Ambidexterity and Firm Performance: A Literature Review

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ABSTRACT

This study reviews extant literature on ambidextrous mechanisms, contingencies impacting the relationship between organisational learning activities and performance, and aggregation issues in studying ambidexterity. The review identifies a largely neglected factor by the extant literature in determining and clarifying the relationship between ambidextrous organisational learning and firm performance, namely, intra-firm distribution of organisational learning activities. Building upon the literature review, this study recommends future research directions associated with the intra-firm distribution of organisational learning activities to advance our understanding of firm strategic deployment of ambidexterity.

KEYWORDS: *ambidexterity, distribution, exploration, exploitation, organisational learning*.

JEL CLASSIFICATION: *D8, L2*.

1. INTRODUCTION

In response to the call for ambidextrous organisations (March, 1991), research in the last couple of decades has significantly advanced our understanding of organisational learning. A widely accepted tenet is that to sustain short- and long-term performance, firms must engage in both exploration and exploitation and maintain a balance between the two, i.e., ambidexterity.

This study reviews the fruitful organisational learning literature on the relationship between ambidexterity and firm performance since the 1991 seminar work. We first review the literature on ambidextrous mechanisms that balance the exploration and exploitation within a firm to improve both short- and long-term firm performance. The literature review then moves to contingencies impacting the relationship between organisational learning and firm performance. Although many research efforts have been devoted to understanding firms' internal and external contingencies, the distribution of organisational learning activities is largely neglected. Assuming that two firms engage in the same amount of exploration and exploitation, both achieve the balance between exploration and exploitation (or ambidexterity) at time t. One of the firms chooses to have one or a few units focusing on exploration, and the other firm chooses to involve the whole organisation in exploration. In this context, the two firms achieve ambidexterity with different distributions of organisational learning activities. The former achieves ambidexterity through balancing exploration and exploitation across units. The latter achieves ambidexterity by balancing exploration and exploitation within each unit. However, it is not clear from the extant literature which firm would experience better performance. The only exception is the discussion on the unit of analysis and the aggregation of organisational learning activities across hierarchical levels. Although the discussion fails to detail the impacts of distribution, it suggests that distribution should be a critical factor to consider in studying organisational learning activities (Desai, 2015).

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Building upon the literature review, this study recommends some future research directions associated with the intra-firm distribution of organisational learning activities in advancing and clarifying our understanding of firm strategic deployment of ambidexterity.

2. LITERATURE REVIEW

2.1. Ambidextrous Mechanisms and Distribution

Firms must balance exploration and exploitation to sustain performance (Katila & Ahuja, 2002; March, 1991). The balance as such has been broadly defined as ambidexterity (Lavie et al., 2010; Luger et al., 2018; Raisch & Birkinshaw, 2008). The existing literature suggests three major mechanisms through which ambidexterity might be achieved, namely organisational or spatial separation (Benner & Tushman, 2003; Nielsen et al., 2018; O'Reilly III & Tushman, 2004; Tushman & O'Reilly, 1996), temporal separation or transition (Boumgarden et al., 2012; Brown & Eisenhardt, 1997; Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2013), and contextual ambidexterity (Gibson & Birkinshaw, 2004).

Organisational separation or 'structural ambidexterity' recommends the division of an organisation into different, spatially separate subunits, dedicated to either exploration or exploitation (Benner & Tushman, 2003; O'Reilly III & Tushman, 2004; Stettner & Lavie, 2014; Tushman & O'Reilly, 1996). Structural separation in large organisations enables focusing away from existing product-market combinations and allocating resources accordingly, and create internally consistent architectures for both old and new product-market trajectories; it also limits the inertial and myopic tendencies of organisational size on search and risk taking (Fourné et al., 2019; Jansen et al., 2009; Smith et al., 2005). In implementing organisational separation mechanism, some argue that firms explore through parallel and isolated learning within each subunit while exploiting through learning across subunits (Fang et al., 2010). Others suggest that firms may maintain distinct activities within separate subunits dedicated to either exploration or exploitation (O'Reilly & Tushman, 2013). Regardless of the differences, both sides implicitly aim for balancing exploration and exploitation across subunits at any given time. The former suggests an evenly distributed exploration among subunits, whereas the latter implies a concentrated distribution of exploration within a few dedicated subunits. Although organisational separation literature implies the existence of different distributions of explorative activities within an organisation, it falls short in shedding further light on the issue.

