Linking Agility to Environmental Sustainability of Emerging Market MNEs: The Mediating Role of Individual Creativity and Flexible Work Arrangements

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Abstract
Prior research has produced ample evidence showing that agility affects performance outcomes; however, we know little about the link between agility and collaborative processes toward environmental sustainability. This study examines the relationship between operational agility and environmental collaboration, mediated by individual creativity and flexible work arrangements. Using multilevel analysis of data obtained from 249 managers of 66 multinational enterprises (MNEs) in Turkey, we find that operational agility through individual creativity and flexible work arrangements leads to greater environmental collaboration. We contribute to the streams of literature on agility, international management, and environmental sustainability by elucidating that operational agility of emerging market MNEs tends to reduce environmental impacts and that individual creativity and flexible work arrangements facilitate environmental collaboration to attain environmental success.

Keywords: Operational agility; environmental collaboration; individual creativity; flexible work arrangements; MNEs; microfoundations, multilevel analysis.
1. Introduction

Organizations increasingly integrate environmental practices and processes into mainstream strategic and operational tasks. Controversies over environmental sustainability have fueled social concerns and public pressure, dictating that manufacturers and service providers maintain agile and flexible practices to reduce environmental impacts of their products and services (Clarke & Boersma, 2017; Mendleson & Polonsky, 1995). As such, organizations, especially those with large international operations (e.g., MNEs) are facing increased pressure from governments and environmental constituents to promote and achieve sustainable environmental goals, especially in the context of emerging markets. Within this setting, organizational agility\(^1\) remains an essential capability to enhance collaborative processes for environmental sustainability, due to its role in adapting and responding quickly to the external environment, and also in supporting environmental practices beyond the firm boundaries (Gölgeci, Gligor, et al., 2019; Vachon & Klassen, 2006, 2008). Collaborative processes, which constitute of interorganizational relationships and network partners to enhance production capabilities and reduce environmental impacts (Vachon & Klassen, 2008), are influenced to a large extent by the degree of operational agility, because it adapts to changing environment to improve operations and processes (Schmitz, 2017; Vachon & Klassen, 2008).

In this paper, we propose that operational agility of organizations are well placed to achieve environmental sustainability through promoting collaborative processes and subsequently reducing environmental concerns. Linking operational agility to environmental collaboration of MNEs is important. First, operational agility is critical for competitiveness as it allows firms to quickly and continuously adapt and respond to any market dynamics (e.g., resources, suppliers, customers, supply chain, and production efficiency) and helps organizations improve product variety with minimal environmental impact and thus increase cost-effectiveness (Ivory & Brooks, 2018; Newman & Hanna, 1996). Second, the study context is important because beyond Turkey being an emerging market,

\(^1\) Organizational agility refers to the capacity of an organization to efficiently and effectively redeploy/redirect its resources to value creating and value protecting (and capturing) higher-yield activities as internal and external circumstances warrant (Teece et al., 2016). Organizational agility is generally classified into two perspectives: operational agility and strategic agility (Brannen & Doz, 2012; Cao & Dowlatshahi, 2005).
environmental concerns are becoming of prime importance to the Turkish government. For example, Turkey has introduced plans and policies to direct businesses toward more environmentally sustainable practices. These developments pressure MNEs in Turkey to adopt more efficient and flexible practices to achieve sustainable environmental goals (Arda et al., 2018; Fainshmidt et al., 2016).

Although environmental collaboration has been receiving increased interest, little research has been conducted to advance our understanding of the link between operational agility and environmental collaboration in emerging markets. Likewise, research on how MNEs are involved in environmental processes has been limited (Kolk, 2016). Given that agility enables organizations to swiftly adapt and adjust their business processes to meet rapidly changing market demands and sustain competitive advantage amid volatility (Sambamoorthy et al., 2003), it may be plausible to expect that agility can be used to sense and respond to emerging environmental and social demands by different stakeholders (Christofi et al., 2013). However, with agility conceptualized as a firm-level capability, the way its potential role in interorganizational environmental collaboration is manifested by individuals remains unexplored. Accordingly, research on agility and environmental collaboration so far has been focused on the organizational level and has somewhat neglected micro-level variables (Gölgeci, Gligor, et al., 2019; Vázquez-Bustelo et al., 2007; Wu et al., 2017). Given that collaborative processes reside within individuals (Conto et al., 2014), examining the influence of individual-level micro variables is highly warranted as it can provide novel insights into the microfoundations of MNE managers successfully applying their agility and engaging in environmental collaboration. Building on this view, we explore the way individual creativity and flexible work arrangements (FWAs) exert an influence on MNEs’ collaborative processes to achieve and sustain environmental effectiveness.

Extant research advocates that effectiveness in environmental collaboration can be attained not only by organizational strategies and structures but also by distinct social relationships and individual capabilities (Gölgeci, Gligor, et al., 2019). In this vein, individual capabilities, such as creativity, enable firms to generate useful ideas and develop innovative solutions necessary for operational and strategic effectiveness. As such, organizations need creative solutions and innovative responses to meet environmental goals. Such innovative responses may depend on the creativity of individuals within
firms. Adding to this, we posit that effective environmental collaboration can also be further enhanced through FWAs (e.g., flexible hours, telecommuting, reduced work hours, and job sharing). We build this argument on research showing that FWAs lead managers to increase aspects of their performance, such as engagement, productivity, creativity, and morale (McNall et al., 2010).

This study aims to investigate the role of individual creativity and flexible work arrangements in linking operational agility to environmental collaboration. Applying microfoundations approach and analysis based on survey data from 249 managers nested in 66 MNEs operating in Turkey, we examine the impact of operational agility on environmental collaboration, while exploring the mediating roles of individual creativity and FWAs.

This study contributes to the literature on organizational agility, international management, and environmental sustainability in several ways. First, to the best of our knowledge, this study is the first to unpack the link between agility and environmental collaboration. Our encouraging findings should prompt further research in this area. While extant literature examined organizational outcomes of agility such as efficiency, innovation, and financial performance, our study goes further and illustrates that agility can also help firms experience environmental benefits, by helping facilitate environmental collaboration. In doing so, we examine the link between operational agility and environmental collaboration within the context of MNEs operating in the emerging market of Turkey. As such, our first contribution to international management sets the stage for better understanding how emerging market MNEs (EM MNEs) leverage their operational agility to support environmental collaboration.

Second, we fine-tune the discourse beyond the broad discussion of agility and environmental collaboration, by exploring the impact of agility on micro-level variables (e.g., individual level). Although previous research has provided ample evidence of how agility influences macro-level level factors (Eckstein et al., 2015; Wu et al., 2017), it has neglected micro-individual level factors. Building on the international human resource management and learning literature and following microfoundations approach (e.g., Buckley et al., 2016; Morris et al., 2014; Shoham et al., 2017), our study addresses this deficiency by examining the role of operational agility in individual creativity and FWAs. Such work addresses some of the outstanding issues on the interaction between individual and
organizational level factors in agility and environmental sustainability research. Likewise, it explains why MNEs rely on their employees to translate their operational agility into improved environmental collaboration. In this vein, we advance environmental sustainability and international management literature by uncovering that individual creativity and FWAs are facilitators of environmental collaboration to attain environmental success within the context of MNEs operating in Turkey. Likewise, our examination of the role of individual creativity and FWAs addresses the point made by scholars like Teece (2014a) concerning international business research overlooking management phenomena and micro-level factors that underpin macro-level linkages. Our findings allow us to derive some novel theoretical and practical implications that we detail in the latter part of the manuscript.

