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## Micro-foundations of organizational design and sustainability: The mediating role of learning ambidexterity

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**MICRO-FOUNDATIONS OF ORGANIZATIONAL DESIGN AND SUSTAINABILITY:  
THE MEDIATING ROLE OF LEARNING AMBIDEXTERITY**

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## **ABSTRACT**

This paper builds on prior scholarly works by examining the relationship between organizing paradox (formalization and decentralization), and organizational levels of learning paradoxes, i.e. exploration and exploitation, and firms' outcomes (organizational creativity, organizational resilience and organizational energy). Using data from 98 executives and 325 senior employees working across a diverse range of firms operating in the Middle East, the findings suggest that organizing paradox (formalization and decentralization) has a positive impact on learning ambidexterity. In addition, we also found that learning ambidexterity has a positive impact on both organizational resilience and organizational energy. Furthermore, the results indicate that learning ambidexterity mediates the relationship between organizing paradox and organizational creativity. These findings provide important insights into the micro-foundation aspects of organizational ambidexterity.

**Keywords:** Organizational design; paradox; exploration; exploitation; ambidexterity; micro-foundations; emerging markets; Middle East.

# **1 INTRODUCTION**

Over the past few decades, management literature has become increasingly replete with paradoxes such as co-opetition (cooperation and competition) (Brandenburger & Nalebuff, 1996; Bouncken et al., 2015; Klien et al., 2019; Sanou et al., 2016), organizing paradox (formalization and decentralization), paradox of success and learning paradox (exploitation vs. exploration) (Atuahene-Gima, 2005; Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Schad, Lewis, Raisch & Smith, 2016; Smith & Berg, 1987; Smith & Lewis, 2011). When confronted with competing demands and changing environmental conditions, organizational leaders are often compelled to select whether to explore or exploit these activities simultaneously (Andriopoulos & Lewis, 2009; Smith, 2014; Faems & Filatotchev, 2018). Paradox or contradiction forces presents a challenging terrain for managers seeking clear options in charting a course of action for their organizations to deal with changing market conditions (Smith & Lewis, 2011; Cunha & Putnam, 2019; Faems & Filatotchev, 2018). In much of the discourse on strategic positioning, organizations are offered options to choose between two competing positions, e.g. cost-leadership or follow a differentiation strategy in order to avoid becoming obsolete in a competitive and dynamic environment (e.g. Banker et al., 2014; Li & Li, 2008; Porter, 1985).

Although many organizations from a wide range of industries are adept at addressing one organizational problem or issue at a time, they appear to falter when concurrently faced with addressing competing demands simultaneously (Smith, 2014; Schad et al., 2016). Besides assembling resources and expertise to manage the tensions (Schad et al., 2016), managers may also be side-tracked from other competing demands such as profits over purpose, thus requiring managerial attention (Gino, 2013). Nonetheless, there are a number of studies that demonstrate that concurrently pursuing two activities or strategic options can be beneficial to the focal organizations and individuals (Smith, 2014; Smith & Lewis, 2011). For example, firms that can successfully balance both exploration and exploitation activities (ambidextrous firms) are

expected to show superior performance (e.g. He & Wong, 2004; Raisch et al., 2009). Despite the growing breadth and depth of research on paradox and paradox theory (e.g. Cunha & Putnam, 2019; Faems & Filatotchev, 2018; Miron-Spektor, Ingram, Keller, Smith & Lewis, 2018; Miron-Spektor & Paletz, 2017; Fairhurst, Smith, Banghart, Lewis, Putnam, Raisch & Schad, 2016; Schad et al., 2016) and research on organizational ambidexterity (Andriopoulos & Lewis, 2009; Gibson & Birkinshaw, 2004; Cao, Gedajlovic & Zhang, 2009; Tushman & O'Reilly, 1996), relatively limited scholarly attention has been devoted to exploring the linkages between dual organizational structure and organizational ambidexterity, and whether the structure can have negative or positive effects on organizational outcomes operating in different contexts across both developed and emerging economies. Indeed, we lack even a basic understanding of these issues in those contexts (such as the Middle East and other emerging economies) which are characterized by high levels of political instability, the strong role of the national governments and fragmented institutions. Unexpected changes in constitutions, laws, public policies and legal practices, and the nature of the political systems (e.g. autocratic vs. democratic) are all examples of trends that can affect the nature of business activities and restructuring of firms operating in these countries.

To address this deficit in our current understanding of organizational tensions, we examine these paradoxical relationships. We limit our analysis to relationships between different sets of variables that operate at the organizational level of paradoxes, i.e. exploration and exploitation (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996; Siggelkow & Levinthal, 2003) and organizing paradox (formalization and decentralization). Exploring the learning paradox (exploitation vs. exploration) has the potential to enrich our understanding of the different ways through which organizational structure can exert different influences on organizations' sustainability, including creativity, resilience and energy – the firm-level outcomes. We contend that creativity, resilience and energy are micro-foundations since these have strong foundations in individual employees and develop on the basis of individuals' skills and human capital present within organizations. The individual-level actions essentially add

up in explaining organization-level phenomena such as sustainability and strategy (e.g. Akhtar et al., 2018; Cooper, Stokes, Liu, & Tarba, 2017; Felin et al., 2015; Del Giudice et al., 2017). Against such a background, the role of individuals becomes even more important in managing conflicting and competing demands simultaneously.

The paper makes three main contributions to international business strategy and organizational ambidexterity literature. First, although existing studies have addressed the beneficial impact of pursuing exploratory and exploitative learning simultaneously (e.g. Amankwah-Amoah et al., 2019; Jansen, 2005; Gibson & Birkinshaw, 2004; He & Wong, 2004), these studies have mostly focused on organizational performance. However, other organizational outcomes such as sustainability, creativity and resilience, are still open for empirical investigation. In the paradox theory, Smith and Lewis (2011) have expanded the perspective of previous studies by pointing out that simultaneously pursuing exploratory and exploitative activities can foster sustainability, thus enabling firms to achieve the highest levels of performance. Smith and Lewis (2011) noted that firm-level sustainability is achieved by ensuring three mechanisms: *organizational creativity*, *organizational resilience* and *organizational energy*. Therefore, micro-foundation focuses on the antecedents and how they can be amassed to explain macro-level phenomena (Felin et al., 2015). In this paper, we identify that learning ambidexterity positively affects these mechanisms. Recently, scholars have emphasized the need to understand micro-level routines and actions which managers undertake and how such actions shape organizational outcomes and macro-level phenomena (e.g. Felin & Foss, 2005; Foss, 2011; Felin et al., 2012, Felin et al., 2015), including sustainability (e.g. Akhtar et al., 2018; Del Giudice et al., 2017).