Temporal separation or transition refers to the oscillation between exploration and exploitation over time (Brown & Eisenhardt, 1997). Although some challenge whether sequential ambidexterity constitutes a type of ambidexterity (Lavie et al., 2010; Luger et al., 2018), others argue that ambidexterity and a temporal transition are not mutually exclusive alternatives (Kang & Kim, 2020). Specifically, firms may essentially remain ambidextrous even as they engage in dynamic adaptation between exploration and exploitation. In this sense, the temporal mechanism refers to gradual and progressive changes between exploration and exploitation over time (Lavie & Rosenkopf, 2006; Lavie et al., 2010; Luger et al., 2018; Raisch & Birkinshaw, 2008; Rothaermel & Deeds, 2004), rather than temporal separation between exploration and exploitation (Gupta et al., 2006; Mudambi & Swift, 2014; Swift, 2016). Debate on temporal mechanism extends further to its empirical results. On the one hand, the coexistence of exploration and exploitation in the same organisational subunit but at different points in time is found to enable synergies between the dual learning processes (Farjoun, 2010) and allow coalignment returns (Gulati & Puranam, 2009; Posen & Levinthal, 2012). On the other hand, temporal separation is found to have a negative performance effect, whereas a gradual temporal transition may have a positive effect (Kang & Kim, 2020). Frequency and

scale of vacillation are found to have an inverted U-shaped relationship with firm performance (Kang et al., 2017). By the same token, Mavroudi et al. (2020) imply that firms that swiftly alternate between exploratory and exploitative R&D are less effective in integrating their learning into organisational routines (Lavie et al., 2011; Schilling et al., 2003) and experience negative effects on their performance (Stieglitz et al., 2016). Regardless of recently enhanced research efforts, the temporal transition mechanism remains conceptually and empirically ambiguous. In addition, the locale and distribution of exploration and exploitation are largely ignored in the literature. It is not clear whether exploration and exploitation should be performed in the same subunit or across subunits over time (Luger et al., 2018).

Contextual ambidexterity insists that a firm can balance exploration and exploitation within a single organisational unit by nurturing discipline, support, and trust (Gibson & Birkinshaw, 2004; Stettner & Lavie, 2014). It is possible because individual members of the organisation can make their own choices how to best divide their time and efforts between exploration and exploitation, as well as switch in between the competing tasks as the demand or opportunity arises (Gibson & Birkinshaw, 2004; Vahlne & Jonsson, 2017). Yet, even for individuals, "*the skills that result in the identification and/or development of an opportunity are not the same as those required to profit from or exploit the opportunity*" (Teece, 2007). In other words, the difficulties in managing exploration and exploitation tensions at the individual level remain significant. As a result, Kauppila (2010) believes that contextual ambidexterity must co-exist with either temporal or organisational ambidexterity (O'Reilly & Tushman, 2008). It is likely that different parts of the organisation can apply different sorts of ambidexterity (Benner & Tushman, 2003). Contextual ambidexterity implicitly suggests an ambidexterity through evenly distributed exploration and exploitation. Yet, with limited and mixed empirical results, the performance implications of the recommended even distribution are not clear.

These three most discussed ambidexterity mechanisms suffer from important and persistent challenges. Organisational and temporal separation mechanisms require a firm to maintain conflicting organisational routines and distribute resources between exploration and exploitation across time and/or space, extending the risk of cross-contamination (Hansen et al., 2019; Nielsen et al., 2018). Contextual mechanism suffers from the difficulties of managing organisational impediments, cognitive constraints, and attentional control, opening the door for role ambiguity among managers (Koechlin & Hyafil, 2007; Laureiro-Martínez et al., 2015; Petruzzelli, 2014; Tempelaar & Rosenkranz, 2019). Moreover, trade-offs exist across mechanisms. Whereas separation reinforces specialisation reducing managers' ability to act ambidextrously, absence of formal separation jeopardises specialisation benefits (Adler et al., 2009; Chou et al., 2018; Fourné et al., 2019; Lavie et al., 2010).

