

# Strategic Agility and Product Development in Emerging Markets: The Role of Employee Resilience and Self-efficacy as Microfoundations

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**Note: This is a post-review, pre-print accepted version, please cite:**

Bouguerra, A., Gölgeci, I., Gilgor, D., Khan, Z., Arslan, A., & Tatoglu, E. (2023). Strategic Agility and Product Development in Emerging Markets: The Role of Employee Resilience and Self-efficacy as Microfoundations. *IEEE Transactions on Engineering Management*, in press.

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**Abstract**—While strategic agility is increasingly acknowledged as a critical source of innovation and product development performance (PDP), little attention has been paid to the micro-individual capabilities that translate strategic agility into greater PDP. This study examines the mediating roles of employee resilience and self-efficacy as key dynamic micro-level (individual) capabilities that connect firms' strategic agility to their PDP in the emerging market of Türkiye. We draw on dynamic capabilities theory, adopt a microfoundations approach, and run a multilevel analysis using data from 758 managers working in 185 firms to test our hypotheses. We draw on the microfoundations of PDP and provide important insights into how individual capabilities enable attaining higher PDP in emerging markets. In particular, the findings suggest that strategic agility is positively associated with PDP. Also, the impact of strategic agility on PDP -both examined at the organizational level- is conveyed through individual-level capabilities of employee resilience and self-efficacy. Our study makes significant theoretical contributions to innovation and product development, operations management, and strategic agility research and draws managerial implications.

**Index Terms**—**Strategic agility; product development performance; employee resilience; self-efficacy; microfoundations; emerging markets; multilevel analysis.**

**MANAGERIAL RELEVANCE STATEMENT**—Our study carries several managerial implications. We indicate that strategic agility can help firms achieve superior PDP. Managers and firms can draw on this by emphasizing strategic agility as a key driver of product development performance. This implies that investing in strategic agility is vital for firms to launch a new product, renew an existing product, and or introduce an old product to a new market.

Also, we further demonstrate that employee resilience and self-efficacy act as mediators in linking strategic agility and PDP. Therefore, beyond investing in enhancing strategic agility, firms should develop their employees' resilience and self-efficacy to realize the full potential of strategic agility in pursuing product development. This is beneficial for firms to maximize product development as their employees can proactively interact and respond to market changes and deal with stress and crises to solve any problems in the product development process.

## I. INTRODUCTION

In turbulent, dynamic, and continuously changing environments, strategic agility can be an important driver of product development [1, 2]. In particular, in the intricate and changing global environment characterized by technological advancements and digitalization, agility is considered critical to detect and swiftly and resolutely react to severe external shocks with new ideas, solutions, and products [3, 4]. Likewise, strategic agility is a crucial driver of discovering, venturing, and renewing resources and capabilities and can foster generating new ideas and steering organizational change through product development [4, 5]. Inherent in strategic agility is the firm's flexibility and ability to rapidly reconfigure resources and capabilities to support product innovation/development. Product development, in turn, often brings value to organizations and societies.

Recently, there has been growing attention to understanding the individual actions and practices that enable the application of organizational capabilities and convey their effect on operations management (OM) [6, 7], as well as innovation and product development performance (PDP) [e.g., 8, 9, 10]. However, scant attention has been paid to the micro and individual-level capabilities and practices that play a vital role in conveying the impact of strategic agility on performance outcomes and PDP in particular [11]. This has been detrimental to understanding how strategic agility is applied to realize optimal firm-level innovation outcomes [4, 12]. Furthermore, although a large body of literature exists on the antecedents and outcomes of strategic agility [cf. 13], relatively little is known about how and when strategic agility might lead to PDP, suggesting that potential mediating factors are left unexplored [1, 14]. Some recent studies [15-17] have referred to issues such as technological turbulence, knowledge management capability, and inclusive climate to mediate or moderate the relationship between strategic agility and product innovation at a general level. However, specific employee-level practices (microfoundations) have been visibly missing from the discussion linking strategic agility and product innovation. This gap becomes even more glaring while focusing more specifically on PDP, and particularly in the context of firms operating in emerging markets. At the

same time, the vitality of employee-level dynamics, including talent development for organizational agility, has been demonstrated [e.g., 16]. However, employee-level specific characteristics and practices and their interlink with agility and PDP are relatively underexplored. Hence, our paper aims to fill these knowledge gaps in the literature by adopting a microfoundations approach to the relationship between strategic agility and PDP in an interesting and under-researched emerging market context of Türkiye. Emerging markets offer a fertile empirical context to examine the role of strategic agility on PDP and the impact of micro level factors, as these markets suffer due to institutional voids and firms receive limited support for R&D to develop new products/services [18, 19]. Furthermore, the explorations of micro and macro-level factors provide a more fine-grained understanding about the firm level outcomes such as PDP.

The microfoundations approach points to the macro (collectivist) explanation currently dominating management literature and asserts that a link between firm-level routines and capabilities and firm-level outcomes is incomplete without accounting for micro mechanisms. Thus, “the micro-level (i.e., individual action and interaction) ultimately replaces the macro-level (i.e., the postulated direct link between routines/capabilities and performance) in the explanation of how routines/capabilities and performance are linked” [20]. This approach proposes that individual-level attributes are the key building blocks that can be leveraged to attain organizational outcomes that positively impact society [21].

We argue that unpacking the link between strategic agility and PDP and examining different individual-level variables’ effects is imperative to clarify differences in PDP. Surviving and effectively competing in dynamic and complex environments characterized by rapid technological advancements requires not only the ability to anticipate or respond quickly to changes in the external environment but also individual capabilities to manage and address tensions in such complex environments [3]. Firms are made of people, and organizational structuring and management of product development reside in individuals participating in product development activities and cross-

functional knowledge-sharing routines. To attain higher PDP from firms' strategic agility, individuals need to develop and deploy the critical capabilities necessary to speed up the regeneration and transformation of current business processes [22]. For example, employee resilience may be conducive to managing tensions related to organizational renewal [23, 24]. Individuals' capability to confront challenges and cope with stresses is vital for firms to adjust and respond adequately to changing environmental conditions [e.g., 25]. Adding to this, self-efficacy (i.e., personal belief one can successfully execute specific tasks) can be essential in embracing change and overcoming tensions through exerting sufficient effort and belief to achieve successful outcomes [26, 27].

This paper aims to examine the microfoundations of PDP and their role in connecting strategic agility with PDP in the context of firms based in emerging markets. We draw insights from the microfoundations approach and investigate the role of individual-level factors (i.e., employee resilience and self-efficacy) as potentially instrumental mechanisms between firms' strategic agility and PDP. We untangle the nexus of relationships between strategic agility and PDP by integrating the micro (individual-level) variables of employee resilience and self-efficacy as important individual-level mechanisms in explicating the vital role of strategic agility in achieving superior product performance. To achieve its aims, the study utilizes a microfoundations approach and multilevel analysis. Our analysis is based on a unique dataset of 758 managers nested in 185 firms from Türkiye, enabling us to conduct a multilevel analysis and examine the role of microfoundational individual capability in linking strategic agility and PDP.

We contribute to innovation and product development studies streams in three notable ways. First, we respond to Millar, et al. [28] call to study innovation drivers and outcomes in volatile and dynamic environments. We respond to this call by examining how organizational and individual capabilities improve innovation outcomes (i.e., product innovation) in challenging environments in the context of emerging markets [29]. This context (i.e., Türkiye) is highly relevant to examine the interplay between macro and micro environments [30] and have been experiencing constant changes in the economic,

political, social, and competitive landscape [31], which may influence the ability of firms to sustain innovation and new value creation through product development.