Second, drawing on a paradox theory (Miron-Spektor et al., 2018; Cunha & Putnam, 2019; Smith, 2014; Smith & Lewis, 2011) and organizational ambidexterity literature (Cao et al., 2009; Raisch et al., 2009; Tushman & O'Reilly, 1996; O'Reilly & Tushman, 2013), we developed and

tested a model which captures these complex relationships. Thus, the paper enhances our understanding of the paradox (Fairhurst et al., 2016; Schad et al., 2016). In light of growing calls for a better understanding of the dynamics of organizational paradox (Faems & Filatotchev, 2018; Schad et al., 2016), our study responds to the call by shedding light on how organizing paradox ‘can impact on learning ambidexterity (Simsek, 2009). Organizing paradox refers to a firm’s ability to simultaneously combine and develop contradictory organizational characteristics (e.g. formalization and decentralization) (Jansen et al., 2005), while learning ambidexterity is defined as a firm’s ability to pursue and balance exploration and exploitation activities at the same time (cf., Andriopoulos & Lewis, 2009; Lubatkin et al., 2006; Wei et al., 2014). Moreover, the present study helps to address the deficit in current literature where scholars have focused mainly on organizations in stable institutional settings of developed countries. Accordingly, we still know relatively little about the effects and outcomes of organizational tensions in non-Western-country settings since recent international business (IB) literature highlights the importance of understanding and integrating context (Liu & Vrontis, 2017; Teagarden et al., 2018). Using data from a developing economy and an understudied Middle East context in the IB field, we extend the current literature on the organizational tensions by providing a much fine-grained view about the mechanisms through which managers manage competing demands.

The remainder of this paper is organized as follows. In the next section, we present a review of the literature on organizational structure, organizational ambidexterity and organizational outcomes. This culminated in the development of a conceptual framework. We then turn our attention to data collection and analysis. We then set out the findings. Finally, the theoretical and managerial implications of the study are outlined.

## **2 CONCEPTUAL BACKGROUND AND HYPOTHESES DEVELOPMENT**

Paradoxes are contradictory yet there are “interrelated elements that exist simultaneously and persist over time” (Smith & Lewis, 2011, p. 382). It can be viewed as a persistent contradiction

between interdependent elements or constructs (Schad et al., 2016). Paradox theory represents the “tensions that coexist and persist over time, posing competing demands simultaneously that require ongoing responses rather than one-time resolutions” (Smith, 2014, p. 1592; Lewis, 2000; Miron-Spektor et al., 2018). An organizational-level paradox includes cooperation and competition such as alliances and network forms of collaborations with competitors (Brandenburger & Nalebuff, 1996; Klein et al., 2019; Sanou et al., 2016), and exploration and exploitation that generate persistent and conflicting demands on firms (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; O’Reilly & Tushman, 2013). It is in this context that it has been suggested that firms need to “engage in enough exploitation to ensure the organization’s current viability and engage in enough exploration to ensure its future viability” (Levinthal & March 1993, p. 105). Past studies have demonstrated that, in order to ensure long-term survival, organizations require ongoing effort to address multiple competing demands (Smith & Lewis, 2011; Lewis, 2000). Organizational structure could play an important role when it comes to addressing conflicting demands. According to Mintzberg (1979, p. 2), organizational structure simply refers to “the sum total of the ways in which it divides its labor into distinct tasks and then achieves coordination among them”. Organizational structure shapes how organizational resources are mobilized and utilized across a range of activities and competing demands (Rivkin & Siggelkow, 2006). Contingency theory has been employed to explain the conditions that lead to the adoption of centralized and decentralized approaches (Siggelkow & Levinthal, 2003). Figure 1 shows the conceptual model of this study.

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## **2.1 Learning ambidexterity, organizational design and performance**

Scholars suggest that superior firm performance and ability to innovate are predicated on simultaneously pursuing both exploitation and exploration activities (Andriopoulos & Lewis,



2008; Cao et al., 2009; Messersmith & Chang, 2017; Raisch et al., 2009). Besides capturing and applying new knowledge to improve their processes and innovation activities, many firms also turn to outside organizations including rivals and suppliers to elicit knowledge to enhance their innovation activities (Chesbrough, 2006; Gassmann, Enkel & Chesbrough, 2010; Khan et al., 2018). In addition, organizations are also forced to decide whether to formalize or decentralize innovation activities in order to enhance and take advantage of their resource base. This is particularly pertinent in highly uncertain and unstable institutional environments where access to resources is constrained by a lack or limited rule of law and weak legal enforcement (see Amankwah-Amoah et al., 2018a, 2018b; Cavusgil, Knight & Riesenberger, 2017; Khan et al., 2018). These constraints limit an organization's ability to accrue any positive gains from pursuing both exploitative and exploratory activities simultaneously, which leads to ambidexterity.

Firms operating in international markets face the dual challenge of pursuing both exploitative and exploratory activities, and how to balance these may require specific managerial actions that can facilitate ambidexterity (Foss, 2011; Felin et al., 2015). Scholars note that such innovation requires a different set of resources and capabilities for them to co-evolve (Collinson & Liu, 2019; Collinson & Narula, 2014), including the important role of absorptive capacity and learning intent which enable firms based in emerging markets to develop exploitative and exploratory innovations (e.g. Khan, Lew & Marinova, 2018). It is in this context that scholars suggest the need to invest in resources and capabilities in order to balance both exploration and exploitation which is vital for long-term survival of firms (Hill & Birkinshaw, 2014; O'Reilly & Tushman, 2013; March, 1991; Khan et al., 2018). A prominent theoretical underpinning for understanding how organizations achieve superior performance by investing intra-firm resources and capabilities is the resource-based view (RBV) (Corbett & Claridge 2002). These resources and capabilities represent bundles of tangible and intangible assets that firms use to formulate and implement organizational strategies (Barney, Wright & Ketchen, 2001). The fundamental assumption of RBV is that the organization's ability to achieve superior performance is linked to

its ability to acquire and control valuable, rare, inimitable and non-substitutable resources and capabilities (Barney, 1991). In addition, in order to benefit from resources and capabilities, firms also need to have a proper organizational design in place which can mold the firm-level resources and capabilities into achieving exploitation and exploration. Organizational design has also been suggested to play a vital role in the discovery and realization of entrepreneurial opportunities (e.g. Foss et al., 2015).