To address the challenges, researchers extend their investigations across organisational boundaries, namely cross-domain or interorganisational ambidexterity (Bandeira-de-Mello et al., 2016; Kauppila, 2010; Lavie et al., 2011; Lucena, 2016; Penney et al., 2020; Stettner & Lavie, 2014). Gupta et al. (2006) argue that although punctuated equilibrium, rather than ambidexterity, is more appropriate within a single domain, across multiple and loosely connected domains, ambidexterity becomes entirely feasible (Koryak et al., 2018). In a study of the alliance portfolios of software firms, Lavie et al. (2011) show that firms benefit from "*engaging in upstream activities of the value chain via recurrent alliances with the same partners, thus combining structural exploitation with functional exploration*" (Lavie & Rosenkopf, 2006). By the same token, Stettner and Lavie (2014). Likewise, Lucena (2016) argue that firms benefit from the balance of exploration and exploitation across the internal organisation, alliance, and acquisition modes. It is because decoupling exploration from

exploitation across modes can reduce the interdependence of these activities and circumvent the need to maintain conflicting organisational routines within each mode, while still enabling the firm to benefit from simultaneous pursuing exploration and exploitation (Stettner & Lavie, 2014). Petruzzelli (2014) investigates the implications of balancing knowledge exploration and exploitation both within and across technological and geographical domains and finds that firms benefit more from balancing across than within domains. Cross-domain approach is further applied to domestic and international marketing ambidexterity and shows that the concurrent processes of exploitation and exploration are sources of synergies and tensions between and within domestic and international market activities (Karafyllia & Zucchella, 2017). Apparently, an even distribution of exploration and exploitation among subunits is not recommended, whereas a positive implication of a concentrated distribution may be interpreted from cross-domain ambidexterity literature. Yet, cross-domain ambidexterity is mainly studied in the context of employing strategic alliance or acquisition, limiting its implications in managing ambidexterity within a firm's existing hierarchical structure. The inherent merits of exploring or exploiting in particular domains are not clear either (Lavie et al., 2010).

2.2. Merits of Ambidexterity and Contingencies

Recent studies challenge the viability of 'domain separation' when domains are defined in diverse ways. Penney et al. (2020) investigate value chain function, market overlap, product diversity, and governance mode domains, and find that firms perform better when their alliance portfolios are imbalanced toward exploration. They found no evidence showing that firms could profitably balance across domains. By studying upstream and downstream supply-chain collaborations of Norwegian firms, Haus-Reve et al. (2019) find a negative effect on innovation from explorative and exploitative collaborations across scientific and supply-chain domains. Likewise, Lucena (2016) investigates inter-firm R&D agreements and indicates that specialisation in internal and external exploration has positive innovative performance effects, and a balance strategy is not necessarily the best option to enhance firm innovation. While the mixed results challenge the effectiveness of cross-domain ambidexterity, these results further question the widely believed benefits of broadly balancing exploration and exploitation (Junni et al., 2013; Raisch & Birkinshaw, 2008; Simsek, 2009; Solís-Molina et al., 2018).

Some studies report a positive association between balancing exploration and exploitation, i.e., establishing ambidexterity, and performance (He & Wong, 2004; Ho et al., 2020; Smith & Lewis, 2011). Others find that not all firms that aim for ambidexterity are successful; instead, a specialisation in exploitation or exploration could be more beneficial (O'Reilly & Tushman, 2013). For instance, Ebben and Johnson (2005) find that firms pursuing either exploration or exploitation outperform those combining these activities. Ngo et al. (2019) suggest that the expected exploration-exploitation complementarity is hard to materialise. Likewise, Thornhill and White (2007) observe that a pure strategy emphasising operational excellence (i.e., exploitation) or product leadership (i.e., exploration) enhances firm performance. With a more 'organic' stance allowing an asymmetric exploitation-exploration combination (Lennerts et al., 2020), recent studies agree that the performance implications of exploration, exploitation and ambidexterity vary based on the available options considered (Lavie et al., 2010), and organisational and environmental contingencies (Gupta et al., 2006; Mavroudi et al., 2020; Osiyevskyy et al., 2020; Raisch & Birkinshaw, 2008; Wilden et al., 2018).