Second, we provide a theoretical argument accompanied by empirical evidence showing that distinct individual-level capabilities explain how strategic agility leads to higher PDP. The constant technological shift necessitates firms to become agile [3] and mobilize and deploy their employees to enhance resilience, adaptability, and innovativeness in the face of disruptive changes. Hence, our findings show that firms need to develop new micro capabilities, such as employee resilience and self-efficacy, to obtain such characteristics and become more agile. Adopting a microfoundations approach [cf. 32, 33, 34] allows us to mitigate the shortcomings of research on agility concerning individual mediating mechanisms in deploying and manifesting strategic agility by examining the role of individual-level factors of employee resilience and self-efficacy in the link between strategic agility and PDP. Likewise, such an approach helps explain how firms depend on their employees to convert their strategic agility into enhanced PDP where the environment is dynamic and fluid. By doing so, we add the discussion of employee resilience and self-efficacy to the extant research on strategic agility, which has hitherto unexplored the individual-level factors.

Third, our study sheds important light on how strategic agility at the firm-level influences employee capabilities. Authors like Ahammad, et al. [35] stressed that it is vital for firms to deploy agile practices and develop the human capabilities required to accelerate the renewal and transformation of resources and capabilities and subsequently upgrade innovation in the firm. We extend this strand of research by analyzing multilevel relationships between individual and organizational levels in agility and PDP research [13, 36]. It explains why firms rely on human capital to convey their strategic agility into greater PDP. That is, employee resilience and self-efficacy can be enhanced through strategic agility and, in turn, assist strategically agile organizations in changing their business models to reinvent or improve value creation through new production methods, and offering new products and services. Practitioners and policymakers may draw on the findings of this study,

showing that promoting agile practices and dynamic human capabilities is critical for successful product development and innovativeness, especially in the context of emerging markets.

## II. CONCEPTUAL BACKGROUND AND HYPOTHESES DEVELOPMENT

### *A. Dynamic Capabilities Theory*

We adopt dynamic capabilities theory (DCT) to examine the link between strategic agility and PDP. Dynamic capabilities (DCs) are defined as “a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness” [37]. They enable “business enterprises to create, deploy, and protect the intangible assets that support superior long-run business performance” [38]. Inherent in this conceptualization, the ability to adapt and reconfigure internal and external resources and competencies to address rapidly changing environments rests at the epicenter of a firm’s agility [39].

The premise of DCT posits how firms can create, exploit, and reconfigure resources and capabilities to address the complex changes in the external environment agilely. Such firms are more likely to meet changing customers’ needs and adapt to evolving technological advances, which leads to sustained competitiveness [38]. For instance, Shams, et al. [40] argue that DCs enable firms to adequately anticipate the variations in the business environment, which subsequently assist firms in responding speedily yet efficiently to emerging challenges and threats so that they continue their innovations. Further, Mudalige, et al. [41] emphasize that combining firm-level and individual-level DCs plays a vital role in increasing product and process innovation.

DCT has often been applied to OM and innovation research to examine a variety of issues, such as agility and resilience [42], entrepreneurial intensity [43], and the role of innovative capacity and strategic flexibility in DCs [44]. The underlying premise that interweaves OM research adopting DCT is that DCs, at their core, are about innovation and are among the key forces behind the successful development, implementation, and utilization of new products and processes within and across organizational boundaries [38].

A wide range of microfoundations (e.g., cognitive, psychological, and emotional) underpins DCs, suggesting that DCs can be largely idiosyncratic to the firm in which they are based [45]. We argue that comprehending micro-level elements is essential to understanding how DCs improve firms' performance in volatile institutional environments such as those observed across emerging markets. As we will detail in the manuscript, employee resilience and self-efficacy are two such elements, as employee resilience and self-efficacy can lead to a higher level of job performance that can support better product design and improved customer service.

### *B. Product Development and Product Development Performance*

Product development is defined as the transformation process of ideas and information into commercial services and products. Product development is the cornerstone of innovation [2, 14] and is considered an essential function of contemporary firms [46]. Likewise, product development is often deemed critical for operational success and survival [47].

In today's world, tangible or intangible, any product is measured against the "service" it provides, i.e., various types of value it offers to consumers [48]. It is increasingly accepted that services are the products of service firms. As such, product development includes the development of physical as well as intangible products. In fact, much research considers knowledge development and new concept development -both intangible- as components of product development [46]. In this vein, our conceptualization and examination of product development capture both product and service development outcomes.

In this study, we focus on the performance aspect of product development [24]. PDP encapsulates the dynamic and multifaceted realm of outcomes achieved while creating new products or enhancing existing ones [29, 49]. At its core, PDP reflects firms' ability to seamlessly navigate through the different stages of product development. As such, in innovation management, this concept encompasses a spectrum of key indicators that gauge the effectiveness, efficiency, and overall success of firms' product development endeavors. Ultimately, PDP guides firms toward the zenith of their



innovation potential [50]. It encapsulates the intricate interplay between creativity and efficiency, translating ideas into tangible offerings that may enhance competitiveness.

A significant challenge associated with new product development is represented by the difficulty in measuring its performance. The problem stems from the multidimensionality of the outcomes of product development. As Tatikonda and Montoya-Weiss [51] recognized, “although new product development projects are inherently multi-disciplinary, studies of development projects typically adopt a singular functional perspective of performance. Inherent functional differences contribute to a natural tendency toward myopic evaluation of development efforts”.

Multiple studies have used a single metric to assess PDP, as various authors focused on different aspects of performance and defined success and failure in distinct ways [e.g., 49]. While depending on the study’s focus, such measures can provide valuable insights, some authors argue for a more comprehensive approach [50]. To capture the concept’s various aspects and consistent with extant studies, we consider PDP to be reflected by how quickly organizations can enter new markets, how fast they can bring new products/services to market, and the success rate of their new products/services [76].

### *C. A Microfoundations Perspective: Why Consider the Roles of Employee Resilience and Self-efficacy?*

Recently, strategy scholars have highlighted the significance of integrating micro-level variables in understanding organizational-level phenomena [e.g., 32, 33, 34]. This line of reasoning is embodied by the microfoundations approach that aims to explain the change in organizations through individual behaviors and mechanisms and that argues “managers’ capabilities and activities are microfoundations of organizational” [31] activities and outcomes. For example, Distel [51] adopts Coleman’s bathtub model to explore the microfoundations of absorptive capacity. He finds that knowledge workers’ perspective-taking and creative behaviors are important microfoundations of absorptive capacity, emphasizing employees’ critical role in explaining firm-level heterogeneity.

Accordingly, the emergence of the microfoundations approach in business and management scholarship [32, 52] reflects the growing acknowledgment that the relationships between macro-level phenomena are better understood through underlying microfoundational mechanisms. These mechanisms are manifested by individuals who explain such relationships' inner workings rather than their shallow treatment at a single level of analysis.

In view of the key premises of the microfoundations approach, OM research has also increasingly followed the microfoundations approach to examine relevant OM phenomena, especially at the interface of people and organizations [6, 7, 53]. For example, [7] explore microfoundations of an operational capability, while Sousa-Zomer, et al. [6] examine microfoundations of digital transforming capability. This line of research in OM highlights that the microfoundations approach is useful for examining behavioral issues in OM, i.e., behavioral OM research [53]. Behavioral OM is a relatively strong research domain within OM research, with growing cases of recent applications [54, 55]. Like the microfoundations approach, behavioral OM stresses the role of individuals in organizational phenomena and firm operations and offers unique insights into individual mechanisms of innovation and product development [54]. Thus, as highlighted by Croson, et al. [53], the microfoundations approach is invaluable for OM in explaining individual capabilities and behaviors linking organizational capabilities and outcomes.

