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Dynamic Managerial Capabilities, Firm Context, and Innovation: Evidence from Iran

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Abstract

This research delves into the complex relationship between dynamic managerial capabilities (DMCs) and innovation performance, examining the moderating effects of activity type, export level, and firm size. Employing rigorous ANOVA methodologies, the study elucidates the nuanced and conditional impacts of managerial actions on innovation outcomes. A significant aspect of this investigation is the classification of managers based on their specific DMC components, a novel contribution to the field that enhances our understanding of how different managerial competencies shape innovation. The results indicate substantial interactions between DMCs and the outlined contextual factors. Notably, Type 1 managers, distinguished by their superior managerial human capital, expansive social networks, and propensity for intuitive decision-making, demonstrate a robust positive effect on innovation across varied activities. In contrast, Type 9 managers, who possess limited managerial human capital yet maintain extensive social networks, display performance variability contingent on operational contexts. In export-centric firms, both Type 1 and Type 5 managers emerge as key

drivers of innovation, adeptly maneuvering the complexities of international markets through their strategic acumen and flexibility. Moreover, the effectiveness of DMCs is significantly modulated by firm size, with micro and small enterprises deriving optimal benefits from a multifaceted managerial skill set, whereas larger corporations exhibit a greater reliance on established systemic processes. This research lays the groundwork for subsequent inquiries into the strategic deployment of DMCs in diverse organizational scenarios and offers critical insights for enhancing innovation-led development.

Keywords: Human capital, Social capital, Cognition style, Managers Categorization.

Introduction

In today's rapidly evolving business world, firms face constant pressures from technological advancements, globalization, and shifting market dynamics. To survive and thrive, companies must embrace continuous innovation (Teece, 2007). Innovation—the development of new products, services, or processes—is now essential for maintaining a competitive edge and achieving sustainable growth (O'Reilly & Tushman, 2008). Firms that innovate consistently are better positioned to meet customer needs, exploit emerging opportunities, and sustain superior performance (Hitt et al., 1997). Conversely, those that fail to innovate risk stagnation, particularly in industries being transformed by digitalization and global competition (Artz, 2015).

Despite extensive research linking innovation to firm performance, a key question remains: Why do some firms consistently outperform others in innovation, even when they possess similar resources? While companies may have comparable financial, technological, or human capital, their innovation performance often diverges over time (Saunila, 2020). Understanding this disparity requires examining the internal drivers of innovation, particularly Dynamic Managerial Capabilities (DMCs) (Adner & Helfat, 2003; Bashir & Verma, 2019; Talebi et al., 2012). DMCs refer to managers' skills, knowledge, and abilities that enable firms to adapt, innovate, and transform resources effectively in response to changing environments (Helfat & Winter, 2011). These capabilities are critical for achieving sustained innovation and superior performance in dynamic markets.

However, existing research often examines DMCs in isolation, focusing on managerial human capital, social capital, or cognitive capabilities separately (Ambrosini & Altintas, 2019; Cao et al., 2022). This fragmented approach overlooks how these elements interact. For instance, a manager with strong technical expertise (human capital) may benefit more from an extensive social network (social capital) than a manager with less technical knowledge. Moreover, the existing literature frequently neglects the contextual factors that shape how different DMC profiles perform in varied organizational settings, such as firms of different sizes or those involved in international markets.

The literature on DMCs is growing, but significant gaps remain. Current studies often fail to explore how factors like firm size, industry type, or export orientation moderate the relationship between DMCs and innovation performance (Talebi & Ghavamipour, 2012). As a result, the practical application of these findings for managers operating in diverse environments is limited (Kazakov et al., 2024; Shiferaw & Amentie Kero, 2024). Addressing this gap requires a more comprehensive analysis that recognizes the context-dependent nature of managerial innovation strategies.

To tackle these limitations, this study proposes a novel approach to categorizing managers based on their combined DMC profiles. Rather than considering each DMC component in isolation, we examine how human capital, social capital, and cognition interact to influence innovation performance. By analyzing these profiles holistically, we aim to uncover how the combination of different DMC elements impacts innovation outcomes. We hypothesize that a balanced DMC profile—characterized by strong human capital, social capital, and cognitive abilities—will lead to superior innovation performance compared to an imbalanced profile. However, the optimal DMC configuration likely depends on firm-specific factors such as size, industry, and structural attributes. This necessitates a nuanced examination of how these factors moderate the effects of different DMC profiles.

As innovation becomes increasingly critical in an environment of global competition and rapid technological change, this study offers a timely investigation into the role of dynamic managerial capabilities. By presenting a framework that categorizes managers based on their DMC profiles, this research not only addresses gaps in the existing literature but also provides actionable insights for companies aiming to enhance their innovation strategies in a complex and evolving marketplace.

Literature Review

The successful translation of innovative concepts into tangible outcomes hinges on the capabilities of organizational leaders, particularly managers who harness dynamic managerial capabilities (DMCs) to navigate the complexities of the innovation process (Heubeck, 2023). Grounded in the dynamic capabilities theory, DMCs encompass a blend of knowledge, experience, networks, and decision-making acumen, which are instrumental in driving innovation (George et al., 2022). Although the significance of DMCs is well-established (Asija & Ringov, 2020; Gusman & Febrian, 2016; Kamasak et al., 2020), a critical knowledge gap persists regarding the interplay among DMC components and their differential impact on innovation outcomes.

Table 1. DMC component description and their impact on Innovation

DMC Component	Description	Impact on Innovation
Human Capital	Managerial skills, knowledge, and experience	- Enables effective identification and evaluation of innovative opportunities - Leads to a better understanding of complex market dynamics and technological advancements
Social Capital	Networks of relationships and connections	- Provides access to valuable resources and external knowledge sources -Facilitate knowledge acquisition and innovation in international markets
Cognitive Capabilities	Effective mental processes	- Enables sound decision-making regarding resource allocation and risk-taking - Allows for creativity, openness to new ideas, and risk tolerance
Developed by the authors		

Despite the recognized importance of DMCs, existing literature often examines these components in isolation, overlooking their potential synergistic effects. The DMC framework posits that each component contributes uniquely to innovation success (Khan et al., 2021; Kor & Mesko, 2013; Yang et al., 2019). This study aims to bridge this gap by providing a comprehensive examination of the relationships among the core dimensions of DMCs: Managerial Human Capital, Social Capital, and Cognitive Capabilities, and their collective impact on innovation outcomes.

Managerial human capital, characterized by skills, knowledge, and experience, is essential for effective opportunity identification, evaluation, and project leadership (Lenihan et al., 2019). Empirical studies indicate that managerial expertise directly correlates with strategic change and innovation performance (Helfat & Martin, 2014; Iglesias & Maksimov, 2023). For instance, Buenechea-Elberdin et al. (2017) and Vedastus L. Timothy (2022) found that managerial human capital fosters innovation by enhancing the understanding of complex market dynamics and technological advancements (Buenechea-Elberdin et al., 2017; Timothy, 2022).

However, the role of human capital is not universally positive. Mostafiz, Sambasivan, and Goh (2021) observed that general managerial human capital, such as educational qualifications and general experience (Mostafiz et al., 2019) does not significantly correlate with innovation in apparel export firms, aligning with previous research on the limitations of generic qualifications compared to industry-specific expertise (Ahmed & Brennan, 2019; Mostafiz et al., 2019).

Managerial Social capital, encompassing relationships and networks, provides access to critical resources and external knowledge, stimulating innovation (Adna & Sukoco, 2020; Heubeck & Meckl, 2022b). Managers with extensive networks can leverage external expertise, identify emerging trends, and secure necessary resources to advance innovative ideas (Adler & Kwon, 2002; Heubeck & Meckl, 2023). Studies by Liu and Lee (2015) and Papa et al. (2018) demonstrate that social capital is linked to the accumulation of foreign

market knowledge and facilitates knowledge acquisition and innovation in international markets(Liu & Lee, 2015; Papa et al., 2018).

While traditionally viewed as a primary driver of innovation performance (Adler & Kwon, 2002), recent research suggests a more nuanced role for social capital. Its impact varies depending on the type of innovation and the industry context (Ali et al., 2023). For example, relationship capital, a subset of social capital, indirectly influences innovation performance in tourism entrepreneurship (Lee et al., 2024). Furthermore, social capital's role in mediating the relationship between high-performance work systems and innovation capabilities is contingent on the innovation type, with stronger effects on incremental rather than radical innovation(Ali et al., 2023).