2. Theoretical background

2.1. MNEs’ operational agility and environmental collaboration

Over the years, the pace of change, the degree of interconnectivity, and environmental challenges around the world have increased to such extent that MNEs increasingly need unique capabilities to navigate in tumultuous settings and achieve performance outcomes beyond profitability and financial performance (Grewatsch & Kleindienst, 2017; Mariadoss et al., 2011; Teece, 2014a). In particular, environmental expectations by various stakeholders are increasingly fluid, multifaceted, complex, and even paradoxical (Gölgeci, Gligor, et al., 2019; Ivory & Brooks, 2018). Such nature of environmental expectations involves organizational capabilities that underpin swift and flexible response across a wide range of global operations (Grewatsch & Kleindienst, 2017; Luzzini et al., 2015; Mariadoss et al., 2011). Therefore, despite the lack of attention by extant research, the agility concept as a potential capability to concurrently manage multiple environmental sustainability-related tensions or paradoxes requires further attention (Fourné et al., 2014; Ivory & Brooks, 2018).

The concept of agility is applied to the business context to enhance the understanding of business behavior in contemporary times of unprecedented pace of economic, political, social, and technological change (Gligor, 2013). Agility signifies the firm’s ability to preempt and respond to environmental changes swiftly (Gligor et al., 2013; Overby et al., 2006). The core premise of agility concerns the firm’s capability to develop and maintain the flexibility to adapt to a set of factors and
forces; including new technologies, customer demands, socio-economic concerns and foreign markets’ norms and values (Christopher, 2000; Doz & Kosonen, 2008, 2010; Ivory & Brooks, 2018; Overby et al., 2006). Previous studies generally classify agility into two perspectives. One perspective is that agility is externally focused generic capability, which helps organizations quickly adjust operations to cope with changing market conditions and also changes in customers’ requirements and preferences (Braunscheidel & Suresh, 2009). The other perspective rests on the fact that agility is not restrained as a capability, but integrates various practices related to strategy or system (Brannen & Doz, 2012; Cao & Dowlatshahi, 2005). This line of research is underpinned by the argument that an agile organization should be not only flexible in its operations, but also in reconfiguring and restructuring its strategy to be responsive and flexible to environmental changes.

Agility enables continuous alignment and realignment of specific tangible and intangible assets and competences as well as business models to serve rapidly changing, multiple reality environments (Doz & Kosonen, 2010). Also, agility allows firms to respond swiftly to market demands that are distinct to the context in which they occur (Doz & Kosonen, 2008, 2010; Gligor et al., 2013; Gurkov et al., 2017). Likewise, agility is closely interlinked with knowledge management (Oliva & Kotabe, 2019; Pereira et al., 2019). Agile firms develop and deploy strategies nimbly, sense and respond to competitive forces, and seize new opportunities through the use of market knowledge. That said, agility is not a unidimensional and abstract concept relevant solely at the strategic level. It is also applicable at the operational level (Gligor, 2013), where strategy meets the real world and deploying agility in daily operations matters more to the manifestation of agility beyond being an idea and a strategic tool.

Operational agility is defined as a firm’s ability to physically and rapidly cope with market or demand changes (Lu & Ramamurthy, 2011). The core premise of operational agility concerns swift, flexible, and responsive operations as a critical ground for enabling quick and fluid translation of innovative initiatives in the face of changes (Lu & Ramamurthy, 2011). Operational agility is a substantive (i.e., ordinary) capability that enables firms to better deploy their resources to reach their domain-specific goals (see Teece, 2014a; 2014b for a discussion of the differences between substantive capabilities and dynamic capabilities). Therefore, operational agility concentrates primarily on
maneuvering and adjusting resources and daily operations of varied nature to provide a fast response to changes. Such operations can include both internal operations that take place within organizational boundaries and external operations that occur across organizational boundaries. In this research, we are more interested in examining the way operational agility is manifested in MNEs’ external operations relative to environmental collaboration.

*Environmental collaboration* refers to joint environmental goal-setting, shared environmental planning, and business partners working together to reduce environmental impacts (Vachon & Klassen, 2008). It involves activities such as joint product/service design for environmental compliance, acquisition and joint deployment of sophisticated environmental technologies, and cooperation for resource and waste reduction (Grekova et al., 2016; Vachon & Klassen, 2006). Intensifying decoupling of business activities across organizational and national boundaries implies that MNEs increasingly rely on global value chain partners to coordinate and execute their value creation activities (Kano, 2018; Kotabe & Mudambi, 2009; Murphree & Anderson, 2018). As most of the external ties of many MNEs are relational in nature (Kano, 2018), their interorganizational activities aiming at achieving various performance outcomes, including environmental collaboration often entail collaborative arrangements.

When MNEs operate in dynamic environments and run sophisticated business activities, they may face multiple tensions or paradoxes regarding environmental sustainability (Ivory & Brooks, 2018). Likewise, given the scale of MNEs’ global business operations, much of their environmental impact is rooted in their network, not within their organizational boundaries (Clarke & Boersma, 2017). Due to grave environmental challenges the world faces, MNEs in both developed and emerging markets are required to seek sustainable solutions by collaborating across geographic boundaries (Grekova et al., 2016; Liu & Vrontis, 2017). Coupling this fact with the amplified environmental expectations of multiple stakeholders, MNEs must work closely with their partners in a collaborative fashion to improve their overall environmental footprint and generate a positive impact on their environment (Caldwell et al., 2017; Klijn et al., 2008; Vachon & Klassen, 2006). Beyond traditional yet increasingly ineffective practices such as environmental and safety checklist audits, collaborative
efforts can help firm and their partners achieve better environmental performance (Plambeck et al., 2012). Therefore, collaboration supporting the natural environment is an essential part of environmentally sustainable strategies and activities for MNEs (Vachon & Klassen, 2008).

Despite the pivotal role of MNE strategy in environmental collaboration, it is not just a structural arrangement devoid of social implications. Even if environmental collaboration policies can be crafted and applied at the firm-level, its application and manifestation take place at the individual-level (Mitra & Datta, 2014). The interactive and behavioral nature of environmental collaboration (Gölgeci, Gligor, et al., 2019) amplifies the role of individuals embedded in collaborative arrangements and highlights the importance of understanding the microfoundations of environmental collaboration.

2.2. Microfoundations of environmental collaboration
Humans, their capabilities, and activities are indispensable elements of MNEs (Budhwar et al., 2017). MNEs increasingly rely on their human capital to create value and yield expected outcomes such as performance and environmental sustainability (Martin et al., 2016; Wright & McMahan, 2011). Though MNEs can be seen as organized value-creating systems (Kotabe & Mudambi, 2009), their behavior is, in fact, resultant of the actions of their constituents i.e., employees (Coleman, 1990). Therefore, the human element cannot be overlooked when explaining international management phenomena that are often addressed through macro-level analysis.

Most management issues take place across multiple levels of analysis, involving individuals and the organizational/interorganizational environments in which individuals operate (Mäkelä et al., 2012; Steel & Taras, 2010). Methodological individualism stresses that individual-level factors are necessary to explicate macro-level (i.e., organizational/interorganizational) phenomena and preclude deficiencies in theorization and contradicting explanations (Felin & Foss, 2005). Although on the surface, one macro-level issue appears to be influencing another macro-level issue, their relation can only be explained through the transition of macro-micro-macro level forces (Coleman, 1990). “…knowledge of how the actions of [systems’] parts combine to produce systematic behavior can be expected to give greater predictability than statistical relations of surface characteristics of the system” (Coleman, 1990 p. 3). This implies that analysis of individual activities, upon which individuals (i.e.,
managers) act and are impacted by the macro(firm)-level forces (Felin & Foss, 2005), helps explain microfoundations of macro-level phenomena.

Managers view the firm and its characteristics according to their own perceptions and values. Thus, firm-level antecedents have a pivotal influence on managers and their capabilities and activities. Drawing on this premise, we argue that environmental collaboration emerges from managers’ individual capabilities (i.e., creativity) and activities (i.e., FWAs) driven by MNEs operational agility. This argument highlights that MNEs cannot be analyzed independent of managers and supposed relationships between firm-level phenomena indeed function via individual-level phenomena. Thus, in order to unpack the potential link between operational agility and environmental collaboration (both conceptualized and measured at the firm level) of EM MNEs, we draw on microfoundations approach to theoretically ground our arguments and hypotheses and examine the mediating role of individual creativity and FWAs that are conceptualized and measured at the individual level.