In the context of firms' strategic agility, a microfoundations approach can better untangle how such meta-capability of complex organizations with a presence in multiple countries is applied and utilized toward strategic ends [11]. While firm-level constructs, including routines and capabilities, may be feasible for explaining organizational outcomes, their relevance stems from repetitive patterns of individual action and coordinated interaction [20]. Thus, we follow the microfoundations approach to illustrate the potential mediating role of individuals' employee resilience and self-efficacy in conveying the influence of strategic agility on PDP. These two concepts were included in our model for several reasons, which we will detail next.

Our focus on individual resilience and self-efficacy responds to the call for exploring managerial cognition's role in enhancing organizational outcomes [45]. This justifies our analysis of individual resilience and self-efficacy as microfoundations of PDP that convert strategic agility to higher PDP. Employee resilience and self-efficacy are integral to managerial cognition and influence behaviors and outcomes within a firm [56], and such capabilities are vital for opportunity recognition and exploitation. The literature suggests that it would be beneficial to consider whether and, if so, how the impact of strategic agility can be conveyed through individual resilience and self-efficacy as microfoundations [12, 42]. Organization and management research has provided important insights into how employee resilience and self-efficacy affect performance [see, for example, 57, 58] but overlooked how these microfoundations translate strategic agility into greater PDP in firms.

Further, employee resilience and self-efficacy are important individual capabilities [25, 27, 59, 60] that firms can nurture and leverage to take advantage of strategic agility. Thus, we contend that employee resilience and self-efficacy can better explain the link between strategic agility and PDP. Agility and resilience are both considered critical capabilities in the contemporary business environment, and the interplay between these concepts has been found to be complex and intensive [61]. Thus, as agility and resilience are inextricably connected across multiple levels [62], employee resilience may play a pivotal role in conveying the influence of strategic agility on PDP. Likewise, self-efficacy is a pivotal element in fulfilling the potential of human capital and thriving at work [27, 63, 64]. As such, employees' self-efficacy can be seen as a meta-capability that plays a pivotal role in transforming firm-level capabilities into strategic performance outcomes like PDP. Combined, these arguments provide the impetus for considering the roles of employee resilience and self-efficacy in the relationship between strategic agility and PDP.

#### *D. Hypotheses Development*

##### *1) Strategic Agility and Product Development Performance*

Agile strategies and capabilities have recently been examined in relation to product development [65], as agile product development has garnered a growing interest [e.g., 5]. The main lesson of such studies is that timing has become the vital basis for competition and a crucial element of product development. Firms seeking to improve their PDP are compelled to adopt strategic agility and implement agile processes and structures to perform better than their competitors. As such, prior studies focusing on product development have argued that speed is vital for firms to remain competitive due to shortened product life cycles and high imitation risk by competitors [e.g., 2].

This study contends that agility is an important dynamic meta-capability that may generate superior PDP, especially for firms based in emerging markets, as these firms receive limited support from their formal institutions. The promise of strategic agility is the discovery, venturing, and renewal of resources and capabilities [4, 5]. Strategic agility enables the firm to rethink its existing processes, adjust its resources and capabilities to achieve sustainable competitive advantage [4, 62], and respond to dynamic and changing environmental conditions. In this way, agile firms can adapt to external market conditions, change their course of action, and develop new products or services.

Strategic agility is fundamentally about the firm's capability to cultivate and retain flexibility and enable positive adjustments to sustain firm competitiveness [36]. Firms with strategic agility are sensitive to innovative clues, deploy their fluid resources to swiftly introduce new products and services in line with market demands, and are swift and resolute in decision-making toward new business practices [24]. In particular, given the turbulent environment in which they operate, strategic agility is one of the key hallmarks of firms [31]. Thus, firms' strategic agility can play an essential role in their product development and increase product development speed and performance, which could be further compounded in the context of Türkiye. It streamlines firms' internal operations with external conditions, enabling timely responses to market changes and customers [2, 66].

In the emerging market context of Türkiye, the firms' strategic agility can expedite and simplify their product development processes, such as funneling and product prototyping, resulting in greater

product development outcomes. For example, the Yildiz Group in Türkiye is renowned for its entrepreneurial spirit and global success in food products. It has been making leaps in western markets through its strategic agility in making bold yet resolute decisions, such as acquiring United Biscuits in the UK [BBC, 67] and being uniquely quick at implementing strategic product development activities. As such, once firms can speed up and streamline their product development processes and operations, it is logical to expect positive influences on PDP due to their strategic agility. Based on this discussion, we hypothesize that:

**H1:** *Strategic agility is positively associated with product development performance*

## *2) The Mediating Roles of Employee Resilience and Self-efficacy*

According to the microfoundations approach, focusing on firm-level variables alone when seeking to explain the impact of capabilities on firm performance generates incomplete explanations. To generate more comprehensive explanations for this link, researchers should account for the role of micro-level (individuals and their actions) variables [20, 21]. This suggests that the key role of such micro-level mechanisms needs to be accounted for to provide adequate explanations for the impact of strategic agility on PDP. In this study, we zoom in on two crucial mechanisms -employee resilience and self-efficacy- that may provide important insights into strategic agility's connection with PDP.

Employee resilience refers to the capacity to bounce back and deal with stresses and crises concerning uncertainty and environmental changes [23]. It is an important capability that helps employees address the mandate for endurance, adaptation, flexibility, and improvisation in circumstances characterized by fluidity and uncertainty [68]. Individuals' resilience at work allows for reactive recovery and proactive growth through learning and effectively responding to new challenges. In the context of Türkiye, individuals' resilience at work enables them to not only bounce back from setbacks but also proactively adapt and thrive by acquiring new skills and effectively addressing emerging challenges. For instance, during the economic and Covid-19-related fluctuations witnessed in recent years, professionals who exhibited resilience were able to quickly recover from

job uncertainties [69, 70] and, at the same time, seize opportunities to develop innovative strategies that propelled their careers forward in the face of evolving market conditions. Thus, it is a pivotal underpinning force for positive behaviors and outcomes in the workplace [71], including Türkiye, leading to firm-level innovations and the development of competitive advantage.

Employee resilience includes “strips of experience (in work relationships) that bring a feeling of energy and aliveness to people and also have the potential to produce more enduring expansive and transformative consequences” [72]. Therefore, employee resilience can be a powerful tool for organizational members (employees) to see different possibilities in new positive ways. In the context of Türkiye, when, for example, a Turkish firm is navigating through a period of rapid technological disruption, employee resilience can become a powerful tool as it empowers organizational members to envision innovative solutions and explore novel opportunities [cf. 62]. Employees’ ability to view challenges through a lens of adaptability and optimism may enable them to identify untapped markets and implement strategies that lead to successful product development.

Resilience stems from the top-down application of both operational and strategic capabilities. Therefore, employee resilience can be developed through unity in the firm’s leadership team and resource fluidity (part of the firm’s strategic agility) [36]. Firms’ strategic agility can particularly be instrumental in building positive and proactive elements of employee resilience. In particular, the strategic agility of firms operating in Türkiye can play a pivotal role in fostering positive and proactive elements of employee resilience. Firms with higher degrees of strategic agility can provide their employees with a flexible, fluid, learning-oriented, autonomous, and proactive work environment that is open to continuous positive change and enables employees to withstand hardships [62]. Likewise, strategic agility may allow firms to dodge the adverse effects of sudden disruptions and hardships through constant alertness to rapid environmental change and swift and resolute responses to such changes [62]. As such, we argue that firms’ strategic agility can enhance their employees’ resilience.