Managerial Cognitive capabilities, including creativity and critical thinking, are essential for navigating the complexities of the innovation process (Helfat & Peteraf, 2015; Kulkarni et al., 2024; Muhammad Ahmed, 2024). Creativity fosters the generation of novel ideas, as exemplified by Acar et al. (2019), who highlighted the role of creativity in organizational psychology(Acar et al., 2019). Critical thinking enables managers to assess the feasibility and risks of innovative ventures (Zhou & Wu, 2010). For example, a manager with strong critical thinking skills can identify potential logistical challenges associated with sustainable packaging implementation (Ņikitina & Lapiņa, 2018).

The impact of cognitive capabilities can vary based on the innovation type and environmental context, with cognitive flexibility being particularly valuable in turbulent environments (Cao et al., 2020; Kazakov et al., 2024). DMC component and its impact on Innovation is shown in Table 1.

This study addresses critical gaps in the existing literature by integrating the core dimensions of DMCs—Managerial Human Capital, Social Capital, and Cognitive Capabilities—to provide a holistic understanding of their collective impact on innovation outcomes. By examining the synergistic effects of these components, we aim to offer actionable insights into optimizing innovation strategies and enhancing firm performance in an ever-evolving business environment. DMC theory highlights the contribution of each component to innovation success (Khan et al., 2021; Kor & Mesko, 2013; Yang et al., 2019). A conceptual model illustrating the constituent elements of Dynamic Managerial Capabilities (DMCs) and their aggregate influence on innovation outcomes is presented in Figure 1.

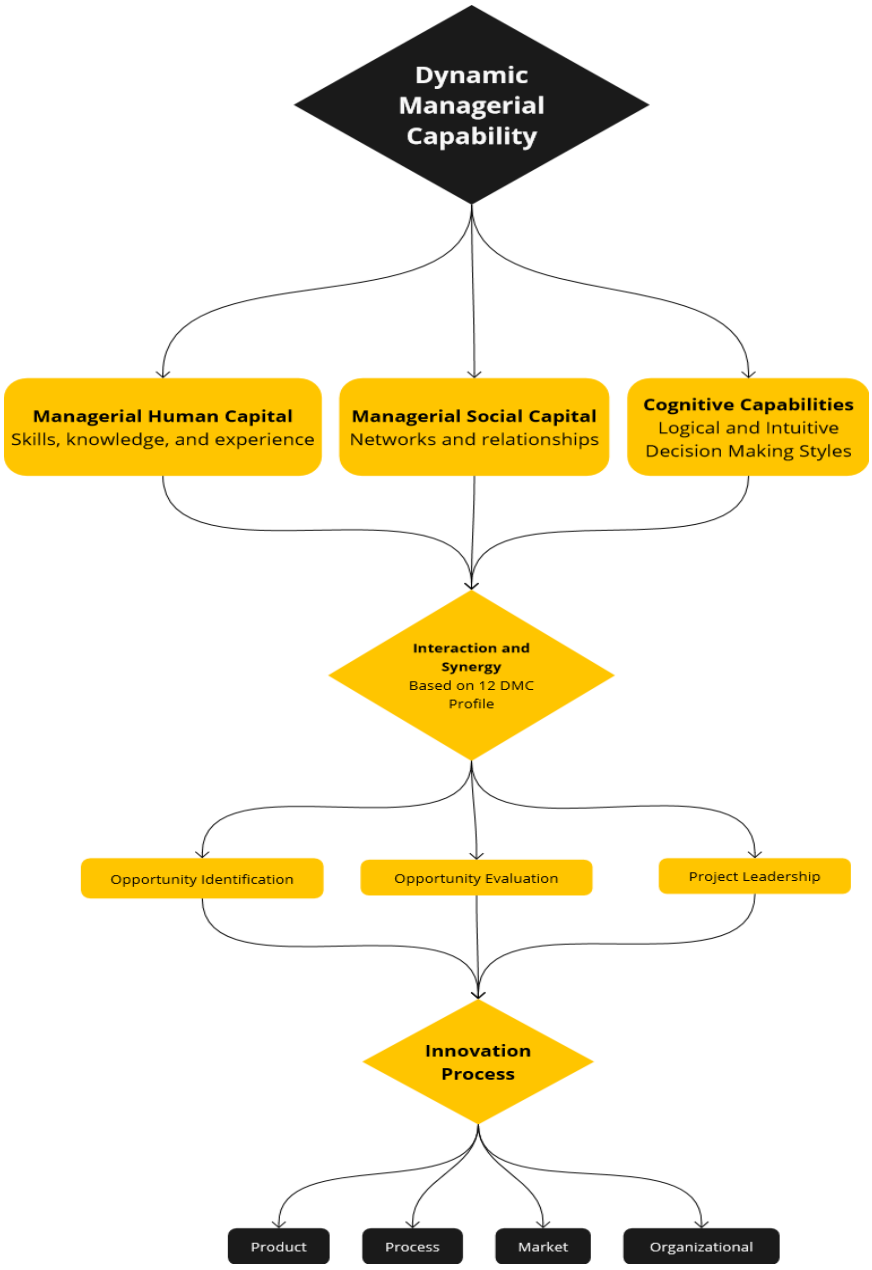

Figure 1. DMC components and their collective impact on innovation outcomes

The Interplay of Managerial Dynamic Capabilities and Innovation

The preceding sections have dissected the individual components of managerial dynamic capabilities (DMCs) – human capital, social capital, and cognitive capabilities – as critical determinants of firm-level innovation. While this granular perspective has yielded valuable insights, a more holistic understanding necessitates an examination of the intricate interplay among these elements. This section delves into the synergistic relationships within DMCs and their collective impact on innovation.

Complementary Strengths: Human Capital and Social Capital

A manager possessing deep technical expertise (human capital) can significantly amplify their impact through a robust social network (social capital) (Grant, 1996). This network serves as a conduit to external knowledge and resources, essential for identifying and developing innovative opportunities (Helfat, 2007). The symbiotic relationship between these DMC components accelerates knowledge transfer and collaboration, fostering a more fertile ground for innovation (Adler & Kwon, 2002).

Cognitive Flexibility and Social Capital: Navigating Turbulence with Agility

In turbulent environments, cognitive flexibility – the ability to adapt thinking and strategies – is paramount (Cao et al., 2020). A diverse social network provides a rich array of perspectives, enabling managers to leverage cognitive flexibility to navigate challenges and capitalize on emerging opportunities (Xu, 2011). This synergistic combination enhances organizational agility and responsiveness to market shifts (Constance E Helfat & Jeffrey A Martin, 2015).

Human Capital, Cognitive Style, and Disruptive Innovation

A manager possessing deep industry knowledge (human capital) coupled with a propensity for risk-taking (cognitive style) can be a catalyst for disruptive innovation (Zhou & Wu, 2010). Such individuals are well-positioned to identify and champion radical ideas, mitigating technical risks due to their in-depth knowledge (Timothy, 2022). This synergistic combination of human capital and cognitive style is essential for driving transformative innovation (George et al., 2022; Hargadon & Sutton, 2000).

While research on DMCs and innovation has advanced, several limitations persist. Firstly, a predominant focus on individual DMC components overlooks the potential synergies within the DMC profile. For instance, the interplay between human capital and social capital can vary based on the nature of the innovation (incremental vs. radical) (Levasseur et al., 2022). Secondly, the interaction effects between DMC components remain underexplored. A deeper understanding of how these elements combine to amplify or attenuate innovation outcomes is necessary (Mostafiz et al., 2019). Lastly, traditional hierarchical categorizations of managers may obscure significant variations in DMC profiles within specific levels, necessitating a more nuanced approach (Zahra et al., 2007).