Managers’ capabilities and activities are microfoundations of organizational activities (Mäkelä et al., 2012; Wright & Mcmahan, 2011). They influence tactics and everyday activities of their firm. More importantly, MNEs’ activities are rooted in the member-managers of these systems, as there is no other entity than people to manifest them. Thus, environmental collaboration is dependent on the capabilities and activities of managers working in MNEs. Below we delve deeper into individual creativity and FWAs as capabilities and activities that convert operational agility into increased environmental collaboration.

The research on creativity has generated a wide variety of definitions of the concept, some of which define it as a characteristic of a person and others as a process (Oldham & Cummings, 1996). We adopt a synthesized approach and define individual creativity as manifested capability of an employee to intentionally create, introduce, and apply new ideas to benefit her/his firm (Janssen, 2000). Creative managers pay greater attention to their context, are detail-oriented (Harvey & Novicevic, 2002), have sophisticated cognitive capabilities (Amabile et al., 2005), and are alert and adaptive (Martinaityte et al., 2016).
Creativity is essentially about discovering new ideas for changing products, services, and processes to achieve a firm’s goals and has been considered a key to enduring advantage (Amabile et al., 2005). Creative managers are among the most critical resources of MNEs to serve onerous customer requirements, compete, and thrive amid external challenges (Santoro, Ferraris, & Winteler, 2019) and opportunities (De Vasconcellos et al., 2018; Martinaityte et al., 2016). In a similar vein, creativity is a vital source of dynamism and adaptability (Maclean et al., 2015; Pandza & Thorpe, 2009) that can serve as an essential ground for navigating arduous environmental collaboration tasks that may involve paradoxical choices and situations.

MNEs invest heavily in attracting, supporting, and retaining creative employees (Bradley et al., 2013), due to their complex structure and dynamic market requirements as well as amplified costs of doing business stemming from unfamiliarity of the environment, cultural, political and economic differences, and the geographic range of operations (Ferraris et al., 2016; Liu & Vrontis, 2017). The importance of creativity of MNE managers is argued to accentuate their value for competing in a hypercompetitive global marketplace (Harvey & Novicevic, 2002). Creative managers form the backbone of business activities that matter and make a difference to MNEs’ competitive advantage in economic, environmental, and social domains (Bradley et al., 2013; Hemphill, 2013).

Flexibility is considered an indispensable element of agility (Gligor et al., 2013; Swafford et al., 2008). As a specific form of individual flexibility, flexible work arrangements refer to individually-crafted HR policies and practices, formal or informal, which permit people to vary when, how, and where work is carried out (Maxwell et al., 2007). FWAs denote one having discretion and means to craft her/his job as s/he sees fit in line with the assessment of internal and external task-related forces (Kelly & Kalev, 2006). FWAs are also positively related to developmental opportunities for managers and negatively related to the work-family conflict that may eventually enhance managers’ organizational commitment (Hornung et al., 2008). Thus, FWAs allow managers to take their own initiatives and be more resourceful and flexible in response to varying task requirements.

Given their often structured task environments (Yan et al., 2010), traditional MNEs may lack attention and means to support managerial discretion and task autonomy as enablers of FWAs.
Nonetheless, due to technological, social, and economic forces driving the need for FWAs (Kelly & Kalev, 2006; Masuda et al., 2012), a growing number of MNES are compelled to design and implement FWAs for their employees. Such a trend could also be reflected in the increasing number of managers working in multiple locations or distantly and forming global virtual teams (Jimenez et al., 2017).

Much of the extant research has focused on the individual benefits of FWAs such as work-life balance, job satisfaction, and career premiums (Hornung et al., 2008; Leslie et al., 2012; Masuda et al., 2012; Mcnall et al., 2010). However, managers’ FWAs can also offer benefits to MNEs in the form of greater aggraded flexibility in response to the requirements of market forces and the external environment. They can convey the role of MNE strategies and capabilities to interorganizational activities. In this vein, FWAs can be seen as a potential conduit between MNEs agility and ensuing activities such as environmental collaboration that can be driven by agility.

3. Hypotheses

3.1. Operational agility and environmental collaboration

Increasing competition has been forcing firms to adopt advanced business paradigms including environmental management as an increasingly important performance driver, along with agile manufacturing which enables firms to survive in competitive business environments with multiple and often paradoxical demands (Vinodh, 2010). Agility and sustainability can both be imperative to meeting divergent customer demands and surviving competitive and environmental pressures in the global marketplace (Christofi et al., 2013; Christopher, 2000; Li et al., 2017). In fact, past research suggests that agile firms are better placed to navigate these challenging pathways of environmental sustainability (Ivory & Brooks, 2018). The relevance of this notion is amplified for EM MNEs that face paradoxical environmental requirements from multiple stakeholders across the globe amid their complicated and large-scale global operations.

Complex and paradoxical activities such as environmental practices often require collaboration beyond the boundaries of the focal MNE (Gölgeci, Gligor, et al., 2019; Vachon & Klassen, 2006, 2008). Environmental collaboration, in turn, involves a complex set of activities with the involvement of multiple partners that may host different mindsets, follow different business practices, and maintain
different priorities that require agile and adaptive processes to tackle. Such operational complexity of environmental practices across organizational boundaries can render environmental collaboration cumbersome and protracted. Thus, EM MNEs may be compelled to deploy operational agility to streamline operational complexities of interorganizational environmental practices and be more effective in participating in and managing environmental collaboration activities.

Environmental collaboration is a challenging and intricate task with unpredictable outcomes, especially when undertaken across national borders (Harari, 2014; Luzzini et al., 2015) and when initiated in emerging markets due to the lack of established principles guiding environmental practices (Tatoglu et al., 2014). Operational agility can provide the necessary tools to navigate and succeed within the fluid and unpredictable domain of environmental collaboration with behavioral aspects that render the management of collaboration challenging. As the essence of operational agility is physically and rapidly coping with external changes (Lu & Ramamurthy, 2011), EM MNEs with operational agility can be in a better position to tackle the challenges of interorganizational environmental practices and succeed in environmental collaboration.

Furthermore, interorganizational collaboration being a multifaceted phenomenon with ingrained elements of conflict and competition can have negative implications for environmental practices (Ritala & Hurmelinna-Laukkanen, 2009). Operational agility can enable EM MNEs to resolve potential incongruent goals and environmental practices of global partners and to face the challenge of executing environmental collaboration activities that can be decoupled across time and space (Caldwell et al., 2017; Fourné et al., 2014). EM MNEs with operational agility can have a better possibility to manage complex environmental practices across firm boundaries and adapt to the changing nature of collaborative arrangements in response to internal and external demands. Therefore, we expect that EM MNEs’ operational agility can be a valuable capability to underpin their environmental collaboration.

**Hypothesis 1:** Operational agility of emerging-market MNEs is positively associated with environmental collaboration.

3.2. The mediating role of individual creativity and flexible work arrangements
Many MNEs around the world face the daunting task of reconciling tensions between task and product standardization and creativity and innovation (Shalley & Gilson, 2017). Such tensions are often amplified by the size of MNEs which exacerbates the need for structuration and formalization to achieve consistency and efficiency and creativity and exploration to achieve responsiveness and effectiveness (Theodosiou & Leonidou, 2003). Similarly, particularly EM MNEs suffer from the lack of established business structure and institutional support when conducting their business activities and creating environmental value (Clarke & Boersma, 2017).

The scope and magnitude of environmental challenges EM MNEs face grow exponentially with the geographic scope of their business operations (Clarke & Boersma, 2017; Ferraris et al., 2016; Ivory & Brooks, 2018). Thus, EM MNEs increasingly need better deployment and utilization of their capabilities such as operational agility for effective environmental collaboration with different stakeholders (Caldwell et al., 2017; Gölgeci, Gligor, et al., 2019; Liu & Vrontis, 2017; Vachon & Klassen, 2008). We argue that individual creativity and FWAs can be mediating mechanisms for translating operational agility into improved environmental collaboration.