In turn, given that the core premise of resilience is about withstanding and rebounding from hardships and the capacity to adapt and transform [73], employee resilience can contribute to capability building in employees toward firms' PDP. However, extant studies have rarely discussed employee resilience as an essential mechanism for PDP. Still, prior studies highlight that employee resilience equips employees to survive in adverse situations and continue to operate coherently and consistently [e.g., 74]. Furthermore, employee resilience has been explicitly linked to proactivity and optimistic behavior [75], which can help employees find innovative solutions to product-related problems and underpin PDP.

Individuals who exhibit greater resilience may quickly adapt to their workplace dynamism, becoming more innovative [68]. For example, firms operating in Türkiye as an emerging market experience a sudden surge in demand, their employees may exemplify greater resilience in the face of heightened workplace dynamism, maintain a positive outlook despite the challenges, and draw inspiration from Türkiye's rich cultural heritage [e.g., 26], weave it into their work. In this vein, recent conceptualizations of resilience consider resilience a driver of proactive renewal [76] that would lead to innovative outcomes. Moreover, from a firm's PDP perspective, employee resilience can potentially make the transformative development of new products or services possible, linking firms' strategic agility to their PDP. Transformative products or services cannot be developed solely based on firm-level agility. Knowledge associated with their development can result in personal stress and crises, which are only addressed by employee resilience. The scholarship also indicates that firms can gain superior performance and enhance their competitive advantages by combining resources and practices into product development processes [77]. Based on the above arguments, we expect that employee resilience can be one of the essential underlying mechanisms between strategic agility and PDP. Thus, we suggest that:

**H2a:** *Employee resilience mediates the positive relationship between strategic agility and product development performance*

Employee self-efficacy has been defined as an individual's belief about their ability to activate cognitive resources and initiate activities required to perform a particular duty [e.g., 26, 27]. Self-efficacy comprises three components – initiative, effort, and persistence [26]. It defines how much task-related effort individuals make and how long they maintain that effort despite the challenges they face [27]. In a seminal piece, Bandura [78] posits self-efficacy as a key mechanism in human agency. Likewise, employees' self-efficacy is developed in the organizational work context and acquired within the firm [64] and may have important implications at the firm level [27, 79]. Thus, we argue that self-efficacy can be a critical individual mechanism linking firm-level strategic agility to PDP.

Self-efficacy can be a key link between firm-level strategic capabilities and outcomes since one's belief that s/he can perform a behavior typically occurs before s/he attempts the behavior and delivers the outcome [60]. When employees in the emerging market of Türkiye embody the concept of self-efficacy, they strongly believe in their ability to effectively manage the new technology, lead their team to achieve product development targets and take proactive steps to understand and master the technology, ensuring smooth operations. Self-efficacy is depicted by increased task-related efforts of employees in response to external challenges [e.g., 27, 79]. In such situations, Turkish employees' confidence in their capabilities can translate into action, and their self-efficacy elements of autonomous decision-making and flexibility [62] can be further useful for a firm in the presence of environmental complexity and volatility [80].

The essence of strategic agility- prioritizing learning aptitude, initiative-taking, autonomous decision-making, and flexibility [62]- provides critical firm-level ingredients that can foster self-efficacy. Employees working in agile firms are more likely to develop their self-efficacy, given the flexible work systems and empowering organizational environment that agile firms provide. For example, the agile work systems implemented by firms operating in Türkiye may offer employees the flexibility to manage their tasks and deadlines, and the empowering organizational environment of the agile firms may further amplify employees' sense of self-efficacy and enable them to take



ownership of their tasks. In contrast to rigid and centralized firms, firms with strategic agility attract creative, confident, and persistent employees and offer them greater opportunities to make the best use of their innovative potential. Particularly in the Turkish context, it is likely that firms' strategic agility may positively influence employee self-efficacy.

In turn, self-efficacy can play an imperative role in product development. It can influence an individual's capability to carry out product development-focused tasks [e.g., 60]. The scholarship also suggests that employees show creativity when they possess greater self-efficacy [63]. Individuals with high self-efficacy tend to proactively mobilize their creative potential, cognitive resources, and courses of action into creative outcomes to meet situational demands for their firms [e.g., 60]. In particular, employees' self-efficacy may drive their proactive utilization of creative potential [63]. Their belief in their abilities empowers them to take charge and innovate, which exemplifies how individuals with high self-efficacy in Türkiye can leverage their confidence to drive innovative outcomes. Efficacious employees deal with difficulties more successfully, persist in facing potential failure and obstacles of processes like product development, and achieve valuable outcomes [26]. As such, self-efficacy can potentially strengthen product-service development due to its clear linkages to cognitive processes associated with product development. Thus, we posit that:

**H2b:** *Self-efficacy mediates the positive relationship between strategic agility and product development performance*

Figure 1 shows the conceptual model along with the hypothesized relationships.

### [Figure 1]

## III. RESEARCH METHODS

### A. The Context of The Study

Türkiye is considered an important context for our study for numerous reasons. First, it is indisputably one of the leading countries in MENA and Southeastern Europe. Second, Türkiye is one of the fastest-growing economies globally and is considered one of the biggest emerging markets.

Despite this, Türkiye is still a relatively under-explored context. It shares similar industrial and institutional features with other leading emerging markets, such as Argentina, Chile, and Vietnam [81], which might enhance our findings' generalizability. Third, Türkiye is strategically developing towards an innovation-related environment, transforming its economic structure by implementing education, social development policies, and R&D expenditures [82] and supporting Turkish firms' innovation-related activities. From 2014 to 2016, 64.5 percent of all industrial companies in Türkiye reported innovation activity. The expenditure on R&D as a share of GDP more than doubled from .47 percent in 2003 to .96 percent in 2017.

### *B. Research Design*

We used questionnaires to collect data and sent emails to sample firms. Following Brislin's (1986) translation procedure, we first developed the questionnaire in English. Then, using the back-translation technique, we translated it into Turkish. This technique allowed us to capture and modify any potential misunderstandings and misconceptions before finalizing the survey. To assure the consistency and quality of the translated English and Turkish versions, two bilingual academics thoroughly checked the back translation of both versions.

A variety of firms from several product-intensive industries located in Türkiye were sampled to achieve generalizability and external validity of the findings. We targeted medium-sized and large-sized firms because small-sized firms frequently have insufficient resources to allocate to product development processes and applications. We framed our sample to include firms that met our selection criteria from those part of the TOBB (Union of Chambers and Commodity Exchanges of Türkiye). This industrial database comprises over 40,000 firms registered in 10 Chambers of Industry, 19 Chambers of Trade, and 64 Chambers of Industry and Trade. The TOBB database includes 365 different local commerce and business chambers. Per Dillman's [83] recommendation, we targeted and prequalified prospective respondents in participant firms by their holistic understanding of their organizations' key strategic orientations, processes, and managerial expertise.

Additionally, we utilized multiple responses from each firm. We sent 5000 questionnaires (4 to 6 responses from each firm), asking that respondents have an overall and systematic understanding of organizational processes regarding product development processes and a high degree of strategic knowledge and proficiency in the firm operations. This procedure was vital to enhance the accuracy and validity of the data. We ran two sequences of questionnaire distribution and two reminders and obtained 783 surveys, of which 758 were usable (from 185 firms). This led to an 18.5 percent response rate. Table I summarizes the characteristics of the respondents and responding firms.