Organizational design refers to “the process of creating, implementing, monitoring, and modifying the structure, processes, and procedures of an organization” (Rothaermel, 2015, p. 345). One key element of organizational design is structure, which influences how the organization is positioned to harness its available resources and talent to outsmart and maneuver rivals (Hitt, Ireland & Hoskisson, 2012). By organizational structure, we are referring to firm-specific formal procedures, processes, controls and authority, which changes how decisions are made (Keats & O’Neill, 2001). Stemming from organizational structure is managers’ latitude to act within the organization. Corporate executives are often seduced by the benefits of centralization by taking decision-making and power to the center to the detriment of their organizations. Given that the structure (formalization and decentralization) specifies how activities are coordinated and conducted inside the organization, it is likely to facilitate or constrain organization-level learning ambidexterity. The failure of common types of organizational designs to support the organization’s ability to manage contradictory activities simultaneously (for example, learning ambidexterity) has made researchers question what is the most appropriate design (Smith, Lewis & Tushman, 2011). Some authors have suggested that achieving a balance between exploratory and exploitative activities requires different organizational characteristics (e.g. Raisch & Birkinshaw, 2008). Few empirical endeavors have been undertaken to find out what structural characteristics organizations can adopt to enhance learning ambidexterity (Pertusa-Ortega & Molina-Azorín, 2018; Jansen, Bosch & Volberda, 2005). Some studies examined the influence of specific structural characteristics separately on an

organization's ambidexterity. For example, using data from a sample of 164 Spanish firms, Pertusa-Ortega and Molina-Azorín (2018) found that decentralization and enabling formalization can increase organizational ambidexterity, whereas coercive formalization has a negative effect. Other studies have focused on how the combination of contradictory organizational characteristics may be needed to develop organizational ambidexterity. For example, using data from a sample of 220 branches at a large European multi-unit financial services firm, Jansen and his colleagues (2005) highlighted that a combination of contradictory organizational characteristics (formalization, decentralization and connectedness) can enhance a unit's ambidexterity. Within the micro-foundational thinking, scholars such as Felin et al. (2012, p. 1364) note that "structures, whether at the organizational level or within an organization, specify the conditions that enable and constrain individual and collective action and establish the context for interactions within an organization. While structures may constrain behaviour, they also enable efficient information processing, knowledge development and sharing, coordination and integration, and more generally, collective action." These arguments suggest that structure plays an important role in enabling or constraining organizations to balance exploration and exploitation. Consistent with Jansen et al. (2005), our study assumes that ambidextrous firms are characterized by interaction of formalization and decentralization simultaneously. Based on the above discussion we propose:

*H1: Organizing paradox (e.g. formalization and decentralization) has a positive impact on learning ambidexterity.*

## **2.2 Learning ambidexterity and sustainability**

Today, executives are becoming more aware of the vital importance of sustainability in their business success (Akhtar et al., 2018; Wales, 2013). The concept of a sustainable organization is not only related to the optimal use of environmental and physical resources but also to the cultivation of other resources such as human and organizational resources (Smith, Lewis & Tushman, 2011). Although the common meaning of organizational sustainability revolves around

the organization's ability to protect the rights of future generations by preserving and renewing ecological, economic and social resources (Elkington, 1997; Senna & Shani, 2009), our study embraces a broader meaning that focuses on how the organization achieves sustainability through efforts to meet multiple and contradictory demands of diverse stakeholders (Lewis, 2000; Smith & Lewis, 2011). This is consistent with Smith and Lewis's (2011) dynamic equilibrium model of organizing that highlights how sustainability can be enabled through the effective management of paradoxes. According to this model, organizational sustainability is defined as "achieving peak performance today while creating conditions to thrive tomorrow" (Smith et al., 2011: p. 799). Smith and Lewis (2011) pointed out that enabling sustainability is achieved by ensuring three mechanisms: organizational creativity, organizational resilience and organizational energy. Such activities can be important antecedents for micro-level actions undertaken by managers to facilitate macro-level outcomes such as sustainability (Barney & Felin, 2013; Del Giudice et al., 2017; Felin & Foss, 2005; Foss, 2011; Felin et al., 2015).

Rationale behind linking between 'creativity, resilience and energy' and organizational sustainability exists in literature. Through collective creativity (e.g. utilizing human capital), organizations can develop and produce solutions that create opportunities for more effective management of, and benefit from, organizational resources as a whole and overcome challenges that may deter a balanced approach to organizational sustainability (e.g. focus on achieving peak performance in the present at the expense of building resources and competencies that position to excel in the future) (Lim, 2016). Resilient organizations are more likely to achieve sustainability not only because they are able to manage the complexity of assembling and integrating their various resources (e.g. social, financial, human and environmental resources) but are successful in balancing the demands and priorities of their various groups – employees, customers and diverse shareholders, and while, at the same time, achieving its own goals (e.g. Tarba et al., 2019; Tengblad & Oudhuis, 2018). Resilient organizations are able to manage, cope with and overcome unexpected challenges (e.g. Linnenluecke, 2017; Sutcliffe & Vogus, 2003). In addition to the role

of creativity and resilience, productive energy of employees can be an important key to organizational sustainability. Employees in organizations with high productive energy collectively direct their efforts and activities towards achieving the organization's goals (Schudy, 2010). This energy not only consumes existing resources to achieve organizational goals but may itself be a source of self-reinforcing of the resources that the organization can invest to meet potential demands and challenges over time (Quinn, Spreitzer & Lam, 2012; Cameron, Dutton & Quinn, 2003; Vogel & Bruch, 2011).

Since the core idea of this study deals with how to employ contradictions to achieve sustainable performance at the organization level – not the individual – therefore we have selected 'creativity, resilience and energy' as firm-specific characteristics which are rooted in individual actions inside the firm (e.g. Felin et al., 2012). Although previous literature has suggested that these concepts (creativity, resilience and energy) can be preconditions to achieve peak performance at the individual level, our study agrees with Smith and his colleagues (2011) who have shifted this perspective by exploring preconditions to achieve sustainability at the organizational level. Therefore, we will employ measures that deal with these constructs as a collective phenomenon that emerges from the individual-level actions but is achieved at a higher level of analysis (Kozlowski & Klein, 2000). In the following sections, the relationships between learning ambidexterity and these mechanisms are discussed.

### **2.2.1 Learning ambidexterity and creativity**

The study of organizational creativity over the past years has generated a wide variety of definitions (Oldham & Cummings, 1996). It was found that these definitions do not depart from satisfying two basic conditions for creativity ideas, products or procedures, namely, first, novelty and, second, the benefit they bring to work within the organization (e.g. Zhou & George, 2001; Smith, 2006; Gumusluoglu & Ilsev, 2009). Novelty is defined as the originality or the unexpected, while the utility and benefits are defined as appropriateness, adaptation and feasibility (Belkin,

Zhao, Tolboom & Farris, 2008). Researchers have suggested that transporting the human mind to two contradictory ideas simultaneously ignites creative ideas. For example, in a study of 54 scientists and artists such as Einstein and Picasso, Rothenberg (1979) noted that the secret of the mental and creative progress of these scientists and artists comes when there are two contradictory ideas in the mind of the individual and both are simultaneously important to him or her.