Operational agility as an organizational capability developed and applied as part of the EM MNE strategy provides conducive ground to support individual creativity of emerging-market MNE managers. EM MNEs following agile principles and developing flexible structures to improve agile capabilities are more likely to design and maintain policies that support individual creativity (Di Minin et al., 2014). Unlike rigid MNEs where individual creativity and initiative-taking may be discouraged for the sake of efficiency and standardization, agile EM MNEs allow more room for managerial discretion and creativity for rapid and flexible responses to environmental demands. Resolute decision-making and responsiveness are essential dimensions of agility (Gligor et al., 2013), and EM MNEs seeking to support these qualities may need to invest in individual creativity. EM MNEs with the capability of operational agility in place can be in a better position to attract, support, and maintain creative managers.

On the other hand, strategic environmental collaborations entail potential dilemmas such as the proper extent of control, goal specification, and budget requirements as well as the coordination and
organization of disparate goals, incentives, and management practices (Caldwell et al., 2017; Klijn et al., 2008). Emerging-market MNE managers who follow creative processes are better positioned to find solutions to resolve potential problems in the joint pursuit of environmental goals. When partners of divergent backgrounds and priorities come together to work on improving environmental outcomes, creative managers can see through the subtleties of such challenging collaborations and can find innovative ways to tackle the complicated environmental problems they face (Ritala & Hurmelinna-Laukkanen, 2009). For example, creativity can help overcome managerial dilemmas related to interaction with partners, strategic orientation, management style, and process dynamics in the interorganizational context of complex environmental projects across multiple countries (Klijn et al., 2008). Likewise, as institutions underpinning environmental standards are very different across national settings (Fainshmidt et al., 2016), creative managers can improvise to overcome unexpected contingencies and bridge the gap between partners. Therefore, we expect that individual creativity can underlie environmental collaboration if it is enacted by EM MNEs’ operational agility.

Taken together, we view individual creativity as a linchpin between operational agility and environmental collaboration as it can help convey the influence of operational agility on environmental collaboration through creative activities by focal emerging-market MNE managers.

**Hypothesis 2:** Individual creativity of emerging-market MNE managers mediates the link between operational agility and environmental collaboration.

At its core, operational agility involves MNEs’ deliberate strategy and activity formulation toward greater flexibility in the way their employees execute their tasks (Lu & Ramamurthy, 2011). This means that EM MNEs that continuously align and realign their tangible and intangible resources to achieve greater operational agility are also likely to invest in FWAs for their managers. When emerging-market MNEs’ agility-related priorities, capabilities, and processes are in place, managers can find greater leeway to adjust their tasks, working hours, and place of work as new work requirements arise. Contemporary EM MNEs that are swift and responsive to a multitude of market demands and quickly evolving environments eliminate silos, bureaucracy, and top-down hierarchies
and emphasize quick changes, flexible resources, and creative teams to ensure a successful stream of activities (Aghina et al., 2018).

Furthermore, though operational agility does not necessarily mean boundless or constant changes to business activities (Overby et al., 2006), managers can find themselves in need of being flexible with what and how they do to comply with their firms’ agile strategies and tactics. For example, managers’ work tempo and working hours may need to be attuned to changing environmental demands or the relational dynamics of collaboration in environmental projects. Likewise, a network of empowered EM MNE teams working together to solve the complex environmental problems can rely on the rapid decision and learning cycles that feed FWAs (Aghina et al., 2018).

On the other side of the coin, FWAs of partner firms’ managers are often needed for goal alignment and relational coordination in environmental collaborations (Caldwell et al., 2017). In many emerging markets, the dynamic coexistence of a set of business paradigms, organizational cultures, and management systems that feed FWAs (Gölgeci, Karakas, et al., 2019) can yield creative third-way solutions to complex environmental problems and facilitate environmental collaboration tasks. When emerging-market MNE managers exhibit flexibility in the way they work, they also manifest greater willingness to accommodate the challenging requirements of environmental collaboration. EM MNEs can, for instance, assign their flexible managers as organizational implants to their partner firms to enhance commitment to (Grawe et al., 2012) and facilitate processes for environmental collaboration. When managers are ready and willing to embark upon new challenges and are flexible in so doing, they are more likely to succeed in facing the challenges of environmental collaboration and work with their partners to achieve environmental objectives.

Thus, we expect that while EM MNEs’ operational agility encourages and supports managers’ FWAs, FWAs are needed to convey operational agility’s influence on environmental collaboration across EM MNEs and their partners. Operational agility can manifest itself in how emerging-market MNE managers arrange their work, and those managers’ flexibility in working hours, spatial arrangements, and task descriptions can underlie successful interorganizational execution of environmental collaboration. This leads to the following hypothesis.
**Hypothesis 3:** Flexible work arrangements of emerging-market MNE managers mediate the link between operational agility and environmental collaboration.

The conceptual model of our paper is presented in Fig. 1.

[Insert Fig. 1]

4. Method

4.1. Survey setting

We selected Turkey as the research site for several reasons. First, Turkey is undisputedly the leading economy in Southeastern Europe and the Middle East and has been one of the G20 member countries due to the importance of its economy to the world's financial markets. Execution of a rigorous macroeconomic strategy coupled with prudent fiscal policies and major structural reforms since early 2000 has also transformed the country into one of the major recipients of foreign direct investment (FDI) in both regions of Southeastern Europe and the Middle East. The total FDI stock increased nearly thirteen times, from US$ 15 billion in 2003 to US$ 193 billion as of 2017 (Invest in Turkey, 2018). Second, while Turkey is a sizable emerging market, it is relatively under-researched context and exhibits common industrial, institutional and organizational features with other big emerging markets like Brazil and Mexico (Fainshmidt et al., 2016), which may improve the generalizability of our results. Third, as in most emerging markets, the external environment in Turkey is very dynamic, where firms inherit more flexible and agile practices, necessary to adapt and adjust to any environmental changes (Arda et al., 2018; Fainshmidt et al., 2016; Tatoglu et al., 2014). Furthermore, MNEs are especially suitable for our study because they are facing increased pressure from governments and environmental constituents to promote and achieve sustainable environmental goals, especially in the context of emerging markets. For instance, the Turkish government has introduced national development plans and policies to direct businesses toward more environmentally sustainable practices.

The government imposes strict rules particularly to foreign and private organizations to be aware and adopt more environmental practices; and also to be more engaged in tackling issues related to environmental sustainability (Cakar & Alakavuklar, 2014). Within this context, MNEs, in particular, are shifting their primary focus from achieving superior economic performance in terms of higher
profit and sales, to environmental and social performance. To achieve these goals, MNEs need to adopt more flexible and agile practices to improve their production efficiency and meet environmental goals and requirements. All of which renders a suitable context to investigate the link between operational agility and collaborative processes toward environmental sustainability of MNEs in Turkey.

4.2. Sampling and data collection

The sampling frame for MNEs in Turkey was drawn from the database of a government body: General Directorate of Foreign Investment (GDFI), which maintains the records of all FDI firms operating in Turkey. GDFI also acts as a one-stop agency for implementing regulations about FDI. As of 2017, the database of GDFI consists of 58,954 FDI firms. For this survey, we excluded ventures with a capital value of less than ten million US$, as most of these firms were small businesses owned by a single person or established through ordinary partnerships with no recognizable environmentally sustainable practices. We also excluded ventures with foreign ownership of less than 10% (Demirbag et al., 2007).

We employed a structured questionnaire to gather firm-level and individual-level data from MNEs in Turkey. The survey questionnaire was originally written in English and then translated into Turkish using the back-translation procedure recommended by Brislin (1986). The process of back-translation was useful to identify potential misunderstanding and misinterpretations before administering the questionnaire. To ensure the validity and consistency of the translation, two bilingual scholars verified the back-translated English and Turkish versions of the survey.