### **[Table I]**

To assess the non-response bias, we followed two steps. In the first step, we analyzed responses from early and late respondents. The test results showed no significant differences ( $p > .1$ ) for the following measures: PDP (t-value=.97,  $p=.36$ ), strategic agility (t-value=2.01,  $p=.10$ ), employee resilience (t-value=.17,  $p=.87$ ), self-efficacy (t-value=2.09,  $p=.11$ ). Again, this showed no systematic differences ( $p > .1$ ); hence, no response bias was evident. In the second step, a random selection of a group of 50 non-participating firms and 250 respondent firms to compare the variables industry, number of employees, and turnover and found no significant variation ( $p > .1$ ). From the above, non-response bias did not constitute a serious concern in our study.

### *C. Measurement of Variables*

The variables for our study are drawn from prior research and are measured on a 5-point Likert scale (1="strongly disagree" to 5="strongly agree"). The questionnaire items were derived from previous studies [59, 84-86]. This study used managers' perceptions to evaluate each variable. Managers' perceptual measures represent the firm's current situation and depict its behaviors, mechanisms, and processes. Previous studies have largely employed and accepted such measures to investigate a firm's capabilities, behaviors, and subsequent outcomes [87].

1) *Dependent Variable*: PDP measures how firms perform concerning the speed and efficiency of product development compared to their competitors. We used three items to measure PDP [85]. As per the PDP measures' level of analysis, the respondents were asked to refer to their firms' PDP when answering questions.

2) *Independent Variable*: Strategic agility was assessed using five items (Tallon and Pinsonneault [84]). The concept of strategic agility determines how agile their firms are, including adapting and adjusting their strategic tasks and activities to meet environmental changes. Similar to the case of PDP, the respondents were asked to refer to their firms' strategic agility when answering questions related to strategic agility.

3) *Mediating Variables*: Employee resilience and self-efficacy were used as mediating variables. We used five items developed by [59] to measure each employee's resilience. This variable assesses a manager's ability to deal with stress and cope with setbacks within a firm and their capacity to learn and grow from difficult situations and mistakes. Self-efficacy measures the manager's belief in achieving goals and succeeding in a specific situation. Seven items adapted from Schwarzer and Jerusalem [86] were used to measure self-efficacy, focusing on individual and individual-level measurement.

4) *Control Variables*: Our controls are consistent with previous research, and we used several control variables: *industry sector*, *firm size*, *managerial level*, *work experience*, and *educational level* of managers. *The industry sector* is assessed by the type of industry. *Firm size* is measured by the number of employees. Also, a manager's *work experience* is measured by the number of years of work within the same firm, and *managerial level* is assessed using three categories: top, medium, and lower managerial level. Finally, the *educational level* of managers was assessed by five ordinal categories of qualification levels.

#### IV. ANALYSIS AND RESULTS

We collected hierarchical data composed of individual and organizational levels. Our sample consists of 758 employees working in 185 firms. Based on our data's nature and structure, we used MLwiN software to test our multilevel modeling framework. To check the relevance of this technique, a model of one level (individual-level) was compared to a model of two levels (individuals nested in firms). The difference in log-likelihood was found significant ( $1820.62 - 1692.79 = 127.83$ ;  $p < .01$ ). In the next step, to compare the two levels of analysis, we divided the value of .23 (level 2 variance) by the value of .41 (total variance), resulting in a value of .56. This value is higher than .1, indicating the relevance of using a multilevel modeling technique for this study [88].

To test the mediating effects of employee resilience and self-efficacy on the strategic agility- PDP link, we generated  $R^2$  values using an online Monte Carlo Markov Chain (MCMC) tool. If the confidence intervals do not contain the zero value, it signifies that the mediation effect exists [89].

#### *A. Confirmatory Factor Analysis*

Confirmatory factor analysis (CFA) was conducted using the maximum likelihood estimation procedure using AMOS 25 software. Our CFA results, reported in Table II, showed a good fit with the data [ $\chi^2 = 1640.54$ ;  $DF = 538$ ;  $\chi^2/df = 3.04$ ,  $p < .01$ ; comparative fit index (CFI) = .90; incremental fit index (IFI) = .90; Tucker-Lewis index (TLI) = .88; root-mean-square error of approximation (RMSEA) = .05].

#### **[Table II]**

Moreover, the average variance extracted (AVE) results are displayed in Table II. The AVE values are greater than .50, indicating that our survey instrument's convergent validity is satisfactory (Fornell and Larcker [90]).

#### *B. Common Method Bias and Endogeneity*

Given the cross-sectional nature of the present research, where both dependent and independent variables were collected using the same questionnaire and informants, there is a potential risk of

common method bias (CMB). However, as recommended in the literature, we pursued several steps to reduce the risk [91].

First, we applied various design-related procedures to remedy the potential problem of CMB. An initial pre-qualification of potential respondents was done based on the respondent's prior knowledge of the research topic. Next, all respondents were informed about their responses' anonymity and confidentiality while informing them that there are no right and wrong answers and that their responses will only be used for academic studies. Each participant's responses were sent back in a sealed envelope to avoid bias [92].

In addition, two to six qualified respondents within each firm were used to improve the consistency and validity of the data. Data from multiple respondents was necessary to depict potential variations in assessing a firm's agility and outcomes [93].

Secondly, we run two other statistical tests to address any further issues of CMB. We initially tested Harman's one-factor analysis. Our results demonstrate that a single factor did not systematically explain most of the variance in the measurement items [91]. Following this, we undertook a marker variable procedure. In so doing, the lowest positive correlation between self-reported variables was deducted from each individual correlation value [92]. The results demonstrate that the differences are relatively small (between .01 and .005), indicating that CMB is not a problem.

In line with previous research on strategic agility, we conducted a 2-stage least squares (2SLS) estimation with an instrumental variable to check for potential endogeneity. We used affective commitment -the ability of individuals to express emotional attachment to their organization [97]- as an instrumental variable for two reasons. First, affective commitment reflects the core argument of strategic agility as it provides emotional involvement and resilience to adapt and respond to unpredictable situations and events [98]. Second, affective commitment is highly correlated with strategic agility but not with PDP, the dependent variable, suggesting that it is a valid instrument for the endogeneity test. In conducting 2SLS, we regressed strategic agility on controls and the

instrumental variable (e.g., affective commitment), and then we utilized the predicted value of this regression in our model. The first stage results indicate that the instrument is positively and significantly correlated with the strategic agility variable ( $\beta=.19$ ,  $SE=.06$ ,  $t=3.16$ ). The second stage results highlight that after controlling for endogeneity, strategic agility is still positively correlated with PDP ( $\beta=0.43$ ,  $SE=.04$ ,  $t=10.75$ ), which indicates that endogeneity is not an issue in our research.

### *C. Hypotheses*

We displayed the descriptive statistics and correlations in Table III. We run both tolerance values and VIF analyses (variance inflation factors) for each analysis model to examine potential multicollinearity issues. The tolerance values are all higher than .89, and all VIF values range from 1.11 to 1.94, indicating that multicollinearity does not pose a problem in this study [94].

#### **[Table III]**

The direct effect of strategic agility on PDP, and the mediation effects of strategic agility on PDP through employee resilience and self-efficacy are reported in Table IV. In line with extant multilevel research [see, for example, 95], we reported our results as follows: Models 1 and 2 in Table IV test the direct effect of strategic agility on PDP. Also, in Table IV, Models 3 and 4 assess the mediation effects of employee resilience on the link between strategic agility and PDP. Models 5 and 6 display the mediation effect of self-efficacy on the link between strategic agility and PDP.