Table 2. DMCs and Innovation: A Condensed Overview of Current Research

Study	Method	Focus & Contribution	Key Finding
Adner and Helfat (2003)	Theory	Pioneered DMCs for environmental adaptation	Enables adaptation to environments
Foss and Knudsen (2003)	Review	Highlighted strategic importance of human capital for innovation	Drives innovation
Constance E Helfat and Jeffrey A Martin (2015)	Multiple Case Study	DMCs & International Opportunity Recognition	Dynamic capabilities mediate cognitive style & firm performance
Donate et al. (2016)	Survey	Investigates role of social capital in innovation (causal unclear)	Supports innovation (causal unclear)
Ma et al. (2012)	Survey	Advances understanding of leadership's influence on different innovation types	Style linked to innovation type
Makadok et al. (2018)	Review/Case Studies	Underscores the importance of leadership experience as crucial human capital	Crucial human capital
Cao et al. (2020)	Case Study	Managerial cognitive capability in sustainable innovation ecosystems	MCC drives ecosystem development
Khan et al. (2021)	Survey (China SMEs)	Extends understanding of DMCs to emerging economies (China)	Positive impact on SME innovation
Heubeck and Meckl (2022a)	Survey (Industry 4.0)	First study on complete DMC effect in digital firms (all aspects needed)	All aspects needed for digital innovation
Heubeck and Meckl (2022b)	Survey (Industry 4.0)	Provides novel insights on DMC & business model innovation (HC & SC for cognitive capability)	HC & SC for cognitive capability in business model innovation
Faiz et al. (2024)	Survey (Pakistan)	Links digital leadership to innovation through decision-making (limited data)	Fosters innovation (limited data)
Gerulaitiene et al. (2024)	Survey (Family firms)	Explores emotional intelligence in the family firm context for innovation	Impacts innovation
Developed by the authors			

By acknowledging these contingencies, firms can cultivate targeted DMC profiles within their management teams, ultimately enhancing innovation capabilities and achieving a sustainable competitive advantage. Table 2 summarizes the strengths and limitations of existing research on DMCs and innovation, along with the focus and contributions from various studies included in this review.

In conclusion, while significant progress has been made in understanding the individual contributions of DMC components, the critical next step is to explore their compound effect. This holistic perspective will allow firms to harness the full potential of DMCs, ensuring that innovation strategies are not only optimized but also more resilient and responsive to the dynamic business landscape.

Research Gap and Theoretical Contribution

While the significance of Dynamic Managerial Capabilities (DMCs) in fostering innovation has been recognized in prior research, existing studies often treat the core components of DMC—human capital, social capital, and cognition—in isolation. This fragmented approach limits our understanding of how these elements interact and contribute to innovation

performance in a holistic manner (Ambrosini & Altintas, 2019; Mostafiz et al., 2019). The current literature lacks an integrative framework that examines these managerial capabilities as a combined set, which can offer more nuanced insights into the drivers of innovation.

While traditional managment studies often employ hierarchical categorizations like "top" or "middle" managers (e.g., Mintzberg, 1973; Chandler, 1962), or other role-, function-, or tenure-based classifications (e.g., Pfeffer & Salancik, 1978; Burton & Obel, 2000; Eisenhardt & Martin, 2000), these approaches may overlook significant variations in managerial capabilities within these categories. DMC categorization, which considers specific combinations of managerial capabilities, provides a more nuanced perspective. This approach is essential for understanding how different configurations of DMCs can lead to varying innovation outcomes (Baum & Lant, 2003). There is a growing consensus in the literature that a more detailed examination of how these capabilities interact within different managerial roles and contexts is necessary (Constance E. Helfat & Jeffrey A. Martin, 2015).

This research addresses these gaps by proposing a novel framework for categorizing managers based on their combined DMC profiles. By integrating human capital, social capital, and cognition, this study presents a more holistic approach to understanding the impact of managerial capabilities on innovation performance. Furthermore, this research examines how firm-specific factors, such as firm size, activity type, and export level, moderate the effects of these DMC profiles on innovation, providing new insights into how context shapes managerial effectiveness.

This study contributes to the literature in three significant ways:

1. It offers a comprehensive categorization of managers based on their combined DMC profiles, moving beyond the limitations of examining these capabilities in isolation.
2. It expands our understanding of the synergies between human capital, social capital, and cognition and how these combinations influence innovation performance.
3. It explores how contextual factors—such as firm size and industry—moderate the relationship between DMC profiles and innovation, contributing to a more context-sensitive understanding of managerial capabilities.

Categorizing Managers Based on DMC Profiles

To address the limitations of prior research, which largely investigated components of Dynamic Managerial Capabilities (DMCs) in isolation (Mostafiz et al., 2020), this study introduces an innovative methodological framework: categorizing managers based on their DMC profiles. By integrating human capital, social capital, and cognition into a comprehensive construct, this approach provides a more nuanced understanding of managerial capabilities and their influence on innovation performance.

Operationalizing DMC Components

The categorization of managers involves operationalizing DMC components into measurable indicators. Human capital is assessed based on factors such as technical expertise, design thinking proficiency, knowledge of emerging technologies, and leadership experience in innovation projects. Drawing from human capital theory, we distinguish between general human capital, which includes transferable skills like industry experience and educational attainment, and firm-specific human capital, which pertains to knowledge unique to the organization (Quigley & Hambrick, 2012).

Table 3. Categorizing Managers Based on DMC Profile

DMC Profile	Managerial Human Capital	Managerial Social Capital	Managerial Cognition
Type 1	High	High	Intuition
Type 2	Low	High	Intuition
Type 3	High	Low	Intuition
Type 4	Low	Low	Intuition
Type 5	High	High	Logical
Type 6	Low	High	Logical
Type 7	High	Low	Logical
Type 8	Low	Low	Logical
Type 9	Low	High	Both
Type 10	High	Low	Both
Type 11	High	High	Both
Type 12	Low	Low	Both

Social capital is measured through network size, diversity, tie strength, and the ability to leverage relationships for knowledge and resources (Mehta & Ali, 2021). Following the framework of Nahapiet and Ghoshal (1998), this study captures structural capital (network size and composition), relational capital (relationship quality), and cognitive capital (shared knowledge within the network).

Managerial cognition is evaluated through creativity, openness to new ideas, risk tolerance, and strategic decision-making abilities (Helfat & Peteraf, 2015). Using tools like the Rational and Intuitive Decision Styles Scale (RIDSS) (Hamilton et al., 2016) and the concept of strategic intuition (Luoma & Martela, 2021), we assess cognitive flexibility and decision-making approaches that influence innovation performance.

This comprehensive approach allows us to categorize managers into distinct profiles based on their combined DMC components. Table 3 illustrates the twelve identified DMC profiles, offering insights into how these combinations influence managerial effectiveness and innovation outcomes. The study employed a self-reported questionnaire from a sample of 344 managers to generate these profiles.

This novel categorization framework serves as a basis for further investigation into how combinations of DMC components—across firm size, activity, and export activities—moderate the effects of managerial capabilities on innovative performance. By adopting this

holistic perspective, organizations can tailor managerial strategies to optimize innovation and enhance competitive advantage in dynamic business environments.

Research Questions

Building on this categorization of DMC profiles, this study seeks to explore the influence of these profiles on innovation outcomes. The following research questions guide the investigation:

Primary Question: How do Combinations of the Twelve Identified Dynamic Managerial Capabilities (DMCs) Influence the Innovative Performance of Firms?

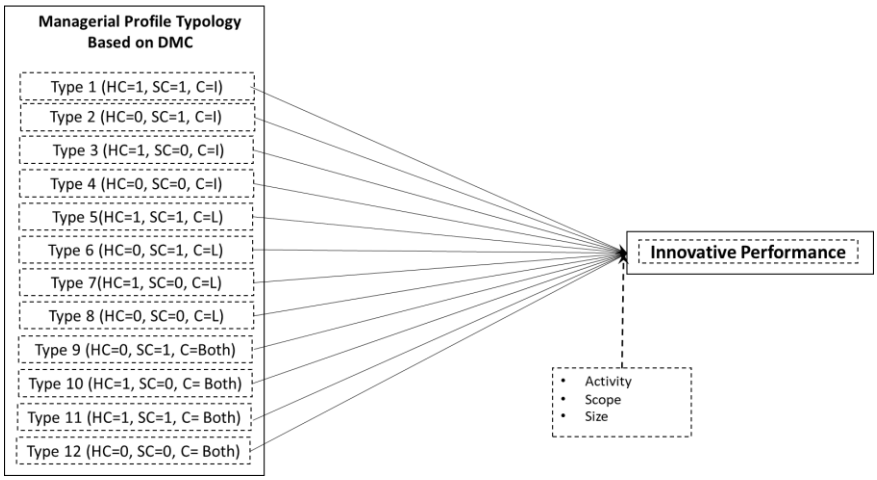

Figure 2 Conceptual model

Secondary Questions

1. How do Export Activities Moderate the Effect of the Twelve Identified Dynamic Managerial Capabilities (DMCs) on Innovative Performance?
2. How Does Firm Activity (Manufacturing, Agriculture, and Services) Moderate the Effect of the Twelve Identified Dynamic Managerial Capabilities (DMCs) on Innovative Performance?
3. How Does Firm Size (Micro, Small, Medium, and Large) Moderate the Effect of the Twelve Identified Dynamic Managerial Capabilities (DMCs) on Innovative Performance?