Based on a random sampling selection procedure, 500 MNEs was generated and constituted the sample for the study. We prequalified potential participants within each firm by their responsibilities, expertise, and holistic understanding of core managerial functions and manufacturing processes, as recommended by Dillman (2007). We used multiple respondents for each firm and mailed a total of 1800 questionnaires (2 to 5 respondents in each firm) requesting that survey respondents possess a holistic view of organizational processes and their outcomes, and also a high degree of operational knowledge/expertise within a firm. This step helped us to foster the accuracy of the data and increases the validity of responses. The questionnaires were returned in sealed envelopes and with attached business cards.
After two waves of data collection and two reminders, 257 questionnaires were returned, of which 249 questionnaires were usable (from a total of 66 MNEs) representing an effective response rate of 13.8%. The response rate is considered satisfactory and also comparable to those of research in similar contexts, given the nature of the research and the type of potential participant (Kriauciunas et al., 2011). The characteristics of the questionnaire respondent MNEs are summarized in Table 1.

[Insert Table 1]

To evaluate non-response bias, we followed two steps. First, we compared responses from early and late respondents and found no statistically significant differences. Secondly, a randomly selected group of 45 non-participants MNEs and the participating 249 indicated no significant differences for any of these demographic variables: number of employees, firm size, and firm sales volume. Hence, we concluded that non-response bias did not pose a significant issue in our study.

4.3. Measures
All of our measures are based on 5-point Likert scales (1=“strongly disagree” to 5=“strongly agree”) and are drawn from previous research. We used managers’ perceptual evaluation to measure each variable in our study. Perceptual measures by managers reflect the actual state of a firm and capture a firm’s behavior and capabilities. These measures are widely used in recent empirical research (Gölgeci, Gligor, et al., 2019; Leslie et al., 2012; Singh et al., 2016).

4.3.1. Operational agility
Operational agility (OA) was measured using three items drawn from Lu and Ramamurthy (2011). Managers were asked to assess how agile the operations inside their organizations are and their firms’ ability to adjust their production to meet market demand.

4.3.2. Individual creativity
Individual creativity (IC) was measured using three items developed by Janssen (2000). Managers assess their ability to generate creative ideas and find solutions.

4.3.3. Flexible work arrangements
Flexible work arrangements (FWAs) measure the extent to which managers obtain flexible work practices by their organizations. These arrangements include flexible hours, telecommuting, reduced work hours, and job sharing. Seven items adapted from Leslie et al. (2012) were used to measure FWA.

4.3.4. Environmental collaboration

Environmental collaboration (EC) measures how organizations are performing regarding the degree of their collaboration with supplier partners to improve and achieve environmental goals. EC was measured by six items drawn from Vachon and Klassen (2006).

4.3.5. Control variables

We controlled for the variables of firm size, manager’s work experience, and educational level. We measured firm size (SIZE) by five ordinal categories consisting of the number of employees ranging from less than 250 to more than 5000 employees. SIZE is a common control variable to capture whether there is a potential influence of the number of employees on the outcome variable. Manager’s work experience (EXP) was measured through five categories in the same firm ranging between less than 5 years to more than 40 years. We measured educational level (EDU) by five ordinal categories based on the qualifications obtained at university, to control for its potential influence. The measurement of the control variables is shown in Table 1.

4.4. Analysis

Due to the hierarchical nature of our data (i.e., individual- and organizational-levels) and the structure of our sample (249 employees nested in 66 MNEs), we conducted multilevel analysis using the software MLwiN to explain microfoundations of environmental collaboration and control for any possible nesting effects of organizational level and employee level factors on the relationship we tested (Rasbash et al., 2009). Multilevel analysis is an important tool to understand how individual capabilities and activities underlie organizational outcomes and to advance research adopting microfoundations approach (Aguinis & Molina-Azorín, 2015).

To test statistically whether multilevel analysis was the appropriate statistical technique for our study, we followed the procedure recommended by Klein et al. (1999). We compared a model of one structure (individual-level) to a model at two levels (individuals nested in MNEs). The results show
that the difference in log-likelihood (518.38 – 510.95 = 7.43; p<.01) is significant. Then, we compared the percentage of variance at level 2 to overall variance, i.e., we divided 0.065 (level 2 variance) by 0.470 (the total variance) and found 0.138. Any value above 0.1 justifies the use of multilevel analysis technique (Klein et al., 1999). From the above, there is a valid justification to use multilevel analysis in the present study.

To test the indirect relationship between operational agility and environmental collaboration through individual creativity and FWAs, we employed a procedure recommended by Bauer et al. (2006). Thus, we used online tool Monte Carlo Markov Chain (MCMC) simulations with 20,000 iterations to obtain confidence intervals for the indirect effects. The online tool helps to develop $R^2$ value and test the indirect effect (mediation). The indirect effect (mediation) is significant if the confidence internals does not contain the value of zero (Selig & Preacher, 2008).

5. Results
Three steps were undertaken to report our results. First, we conducted confirmatory factor analysis (CFA) to demonstrate whether the study’s variables and model provide a good fit. Secondly, we addressed the possibility of common method bias (CMB) using different design and statistical techniques. Finally, we used multilevel analysis to test our proposed hypotheses.

5.1. Confirmatory factor analysis
We conducted confirmatory factor analysis (CFA) to test the discriminant validity of our measures using AMOS software (Byrne, 2001). Table 2 reports the fit statistics for CFA. The results supported the discriminant validity of the measures and report a good fit with the data [$\chi^2=528.75; DF=146; \chi^2/df=3.62, p<.01$; comparative fit index (CFI)=0.79; incremental fit index (IFI)=0.80; Tucker-Lewis index (TFI)=0.72; root-mean-square error of approximation (RMSEA)=0.103].

[Insert Table 2]

We assessed the discriminant and convergent validity of our model by examining the average variance extracted (AVE) measures and the squared correlations among the variables. The results in Table 3 show that AVE values are higher than 0.50, which mean that the level of convergent validity for our survey instrument is acceptable, as recommended by Fornell and Larcker (1981).
5.2. Common method bias

To address the possibility of common method bias (CMB) for our study, we used multiple design-related techniques (i.e., psychological separation, methodological separation, and using multiple sources) and statistical techniques (i.e., Harman’s single factor, and marker variable technique). In the first step, various design-related techniques were used to reduce potential CMB. To do so, we initially pre-qualified potential respondents that have core knowledge of the research topic. Then, we informed all potential participants that their responses are confidential and anonymous. We received for each respondent a questionnaire in a sealed envelope, which helped us to reduce the threat of any social desirability bias (Podsakoff et al., 2012). Additionally, we separated the independent and independent variables/constructs from each other and randomized the items within each construct. Finally, we used two and six qualified participants in each MNE to enhance the validity and consistency of responses (Craighead et al., 2011). Collecting data from multiple informants was purposeful to tease out any differences in perceiving the agility of an organization and its environmental outcomes, which reduces the possibility for CMB effect in this study.

Further, we used a structured questionnaire that is carefully constructed. In so doing, we draw an initial list of questions generated from previous studies and given to three academics from different universities in the UK. These scholars provided feedback about the wording and grammar and proposed useful techniques to improve the clarity and consistency of the questions. Following this, we sent the questionnaire to two academics based on Turkey. They helped us to redesign the structure of the questions and refine some questions that comply with the context/site of our research. These steps were necessary to maximize clarity, accuracy, and cohesiveness of the questions in our survey.

In the second step, two statistical tests were undertaken for CMB. Firstly, we employed Harman’s single factor test to verify whether a single factor can explain the majority of the variance (Podsakoff et al., 2003). In so doing, the number of factors was constrained to a single factor. If there is considerable common variance, it means that the single factor is expected to generate the majority of the covariance among all factors. The results show that the single factor did not account for the
majority of the variance in the items. Secondly, we used marker variable technique following Podsakoff et al. (2012) recommendation. To do so, we took the smallest correlation between the marker variable and the substantive variables as an estimate of the CMB effects. Then, we subtracted the lowest positive correlation between self-report variables from each correlation value. The result of correlation values reflects CMB adjusted correlations. The absolute differences were relatively small in our findings, ranging between 0.01 and 0.005. Prior research highlights relatively small differences between the unadjusted and common method bias-adjusted correlations, means that CMB is a problem. Thus, based on the above discussion, CMB was not deemed to pose a severe problem in our study.