#### **[Table IV]**

Model 2 in Table IV shows that strategic agility is positively associated with PDP ( $\beta=.54$ ,  $p<.01$ ), confirming support for *H1*. Further, Table IV reports the mediation hypotheses. We used the online tool (MCMC) to test the mediation effect. Model 4 indicates that *H2a* is supported, where employee resilience mediates the relationship between strategic agility and PDP ( $\beta=.49$ ,  $p<.01$ ). Using MCMC, we found that the 95 percent confidence interval (CI: .12 – .24) of the indirect effect does not have zero value, which means strong support for *H2a*. Similarly, Model 6 shows that self-efficacy mediates the relationship between strategic agility and PDP ( $\beta=.41$ ,  $p<.01$ ), and the 95 percent confidence

interval (CI: .16 – .26) of the indirect effect is significant. Thus, *H2b* is supported. It should also be noted that neither of the control variables has a statistically significant impact on PDP.

## V. DISCUSSION AND CONTRIBUTIONS

Firms dealing with higher levels of uncertainty and complexity in their external environments, especially in terms of rapid changes in technological advances and digitalization, are compelled to develop and deploy relevant strategic capabilities such as strategic agility to withstand disruptions, create superior value for their stakeholders, and achieve greater performance outcomes [4]. Strategically agile firms can often predict or analyze market needs and trends better than their counterparts. These firms can adjust to changes in external factors, thus developing new products that meet external demand and fulfill societal needs. On the other hand, the impact of firm-level strategic agility on relevant outcomes is not manifested automatically. Instead, its impact entails path-dependent multilevel interactions and is underlain by individual capabilities [31]. This challenge instigates the examination of the role of individual capabilities (i.e., employee resilience and self-efficacy) in mediating the link between strategic agility and PDP.

This study aimed to elucidate the complex relationship between strategic agility and PDP under the mediating effects of employee resilience and self-efficacy in the context of emerging market firms. Such mediating variables are relatively unexplored in extant studies on strategic agility and product development. Thus, we bring in vital microlevel capabilities and explicate their role in enhancing strategic agility and its connection with superior PDP. We relied on data collected from 758 managers working in 185 firms in Türkiye to meet this aim. The multilevel data analysis approach allowed us to gain unique insights into the relationship of interest and derive several noteworthy theoretical and managerial implications.

### *A. Theoretical Contributions*

We augment extant innovation and product development literature streams and research on behavioral OM in several important ways. Firstly, this study responds to the calls for further research



on how innovation, particularly product development, is promoted in dynamic and complex environments such as those observed across emerging markets. Studies on innovation outcomes such as a product or process have been growing [3]. However, there is still room for more research on understanding the role of micro-level and macro-level factors in enhancing PDP in the context of emerging market firms, which receive limited R&D support for product development from their national systems of innovation. In this vein, Millar, et al. [28] stressed that innovation management in a turbulent, volatile, and uncertain world underscores the necessity to provide more insights in this field and emphasize the drivers and mechanisms of innovation capabilities in terms of PDP. Drawing on our findings in the context of Türkiye with its growing yet turbulent economy, we elucidate how organizational and individual capabilities enable innovation outcomes (i.e., product development) in challenging environments typical of emerging markets where the rapid change in institutional, political, and competitive landscape shapes the likelihood of sustaining innovativeness and value. Thus, we provide a more fine-grained insight into the enablers of PDP by leveraging DCT and microfoundations and with a particular focus on meta capability, such as strategic agility, as an important enabler of PDP in an emerging market context.

Secondly, although several studies have explored outcomes of strategic agility, these studies primarily focused on firm-level phenomena and firm-level value-creation outcomes [4, 24]. Drawing on DCT and microfoundations approach, we incorporated individual-level capabilities (e.g., employee resilience and self-efficacy) and their relationship with PDP, which has been overlooked in prior research. We argue that agility is not a stand-alone organizational capability but should be combined with a set of other individual capabilities that help firms remain competitive and innovative in the era of disruptive technologies. Hence, through the lens of DCT, we complement and enrich the extant research on product development and behavioral OM by exploring and evaluating the micro (individual-level) variables that translate strategic agility into greater product development. Our results indicate that strategic agility improves a firm's employees' ability to deal with stress and crises

and enhances employees' confidence and ability to solve problems. Such individual capabilities, in turn, mediates the influence of strategic agility on PDP. Considering that employees deal with significant pressures that challenge their resilience and well-being [96], our findings are noteworthy as they present a venue (i.e., increasing strategic agility) for mitigating these issues.

Thirdly, we advance the extant research examining the interface of product development-innovation and behavioral OM by adopting the microfoundations approach [e.g., 8, 9, 10]. This stream of literature has recently been advancing the knowledge about the role of individual mechanisms in explaining firm-level innovative outcomes. For example, Yildiz, et al. [10] explain how employees' goal orientations affect their individual-level absorptive capacity and, in turn, under which conditions individuals' absorptive capacities can increase collective innovation performance. Our findings also allow us to augment this literature. Our model adds new insights into the complex interface of product development-innovation and behavioral OM by showing that employee resilience and self-efficacy mediate the relationship between strategic agility and PDP. Our findings suggest that strategic agility improves PDP via employee resilience and self-efficacy, and employee resilience and self-efficacy function as its microfoundations. Thus, our study offers valuable insights into how individual capabilities and actions emerge at the firm level to support innovative outcomes at the firm level.

While the interest in strategic agility has recently skyrocketed [4, 36, 66], thanks to unprecedented levels of volatility and complexity the world currently faces, less attention has been paid to how firm-level strategic agility influences individual capabilities. Thus, our findings complement the literature by revealing that firms' strategic agility affects how employees develop and apply their capabilities and can help employees foster their resilience and self-efficacy. We argue that as agility offers flexible and adaptable practices for organizations, it subsequently helps employees cope with stresses and respond to pressures efficiently, stimulating intrinsic motivation and behavior to attain higher performance. This has important implications considering the relative scarcity of research examining individual-level outcomes of strategic agility.

### *B. Managerial and Policy Implications*

Our study also allows us to derive several managerial takeaways. Our results indicate that strategic agility can help firms achieve superior PDP. Our results also stress to managers that strategic agility positively affects firm employees. Specifically, the results indicate that improving strategic agility can help enhance employees' employee resilience and self-efficacy. Hence, we have demonstrated that emerging market firms' ability to proactively interact and respond to market changes strengthens employees' capacity to deal with stress and crises, enhancing their confidence and ability to solve problems. For emerging market firms facing significant pressures and dealing with heightened and continuous (economic, political, and social) uncertainty, strategic agility can be a useful managerial tool to ensure employee well-being despite challenges.

Our findings further suggest that employee resilience and self-efficacy act as mediators in linking strategic agility and PDP. It should further be stressed that the role of organizational climate is vital in organizational agility and associated innovative outcomes, including product development [e.g., 15]. Hence, firm managers, especially those originating in emerging markets, need to develop processes ensuring a supportive organizational climate that will strengthen employee resilience and self-efficacy, positively influencing product development processes and outcomes.

Our paper also offers policy implications. Although strategic agility has been consistently recognized as an essential source of firm competitive advantage, policymakers should note that it can also positively impact employee resilience and self-efficacy. Considering that employees have had to increasingly deal with stressful situations caused by external factors beyond their control, such as pandemics and economic turbulence, employee resilience should be of prime concern for firms and policymakers. As such, as a means to indirectly promote workers' well-being via increased self-efficacy and employee resilience, policymakers could incentivize firms to pursue strategic agility. The survey items presented in Table II offer specific, actionable items. For example, policymakers could incentivize firms to expand into new regional or international markets or adopt new technologies via

tax breaks, and thus help increase their strategic agility and, indirectly, the resilience of employees. Finally, enhanced self-efficacy and resilience of employees can also lead to increased capacity at the societal level while dealing with socioeconomic uncertainty and stress, especially in emerging markets. Therefore, its consideration by policymakers is vital despite these aspects usually being considered firm-level factors rather than policy-level considerations.