This investigation offers valuable insights into how firms can align managerial capabilities with innovation strategies, ultimately enhancing their competitive positioning in dynamic markets. Figure 2 illustrates the conceptual model of this study, providing a visual representation of the key constructs and hypothesized relationships underlying the research framework.

Methodology

This study employs a quantitative approach to investigate the relationship between Dynamic Managerial Capabilities (DMCs) and innovation performance, with an emphasis on the moderating roles of activity type, export orientation, and firm size. The research follows a causal-comparative design, using Analysis of Variance (ANOVA) and moderated regression analysis to explore how different configurations of DMC components affect innovation outcomes.

Research Design and Data Collection

A purposive sampling strategy was used to recruit managers from diverse industries across Iran, ensuring the inclusion of participants with varying managerial capabilities. The final sample comprised 344 managers, selected from a pool of 600 initial respondents after applying data cleaning techniques to remove incomplete or invalid responses. These managers were sourced from professional networks and online platforms targeting business professionals, particularly top-performing entrepreneurs recognized within their respective industries selected by ministry of cooporatives, labour and social welfare.

To ensure representativeness across industries, the sample included managers from the manufacturing, services, and agriculture sectors, along with firms of varying sizes (micro, small, medium, and large). Stratified sampling was employed to achieve a balance across these categories, which allows for a more comprehensive analysis of how different contexts moderate the impact of DMC profiles on innovation performance.

Measurement Instruments

1. **Dynamic Managerial Capabilities (DMCs)** were measured using three components:

- Managerial Human Capital was assessed using a 7-point Likert scale questionnaire designed to measure respondents' knowledge, skills, educational background, and professional experience (Mostafiz et al., 2019). For the purposes of this study, these responses were dichotomized into a binary scale (0 = Low, 1 = High). Managers were categorized as having "high" human capital if their responses exceeded the sample mean.
- Managerial Social Capital was evaluated using the Nahapiet and Ghoshal (1998) framework, which assesses the size, diversity, and strength of a manager's network. Similar to human capital, social capital was also categorized on a binary scale (0 = Low, 1 = High) based on the respondent's network characteristics (Mostafiz et al., 2019).
- Managerial Cognition: Captured using the Rational and Intuitive Decision Styles Scale (RIDSS) (Hamilton et al., 2016). This scale differentiates between rational (analytical and logical) and intuitive (quick and instinctive) decision-making styles. Managers were categorized into one of three cognitive profiles: intuitive, rational, or both, depending on

their relative scores on the respective subscales.

2. **Innovation Performance (IP)** was measured using a validated multi-item scale adapted from Alpkan et al. (2010), which assesses the firm's performance in terms of product innovation, process innovation, and new product introductions. Respondents rated their firm's innovation performance on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Stages of Data Analysis

The analysis proceeded in several stages:

1. **Descriptive Statistics:** Initial analysis involved generating descriptive statistics to provide an overview of the sample, including mean values, standard deviations, and frequency distributions for key variables such as DMC profiles and innovation performance.
2. **ANOVA:** A one-way Analysis of Variance (ANOVA) was conducted to determine the main effect of DMC profiles on innovation performance. This method is suitable for comparing innovation performance across the 12 identified DMC profiles. ANOVA was chosen because it allows for the examination of differences across multiple groups and is effective in identifying whether certain DMC profiles significantly outperform others in terms of driving innovation.
3. **Moderated Regression Analysis:** To examine the moderating effects of firm size, export orientation, and activity type on the relationship between DMC profiles and innovation performance, moderated regression analyses were conducted. This approach helps capture the interaction between managerial capabilities and contextual factors. For each contextual factor (firm size, export level, activity type), separate regression models were built to test their interaction with DMC profiles.
4. **Interaction Effects:** Interaction plots were generated to visually represent how different DMC profiles interact with firm size, export orientation, and activity type in shaping innovation outcomes. These plots aid in interpreting the nature of moderation and highlight which DMC profiles are most effective under different organizational conditions.

Validity and Reliability

To ensure the validity and reliability of the measurement instruments:

- Pilot Testing was conducted with a small group of managers to assess the clarity and comprehensibility of the questionnaire items, particularly focusing on the managerial cognition section. Adjustments were made to improve the language and reduce respondent bias.
- Translation Procedures: Given the Iranian context of the study, all questionnaires were translated from English to Farsi using the back-translation method (Brislin, 1986). This

ensured linguistic and cultural equivalence between the original and translated versions.

- Common Method Bias: Several strategies were implemented to mitigate common method bias, including temporal separation of DMC and innovation performance measures within the survey and the inclusion of a social desirability scale to statistically control for potential bias in self-reported data.

Results

The effect of Dynamic Managerial Capabilities (DMCs) on firm innovation performance (IP) was assessed using Analysis of Variance (ANOVA). DMC types, conceptualized as within-subjects factors, were analyzed against the dependent variable, innovation performance. This methodology aligns with the causal-comparative research design (Nugroho & Zulfiani, 2021), facilitating the evaluation of innovation performance across diverse DMC configurations within the sample (n = 344) is shown in Table 4.

Table 4. Descriptive Statistics

Dependent Variable: Innovation Performance			
TYPES	Mean	Std. Deviation	N
TYPE 1	4.5250	.27203	16
TYPE 2	3.7818	.83929	22
TYPE 3	2.9750	.87737	24
TYPE 4	2.9708	1.14259	48
TYPE 5	3.9429	.69881	49
TYPE 6	3.7688	.67606	32
TYPE 7	3.3913	1.00450	23
TYPE 8	3.2278	.80591	36
TYPE 9	4.2824	.64054	17
TYPE 10	3.5000	.43205	16
TYPE 11	3.9854	.71469	41
TYPE 12	3.2600	.82870	20
Total	3.5901	.92305	344

Results of ANOVA Analysis on DMC Types and Innovation Performance

The initial ANOVA demonstrated a significant main effect for the factor "TYPES" on innovation performance ($F(11, 332) = 9.848$, $p < 0.001$, $\eta^2 = 0.246$). This result indicates that different types of managerial capabilities significantly impact innovation performance, accounting for 24.6% of the variance (R Squared = 0.246, Adjusted R Squared = 0.221). The substantial effect size ($\eta^2 = 0.246$) highlights the importance of considering these varied managerial capabilities in understanding innovation outcomes are presented in Table 5 and Figure 3.

Table 5. DMC Types and Innovation Performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	71.896[a]	11	6.536	9.848	.000	.246	108.326	1.000
Intercept	3888.760	1	3888.760	5859.169	.000	.946	5859.169	1.000
TYPES	71.896	11	6.536	9.848	.000	.246	108.326	1.000
Error	220.350	332	.664					
Total	4726.040	344						
Corrected Total	292.246	343						
a. R Squared = .246 (Adjusted R Squared = .221)								
b. Computed using alpha = .05								

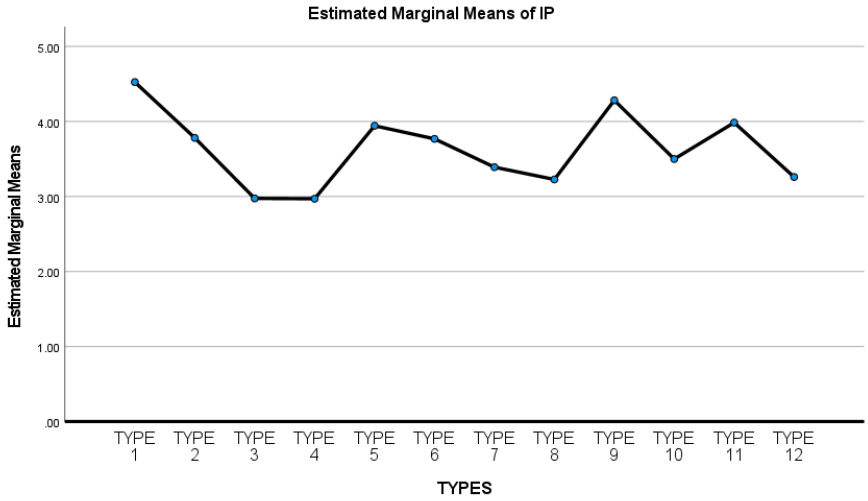

Figure 3. Interaction plot for Innovation Performance and DMC Types

The second ANOVA incorporated "Activity" as an additional factor, revealing several significant findings are presented in **Error! Reference source not found.**.