Learning ambidexterity refers to the organization's ability to divide its attention and resources simultaneously between both exploratory and exploitative activities to overcome the contradictory tensions of learning (Carmeli & Halevi, 2009). Exploration activities are related to a kind of thinking called divergent thought, a thinking that looks beyond current solutions and ideas and is associated with the generation of new and original ideas. Exploitative activities are related to a kind of thinking called convergence which is focused on incremental innovations that meet the needs of current customers and markets (Tushman & O'Reilly, 1996; O'Reilly & Tushman, 2013). This type of thinking is related to the development of previously used solutions and existing ideas. Although exploration activities reinforce the process of presenting new ideas, they do not necessarily enhance the process of generating creative ideas because creative ideas require not only novelty and originality, but must also be beneficial to the organization (e.g. Sullivan & Ford, 2010; Belkin et al., 2008). Organizations that focus on exploration activities may improve their ability to replenish their knowledge of new ideas, but can immerse them in an endless cycle of research and change (Raisch & Birkinshaw, 2008). In order for organizations to benefit from new ideas, they also need to focus on exploitative activities. Exploration and exploitation are complementary activities (He & Wang, 2004) and firms' long-term survival hinges on pursuing both activities (Hill & Birkinshaw, 2014). The returns generated by expanding existing products and services can be devoted to exploring opportunities for new products and services, and these new products and services will generate returns that sustain investment in day-to-day operations (Sarkees, 2007). The above arguments lead to the following hypothesis:

*H2: Learning ambidexterity has a positive impact on organizational creativity.*

### **2.2.2 Learning ambidexterity and resilience**

Organizational resilience refers to the organization's ability to avoid, bounce back or recover from sudden and emergency events that could threaten its existence (e.g. Chrisman et al., 2011; Liu, Cooper & Tarba, 2019; Somers, 2009; Robertson et al., 2015; Sutcliffe & Vogus, 2003). This ability provides organizations with insight into how they continue to achieve desired outcomes in sudden events and crises that are important impediments to adaptation (Sutcliffe & Vogus, 2003). The micro process of resilience can be an important antecedent of both exploitative and exploratory activities from the micro-foundation-based view (Felin & Foss, 2005; Foss, 2011; Felin et al., 2015). Such micro-level aspects can lead to understanding macro-level phenomena (Barney & Felin, 2013). One of the fundamental characteristics of organizations that have the ability to adapt successfully in such circumstances is the ability to manage and resolve contradictions (Luscher et al., 2006; Smith & Lewis, 2011). For example, in research on adaptation in colleges and universities, Cameron (1986) concluded that those organizations that were able to detect and respond well to uncertainty, complexity and turbulence were those who pursued simultaneous contradictions.

One reason that organizations find it difficult to adapt to new environmental conditions is due to their capacity to allocate their resources and effort towards certain activities. Organizations that focus on exploration activities at the expense of exploitative activities or vice versa may maintain success in the short term but at the same time may suffer from future inertia in their structures or have strategic commitments for various activities that hinder their ability to adapt successfully to environmental changes (Smith & Lewis, 2011; Hill & Jones, 2009). Focusing on exploitative activities may enhance short-term performance but can lead to an efficiency trap because organizations will be unable to respond adequately to sudden changes (Raisch & Birkinshaw, 2008). While focus on exploration activities may enhance the stock of new

knowledge, it may, however, lead to a failure trap (Amankwah-Amoah, 2016; Amankwah-Amoah et al., 2018c; Jansen, 2005), because organizations will be overwhelmed by the unjustified excess that is reflected in their low ability to improvise appropriate solutions to environmental changes they may face (Zheng, Venters & Cornford, 2011). According to the above arguments, the focus on one of the poles of organizational ambidexterity, whether exploitative activities or exploration activities, leads to organizational inertia and strategic commitments that may reduce the organization's ability to cope with sudden changes and events which may hinder its ability to develop resilience. Therefore, we propose:

*H3: Learning ambidexterity has a positive impact on organizational resilience.*

### **2.2.3 Learning ambidexterity and energy**

The construct of productive organizational energy has increasingly attracted scholarly interest throughout recent years and was found to have a predictable effect on many positive outcomes such as organizational performance, absorptive capacity and organizational learning (Alexiou, Khanagha & Schippers, 2018). Cole and his colleagues (2012) have defined the concept of productive organizational energy as “the shared experience and demonstration of positive affect, cognitive arousal, and agentic behavior among unit members in their joint pursuit of organizationally salient objectives” (p. 447). It reflects the extent to which an organization has mobilized its emotional, cognitive and behavioral potential in pursuit of its goals. Two key characteristics describe this concept – first, its multifaceted nature (Cole, Bruch & Vogel, 2005). It has three dimensions: affective, cognitive and behavioral energy (Cole, Bruch & Vogel, 2012). Affective energy describes the collective positive emotions, feelings of enthusiasm and inspiration associated with work tasks and organizational goals (Cole et al., 2005). Cognitive energy describes the collective capacity to think productively and proactively about activities and find solutions to problems related to work performance (Cole et al., 2005). Behavioral energy refers to the joint efforts of the employees incorporates the intensity and amount of effort that the



employees invest purposefully to achieve the organization's goals (Cole et al., 2005). Second, productive organizational energy is a collective phenomenon measured by the aggregation of the shared opinion of the unit's members (Schudy & Bruch, 2010; Cole et al., 2012).

Engaging in contradictions gives organizations a source of productive energy that is central to change and development (Papachroni, Heracleous & Paroutis, 2014). Moreover, effective management of the paradox provides an opportunity for individuals to experience positive energy by dealing with challenges and success, which in turn gives them greater flexibility in facing future challenges and achieving their goals (Smith et al., 2011). Drawing on a sample of 118 German small to medium-sized organizations, Schudy and Bruch (2010) examined whether organizational ambidexterity enhances the affective, cognitive and behavioral potential of the organization. Their findings show that firms which have achieved ambidexterity are able to activate and facilitate the emotional, cognitive and behavioral resources toward the overarching firm's goals. They suggested that organizational ambidexterity makes employees feel that their work is meaningful because they will be able to invest their resources in their current tasks while simultaneously looking at potential opportunities to invest in the future. In ambidextrous organizations, employees are independent in how they divide their time between different demands of work (Gibson & Birkinshaw, 2004). Their tasks are challenging, diverse and independent, and they feel they need to contribute to the achievement of the organization's goals (Schudy, 2010). Organizational ambidexterity activates and directs all actions within the organization towards achieving its goals (Gibson & Birkinshaw, 2004). Based on the preceding discussion, we propose the following:

*H4: Learning ambidexterity has a positive impact on organizational energy.*

### **2.3 The mediating role of learning ambidexterity**

Research indicates that formalized structures outline written rules, procedures and policies that govern the way an organization performs its activities and manages employee behavior

(Rothaermel, 2015). In centralized organizations, the decision making and power are concentrated in the hands of the top-management team, whereas decentralized organizations allow ideas and contributions to flow from the bottom to the top (Rothaermel, 2015). By deviating from top-down strategic planning, organizations create space and an environment in which innovation can occur and employees can pursue creative ideas. Accordingly, these would foster learning and innovation as per the micro-foundation-based view since individual actions lead to macro-level outcomes (Barney & Felin, 2013; Foss, 2011; Felin et al., 2015). Developing an organizational culture and structure that effectively supports organizational creativity, organizational resilience and organizational energy is likely to be challenging and will require the full commitment of the top-management team. Learning ambidexterity can also have potentially positive effects on these key factors.

Anchored in the organization's ambidexterity paradox is the difficulty in concurrently pursuing exploration and exploitation activities (March, 1991; He & Wong, 2004; Andriopoulos & Lewis, 2010). By exploring through searching and experimenting whilst exploiting through selecting and executing, firms improve their long-term outlook and survival chances (Levinthal & March, 1993; Raisch & Birkinshaw, 2008; Hill & Birkinshaw, 2014). Exploration and exploitation at the firm level offers limited insights into how learning ambidexterity can influence organizational creativity, organizational energy or even organizational resilience. Pursuing ambidexterity can ultimately improve organizations' ability to navigate uncharted terrain (see Raisch & Birkinshaw, 2008) where traditional sources of competitive advantage such as resources and capability are rendered obsolete. The case in point is emerging markets where firms lack institutional support for exploratory activities (Khan et al., 2018). Indeed, in such environments corporate political activities can become an effective mechanism in not only exploring but also exploiting market opportunities (Hillman, Keim & Schuler, 2004; Lawton, McGuire & Rajwani, 2013; Rajwani & Liedong, 2015).

Anchored in organizational learning theory (Fiol & Lyles, 1985) is the suggestion that both exploitation and exploration activities, and learning from them, can equip organizations in the competitive environment through new product development and innovation (Atuahene-Gima & Murray, 2007; Wei, Yi & Guo, 2014). Both activities are associated with different degrees of learning occurring at the organizational and individual level. In the wake of environmental shifts, past studies indicate that organizations are expected to advance and enrich their knowledge base through ambidextrous learning occurring at both the exploitation and exploration stages (Gibson & Birkinshaw, 2004; He & Wong, 2004; Wei et al., 2014). In the face of scarce organizational resources, organizations are likely to scale back both exploitation and exploration activities, thereby hampering their ability to accrue long-term gains. A related line of research suggests that political instability and conflict in a given country generally retards economic activities and firms tend to be discouraged from engaging in exploitation and exploration (see Cavusgil et al., 2017). Therefore, there is likely to be a weak link between these two components and learning from such activities. These are more likely to translate into minimal or possibly enhanced organizational creativity, organizational resilience and organizational energy. Based on the above discussion, we propose the following:

*H5: Learning ambidexterity mediates the relationship between organizing paradox and organizational creativity.*

*H6: Learning ambidexterity mediates the relationship between organizing paradox and organizational resilience.*

*H7: Learning ambidexterity mediates the relationship between organizing paradox and organizational energy.*

### **3 CONTEXT AND METHODS**

#### **3.1 Sample and data collection procedures**

The study uses survey data of firms operating in a wide range of industries in the Middle East. The Middle East offers an interesting context to examine paradox-related issues as these

economies like other emerging markets suffer due to weak, fragmented and evolving institutions (Khanna & Palepu, 1997, 2000). In such contexts understanding how managerial actions lead to collective outcomes will provide important insights to the existing literature on ambidexterity (Foss, 2011, Felin et al., 2015; O'Reilly & Tushman, 2013). According to Budhwar and Mellahi (2007, p. 2), the term Middle East broadly denotes “a cultural area which does not have precise borders” but has Islam as the main religion for the vast majority of the population. Besides experiencing the so-called “natural resource curse”, other contextual factors such as underdeveloped financial markets, culture conflicts, deficient economic and political systems have often curtailed the pace and distribution of economic development (Budhwar & Debrah, 2013; Budhwar & Mellahi, 2006, 2007; Mellahi, Demirbag & Riddle, 2011). In addition to these, lack of privatization and deregulations coupled with the dominance on the oil sector are seen as barriers to entrepreneurial development (Budhwar & Mellahi, 2007; Mellahi et al., 2011). It is important to note that the contemporary shift in many countries in the region towards human resources development with substantial investments in education and training has helped to put the nations and the region on a stronger footing for the future (see also Budhwar & Mellahi, 2006).

Furthermore, the Middle East context is strategically important due to its location and growing markets, thus offering important opportunities to examine paradox-related research in such regions. Today, firms operating in the Middle East face intense competition not only because of local firms but also foreign rivals entering local markets (Mellahi et al., 2011). Since the enhancement of ambidexterity is an important source to enhance the ability of firms to compete (Colbert, 2004), so the study of ambidexterity and its antecedents for firms operating in the Middle East is a worthy topic (Heirati, 2012). Above all, the region is relatively underexplored in the wider management literature.

The survey questionnaire was developed based on the extant studies on this topic and distributed to executives of 203 firms. In the survey, we asked the CEO of each firm to fill out

one questionnaire and select at least two other qualified senior employees to complete the same questionnaire. A total of 98 firms responded to the survey, representing a response rate of 48%. After excluding questionnaires containing missing data or doubtful answers, the final usable sample consisted of 98 CEO surveys and 325 senior-employee surveys. In the sample, the number of respondents (CEO and senior employees) ranged from three to eight per firm. To provide assurances of participants' confidentiality, anonymity was promised. The firms in the sample were from a variety of industries, covering manufacturing (29.6%), construction (9.2%), financial and banking services (23.5%), scientific and education services (19.3%), and other industries (18.4%). The firms had an average size of 86.03 (s.d. = 43.33) full-time employees and an average age of firms 11.94 (s.d. = 6.85).

### 3.2 Measures

***Organizational creativity.*** Five items were designed to measure organizational creativity using Lee and Choi's (2003) scale. A sample item is: Our organization has produced many novel and useful ideas (services/products). All items are rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's alpha was 0.93.