### *C. Limitations and Research Avenues*

This study has some limitations and offers promising avenues for further research on this crucial topic. First, we tested our model using data collected from businesses operating in Türkiye. While this context allowed us to gain some unique insights, as described in the methods section, future research should test our proposed model in different contexts (e.g., other emerging and developed economies) to increase our findings' generalizability. Our research draws on the notion that many firms, including those in emerging and developed markets, currently face varying degrees of external dynamism and turbulence [14]. However, not all dynamisms are identical and have comparable influences on firm operations and characteristics. As such, examining strategic agility and product development across multiple contexts may reveal interesting findings. In this context, future studies could potentially examine the moderating role of environmental dynamism as an important boundary condition in enhancing the effect of dynamic capabilities (strategic agility) on performance.

Second, we collected data from firms belonging to different industries. While our approach helped establish our findings' generalizability, future research can test our proposed model in specific industries to determine whether specific differences exist across industries. Such an avenue could be fruitful, as specific industry-related differences could exist. In particular, industries defined by high degree vs. low degree of technology content [52] might influence the individual capabilities needed to convert strategic agility into superior PDP. Thus, we suggest that future research can delve into a specific industry and examine the role of strategic agility within the context of the specific industry or

select two distinct industries to conduct a comparative analysis of strategic agility and product development across industries.

Third, our study considered two micro-level variables: employee resilience and self-efficacy. Future research should consider additional micro-level factors that might shape the link between strategic agility and PDP, such as employee diversity, workplace mindfulness, individuals' organizational identification, motivation, employee creativity, or the use of cross-functional teams.

Fourth, beyond future research opportunities stemming from limitations, there is a scope to include the role of leadership in enhancing strategic agility, employee resilience, and self-efficacy. Leaders can champion strategic agility initiatives and promote an organizational environment that embraces uncertainty and volatility and is open to change [36, 60]. However, the specific individual mechanisms through which leadership can drive agility and PDP entail further research.

Finally, our study lacks generalizability as the sampling structure is narrowed. The study focused on knowledgeable and highly qualified participants who occupied upper-level managerial jobs. Within this context, the participants carry out core knowledge and know-how about the firm strategic orientations. Hence, future research could explore different sample characteristics (e.g., mid/junior managerial levels) to diagnose how employee resilience and self-efficacy vary across different hierarchical positions, subsequently impacting product development within the firm.

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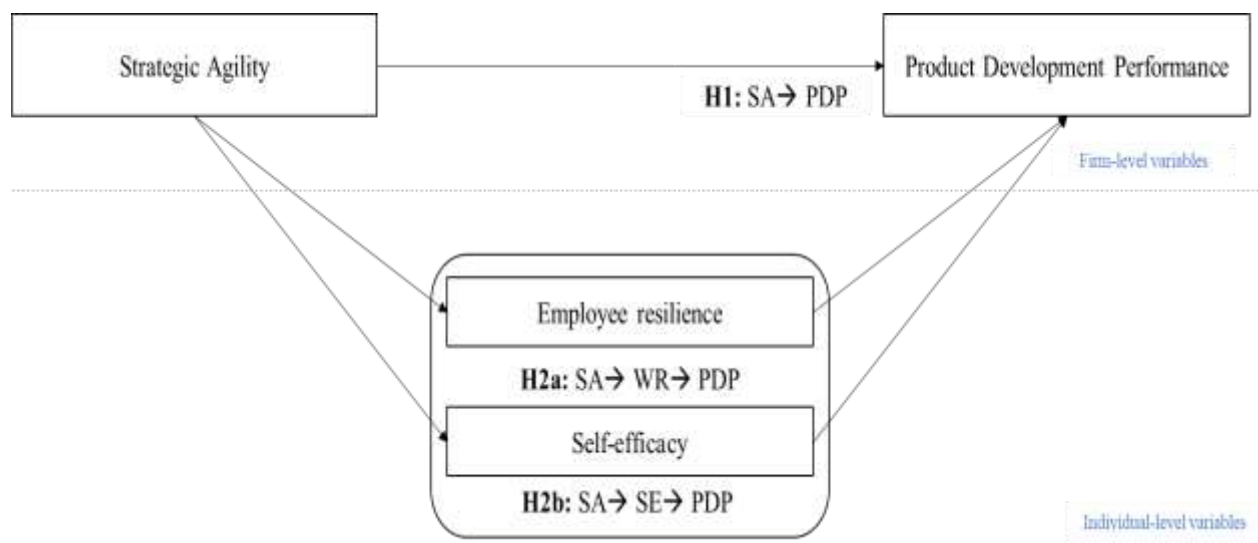


Fig 1. Conceptual model

TABLE I  
CHARACTERISTICS OF RESPONDENTS AND RESPONDING FIRMS

| <i>Characteristics of respondent managers (N=758)</i> |   | <i>Number</i> | <i>%</i> |
|---|---|---------------|----------|
| <i>Managerial level</i>                               | Top level (CEO, chairman, and board member)     | 198           | 26       |
|   | Medium level (Director/head of department)      | 359           | 48       |
|   | Lower level (First-line manager and supervisor) | 201           | 26       |
| <i>Education level</i>                                | High school                                     | 55            | 7        |
|   | Some college                                    | 82            | 11       |
|   | Bachelor degree                                 | 378           | 50       |
|   | Postgraduate degree                             | 243           | 32       |
| <i>Work experience</i>                                | Less than 4 years                               | 164           | 22       |
|   | 4-9 years                                       | 238           | 31       |
|   | 10-15 years                                     | 158           | 21       |
|   | More than 15 years                              | 198           | 26       |
| <i>Current industry</i>                               | Industrial, automotive, and machinery equipment | 133           | 18       |
|   | Textile and apparel                             | 58            | 8        |
|   | Consumer electronics and appliances             | 64            | 9        |
|   | Forestry products and paper                     | 84            | 11       |
|   | Food and beverage                               | 73            | 10       |
|   | Other manufacturing                             | 67            | 9        |
|   | Healthcare services                             | 93            | 12       |
|   | Transportation and logistics                    | 55            | 7        |
|   | Financial services                              | 56            | 7        |
|   | Hospitality and tourism                         | 49            | 6        |
| Other services  | 26  | 3             |          |
| <i>Characteristics of respondent firms (N=185)</i>    |   | <i>Number</i> | <i>%</i> |
| <i>Industry sector</i>                                | Industrial, automotive, and machinery equipment | 26            | 14       |
|   | Textile and apparel                             | 13            | 7        |
|   | Consumer electronics and appliances             | 18            | 10       |
|   | Forestry products and paper                     | 19            | 10       |
|   | Food and beverage                               | 18            | 10       |
|   | Other manufacturing                             | 16            | 9        |
|   | Healthcare services                             | 27            | 14       |
|   | Transportation and logistics                    | 13            | 7        |
|   | Financial services                              | 11            | 6        |
|   | Hospitality and tourism                         | 15            | 8        |
|   | Other services                                  | 9             | 5        |
| <i>Number of employees</i>                            | 50- 249   | 54            | 29       |
|   | 250-500   | 44            | 24       |
|   | 501-1000  | 38            | 21       |
|   | 1001-5000                                       | 25            | 13       |
|   | More than 5000                                  | 24            | 13       |