5.3. Hypotheses testing

The descriptive statistics, reliability estimates, and correlations of all measures are reported in Table 4. In each model, we examined tolerance values and variance inflation factors (VIF) to account for multicollinearity. The results show that all tolerance values were more than 0.90, and all VIF scores were between 1.06 and 1.09, affirming that multicollinearity is not a serious issue in our study (Hair et al., 2010).

[Insert Table 4]

Table 5 shows the results of multilevel analysis. Table 5 reports the results of the direct effect of operational agility on environmental collaboration. It also reports the results of the mediation effects of operational agility with environmental collaboration through individual creativity and FWAs. Model 1 includes only control variables. Model 2 includes dependent variable and reports the results of the direct effect of operational agility on environmental collaboration. Two models to test the mediation effect of individual creativity on the relationship between operational agility and environmental collaboration (Models 3 and 4). Also, two models are set to report the mediation effect of FWAs on the relationship between operational agility and environmental collaboration (Models 5 and 6).

Model 2 indicates that there is strong support for Hypothesis 1, in that operational agility has a significant positive effect on environmental collaboration ($\beta=.17$, $p<.01$). We found strong support for the two mediation hypotheses (Hypotheses 2 and 3). To test Hypothesis 2, which predicts that operational agility has an indirect and positive relationship with environmental collaboration via
individual creativity, we followed the recommendations by Bauer et al. (2006). The results in Table 5 (Model 3) indicate that operational agility is positively and significantly associated with individual creativity ($y=.28$, $p<.01$). Additionally, Model 4 shows that operational agility is positively and significantly associated with environmental collaboration when individual creativity is taken into account ($y=.41$, $p<.01$). Further, we conducted MCMC simulations to obtain confidence intervals for our proposed indirect effects. We used an online tool that develops $R^2$ value to test the mediation as suggested by Selig and Preacher (2008). The bootstrapping test reported that the indirect effect of operational agility on environmental collaboration via individual creativity was significant (i.e., indirect effect $=.07$, $p<.01$). Also, the 95 percent confidence interval (CI: $-0.13 – 0.49$) of the indirect effect did not contain zero. Thus, strong support was found for Hypothesis 2.

Similarly, Hypothesis 3, which predicts that operational agility has an indirect and positive relationship with environmental collaboration via FWAs, was supported. As indicated in Table 5 (Model 5), operational agility is positively and significantly associated with FWAs ($y=.22$, $p<.01$). Model 6 illustrates that operational agility is positively and significantly associated with environmental collaboration when FWAs are taken into account ($y=.13$, $p<.01$). Similar to previous hypotheses, we used MCMC online tool stimulations to obtain confidence intervals for the indirect effects, as suggested by Selig and Preacher (2008). The bootstrapping test reported that the indirect effect of operational agility on environmental collaboration via FWAs was significant (i.e., indirect effect $=.05$, $p<.01$). Also, the 95 percent confidence interval (CI $-0.10 – 0.21$) of the indirect effect did not contain zero. Thus, strong support was found for Hypothesis 3.

[Insert Table 5]

5.4. Discussion of findings

Our results show that the mediation effects, via individual creativity and FWAs, is higher than the direct effect of operational agility on environmental collaboration. This finding reveals that environmental collaboration is improved and sustained by developing distinct individual capabilities. Evidence shows that the increase of environmental collaboration from operational agility rests primarily on individual creativity and also FWAs. While operational agility provides a basis to develop
environmental collaboration, individual capabilities (individual creativity and FWAs) represent microfoundations of environmental collaboration. Our findings are largely supportive of extant studies (Gligor et al., 2015; Gligor & Holcomb, 2012; Vázquez-Bustelo et al., 2007), highlighting additional benefits of agility. In the next section, we go into further detail of the individual results and discuss our findings in light of the existing literature.

6. Conclusions and implications

Our main research objective was to shed further light on the link between agility and environmental collaboration, especially within MNEs operating in emerging markets. To achieve this goal, we collected and analyzed data from 249 managers of 66 MNEs in Turkey. This research endeavor allowed us to identify several key findings.

6.1. Key findings

Our results show that the operational agility of MNEs is positively associated with environmental collaboration. Further, the link between operational agility and environmental collaboration is mediated by individual creativity of MNE managers and by FWAs of MNE managers. Additionally, the mediation effect of individual creativity and FWAs is stronger than the direct effect of operational agility on environmental collaboration. Given the magnitude of environmental impacts coupled with institutional pressures and social concerns, organizations are increasingly compelled to adopt more flexible approaches to enhance collaborative processes geared toward environmental sustainability. Moreover, organizations, especially those with large international operations (e.g., MNEs), exhibit dynamic operational practices in collaboration with their supply chain partners to provide sustainable environmental solutions (Clarke & Boersma, 2017; Vachon & Klassen, 2006). As collaborative processes reside in organizational mechanisms and also in individual capabilities, they may not be fully realized unless they are actually developed and implemented via various interorganizational activities exercised by individual managers (Schillebeeckx et al., 2016). Building on this view, the present study highlights the role of individual creativity and FWAs as mediating means to convert operational agility into environmental collaboration. In so doing, the study has several implications for research and practice, which are laid out below.
6.2. Theoretical implications

The study’s results allow us to make theoretical contributions across different domains. First, we augment the agility literature in several ways. To the best of our knowledge, our study is the first to shed light on the complex relationship between agility and environmental collaboration. We build on extant studies that have examined the performance outcomes of agility. The pertinent literature indicates that agility helps firms improve aspects of their performance such as efficiency, effectiveness, product and service quality, and financial performance (Gligor et al., 2015; Gligor & Holcomb, 2012; Vázquez-Bustelo et al., 2007). We contribute to this stream of literature by providing empirical evidence that agility also positively influences a firm’s ability to collaborate with stakeholders to reduce its environmental footprint. Thus, while past studies focused extensively on the economic benefits experienced by firms that embrace and implement agility principles, our study is the first one to recognize the potential environmental benefits that can be derived from agile practices. This indicates that agility can have a positive impact not only on the immediate firm shareholders but also on the firm’s extended stakeholders and the society as a whole.

We then contribute to the international management literature by exploring the impact of agility on microfoundations phenomena within MNEs (i.e., employees). Previous agility literature has mainly examined how agility influences macro-level phenomena and its role as a source of competitive advantage at the firm-level (Eckstein et al., 2015; Wu et al., 2017). We expand this stream of research by examining the impact of operational agility on individual creativity and FWAs. Our findings show a direct link between operational agility and these variables and further reveal that individual creativity and FWAs convey the positive influence of agility on environmental collaboration. Thus, this study is a significant addition to nascent agility research in international business/management literature (Li et al., 2018; Vaillant & Lafuente, 2018), as it tackles individual mechanisms applied by EM MNEs’ managers to link their operational agility to environmental collaboration. Additionally, this initial study should serve to stimulate further research examining the impact of agility on microfoundations phenomena across national borders.
Moreover, our findings help expand the literature examining sources of desirable performance outcomes within MNEs. To illustrate, previous studies explored how MNEs can improve innovative performance (Elia et al., 2019; Ferraris, Santoro, & Bresciani, 2017; Ferraris, Santoro, & Dezi, 2017), knowledge transfer performance (Ferraris et al., 2018), marketing performance (Sharma et al., 2016), or financial performance (Gabrielsson et al., 2016), to name a few. Specifically, our study shows that MNEs can improve environmental collaboration by increasing their levels of agility; this relationship can be strengthened by promoting individual creativity and offering FWAs.