***Organizational resilience.*** This variable was measured by averaging responses to a six-item Organizational Resilience Potential Scale (ORPS) adapted from Somers (2009). This measure is based on six indicators identified by Mallak (1998) as effective factors for measuring organizational resilience: risk avoidance; ability to fill multiple roles; situational understanding; degree of reliance on information sources; goal-directed solution seeking; and access to resources. Each of these factors is operationalized by a single item. We asked respondents to assess their organization's resilience along a seven-point visual analogue scale (VAS). The Cronbach's alpha was 0.87.

***Productive organizational energy.*** This variable was measured by the scale developed by Cole et al. (2005). This scale includes three dimensions: cognitive, behavioral and emotional

(Cole et al., 2005; Cole et al., 2012). We used a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) for cognitive items (sample item: “My organization is ready to act at any given time”) and behavioral items (sample item: “People in my organization often work extremely long hours without complaining”). For affective items we used a 5-point Likert scale from 1 (never) to 5 (extremely often/always). Sample item is: “People in my organization feel excited in their job”. We followed previous studies (e.g. Cole et al., 2005; Walter & Bruch, 2010) by considering productive organizational energy as a second-order three-dimension construct which requires averaging scores from the three subscales to form a single score for each individual. The Cronbach’s alpha was 0.85.

***Learning ambidexterity.*** Following previous research (e.g. He & Wong, 2004), we use a two-step approach to measure organization-level learning ambidexterity. First, respondents were asked to rate their firm’s level of exploratory and exploitative learning by using Atuahene-Gima and Murray’s (2007) ten-items scale (five items for exploratory ( $\alpha = 0.92$ ) and five items for exploitative learning ( $\alpha = 0.95$ )). A sample item, for exploitative learning, is: We searched for the usual and generally proven methods and solutions to product (service) development problems; and a sample item, for exploratory learning, is: We collected novel information and ideas that went beyond our current market and technological experiences. All items are rated on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Our second step included assessing firms’ learning ambidexterity by computing the multiplicative interaction between firms’ exploration learning and firms’ exploitation learning.

***Organizing paradox.*** We also used a two-step approach to measure organizing paradox. First, the survey asked the respondents to assess their firms’ level of decentralization and formalization characteristics. Decentralization was assessed using the five-item measure that was developed and validated by Lee and Choi (2003). A sample item is: Our organization members can take action without a supervisor. To measure formalization, we use a five-item formalization

scale (Lee & Choi, 2003). A sample item is: In our organization rules and procedures are typically written. The Cronbach's alphas were 0.91 and 0.94 respectively. To capture a firm's organizing paradox, the second step for developing the measurement was the computation of the multiplicative interaction between a firm's decentralization and formalization.

**Control variables.** We controlled for firm age (i.e. the number of years since the firm was established), firm size (i.e. the number of full-time employees within firms) and industry dummies as they may have influenced firm ambidexterity (e.g. Jansen et al., 2009). In order to offset the skewness, firm size and age were measured by natural logarithm (e.g. He & Wong, 2004). Following the recommendation of Becker (2005), we have tested the potential impact of our control variables (firm size, firm age and industry type) on learning ambidexterity, organizational creativity, organizational resilience and organizational energy. However, none of these variables has demonstrated significant effects on any of the outcome variables. Therefore, we have not included them as control variables in the analyses of our model.

We translated the questionnaire of this study from English into Arabic following the back-translation procedure recommended by Brislin (1980). As we are interested in our variables at the firm level, we aggregated the individual scores for every firm. Before aggregating the scores from each firm respondent, we calculated an interrater agreement score ( $r_{wg}$ ) for each of the variables (James, Demaree & Wolf, 1993). The average  $r_{wg}$  per variable was higher than 0.75 which suggests adequate agreement amongst respondents.

## **4 RESULTS**

### **4.1 Construct validity and assessment of common method bias**

Prior to analyzing the data, we conducted a confirmatory factor analysis (CFA) to check sufficient convergent and discriminant validity among all variables. We first tested a seven-factor CFA model that included decentralization, formalization, exploratory learning, exploitative

learning, organizational creativity, organizational resilience and productive organizational energy. As shown in Table 1, the CFA showed that our measurement model fits the data well ( $X^2 = 1535.372$ ,  $df = 921$ ,  $CFI = 0.96$ ,  $NFI = 0.90$ ,  $RMSEA = 0.040$ ) and factor loadings for all items were significant, demonstrating convergent validity. To provide evidence of the discriminant validity of our variables, we compared the original seven-factor model with a one-factor model that incorporated all seven variables. The chi-square difference test has been used to compare our model. Model comparison results revealed that the one-factor model fits the data poorly ( $X^2 = 11763.553$ ,  $df = 945$ ,  $CFI = 0.17$ ,  $NFI = 0.16$ ,  $RMSEA = 0.165$ ) compared to the original seven-factor model in terms of the chi-square difference test. Means, standard deviations and the intercorrelations for all variables are presented in Table 2. As noted in the table, the intercorrelations of the key variables are in the expected direction.

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**Insert Table 1 about here**  
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To mitigate the risk of common method bias, we have followed the statistical remedies recommended by Podsakoff, MacKenzie, Lee and Podsakoff (2003). Therefore, we used the single common method factor approach to diagnose this bias for our data. According to this approach, we needed to perform a CFA by adding a common method factor to our hypothesized measurement model and draw paths from it to each indicator. This test shows that the fit indices of this model ( $\chi^2 = 1531.677$ ,  $df = 920$ ,  $CFI = .96$ ,  $NFI = .90$ ,  $RMSEA = .039$ ) are similar to those found in the hypothesized measurement. The results indicate that the addition of a common method factor did not improve model fit ( $\Delta\chi^2 = 3.69$ ,  $df = 1$ , ns) and its total variance that explained is below the 25% threshold for common method variance (Williams, Cote & Buckley, 1989). Therefore, even though a small degree of common method variance may be present, it is unlikely that it is strong enough to influence our results meaningfully.

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**Insert Table 2 about here**  
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## 4.2 Hypotheses testing

In order to check our structural model fit, structural equation modeling (SEM) was employed using AMOS version 21 with maximum likelihood estimation (Arbuckle, 2012). The study findings demonstrated that our hypothesized model fits the data well ( $X^2 = 465.634$ ,  $df = 319$ ,  $CFI = 0.94$ ,  $NFI = 0.86$ ,  $RMSEA = 0.069$ ). We next assessed the direct effect relationship between organizing paradox and learning ambidexterity. The unstandardized path coefficient from organizing paradox to learning ambidexterity was significant ( $\beta = 0.68$ ,  $p < 0.01$ ). Therefore, Hypothesis 1 is supported. In Hypotheses 2, 3 and 4 we proposed that learning ambidexterity were positively related with organization-related variables. As shown in Table 3a, learning ambidexterity was positively associated with organizational creativity, organizational resilience and organizational energy ( $\beta = 0.48$ ,  $p < 0.01$ ,  $\beta = 0.57$ ,  $p < 0.01$ ;  $\beta = 0.25$ ,  $p < 0.05$  respectively). These results support Hypotheses 2, 3 and 4.