Organisational contingencies, such as history, age, size, slack resources, absorptive capacity, mission, structure, culture, and dominant organisational logic or managerial biases, may determine an organisation's tendency toward exploration, exploitation, or ambidexterity (Bernal et al., 2019; Cao et al., 2009; Lavie et al., 2010; Levinthal & March, 1993; Miles et al.,

1978; Rothaermel & Deeds, 2004; Yamakawa et al., 2011). For example, exploration is positively associated with absorptive capacity and slack resources (Lane & Lubatkin, 1998; Rothaermel & Alexandre, 2008; Rosenkopf & Nerkar, 2001). Exploitation is more important for startups, while exploration is more important for established firms (Cho et al., 2020). Many studies consider the moderation effects of contingency factors. Suzuki (2019) shows that smaller and older organisations with substantial slacks benefit more from being ambidextrous. Whereas ambidexterity has a greater effect on performance at high levels of absorptive capacity, specialisation in exploitation or exploration is more effective at low levels of absorptive capacity (Solís-Molina et al., 2018). Smith et al. (2005) find that although large organisational size tends to favor exploitation, structural separation alleviates the inertial and myopic tendencies as such (Fourné et al., 2019). For firms adopting a temporal separation mechanism, a high speed of temporal alternating between exploration and exploitation (Mavroudi et al., 2020) or a discontinuous jump (Kang & Kim, 2020) lowers firm performance because of the inefficient learning and the lack of knowledge integration into organisational routines (Lavie et al., 2011; Schilling et al., 2003; Stieglitz et al., 2016). This negative effect is even more pronounced for firms with largescale R&D operations and a high R&D intensity (Mavroudi et al., 2020). Other internal contingencies considered by extant literature include market orientation (Kyriakopoulos & Moorman, 2004) and business strategy (Raisch & Birkinshaw, 2008).

The mixed empirical evidence on the effects of exploration, exploitation, and ambidexterity is also attributable to environmental factors such as industry conditions, market dynamism, exogenous shocks, competitive intensity (Auh & Menguc, 2005; Jansen et al., 2006; Kim & Huh, 2015; Lavie & Rosenkopf, 2006; Lavie et al., 2010; March, 1991). With different focuses on environment factors, empirical results are ambivalent. Suzuki (2019) empirically shows that organisational ambidexterity positively contributes to long-term firm performance in more dynamically changing and competitive environments. In contrast, other studies find that an exploitation orientation is superior in high-turbulence environment, whereas maintaining ambidexterity would be more suitable for an environment characterised by incremental changes (Gulati & Puranam, 2009; Jansen et al., 2006; Kim & Huh, 2015; Luger et al., 2018; Posen & Levinthal, 2012). Osiyevskyy et al. (2020) find that the severity of crisis a firm is exposed positively moderates the relationship between exploration and firm performance, and negatively moderates the impacts of exploitation on firm performance. Likewise, Wang and Li (2008) find that the negative effect of over exploration on organisational performance weakens with an increase in environmental dynamism. Moreover, Gatti et al. (2015) suggest that exploration is necessary to improve firm long term performance in industries with high levels of interdependence and low levels of decomposability; and exploitation is more beneficial in industries with more limited levels of interdependence and high levels of decomposability. In international business context, Elia et al. (2019) notice that multinational corporation (MNC) subsidiaries' exploration-orientated innovative alliances with culturally diverse partners perform well because exploration overcomes the overwhelming impacts of cultural diversity. Fourné et al. (2019) through a meta-study find that structural separation, in contrast to contextual ambidexterity, is a more effective ambidexterity mechanism in high technology environments, especially for firms in manufacturing industries. It allows specialisation with purpose-fit systems and processes and prevents information overload within specialised units. Uotila (2017) suggests that in a race to finish first, focusing on exploitation that offers variability and uniqueness in relation to one's competitors is a more advantageous strategy; to avoid especially low performance, exploration is relatively more beneficial.