Furthermore, we augment the literature addressing human-resource-related issues within MNEs in the context of emerging economies. Past studies indicate that human resource practices pose unique challenges and opportunities within emerging economies (Budhwar et al., 2017; Stokes et al., 2016). Our findings contribute to this research discourse by highlighting human resource-related practices that can help enhance environmental collaboration. Specifically, we explore the roles of FWAs and individual creativity within the context of Turkish MNEs. Thus, we identify additional human resource practices that MNEs can employ to enhance desirable performance outcomes within emerging economies.

Finally, we contribute to the stream of literature on environmental sustainability within MNEs (Luxmore et al., 2018; Wu & Ma, 2016). Specifically, we expand on the scarce studies examining the factors that facilitate environmental collaboration (Green Jr et al., 2012; Vachon & Klassen, 2006). Our findings help uncover the impact of agility, along with individual creativity and flexible work practices, on environmental collaboration. That is, flexible individual capabilities, together with organizational activities and mechanisms, can provide the impetus for MNEs to engage further in environmentally-focused relational exchanges (i.e., environmental collaboration). As such, it is imperative that both organizations and employees engage in processes designed to enhance collaborative relationships among suppliers. Indeed, operational agility, along with individual creativity and FWAs, can help network partners engage in shared discussions and decisions; and adapt to the needs of the relationships to not only solve environmental tensions but also sustain environmental commitment. This study adds to the current literature by documenting that
environmental collaboration, which is facilitated by flexible individual capabilities and organizational mechanisms, plays a superior role in improving environmental and social elements of sustainability. This is a noteworthy contribution considering that environmental sustainability has become a key concern for multiple stakeholders, including private and public institutions (De Brito et al., 2008; Gölgeci, Gligor, et al., 2019).

6.3. Managerial implications

Our study also helps provide some useful insights for managers. Our findings suggest to managers that investing in operational agility helps MNEs better engage in environmental collaboration. As such, our findings offer managers an additional impetus for investing in operational agility. Further, since agility-related developments can require significant financial commitments, and significant financial commitments typically require consensus decision-making within most MNEs, managers can use our findings to persuade their colleagues of the benefits of agility.

Our results also highlight to managers the importance of individual creativity and FWAs in achieving the desired levels of environmental collaboration. Although organizational agility by itself positively impacts environmental collaboration, we suggest to managers that such impact is underpinned and enhanced by individual creativity and FWAs. In fact, our results show that the mediation effect of individual creativity and FWAs is higher than the direct effect of operational agility on environmental collaboration. On the one hand, individual creativity and FWAs can substantially increase the positive impact of agility on environmental collaboration. On the other hand, under conditions of low individual creativity and in FWAs, MNEs are less likely to reap the full potential benefits of agility. This further reinforces the important role of microfoundations phenomena (i.e., employees) in promoting environmental collaboration. Thus, to achieve the desired level of environmental collaboration, it is not sufficient for MNEs to devote resources to enhance operational agility, they should also promote individual creativity and FWAs. Considered together, individual creativity and FWAs allow employees to be more responsive to customers’ needs and thus more agile. This suggests that both organizational agility and individual agility are needed to maximize the impact on environmental collaboration.
Our findings allow us to derive further managerial takeaways. Specifically, while MNEs can, typically at will, adjust the work arrangements of their managers and thus enhance the level of environmental collaboration, it is more difficult for MNEs to enhance managers’ individual creativity. As such, MNEs who seek to engage in environmental collaboration successfully should carefully evaluate the level of individual creativity of job candidates. Individual creativity is a rather innate trait that is difficult to train. Thus, it is easier for MNEs to hire creative individuals than it is to attempt to improve employee creativity. This suggests that MNEs who struggle with environmental collaboration should consider hiring additional managers who exhibit high levels of creativity, while concomitantly providing current managers opportunities for professional development that are focused on creativity enhancement. Furthermore, MNEs should promote individual creativity among existing employees. To do so, MNEs could offer incentives for employees who display creativity and generate novel solutions to organizational issues. The use of incentives is likely to cultivate a culture of creativity, which would facilitate its sustainability within MNEs.

Furthermore, managers should adjust their and their employees’ work arrangements and make the work arrangements more flexible, while ensuring consistency with organizational goals and objectives. While more FWAs can help enhance environmental collaboration, managers should still be cautious of the potential ‘dark side’ of increased flexibility. That is, FWAs, such as telecommuting and flexible work hours, can result in employees gaming the system if not implemented with proper controls and accountability systems. For example, flexible hours could result in employees not being available when MNEs’ customers or suppliers require their attention.

Finally, while operational agility alone cannot assure success in environmental collaboration, it can be an essential precursor to individual capabilities and activities that underlie environmental collaboration, which is fast becoming an imperative task for many MNEs. In this vein, it is important to note that strategy, structures, processes, and people work together to maintain and leverage agility toward strategic ends, and dynamic managers that ignite passion are key to fit MNEs’ agile elements together (Aghina et al., 2018). Thus, MNEs are advised to invest in creative managers and FWAs
together with clear flat structures, active partnerships, and rapid iteration and experimentation as hallmarks of agility to make a positive impact on their natural environment.

6.4. Limitations and future research

Our study has some limitations that also provide fruitful avenues for further research. First, we collected our data within the setting of an emerging market. Although the choice of context provides several benefits as illustrated in the method section, future research should attempt to replicate our findings within other contexts, including those of developed countries. In our study, we focused on the role of operational agility in enhancing environmental collaboration. Future research can help further build theory in this area by exploring the role of other capabilities that have been suggested in the literature to provide MNEs with a competitive advantage, such as innovativeness, resilience, or flexibility. Similarly, at a micro-level, we explored the roles of individual creativity and FWAs. As such, future studies should examine other possible individual-level factors that might be relevant to environmental collaboration, such as employees’ ethics, organizational commitment, and environmental perceptions. Finally, the findings lack generalizability due to the narrow focus of our sample characteristics. This study targeted upper-level and well-educated employees who have senior/executive managerial positions. In this setting, the participants possess core managerial expertise, rich knowledge of their firms’ operations, and are also involved in strategic decision making. Therefore, there is a need for future research to use different sample populations (e.g., senior/junior management levels) to gain a deeper understanding of how individual creativity and FWAs vary across hierarchical positions that consequently may affect the degree of environmental collaboration. Finally, our findings show that the mediation effect of individual creativity and FWAs is stronger than the direct effect of operational agility on environmental collaboration. It can be argued that individual creativity and flexible arrangements facilitate employee agility. As such, future research should empirically examine the interplay between individual/employee agility and organizational agility and its impact on organizational performance. Such studies could provide novel insights into sources of superior organizational performance.
References


Gligor, D.M. (2013). *The concept of supply chain agility: Conceptualization, antecedents, and the impact on firm performance.* (Ph.D. in Business Administration Dissertation), The University of Tennessee, Knoxville, TN.


Fig. 1. Conceptual model

Individual creativity (IC)

H2 = OA → IC → EC

Operational agility (OA)

H1

Environmental collaboration (EC)