Before testing the mediation hypotheses (Hypotheses 5–7), we compared the hypothesized research model (as a full mediating model) with a partial mediating model that includes three paths from organizing paradox to organizational creativity, organizational resilience and organizational energy. However, the partially mediated model did not present a significantly better fit with the data ( $X^2 = 460.784$ ,  $df = 316$ ,  $CFI = 0.94$ ,  $NFI = 0.83$ ,  $RMSEA = 0.069$ ) than our hypothesized model ( $\Delta\chi^2 = 4.85$ ,  $df = 3$ , ns). Moreover, the direct paths from organizing paradox to organizational creativity and organizational energy were non-significant ( $\beta = 0.07$ , ns;  $\beta = 0.03$ , ns respectively), with the exception that the direct path to organizational resilience was significant ( $\beta = -0.24$ ,  $p < 0.05$ ). This suggests that learning ambidexterity fully mediated the relationship between organizing paradox and dependent variables.

To test the robustness of our findings, we used two approaches to examine our mediation hypotheses. First, we used the Baron and Kenny (1986) approach as shown in Table 3a. The data

indicate that, when the learning ambidexterity (mediator) is entered in the model, the significant direct effect of organizing paradox on organizational creativity ( $\beta$  0.26), organizational resilience ( $\beta$  0.27) and organizational energy ( $\beta$  0.19) is reduced considerably to  $\beta$  -0.08,  $\beta$  -0.26 and  $\beta$  0.037 respectively. In addition, the direct effect of the organizing paradox (independent variable) on the outcome variables (creativity, resilience and energy) was found to be insignificant when the mediator was introduced. According to the Baron and Kenny (1986) approach, these findings indicate full mediation.

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Insert Table 3a about here  
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Second, we also tested the mediation hypothesis by following recommendations suggested by Preacher and Hayes (2008). We have computed the indirect effects and use the bias-corrected bootstrapping procedures using the process macro (Hayes, 2013). This method depends on the calculation confidence intervals to test the indirect effect for significance. When the bootstrapped 95% confidence interval around the indirect effect does not include zero, the indirect effect is significant. Our bootstrapping analysis (see Table 3b) indicates that the indirect effect of organizing paradox on organizational creativity through the learning ambidexterity is significant ( $\beta = 0.34$ , 95% LLCI 0.051 and ULCI 0.661), therefore Hypothesis 5 is fully supported. Bootstrapping results also show that the indirect path between organizing paradox and organizational resilience through learning ambidexterity was significant ( $\beta = 0.52$ , 95% LLCI 0.104 and ULCI 1.35). This result supports Hypothesis 6. In addition, the indirect effect between organizing paradox and organizational energy through learning ambidexterity was non-significant ( $\beta = 0.12$ , 95% LLCI -0.028 and ULCI 0.743). Therefore, Hypothesis 7 is not supported. This is consistent with the results of the Baron and Kenny (1986) method except hypothesis 7.

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**Insert Table 3b about here**  
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## **5 DISCUSSION AND CONCLUSION**

Effective organizational design and the quest to achieve organizational ambidexterity requires organizations to reposition in the wake of environmental upheaval. Yet, it remains unclear whether organizations can achieve such fully resolved organizational levels of paradoxes, i.e. exploration and exploitation (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Lewis & Smith, 2011) and organizing paradox (formalization and decentralization) in an environment characterized by high levels of political instability and upheaval. The main purpose of this study was to examine the relationship between organizing paradox (formalization and decentralization), and organizational levels of learning paradoxes, i.e. exploration and exploitation, and firms' outcomes (organizational creativity, organizational resilience and organizational energy). We elicited the views of senior executives of a diverse range of firms operating in the Middle East and found that the organizing paradox has a positive impact on learning ambidexterity. In addition, we also found that learning ambidexterity has a positive impact on both organizational resilience and organizational energy. Furthermore, our hypothesis that learning ambidexterity mediates the relationship between organizing paradox and organizational creativity was also supported. These findings provide important insights into existing studies which have identified a positive impact of formalization on exploitation and negative impact of centralization on exploration (e.g. Jansen et al., 2006; Prajogo & McDermott, 2014). In addition, we shed light on the important mechanisms (e.g. learning ambidexterity) through which different structures influence organizational level outcomes.

### **5.1 Theoretical and practical implications**

From a theoretical standpoint, this study extends our understanding of organizational ambidexterity literature (Cao et al., 2009; O'Reilly & Tushman, 2013) by demonstrating how organizing paradox (formalization and decentralization) can have a positive impact on learning ambidexterity even in politically volatile business environments (Khanna & Palepu, 1997). Thus,

we deepen our understanding of the generalizability of this concept to different institutional settings. We also integrate the micro-foundational perspectives (Barney & Felin, 2013; Felin et al., 2015) and provide important insights into how firms balance exploitation and exploration in contexts where formal institutions are evolving and weak (Khanna & Palepu, 1997, 2000). Lastly, we provide important insights on this topic in one of the less examined contexts (The Middle East) in the field of international business. In addition, these findings are significant because they are in line with past research that states that combining different elements is an important factor in promoting organizational ambidexterity (Gibson & Birkinshaw, 2004). They also confirm the results of Janssen et al. (2005) which show that the interaction between formalization and decentralization positively affects an organization's ability to pursue exploratory and exploitative learning simultaneously.

Furthermore, scholars have suggested a need for more in-depth analysis of dimensions and influences of organizational ambidexterity (see Raisch & Birkinshaw, 2008; Simsek, 2009), yet past studies only provide limited insight into the complex relationship between learning ambidexterity and organizational resilience. This paper deepens the understanding of this relationship by demonstrating potential positive effects of learning ambidexterity on organizational resilience which is an important antecedent of micro-foundations (Felin & Foss, 2005; Foss, 2011; Felin et al., 2015). Moreover, this is consistent with a dynamic equilibrium model of organizing (Smith & Lewis, 2011), which indicates that managing organizational paradoxes (e.g. learning paradox) fosters sustainability by ensuring three mechanisms: creativity, resilience and energy. This is particularly important given the turbulent business environments associated with our context.