Adding to the mixed results on firm internal and external contingencies is the diverse definition and operationalisation of exploitation, exploration, and ambidexterity. One of the key debating issues is on conceptualising exploration and exploitation (Lennerts et al., 2020). Some scholars conceptualise exploitation and exploration as orthogonal variables (Baum et al., 2000; Nerkar, 2003). Others conceptualise organisational innovation as a mix between the processes of knowledge exploration and exploitation (Crossan & Berdrow, 2003; Gupta et al., 2006; Heyden et al., 2015; Lavie & Rosenkopf, 2006; Lavie et al., 2010; Levinthal & March, 1993; March, 1991; Rogan & Mors, 2014). Exploration and exploitation are perceived as two ends of a continuum, suggesting that the distinction between exploration and exploitation is often a matter of degree rather than of type (Gupta et al., 2006; Lavie et al., 2010; Rogan & Mors, 2014). In line with this perception, exploration and exploitation are considered as complements rather than substitutes (Brown & Eisenhardt, 1997; Lavie et al., 2010; Paruchuri & Awate, 2017; Rogan & Mors, 2014; Rothaermel & Deeds, 2004), and the transition from exploitation and exploration is gradual (Choi & McNamara, 2018). Consequently, the balance between exploration and exploitation is conceptualised not as an absolute but a matter of degree. In particular, the balance is defined as the extent to which exploration and exploitation move together, with a positive empirical correlation suggesting balance, and a negative correlation indicating a trade-off (Fourné et al., 2019; Lavie et al., 2010; Papachroni et al., 2014). By the same token, Shibata et al. (2019) propose cannibalistic and complementary types of ambidextrous organisations, and Úbeda-García et al. (2020) embrace a conception of organisational ambidexterity from the dynamic capabilities approach.

Along with conceptual debates, measuring exploration, exploitation, and ambidexterity as an additive, multiplicative, or relative function contributes to sensitive empirical results (Lavie et al., 2010). He and Wong (2004) employ the fit as moderating, i.e., the interaction between exploration and exploitation (Gatti et al., 2015; Gibson & Birkinshaw, 2004; Guisado-González et al., 2017; Katila & Ahuja, 2002; Lavie et al., 2011; Stettner & Lavie, 2014), as well as the fit as matching, i.e., the absolute difference between the two (Cao et al., 2009; Ho et al., 2020). Luger et al. (2018) further includes ambidexterity's arithmetic mean as a measure. Wang et al. (2017) split all inventions into three groups according to the degree of exploration and treat inventions in the middle group as balanced inventions. Lavie et al. (2010) advocate the use of a single continuous variable to capture exploration–exploitation, in which balance is modelled with a quadratic function. Likewise, Lucena (2016), by following Rothaermel and Alexandre (2009) and Lin et al. (2007), builds a combined measure of exploration and exploitation using a ratio capturing the percentage of explorative partnerships among all partnerships. Junni et al. (2013) and Lee et al. (2017) emphasise the need to investigate not just the balance levels between exploration and exploitation, but also the level of total efforts and different combinations. More importantly, the effects of diverse measures vary. Ho et al. (2020) find that the balance between marketing exploration and marketing exploitation, as measured by the absolute difference between the two, is significantly associated with sales performance, whereas the balance operationalised as either an additive or multiplicative is not.

Performance measures, investigation length, and unit of analysis also contribute to the mixed empirical results in extant literature. In terms of performance, for instance, Li et al. (2018) are interested in breakthrough innovations vs. particularly poor innovations. Lennerts et al. (2020) focus on incremental innovation vs. radical innovation performance and find that the relationship between exploration and exploitation in determining performance is asymmetric and more complex than originally thought. Chou et al. (2018) follow O'Reilly and Tushman (2013) and adopt the dynamic capabilities framework as the theoretical frame to study ambidexterity. These authors measure firm performance by new product development.

