in the organization. Borer (2022) in this regard highlights important foundations of trust in the realm of agility that center around feedback capabilities, accountability of individual work, wider team collaboration, and diminishing the fear of failure. We argue that especially advanced feedback techniques are important, as well as team collaboration opportunities among agile and non-agile team members. Here, job rotations that provide insides into different nuances and dimensions of agile ambidexterity could be beneficial, which would also act as a potential mag-

nifier throughout the wider organization.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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