- TYPES: ($F(11, 312) = 10.762$, $p < 0.001$, $\eta^2 = 0.275$)

- Activity: ($F(2, 312) = 3.548$, $p = 0.030$, $\eta^2 = 0.022$)

- Interaction (TYPES * Activity): ($F(18, 312) = 4.103$, $p < 0.001$, $\eta^2 = 0.191$)

Table 6. DMC Types and Activity on Innovation performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	121.021[a]	31	3.904	7.114	.000	.414	220.520	1.000
Intercept	1667.843	1	1667.843	3039.079	.000	.907	3039.079	1.000
TYPES	64.966	11	5.906	10.762	.000	.275	118.379	1.000
Activity	3.894	2	1.947	3.548	.030	.022	7.096	.657
TYPES * Activity	40.529	18	2.252	4.103	.000	.191	73.851	1.000
Error	171.225	312	.549					
Total	4726.040	344						
Corrected Total	292.246	343						
a. R Squared = .414 (Adjusted R Squared = .356)								
b. Computed using alpha = .05								

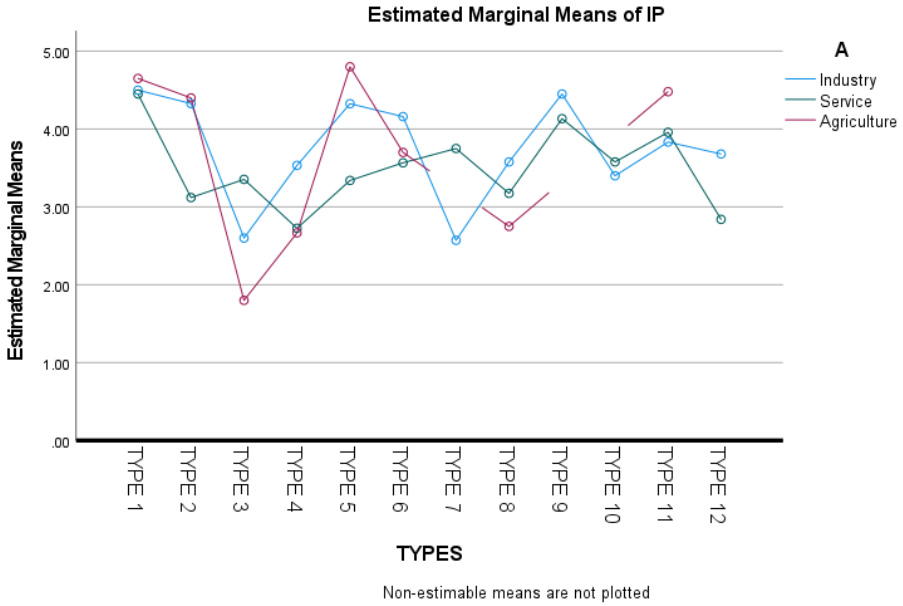

Figure 4. Interaction Plot for Types and Activity on Innovation Performance

This model explained 41.4% of the variance in IP (R Squared = 0.414, Adjusted R Squared = 0.356), suggesting that both the types of managerial capabilities and their interaction with activities significantly influence innovation performance. The interaction effect ($\eta^2 = 0.191$) underscores the dynamic interplay between managerial capabilities and specific activities.

Explanation of Figure 4:

- Most Effective TYPES: TYPES 1, 5, 9, and 11 exhibit the highest levels of innovation performance across various activities. This suggests that managerial capabilities characterized by these types are highly effective in fostering innovation.

- Less Effective TYPES: TYPES 3, 7, and 10 show lower levels of innovation performance, indicating that these managerial capabilities are less effective in driving innovation.

Results of the ANOVA Analysis Incorporating Export as an Additional Factor

In the third ANOVA, "Export" was examined as an additional factor, are presented in **Error! Reference source not found.**:

- TYPES: ($F (11, 320) = 7.119$, $p < 0.001$, $\eta^2 = 0.197$)

- Export: ($F (1, 320) = 12.306$, $p = 0.001$, $\eta^2 = 0.037$)

- Interaction (TYPES * Export): ($F (11, 320) = 3.060$, $p = 0.001$, $\eta^2 = 0.095$)

Table 7. DMC Types and Export on Innovation performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	106.268[a]	23	4.620	7.950	.000	.364	182.848	1.000
Intercept	2894.896	1	2894.896	4981.046	.000	.940	4981.046	1.000
TYPES	45.509	11	4.137	7.119	.000	.197	78.304	1.000
Export	7.152	1	7.152	12.306	.001	.037	12.306	.938
TYPES * Export	19.566	11	1.779	3.060	.001	.095	33.665	.989
Error	185.978	320	.581					
Total	4726.040	344						
Corrected Total	292.246	343						
a. R Squared = .364 (Adjusted R Squared = .318)								
b. Computed using alpha = .05								

This model accounted for 36.4% of the variance in IP (R Squared = 0.364, Adjusted R Squared = 0.318), signifying that both the types of managerial capabilities and their interaction with export levels significantly affect innovation performance. The interaction effect ($\eta^2 = 0.095$) suggests that the impact of managerial capabilities on innovation performance is contingent upon export levels.

Explanation of Figure 5:

- Most Effective TYPES: TYPES 1, 5, and 9 are the most effective across different export levels, indicating that these types of managerial capabilities are well-suited for enhancing innovation in both low and high export contexts.

- Less Effective TYPES: TYPES 2, 3, and 4 show lower innovation performance, suggesting that these managerial capabilities are less effective when dealing with export-related activities.

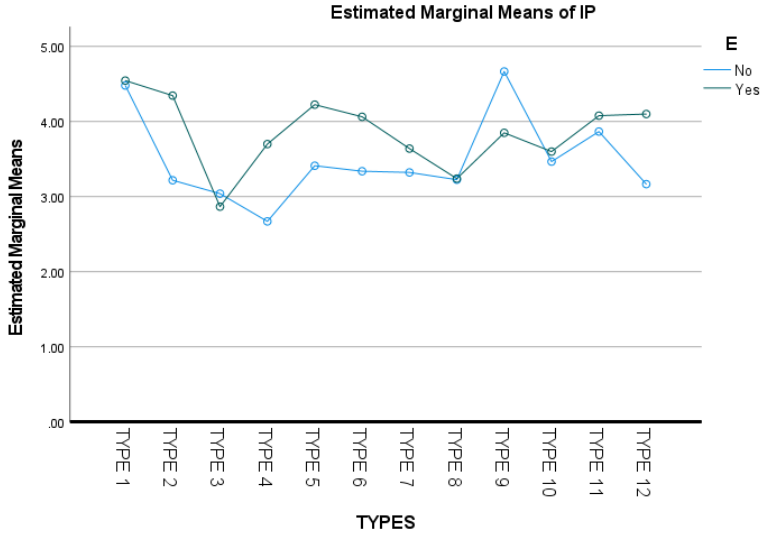

Figure 5. Interaction Plot for Types and Export on Innovation Performance

Results of the ANOVA Analysis Incorporating Firm Size as an Additional Factor

The fourth ANOVA included "Firm Size" as an additional factor, the results of this analysis are presented in Figure 6:

- TYPES: ($F(11, 302) = 4.335$, $p < 0.001$, $\eta^2 = 0.136$)

- Firm Size: ($F(3, 302) = 7.719$, $p < 0.001$, $\eta^2 = 0.071$)

- Interaction (TYPES * Firm Size): ($F(27, 302) = 2.572$, $p < 0.001$, $\eta^2 = 0.187$)