Dierickx and Cool (1989) point out that that a firm's experiential learning is subject to time compression diseconomies. On the one hand, it suggests the negative effects of the speed of temporal cycling between exploration and exploitation on firm performance (Mavroudi et al., 2020). On the other hand, it also warns that exploration, exploitation, and ambidexterity must be studied over a long time frame. As Lavie and Rosenkopf (2006) indicate, if exploration and exploitation were studied over a shorter time-frame, specialisation would emerge rather than a balance between the two (Coradi et al., 2015). Vahlne and Jonsson (2017) observe that firms adopt different ambidexterity over time, with contextual ambidexterity being of great importance in the early history of a firm and structural ambidexterity becoming dominant and institutionalised at its later stages. Similarly, Cho et al. (2020) find that balancing exploitation and exploration positively contributes to startup performance but not necessarily for long-established firms. Lennerts et al. (2020) imply that both structural ambidexterity and the paradoxical view of ambidexterity are needed to secure the long-term performance of firms.

Regardless of the abundancy of studies on various contingencies, the extant literature is not able to agree on the specific impacts of individual contingencies on the relationship between organisational learning activities and firm performance. Yet, it is fair to say that merits of exploration, exploitation, and ambidexterity cannot be taken for granted. Moreover, among diverse internal and external contingencies studied, research efforts by far have neglected the distribution of organisational learning activities.

2.3. Distribution and Aggregated Ambidexterity

Exploration, exploitation, and ambidexterity have been defined and investigated at various levels of analysis (Lavie et al., 2010; Petruzzelli, 2014), such as invention (Nerkar, 2003; Wang et al., 2017), individual (Lee & Meyer-Doyle, 2017; Mom et al., 2007), subunit/group/team (Beckman, 2006; Jansen et al., 2012; McGrath, 2001), organisational (Benner & Tushman, 2003; Greve, 2007; Jansen et al., 2006), inter-organisational (Lavie & Rosenkopf, 2006; Lin et al., 2007), and industry levels (Gilsing & Nooteboom, 2006).

Gupta et al. (2006) have long pointed out that different units of analysis of exploration and exploitation could lead to different conclusions. For instance, by focusing on the patent-level analyses, Wang et al. (2017) find that inventions with a balanced level of exploration and exploitation are of higher quality than inventions that are either over-exploratory or over-exploitative. Li et al. (2018) showed that the simultaneous pursuit of knowledge exploration and exploitation at the team level is more difficult than at the firm level. It is consistent with Gupta et al. (2006)'s argument that '*ambidexterity and punctuated equilibrium may be easier to achieve at an organisational or system level than at an individual or subsystem level of analysis*'. In contrast, Jansen et al. (2009) imply that balancing exploration and exploitation would be more effective at lower hierarchical levels. On top of the mixed results at different levels of analysis, Gupta et al. (2006), Lavie et al. (2010) and Rogan and Mors (2014) agree that exploration and exploitation must be defined from the viewpoint of a given organisation or unit. Even within a particular organisation, a certain activity may be perceived as exploration by one unit and exploitation by another because of the uneven cross-unit distribution of knowledge and experience (Gupta et al., 2006; Lavie et al., 2010; Wang et al., 2017; Zhang et al., 2019).

Many scholars urge for studies spanning multiple levels of analysis (Lavie & Rosenkopf, 2006; Simsek, 2009; Wilden et al., 2018). In response to this call, Lennerts et al. (2020) combine ambidextrous approaches at the organisational level with those at the individual level. Martin et al. (2019) defines organisational ambidexterity as a nested phenomenon incorporating the