TABLE II  
CONFIRMATORY FACTOR ANALYSIS RESULTS

| Constructs   | Standardized loadings <sup>a</sup> | AVE <sup>b</sup> | CR <sup>c</sup> |
|--|------------------------------------|------------------|-----------------|
| <b>Strategic agility</b>   |                                    | <b>.80</b>       | <b>.74</b>      |
| Our organization responds to changes in aggregate consumer demand.                                     | .63                                |                  |                 |
| Our organization customizes a product or service to suit an individual customer.                       | .59                                |                  |                 |
| Our organization expands into new regional or international markets.                                   | .57                                |                  |                 |
| Our organization adopts new technologies to produce better, faster, and cheaper products and services. | .60                                |                  |                 |
| Our organization introduces new pricing schedules in response to changes in competitors' prices.       | .66                                |                  |                 |
| <b>Employee resilience</b>   |                                    | <b>.60</b>       | <b>.80</b>      |
| I am getting better at my work because I learn from my mistakes.                                       | .75                                |                  |                 |
| Dealing with difficult colleagues (or situations) enables me to grow.                                  | .74                                |                  |                 |
| I see challenges as an opportunity to learn.   | .78                                |                  |                 |
| I find ways to handle unexpected situations.   | .74                                |                  |                 |
| I bounce back when I confront setbacks at work.  | .68                                |                  |                 |
| <b>Self-efficacy</b>   |                                    | <b>.68</b>       | <b>.91</b>      |
| I am confident that I could deal efficiently with unexpected events.                                   | .51                                |                  |                 |
| Thanks to my resourcefulness, I know how to handle unforeseen situations.                              | .55                                |                  |                 |
| I can solve most problems if I invest the necessary effort.  | .69                                |                  |                 |
| I can remain calm when facing difficulties because I can rely on my coping abilities.                  | .67                                |                  |                 |
| When I am confronted with a problem, I can usually find several solutions.                             | .77                                |                  |                 |
| If I am in trouble, I can usually think of a solution.   | .70                                |                  |                 |
| I can usually handle whatever comes my way.  | .72                                |                  |                 |
| <b>Product development performance</b>   |                                    | <b>.66</b>       | <b>.73</b>      |
| Our organization has entered new markets more quickly.   | .87                                |                  |                 |
| Our organization has brought new products/services to the market faster.                               | .93                                |                  |                 |
| The success rate of our new products and services has been higher.                                     | .88                                |                  |                 |

Notes: <sup>a</sup>All loadings are significant at  $p < .001$ , <sup>b</sup>Average variance extracted, <sup>c</sup>Composite reliability

TABLE III  
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS AMONG VARIABLES

| Variable                           | Mean  | S.D. | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9 |
|------------------------------------|-------|------|-----|------|------|------|------|------|------|------|---|
| 1. Industry sector                 | 12.31 | 5.60 | 1   |      |      |      |      |      |      |      |   |
| 2. Firm size                       | 2.43  | 1.30 | .04 | 1    |      |      |      |      |      |      |   |
| 3. Work experience                 | 3.62  | 1.15 | .05 | .030 | 1    |      |      |      |      |      |   |
| 4. Educational level               | 3.06  | 1.04 | .02 | .13* | -.11 | 1    |      |      |      |      |   |
| 5. Managerial level                | 2.02  | .73  | .09 | .25  | .04  | -.19 | 1    |      |      |      |   |
| 6. Strategic agility               | 3.95  | .55  | .08 | .04  | .05  | .03  | -.04 | 1    |      |      |   |
| 7. Employee resilience             | 4.41  | .49  | .09 | -.07 | .06  | .00  | .08  | .29* | 1    |      |   |
| 8. Self-efficacy                   | 4.14  | .48  | .03 | -.06 | .01  | -.06 | 0.08 | .39* | .55* | 1    |   |
| 9. Product development performance | 4.00  | .80  | .05 | .03  | .04  | -.01 | .07  | .44* | .29* | .39* | 1 |

Notes: N=758 managers nested in 185 firms. S.D.= Standard deviation. \* $p < .01$ .

TABLE IV  
RESULTS OF DIRECT EFFECTS AND MEDIATION EFFECTS

| <i>Dependent variable:</i> Product development performance | <b>Model 1</b> |           |          | <b>Model 2</b> |           |          | <b>Model 3</b> |           |          | <b>Model 4</b> |           |          | <b>Model 5</b> |           |          | <b>Model 6</b> |           |          |
|--|----------------|-----------|----------|----------------|-----------|----------|----------------|-----------|----------|----------------|-----------|----------|----------------|-----------|----------|----------------|-----------|----------|
|  | <i>B</i>       | <i>SE</i> | <i>t</i> | <i>β</i>       | <i>SE</i> | <i>t</i> | <i>β</i>       | <i>SE</i> | <i>t</i> | <i>β</i>       | <i>SE</i> | <i>t</i> | <i>β</i>       | <i>SE</i> | <i>t</i> | <i>β</i>       | <i>SE</i> | <i>t</i> |
| <i>Intercept</i>   | 3.89*          | .15       | 25.93    | 3.94*          | .14       | 28.14    | 3.88*          | .10       | 38.80    | 3.95*          | .13       | 30.38    | 3.89*          | .09       | 42.22    | 3.90*          | .13       | 30.00    |
| <i>Control variables</i>                                   |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |
| Industry sector  | .02            | .02       | 1.00     | .03            | .02       | 1.50     | .02            | .02       | 1.00     | .03            | .02       | 1.50     | .01            | .02       | .25      | .03            | .02       | 1.50     |
| Firm size  | .03            | .02       | 1.50     | .01            | .02       | .50      | .03            | .02       | 1.50     | .02            | .02       | 1.00     | .02            | .02       | 1.00     | .02            | .02       | 1.00     |
| Work experience  | .02            | .02       | 1.00     | .01            | .02       | .50      | .01            | .01       | 1.00     | .01            | .02       | .35      | .01            | .01       | 1.00     | .01            | .02       | .50      |
| Educational level  | -.02           | .02       | -1.00    | -.01           | .02       | -.50     | -.02           | .02       | -1.00    | -.01           | .02       | -.50     | -.01           | .01       | -1.00    | -.01           | .02       | -.25     |
| Managerial level   | .04            | .03       | 1.33     | .03            | .03       | 1.00     | .03            | .02       | 1.50     | .02            | .02       | 1.00     | .02            | .02       | 1.00     | .03            | .02       | 1.50     |
| <i>Direct effect</i>                                       |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |
| Strategic agility  |                |           |          | .54*           | .05       | 10.80    |                |           |          |                |           |          |                |           |          |                |           |          |
| <i>Mediation of employee resilience</i>                    |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |
| Strategic agility → Employee resilience                    |                |           |          |                |           |          | .23*           | .03       | 7.66     |                |           |          |                |           |          |                |           |          |
| Strategic agility via Employee resilience                  |                |           |          |                |           |          |                |           |          | .49*           | .05       | 9.80     |                |           |          |                |           |          |
| <i>Mediation of self-efficacy</i>                          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |
| Strategic agility → Self-efficacy                          |                |           |          |                |           |          |                |           |          |                |           |          | .37*           | .03       | 12.33    |                |           |          |
| Strategic agility via Self-efficacy                        |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          | .41*           | .05       | 8.20     |
| <i>Change in 2 log likelihood</i>                          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |                |           |          |
| Level 1 intercept variance (SE)                            | .23            | .03       |          | .13            | .02       |          | .10            | .01       |          | .11            | .02       |          | .09            | .01       |          | .11            | .02       |          |
| Level 2 intercept variance (SE)                            | .41            | .02       |          | .39            | .02       |          | .17            | .01       |          | .38            | .20       |          | .16            | .01       |          | .37            | .02       |          |

Notes: N=758 managers nested in 185 firms. \* $p < .01$ .

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|  |  |
|--|--|
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