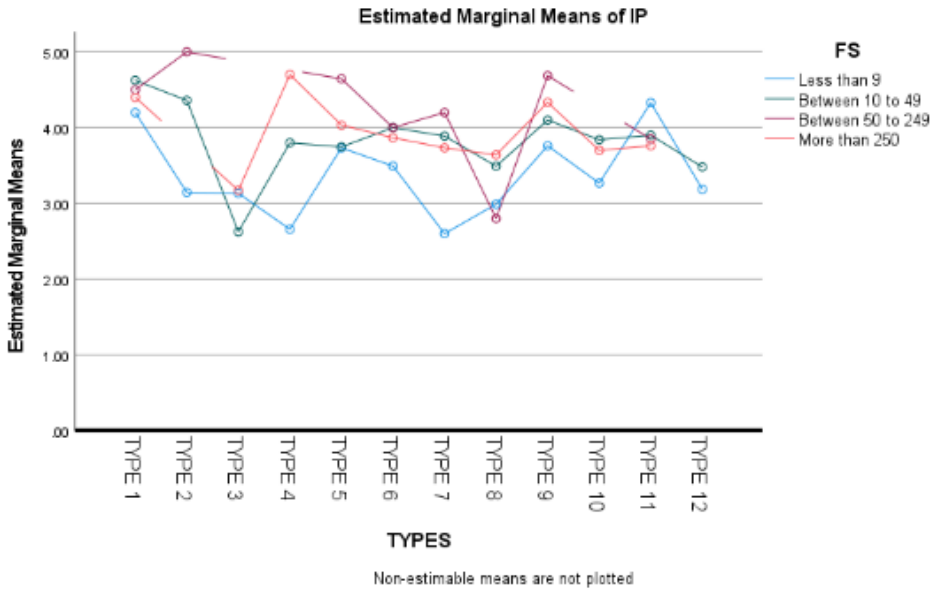

Figure 6. Interaction Plot for Types and Firm Size on Innovation Performance

This model elucidated 44.3% of the variance in IP (R Squared = 0.443, Adjusted R Squared = 0.367). These results indicate that both the types of managerial capabilities and their interaction with firm size significantly influence innovation performance. The interaction effect ($\eta^2 = 0.187$) implies that the effectiveness of managerial capabilities on innovation performance is moderated by firm size.

Explanation of Figure 6:

- Most Effective TYPES: TYPES 2, 5, and 9 are highly effective across different firm sizes, indicating these managerial capabilities are versatile and can enhance innovation in both small and large firms.

- Less Effective TYPES: TYPES 3, 4, and 8 show lower innovation performance, suggesting these managerial capabilities are less effective in varying firm sizes.

Table 8. DMC Types and Firm Size on Innovation performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	129.335[a]	41	3.155	5.848	.000	.443	239.758	1.000
Intercept	2144.557	1	2144.557	3975.517	.000	.929	3975.517	1.000
TYPES	25.726	11	2.339	4.335	.000	.136	47.690	.999
FirmSize	12.492	3	4.164	7.719	.000	.071	23.157	.988
TYPES * FirmSize	37.455	27	1.387	2.572	.000	.187	69.434	1.000
Error	162.911	302	.539					
Total	4726.040	344						
Corrected Total	292.246	343						
a. R Squared = .443 (Adjusted R Squared = .367)								
b. Computed using alpha = .05								

Elaboration on Findings

In this section, we provide a comprehensive analysis of how various dynamic managerial capabilities influence innovation performance, with key contextual factors such as activity type, export level, and firm size. Utilizing robust ANOVA analyses, we elucidate the intricate dynamics and contingent nature of managerial contributions to innovation, offering significant implications for both theory and practice.

Interaction Between Dynamic Managerial Capabilities and Activity Type

The ANOVA results reveal a significant interaction between dynamic managerial capabilities (TYPES) and activity type ($F(18, 312) = 4.103$, $p < 0.001$, $\eta^2 = 0.191$). This underscores that the impact of dynamic managerial capabilities on innovation is highly contingent on the specific activities undertaken by managers. A nuanced understanding of how different managerial skill sets influence innovation across varied operational contexts is necessary.

Type 1 managers, characterized by high levels of managerial human capital, robust social networks, and an intuitive decision-making style, demonstrate the most pronounced positive influence on innovation across diverse activity types. Their extensive understanding and adeptness at leveraging social capital enable them to foster innovation effectively within various operational contexts. This finding aligns with resource-based and social capital theories, which emphasize the importance of human and social resources in driving innovation (Barney, 1991; Nahapiet & Ghoshal, 1998).

In contrast, Type 9 managers, characterized by limited managerial human capital yet robust social capital and a balanced inclination towards both intuitive and analytical decision-making, exhibit differential levels of performance across various operational contexts, including export activities. This finding implies that although social capital is a significant factor, it may not fully mitigate the constraints imposed by lower managerial human capital in the execution of more intricate or volatile tasks.

Interaction Between Dynamic Managerial Capabilities and Export Level

The interaction between dynamic managerial capabilities and export level ($F(11, 320) = 3.060$, $p = 0.001$, $\eta^2 = 0.095$) illustrates the reshaping of the relationship between dynamic managerial capabilities and innovation performance in exporting versus non-exporting firms. In export-oriented firms, Type 1 and Type 5 managers significantly enhance innovation outcomes. Type 1 managers, with their high managerial human capital and intuitive decision-making, alongside Type 5 managers, who combine high managerial human capital with logical decision-making abilities, are adept at navigating the complexities of international markets. This effectiveness can be attributed to their strategic thinking, adaptability, and cross-cultural competence, crucial for success in global contexts (Teece, 2014a).

In contrast, Type 9 managers excel in non-exporting firms, where the demands for cross-cultural and international market competencies are less pronounced. This finding emphasizes the critical role of aligning dynamic managerial capabilities with the specific strategic and operational demands of the firm's market orientation (Mostafiz et al., 2021).

Interaction Between Dynamic Managerial Capabilities and Firm Size

The interaction between dynamic managerial capabilities and firm size ($F(27, 302) = 2.572$, $p < 0.001$, $\eta^2 = 0.187$) indicates that the efficacy of dynamic managerial capabilities in driving innovation is modulated by the size of the firm. Micro-firms benefit most from Type 11 managers, who possess a comprehensive skill set encompassing high managerial human capital, strong social capital, and a blend of intuitive and logical decision-making abilities. These managers' versatility is pivotal in addressing the unique challenges faced by very small firms, where resources are limited, and flexibility is crucial (Carree & Thurik, 2003).

Small firms thrive under the leadership of Type 1 managers, whose high managerial human capital, high managerial social capital and intuitive decision-making facilitate agile and innovative responses to market demands. Medium-sized firms, however, find optimal performance with Type 2 managers, characterized by strong social capital and intuitive decision-making but comparatively lower managerial human capital. These managers leverage social networks to drive innovation despite limited individual expertise, suggesting a balance between resource constraints and network advantages (Karaca & Bağış, 2024).

In large firms, the reliance on individual managerial capabilities diminishes, with established processes and resources playing a more dominant role in fostering innovation. This suggests that in larger organizational contexts, systemic and structural factors may overshadow the influence of individual managerial traits, aligning with the contingency theory of organizational performance (Donaldson, 2001).

Discussion

The intricate relationship between dynamic managerial capabilities (DMCs) and firm-level innovation has emerged as a pivotal area of focus within strategic management and entrepreneurship research. While previous studies have examined individual DMC components, their collective influence on innovation outcomes remains underexplored (Heubeck & Meckl, 2023). This research addresses this gap by introducing an innovative framework categorizing managers based on their DMC profiles, thereby capturing the synergistic effects of human capital, social capital, and cognitive capabilities.

Building upon the foundational work of Constance E Helfat and Jeffrey A Martin (2015), our findings underscore the crucial role of DMC interplay in driving innovation (Constance E Helfat & Jeffrey A Martin, 2015). Specifically, the synergistic relationship between human capital and social capital highlights the significance of a manager's ability to leverage their knowledge and expertise through networks (Grant, 1996). Furthermore, this study elucidates the dynamic interplay between cognitive flexibility and social capital, underscoring their importance in navigating complex and uncertain environments (Xu, 2011).