multi-level and complex relationships between individuals, units, and organisations in achieving and sustaining ambidexterity over time. The three forms may be related to each other over time or even be complementary (March, 1991; van de Ven & Poole, 1995). An interesting observation is that some degree of specialisation in exploration or exploitation can exist at different levels in a system, while the overall system exhibits duality (Miller et al., 2006; Rogan & Mors, 2014). For instance, Gupta et al. (2006) define ambidexterity as the balance achieved through structural separation mechanism, and define punctuated equilibrium as the balance achieved through temporal separation mechanism. Then, the authors discuss an interesting situation with two loosely coupled individuals or subsystems, namely units A and B. At time t1, A pursues exploration while B pursues exploitation. At time t2, A switches to exploitation, while B switches to exploration. Thus, intra-unit balance occurs via punctuated equilibrium over time, while inter-unit or the system-wide balance occurs via ambidexterity at times t1 and t2. Consequently, Gupta et al. (2006) conclude that under certain conditions, the balance could be achieved at the level of a broader system rather than at the level of subsystems. Likewise, Wang et al. (2017), although they focus on the balance at the individual patent level, discuss an interesting question on the synergy among patents. For two homogenous firms, namely A and B, A generates two patents, one being 100% exploratory and one being 100% exploitative; meanwhile, B generates two patents, both being balanced with 50% exploratory and 50% exploitative knowledge. Although both firms would achieve the balance once exploration and exploitation are aggregated to the firm level, would the two firms have similar firm-level performance? Unfortunately, the authors fail to offer much insight in answering the question. Nevertheless, the hypothetical scenario discussed by Gupta et al. (2006) and Wang et al. (2017) imply that the distribution of exploratory and exploitative activities within an organisation matters even when the system-level aggregated exploration and exploitation reach a balance.

The distribution issue is particularly salient for large organisations, in which exploration and exploitation unavoidably involve subunits. With the involvement of subunits, the balance between exploration and exploitation can be achieved through intra-subunit ambidexterity or inter-subunit ambidexterity. The former happens when the balance between exploration and exploitation is achieved within each subunit. Inter-subunit ambidexterity happens when the balance is obtained across subunits with individual subunits specialised in either exploration or exploitation. In both cases, the aggregation of subunit exploration and exploitation would lead to firm-level ambidexterity. Much of the organisational learning literature studies large organisations, many of which are MNCs. The geographically dispersed organisational structure of the MNC makes the understanding of intra-firm distribution of exploration and exploitation even more salient. Indeed, we are not implying that the issues only apply to MNCs; instead, the MNC provides a fertile setting for investigations as such.

Although international business scholars seldom explicitly exam ambidexterity, some studies on intra-MNC knowledge flows implicate the importance of ambidexterity (Gupta & Govindarajan, 1991, 2000). In MNC literature, competence creation *per se* is analogous to exploration in organisational learning literature, while competence exploiting corresponds to exploitation (Cantwell & Mudambi, 2005). MNC literature further acknowledges that exploration and exploitation may occur in various subunits including the parent and subsidiaries of a large organisation. The exploration of idiosyncratic knowledge in diverse locations by the geographically dispersed subunits has been recognised as a source of multinationality advantages of the MNC (Zander, 1998). While geographical distance creates beneficial semi-isolation between subunits to facilitate exploration (Fang et al., 2010), it is an advantage of the MNC only if the outcomes of subunit exploration is combined and recombined, i.e. exploited, within the firm (Kogut & Zander, 1992; Zhang et al., 2019). Consequently, MNCs are advised to develop and maintain social and technological linkages between a competence-creating

subsidiary and the rest of the MNC to avoid the risk of isolated subsidiaries (Birkinshaw & Hood, 1998; Frost & Zhou, 2005; Rabbiosi, 2011; Solvell & Zander, 1998; Zander & Solvell, 2002). Empirical studies show that being proactive in exploration and improving on the effectiveness in exploitation lead to a better globalisation performance (Vahlne & Jonsson, 2017).

While organisational learning and MNC literature share many consistent findings, differences between them are evident. First, organisational learning literature often adopts a single-level approach by focusing on corporate-level ambidexterity and performance. The MNC literature is more interested in subsidiary competence creation, which is used to explain both subsidiary and corporate performance (Andersson et al., 2005; Zhang et al., 2015), i.e., a multi-level approach. Yet, the MNC literature tends to treat subsidiary mandate as a dichotomous variable, i.e., competence-creating vs. competence-exploiting (Cantwell & Mudambi, 2005; Zhang et al., 2015). The distribution of exploration and exploitation among subunits is largely neglected. Second, to achieve ambidexterity, organisational learning literature recommends semi-isolated subunits, i.e., organisational separation (Benner & Tushman, 2003; O'Reilly III & Tushman, 2004), or temporal transition (Boumgarden et al., 2012; Gibson & Birkinshaw, 2004). In contrast, isolated subsidiaries and the oscillating of subsidiary mandates have never been a good idea for both the subsidiary and the corporate in the MNC literature.