In addition, we offer insights into how learning ambidexterity mediates the relationship between organizing paradox and organizational creativity. Indeed, earlier studies on innovation and creativity paradoxes (Andriopoulos, 2003; Miron-Spektor & Erez, 2017) fail to offer any robust

insights into paradoxical relationships in the context of innovation and creativity. Therefore, we extend organizational ambidexterity research (Amankwah-Amoah et al., 2019; Gibson & Birkinshaw, 2004) by shedding light on how formalization and decentralization can impact firms' activities.

From a practical standpoint, our study indicates that organizing paradox can be managed to lead to positive outcomes for organizations (Schad & Bansal, 2018). By deviating from the traditional approach of exploring trade-offs between two variables, organizational learning ambidexterity can arbitrate the relationship between organizing paradox and organizational creativity. Our analysis also demonstrates that paradoxes are beneficial even in the highly institutionalized unstable environments such as those observed in the context of the Middle East. In addition, our study also demonstrated that there are fruitful outcomes for pursuing the organizing paradox: formalization and decentralization.

## **5.2 Limitations and future research possibilities**

Our research, like all research, is limited in several aspects. First, although the collection of study data was not based on a single informant, other issues such as cross-sectional data may be the cause of common method bias. To address this issue, future research needs a longitudinal approach that can help draw stronger and accurate conclusions on the causality of the relationships among the study variables. Second, although data collection from a developing economic country is a distinctive feature of our sample, it may also be constrained to generalize our findings beyond the firms from which our sample is drawn. The precarious institutional setting and other cultural and environmental factors may be the impetus for future research assessing the generalizability of our findings in developed-economy countries.

Our study suggests several fruitful ways to look into the future. First, beyond structural antecedents, it can be argued that there are other antecedents that need to be examined for their

impact on learning ambidexterity. In the theory of paradox, Smith and Lewis (2011) encouraged researchers to study the factors that influence the acceptance of learning contradictions. These factors include leadership variables such as leader's cognitive complexity and emotional equanimity and organizational variables represented by dynamic capabilities. Therefore, it is important that future studies take these factors into account in examining different types of innovations. Second, future studies can redesign our model to be a multi-level model. Specifically, it can assume organizing paradox as a firm-level construct and examine its effects on managers' learning ambidexterity, and in turn how ambidextrous managers can influence the ability of their followers to generate creative ideas and perform their tasks with great resilience. These cross-level relationships can be a promising direction for future research. Third, future research could also seek to provide more in-depth analysis of the influences of cultural, political and institutional factors on the managerial decision-making processes and their impact on exploitation and exploration across developed and emerging markets. Last, future studies could utilize institutional theory and the attention-based view (e.g. Ocasio, 2011) to explore these issues in large and small firms operating in emerging markets. We hope this study reinvigorates a new stream of research on organizational paradox in such volatile environments.

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**Table 1**

Model fit.

Models	X2	Df	CFI	NFI	RMSEA	$\Delta \chi^2$ (df)
Baseline seven-factor model	1535.3**	921	.96	.90	.040	
One-factor model: All variables combined into one factor	11763.5**	945	.17	.16	.165	10228.2 (24) **

Note. \*\*  $p < 0.01$ .**Table 2**

Correlations and summary statistics (N = 98)

Study variables	Mean	SD.	1	2	3	4	5	6	7	8	9	10
1. Manufacturing	.30	.46										
2. Construction	.09	.29	-.21*									
3. Financial and banking	.23	.43	-.36*	-.18								
4. Scientific and education	.19	.40	-.32*	-.17	-.27**							
5. Firm age (natural log)	2.31	.62	-.06	-.07	.13	.31**						
6. Firm size (natural log)	4.33	.50	-.22*	-.11	.20*	.25*	.46**					
7. Organizing paradox	10.25	1.31	-.04	-.10	-.08	.09	.10	.11				
8. Learning ambidexterity	10.17	1.52	-.06	.15	-.11	.05	.10	.12	.67**			
9. Organizational creativity	3.28	.31	-.12	.05	-.10	-.06	-.11	.09	.26*	.45**		
10. Organizational resilience	3.19	.32	.07	.14	-.22*	-.03	-.11	-.05	.25*	.58**	.27**	
11. Organizational energy	3.05	.27	-.06	.04	.03	-.03	.16	-.02	.22*	.26*	.15	.03

\*\*  $p < 0.01$ ;\*  $p < 0.05$ .

**Table 3a**

Hypothesis testing.

Direct Effects						
	Estimate		S.E.	C.R.	P value	R2
H1 OrgPar → LeaAm	.68**	Effect of IV on M (a)	.077	8.86	0.00	.44
H2 LeaAm → OrgCre	.48**	-	.089	5.41	0.00	.20
H3 LeaAm → OrgRes	.57**	-	.087	6.09	0.00	.33
H4 LeaAm → OrgEne	.25*	-	.067	1.95	0.05	.07
OrgPar → OrgCre	.26**	Total effect of IV on DV (c)	.101	2.61	0.01	.07
OrgPar → OrgRes	.27**	Total effect of IV on DV (c)	.106	2.53	0.01	.06
OrgPar → OrgEne	.19*	Total effect of IV on DV (c)	.091	2.18	0.03	.05
Direct Effect with mediator						
H5 OrgPar → OrgCre	-.08	Direct effect of IV on DV (c)	.126	-.669	0.50	.21
H6 OrgPar → OrgRes	-.26	Direct effect of IV on DV (c)	.118	-2.21	0.02	.36
H7 OrgPar → OrgEne	.073	Direct effect of IV on DV (c)	.121	.581	0.52	.07
LeaAm → OrgCre	.51**	Effect of M on DV (b)	.123	4.14	0.00	
LeaAm → OrgRes	.77**	Effect of M on DV (b)	.115	6.72	0.00	
LeaAm → OrgEne	.18	Effect of M on DV (b)	.118	1.58	0.12	

Notes: OrgPar, Organizing paradox; LeaAm, Learning ambidexterity; OrgCre, Organizational creativity; OrgRes, Organizational resilience; OrgEne, Organizational energy, IV, independent variable; DV, dependent variable; M, mediator. \*\*p < .001; \*p < .05.

**Table 3b**

Mediation analysis (Preacher & Hayes, 2008 method).

DV	Indirect Effects (ab)		Bootstrap results for indirect effects through mediator (ab)	
	B	Boot S.E.	LL 95% CI	UL 95% CI
OrgCre	.34**	.462	.051	.661
OrgRes	.52**	.284	.104	1.35
OrgEne	.12	.169	-.028	.743

Notes: OrgCre, Organizational creativity; OrgRes, Organizational resilience; OrgEne, Organizational energy. \*\*p < .001

**Figure 1. Conceptual model**