These findings advocate for a holistic perspective that transcends the analysis of individual DMC components (Yang et al., 2019). Emphasizing cognitive flexibility as a key driver of innovation extends prior research by identifying distinct cognitive styles among managers (Kazakov et al., 2024). This necessitates further exploration of the interplay between rational and intuitive decision-making processes. Integrating tools such as the RIDSS can provide a more granular understanding of managerial cognition and its impact on innovation outcomes (Hamilton et al., 2016).

To enrich the study's practical implications, a deeper exploration of the managerial profiles is warranted. By delving into the specific behaviors and decision-making processes of managers categorized as Type 1, Type 5, Type 9, and Type 11, the research can offer more concrete examples of how different DMC configurations influence innovation outcomes. This will provide actionable insights for organizations seeking to optimize dynamic managerial capabilities.

Potential criticisms of our theoretical framework include the simplification of complex managerial behaviors and the exclusion of external factors affecting innovation. To address these critiques, we recognize that while our framework offers structure, it must adapt to different organizational contexts and changing market conditions. Furthermore, external factors like market volatility and technological changes are crucial in shaping innovation outcomes. Future research should include these factors for a more comprehensive understanding of DMCs.

These insights hold significant implications for both policymakers and organizational leaders. By adopting a DMC profile approach, policymakers can develop targeted interventions to cultivate a talent pool equipped with the necessary capabilities to drive innovation. Organizations can leverage this framework to identify high-potential managers, tailor development programs, and foster an innovation-conducive culture.

Implications

Theoretical Implications

The research extends the theoretical understanding of dynamic managerial capabilities (DMCs) by demonstrating the importance of a holistic perspective that considers the interplay among various DMC components. Unlike traditional studies that focus on individual capabilities, this study underscores how managers' human capital, social capital, and cognitive capabilities collectively drive innovation outcomes. This integrated approach offers a more nuanced understanding of managerial innovation capabilities, challenging existing theories that treat these components in isolation. Moreover, the identification of distinct cognitive styles among managers, such as the balance between rational and intuitive decision-making, highlights new theoretical perspectives that can further enrich DMC theory (Heubeck, 2023).

To operationalize these new perspectives in different contexts, several specific strategies can be employed:

- Human Capital Development: In knowledge-intensive industries, investing in continuous education and training programs can enhance the cognitive flexibility and expertise of managers (Alhammadi et al., 2024). For example, Siemens implements continuous professional development programs to ensure their managers stay at the forefront of technological advancements (Jeretin-Kopf et al., 2016).
- Social Capital Enhancement: In industries where networking is crucial, such as consulting and marketing, fostering strong professional networks through industry conferences and social events can leverage social capital. McKinsey & Company encourages its consultants to participate in industry forums and networking events to build strong external relationships (Singh, 2001).
- Cognitive Flexibility Training: For dynamic and rapidly changing sectors like tech startups, training programs focusing on decision-making under uncertainty can be crucial (Narayan, 2020). Google employs scenario planning and cognitive flexibility workshops to prepare its managers for unexpected challenges (Hillmann et al., 2018).

By implementing these strategies, organizations can tailor their managerial development programs to the specific needs of their industry and context, thereby operationalizing the theoretical insights of this study.

Reader Implications

The findings of this study are significant for scholars and researchers in the field of innovation management. By categorizing managers based on their DMC profiles and demonstrating the synergistic effects of human capital, social capital, and cognitive capabilities, this research provides a clearer picture of how managerial attributes contribute to innovation. This holistic approach can inform future research by highlighting the importance of considering the interactions among different DMC components rather than studying them in isolation. Furthermore, the study's emphasis on cognitive flexibility and its role in navigating complex and uncertain environments offers new avenues for academic inquiry into the cognitive dimensions of managerial decision-making and innovation performance (Kazakov et al., 2024).

Managerial Implications

From a practical standpoint, the research offers valuable insights for managers and organizations aiming to enhance their innovation capabilities. By adopting a DMC profile approach, organizations can identify high-potential managers and tailor development programs to leverage their unique combinations of human capital, social capital, and cognitive capabilities (Gerulaitiene et al., 2024). For instance, tools such as 360-degree feedback assessments and personality tests can be used to create comprehensive DMC profiles. Managers can then work with their teams to develop targeted development plans to strengthen specific areas of these profiles, such as leadership workshops to enhance social capital or cognitive training to boost decision-making flexibility. This framework can help in fostering a culture of collaboration and knowledge sharing, enabling managers to maximize their strengths and compensate for weaknesses through effective teamwork.

Additionally, the study's findings emphasize the importance of ongoing learning and development initiatives to enhance managerial cognitive flexibility and adaptability(Kryeziu et al., 2024). For example, Google's continuous learning programs have shown positive impacts on innovation outcomes (Schmitt & Almeida, 2020). Managers can champion these initiatives by encouraging continuous learning and providing opportunities for skill development. Case studies of organizations that have implemented such initiatives show significant improvements in innovation outcomes, underscoring the necessity of these efforts for sustaining innovation in dynamic business environments (Argote & Ingram, 2000; Kevill et al., 2020).

Conclusion

This study investigated the intricate relationship between dynamic managerial capabilities (DMCs) and firm-level innovation performance. By exploring how configurations of human, social, and cognitive capital influence innovation across diverse organizational contexts, the

research aimed to deepen understanding of managerial contributions to firm innovative success.

Findings reveal a contingent relationship between DMCs and innovation, mediated by organizational context. A novel typology of managers, based on DMC profiles, was introduced, demonstrating that specific combinations of human, social, and cognitive capital differentially impact innovation outcomes. Notably, a balanced blend of rational and intuitive decision-making enhanced innovation performance in dynamic environments. Extending the resource-based view, the study highlights the dynamic and synergistic nature of managerial capabilities(Barney, 1991). While aligning with knowledge-based theory, the research challenges the overemphasis on managerial factors in explaining internationalization (Helfat & Peteraf, 2015; Teece, 2014b).

The study offers actionable insights for managers and policymakers. Organizations can enhance innovation through DMC profiling, targeted development programs, and a culture emphasizing collaboration, knowledge sharing, and cognitive flexibility. Policymakers can contribute to national innovation by investing in managerial capability development.

Limitations and Future Research

Despite its contributions, this study has limitations that may affect the findings. The sample size and industry focus were limited, which may impact the generalizability of the results. Future research should include larger samples and a wider range of industries to validate the findings. Additionally, the cross-sectional design of the study limits the ability to draw causal inferences. Longitudinal studies are needed to understand the long-term effects of DMCs on innovation.

The reliance on self-reported data introduces potential biases such as common method bias and social desirability bias, which might affect the accuracy of the findings (Podsakoff et al., 2024). Future research should consider using mixed-method approaches, including qualitative methods, to gain a deeper understanding of the nuanced relationships among DMC components.

Future research should also explore the role of digital technologies in shaping DMCs and innovation. Technologies like AI and big data analytics could significantly influence how managers develop and utilize their capabilities, offering new avenues for research(Faiz et al., 2024). Additionally, cross-cultural comparisons could enhance the understanding of how DMCs operate in different cultural and economic contexts.

Moreover, industry-specific analyses could uncover how DMCs function within various industrial settings, providing more targeted insights. Advanced analytical techniques such as

structural equation modeling (SEM) and hierarchical linear modeling (HLM) could offer more sophisticated analyses of the interactions between DMC components.

This research makes a significant contribution to the innovation management literature by revealing the complex and contingent relationship between DMCs and innovation performance. By challenging conventional views and offering a holistic perspective, the study provides a foundation for future research into the dynamic interplay between managers and innovation.