In sum, with the conflicting evidence on the relationship between firm performance and ambidexterity, as well as the missing pieces in existing organisational learning and MNC literature, more research is needed to reveal the multifaceted performance implications of organisational learning activities (Coradi et al., 2015; Lavie et al., 2010; Raisch & Birkinshaw, 2008). Most studies fail to identify clear performance implications of ambidextrous designs because organisational separation is often assumed rather than demonstrated/measured.

3. CONCLUSIONS

This study thoroughly reviews extant literature on ambidextrous mechanisms, contingencies impacting the relationship between organisational learning activities and performance, and aggregation issues in the study of ambidexterity. This paper advances our understanding of the relationship between organisational learning and firm performance. Specifically, while the extant literature in organisational learning and international business largely focuses on the absolute and relative magnitude of exploratory and exploitative learning activities of a firm, this study identifies and draws research attention to a much neglected structural factor impacting the relationship between organisational learning and firm performance, namely the distribution of organisational learning activities within an organisation and the associated inter- and intra-subunit ambidextrous mechanisms. By incorporating distribution of learning activities, future conceptual and empirical research efforts would offer more comprehensive insights on organisational learning. Although an empirical analysis on the intra-organisational distribution of organisational learning activities is beyond the scope of this conceptual paper, we discuss a few promising future research directions here.

Firms search internally and externally for knowledge elements and transfer them internally for recombination opportunities. Exploitation contributes to firm survival and growth by exhausting current knowledge element recombination opportunities at a faster rate than the market (Zhang et al., 2019). The wide participation of subunits accelerates the rates of recombination, but may cause duplications across subunits. Exploration, on the other hand, involves a process of bringing in new knowledge and capabilities to a firm, the outcome of which is the increased number of current knowledge elements for recombination within the firm. With a small number of subunits participating in exploration, firms are more likely to guarantee

sufficient internal resources toward exploratory learning. Yet, involving many subunits in exploratory learning arguably would increase the chance of identifying and absorbing new knowledge elements from external environments. Consequently, it would be an interesting and insightful investigation to differentiate exploratory and exploitative learning activities and examine the relationship between their respective intra-firm distributions and firm performance in future research.

Intra-firm distribution of learning activities is particularly salient for large MNCs with a geographically dispersed structure. The fact that MNCs may enjoy larger scale and scope of exploration does not necessarily imply the globalisation of learning or its positive association with firm performance (Ghemawat, 2003; Rugman & Verbeke, 2004). How to structure the organisational learning activities across geographically dispersed subunits of a large MNC deserves further attention and thorough analyses in future research, which will also contribute to the debate of regionalisation vs. globalisation.

As we reviewed above, firms may benefit from diverse learning goals, such as exploration, exploitation, or ambidexterity, depending on various contingencies they face. This study draws research attention to a neglected structure consideration, i.e., the distribution of organisational learning activities. It can be combined with diverse learning goals as a strategic behaviour dimension to facilitate organisational learning mechanism choices. Hence, the performance implications of the interaction between the structure dimension and the strategic behaviour dimension in organisational learning warrant future research attentions.

"*Sustaining an optimal mix of exploitation and exploration at any given time is one of the most important demands on a manager's attention*" (Koryak et al., 2018; Smith & Tushman, 2005). The intra-firm distribution of organisational learning activities emphasised by the current study should also enlighten practitioners, especially those in large organisations with formal and informal intra-firm boundaries. A fine-grained understanding of the impact of distribution offers a practical tool for managers in choosing effective learning mechanisms based on a firm's structural and strategic contingencies.

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