H3 = OA → FWA → EC

Flexible work arrangements (FWA)
Table 1. Characteristics of respondent firms

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondent type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper level (CEO, chairman, and board member)</td>
<td>65</td>
<td>0.26</td>
</tr>
<tr>
<td>Medium level (Director/head of department)</td>
<td>118</td>
<td>0.47</td>
</tr>
<tr>
<td>Lower level (First-line manager and supervisor)</td>
<td>66</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>13</td>
<td>0.05</td>
</tr>
<tr>
<td>Some college</td>
<td>27</td>
<td>0.11</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>124</td>
<td>0.50</td>
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<tr>
<td>Master’s degree</td>
<td>73</td>
<td>0.29</td>
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<tr>
<td>Doctorate</td>
<td>7</td>
<td>0.03</td>
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<tr>
<td>Other (e.g. professional certificate)</td>
<td>5</td>
<td>0.02</td>
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<tr>
<td><strong>Work experience</strong></td>
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<td></td>
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<tr>
<td>Less than 1 year</td>
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<td>0.05</td>
</tr>
<tr>
<td>1-3 years</td>
<td>42</td>
<td>0.17</td>
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<tr>
<td>4-9 years</td>
<td>78</td>
<td>0.31</td>
</tr>
<tr>
<td>10-15 years</td>
<td>52</td>
<td>0.21</td>
</tr>
<tr>
<td>More than 15 years</td>
<td>65</td>
<td>0.26</td>
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<td><strong>Industry sector</strong></td>
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<tr>
<td>Industrial, automotive and electrical equipment</td>
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<tr>
<td>Textile and apparel</td>
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<td>0.08</td>
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<tr>
<td>Food and beverage</td>
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<td>0.06</td>
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<tr>
<td>Forestry products and paper</td>
<td>19</td>
<td>0.07</td>
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<tr>
<td>Chemical &amp; pharmaceuticals</td>
<td>10</td>
<td>0.04</td>
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<tr>
<td>Furniture and wood products</td>
<td>10</td>
<td>0.04</td>
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<tr>
<td>Machinery and equipment</td>
<td>21</td>
<td>0.08</td>
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<tr>
<td>Cement, glass, and ceramics</td>
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<td>Metal and steel</td>
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<td>0.02</td>
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<td>Construction and related products</td>
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<td>Consumer electronics and appliances</td>
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<td>Transportation and logistics</td>
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<td>0.07</td>
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<tr>
<td>Healthcare services</td>
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</tr>
<tr>
<td>IT and software</td>
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<td>0.05</td>
</tr>
<tr>
<td>Tourism and hotel</td>
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<td>0.02</td>
</tr>
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<td>Financial services</td>
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<td>0.05</td>
</tr>
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<td>Market research</td>
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<tr>
<td><strong>Number of employees</strong></td>
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<td>Less than 250</td>
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<tr>
<td>250-500</td>
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<tr>
<td>501-1000</td>
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<td>0.20</td>
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<tr>
<td>1001-5000</td>
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<td>0.15</td>
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<tr>
<td>More than 5000</td>
<td>37</td>
<td>0.14</td>
</tr>
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</table>

| N       | 249 |
Table 2. Confirmatory factor analysis results

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Standardized loadings</th>
<th>CR b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational Agility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We fulfill demands for rapid-response, special requests of our customers whenever such demands arise, our customers have confidence in our ability.</td>
<td>OA</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>We can quickly scale up or scale down our production/service levels to support fluctuations in demand from the market.</td>
<td>OA1</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Whenever there is a disruption in supply from our suppliers we can quickly make necessary alternative arrangements and internal adjustments.</td>
<td>OA2</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OA3</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td><strong>Individual Creativity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I generate new ideas for difficult issues.</td>
<td>IC</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>I search out new working methods, techniques or instruments.</td>
<td>IC1</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>I generate original solutions for problems.</td>
<td>IC2</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td><strong>Flexible Work Arrangements</strong></td>
<td>FWA</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>This organization considers my personal needs when making my work schedule.</td>
<td>FWA1</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>At my request, my organization has accommodated my off-the-job demands when assigning my work hours.</td>
<td>FWA2</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>Outside of formal leave and sick time, my organization allows me to take time off to attend to non-work-related issues.</td>
<td>FWA3</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>Because of my particular circumstances, my organization allows me to do work from somewhere other than the main office.</td>
<td>FWA4</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>My organization allows me to complete a portion of work outside the office.</td>
<td>FWA5</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>Occasionally, I am allowed to work from outside the office.</td>
<td>FWA6</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>Telecommuting (working from home) is seen as a positive aspect in this organization.</td>
<td>FWA7</td>
<td>0.67</td>
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<tr>
<td><strong>Environmental Collaboration</strong></td>
<td>EC</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Our organization cooperates with its suppliers to achieve environmental objectives.</td>
<td>EC1</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>Our organization provides its suppliers with design specification that include environmental requirements for purchased items.</td>
<td>EC2</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Our organization encourages its suppliers to develop new source reduction strategies.</td>
<td>EC3</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Our organization cooperates with its suppliers to improve their waste reduction initiatives.</td>
<td>EC4</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Our organization works with its suppliers for cleaner production.</td>
<td>EC5</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Our organization collaborates with its suppliers to acquire materials, parts and/or services that support its environmental goals.</td>
<td>EC6</td>
<td>0.80</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

a All loadings are significant at p<0.001
b CR=Composite reliability
### Table 3. Convergent and discriminant validity of the measurement model\(^a\)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of Items</th>
<th>AVE(^b)</th>
<th>OA</th>
<th>IC</th>
<th>FWA</th>
<th>EC</th>
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</thead>
<tbody>
<tr>
<td>OA</td>
<td>3</td>
<td>0.55</td>
<td>0.74</td>
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<td></td>
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</tr>
<tr>
<td>IC</td>
<td>3</td>
<td>0.71</td>
<td>0.16</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FWA</td>
<td>7</td>
<td>0.63</td>
<td>0.21</td>
<td>0.24</td>
<td>0.79</td>
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</tr>
<tr>
<td>EC</td>
<td>6</td>
<td>0.70</td>
<td>0.18</td>
<td>0.35</td>
<td>0.21</td>
<td>0.83</td>
</tr>
</tbody>
</table>

**Notes:**
- \(^a\)Italicized values on the diagonal are the square root of the AVE values.
- \(^b\)Average variance extracted.

### Table 4. Means, standard deviations, and correlations among variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SIZE</td>
<td>2.70</td>
<td>1.39</td>
<td>1</td>
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<td>2. EXP</td>
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<tr>
<td>3. EDU</td>
<td>3.18</td>
<td>0.95</td>
<td>-0.01</td>
<td>-0.10</td>
<td>1</td>
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<td>4. OA</td>
<td>3.80</td>
<td>0.74</td>
<td>0.03</td>
<td>0.01</td>
<td>-0.05</td>
<td>1</td>
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<tr>
<td>5. IC</td>
<td>4.12</td>
<td>0.57</td>
<td>-0.20*</td>
<td>0.06</td>
<td>-0.01</td>
<td>0.17*</td>
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<td>1</td>
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<tr>
<td>6. FWA</td>
<td>3.42</td>
<td>0.83</td>
<td>-0.10</td>
<td>0.02</td>
<td>0.02</td>
<td>0.21*</td>
<td>0.24*</td>
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<tr>
<td>7. EC</td>
<td>3.80</td>
<td>0.68</td>
<td>0.02</td>
<td>-0.06</td>
<td>0.01</td>
<td>0.19*</td>
<td>0.36*</td>
<td>0.22*</td>
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</tr>
</tbody>
</table>

**Notes:**
- N=249 managers nested in 66 MNEs.
- \(^*\)p<0.01.
Table 5. Results of multilevel analysis for the hypothesized model

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
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<th></th>
<th>Model 3</th>
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<th>Model 4</th>
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<th>Model 5</th>
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<th>Model 6</th>
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<tbody>
<tr>
<td></td>
<td>β</td>
<td>SE</td>
<td>t</td>
<td>β</td>
<td>SE</td>
<td>t</td>
<td>β</td>
<td>SE</td>
<td>t</td>
<td>β</td>
<td>SE</td>
<td>t</td>
<td>β</td>
<td>SE</td>
<td>t</td>
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<td>16.25*</td>
<td>3.90</td>
<td>0.24</td>
<td>16.25*</td>
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<td>0.23</td>
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<td>0.02</td>
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<td>2.00*</td>
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<td>0.03</td>
<td>-1.00</td>
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<td>0.02</td>
<td>-1.50*</td>
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<td>2.00*</td>
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<td>-1.25*</td>
<td>0.006</td>
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<tr>
<td>OA → EC</td>
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<tr>
<td>OA → FWA</td>
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</tr>
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<td>OA via FWA</td>
<td>0.13</td>
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<td>Change in 2 log likelihood</td>
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<td>Level 1 intercept variance (SE)</td>
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<td>Level 2 intercept variance (SE)</td>
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<td>0.05</td>
<td></td>
<td>0.40</td>
<td>0.04</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
N=249 managers nested in 66 MNEs.
*p<0.01.