Roadmap for Future Studies

Based on the results of this study, a detailed roadmap for future research is proposed to further explore and expand the understanding of dynamic managerial capabilities (DMCs) and their impact on innovation performance:

1. Longitudinal Studies: Future research should employ longitudinal designs to track the development of DMCs and their impact on innovation over time. This approach would help establish causality and provide insights into how dynamic changes in managerial capabilities influence innovation trajectories. Longitudinal data can reveal patterns and long-term effects that are not discernible in cross-sectional studies.
2. Cross-Cultural Comparisons: Expanding the study to include managers from diverse cultural and economic backgrounds would enhance the generalizability of the findings. Comparative studies across different countries can identify universal versus context-specific aspects of DMCs and innovation performance. Such comparisons can provide a broader understanding of how cultural factors influence managerial capabilities and innovation outcomes.
3. Mixed-Methods Approaches: Incorporating qualitative methods such as interviews or case studies alongside quantitative surveys could provide a deeper understanding of the nuances and complexities of managerial capabilities. Qualitative data can offer rich insights into the contextual factors and individual experiences that shape DMCs. This mixed-methods approach can triangulate findings and enhance the robustness of the conclusions(Flick, 2013).
4. Industry-Specific Analyses: Conducting industry-specific studies can uncover how DMCs operate within different industrial contexts. Future research could focus on particular sectors (e.g., technology, manufacturing, services) to explore how industry dynamics influence the relationship between managerial capabilities and innovation. Such studies can provide tailored recommendations for enhancing innovation in specific industries.
5. Advanced Analytical Techniques: Utilizing advanced statistical methods such as structural equation modeling (SEM) or hierarchical linear modeling (HLM) could provide more sophisticated analyses of the interactions between DMC components and their collective

impact on innovation. These techniques can account for multilevel data structures and complex relationships among variables, offering more precise and insightful findings.

6. Exploring Digital and Technological Influences: Investigating how digital technologies and emerging tools like artificial intelligence (AI) and big data analytics shape DMCs and innovation can offer valuable insights. Future research could explore how technological advancements influence managerial capabilities and the mechanisms through which they drive innovation (Alhammadi et al., 2024). This line of inquiry is particularly relevant in the rapidly evolving digital economy.
7. Interdisciplinary Approaches: Integrating perspectives from psychology, sociology, and organizational behavior can enrich the understanding of DMCs. For instance, examining the psychological traits that underpin cognitive flexibility or the social dynamics that facilitate effective networking can provide a more holistic view of managerial capabilities. Interdisciplinary research can uncover new dimensions and interactions that traditional approaches might overlook (Kazakov et al., 2024).
8. Policy and Practical Interventions: Future studies could test the effectiveness of specific interventions designed to enhance DMCs. For example, evaluating the impact of targeted training programs, mentorship initiatives, or organizational policies on the development and utilization of managerial capabilities can provide actionable insights for practitioners and policymakers (Heubeck & Meckl, 2022b). Such research can inform the design of effective programs and policies to foster innovation.

Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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References

Acar, O. A., Tarakci, M., & van Knippenberg, D. (2019). Creativity and Innovation Under Constraints: A Cross-Disciplinary Integrative Review. *Journal of management*, *45*(1), 96-121. https://doi.org/10.1177/0149206318805832

Adler, P. S., & Kwon, S.-W. (2002). Social Capital: Prospects for a New Concept. *Academy of management review*, *27*(1), 17-40. https://doi.org/10.5465/amr.2002.5922314

Adna, B. E., & Sukoco, B. M. (2020). Managerial cognitive capabilities, organizational capacity for change, and performance: The moderating effect of social capital. *Cogent Business & Management*, *7*(1), 1843310. https://doi.org/10.1080/23311975.2020.1843310

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24*(10), 1011-1025. https://doi.org/https://doi.org/10.1002/smj.331

Ahmed, F. U., & Brennan, L. (2019). An institution-based view of firms' early internationalization. *International Marketing Review*, *36*(6), 911-954. https://doi.org/10.1108/IMR-03-2018-0108

Alhammadi, B., Khalid, K., Ahmad, S. Z., & Davidson, R. (2024). Examining the interplay between managerial ties, dynamic capabilities and innovation climate in driving balanced and combined ambidextrous innovation. *Journal of Asia Business Studies*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/JABS-10-2023-0407

Ali, M. A., Hussin, N., Flayyih, H. H., Haddad, H., Al-Ramahi, N. M., Almubaydeen, T. H., Hussein, S. A., & Hasan Abunaila, A. S. (2023). A Multidimensional View of Intellectual Capital and Dynamic Innovative Performance. *Journal of Risk and Financial Management*, *16*(3), 139. https://www.mdpi.com/1911-8074/16/3/139

Alpkan, L., Bulut, C., Gunday, G., Ulusoy, G., & Kilic, K. (2010). Organizational support for intrapreneurship and its interaction with human capital to enhance innovative performance. *Management Decision*, *48*(5), 732-755. https://doi.org/10.1108/00251741011043902

Ambrosini, V., & Altintas, G. (2019). Dynamic Managerial Capabilities. In *Oxford Research Encyclopedia of Business and Management*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190224851.013.20

Argote, L., & Ingram, P. (2000). Knowledge Transfer: A Basis for Competitive Advantage in Firms. *Organizational behavior and human decision processes*, *82*(1), 150-169. https://doi.org/https://doi.org/10.1006/obhd.2000.2893

Artz, G. (2015). Innovation system symbiosis: The impact of virtual entrepreneurial teams on integrated innovation and regional innovation systems. In G. Roos & A. O'Connor (Eds.), *Integrating Innovation: South Australian Entrepreneurship Systems and Strategies* (pp. 91-116). The University of Adelaide Press. https://www.cambridge.org/core/product/F73356276178B3530A684F0C41DB6B15

Asija, A., & Ringov, D. (2020). Dynamic capabilities: The role of board monitoring and managerial incentives. *BRQ Business Research Quarterly*, *24*(4), 268-280. https://doi.org/10.1177/2340944420916309

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of management*, *17*(1), 99-120. https://doi.org/10.1177/014920639101700108

Bashir, M., & Verma, R. (2019). Internal factors & consequences of business model innovation. *Management Decision*, *57*(1), 262-290. https://doi.org/10.1108/MD-11-2016-0784

Baum, J. A. C., & Lant, T. K. (2003). HITS AND MISSES: MANAGERS' (MIS)CATEGORIZATION OF COMPETITORS IN THE MANHATTAN HOTEL INDUSTRY.

In J. A. C. Baum & O. Sorenson (Eds.), *Geography and Strategy* (Vol. 20, pp. 119-156). Emerald Group Publishing Limited. https://doi.org/10.1016/S0742-3322(03)20004-8

Brislin, R. W. (1986). The wording and translation of research instruments. In *Field methods in cross-cultural research.* (pp. 137-164). Sage Publications, Inc.

Buenechea-Elberdin, M., Sáenz, J., & Kianto, A. (2017). Exploring the role of human capital, renewal capital and entrepreneurial capital in innovation performance in high-tech and low-tech firms. *Knowledge Management Research & Practice*, *15*(3), 369-379. https://doi.org/10.1057/s41275-017-0069-3

Cao, X., Ouyang, T., Balozian, P., & Zhang, S. (2020). The Role of Managerial Cognitive Capability in Developing a Sustainable Innovation Ecosystem: A Case Study of Xiaomi. *Sustainability*, *12*(17), 7176. https://www.mdpi.com/2071-1050/12/17/7176

Cao, Y., Ren, S., & Du, M. (2022). Strategic trademark management: a systematic literature review and prospects for future research. *Journal of Brand Management*, *29*(5), 435-453. https://doi.org/10.1057/s41262-022-00283-9

Carree, M. A., & Thurik, A. R. (2003). The Impact of Entrepreneurship on Economic Growth. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction* (pp. 437-471). Springer US. https://doi.org/10.1007/0-387-24519-7_17

Donaldson, L. (2001). *The Contingency Theory of Organizations* https://doi.org/10.4135/9781452229249

Donate, M. J., Peña, I., & Sánchez de Pablo, J. D. (2016). HRM practices for human and social capital development: effects on innovation capabilities. *The International Journal of Human Resource Management*, *27*(9), 928-953. https://doi.org/10.1080/09585192.2015.1047393

Faiz, M., Sarwar, N., Tariq, A., & Memon, M. A. (2024). Mastering digital leadership capabilities for business model innovation: the role of managerial decision-making and grants. *Journal of Small Business and Enterprise Development*, *31*(3), 574-597. https://doi.org/10.1108/JSBED-07-2023-0341

Flick, U. (2013). *The SAGE Handbook of Qualitative Data Analysis*. SAGE Publications Ltd. http://digital.casalini.it/9781446296691

Foss, N. J., & Knudsen, T. (2003). The resource-based tangle: towards a sustainable explanation of competitive advantage. *Managerial and Decision Economics*, *24*(4), 291-307. https://doi.org/https://doi.org/10.1002/mde.1122

George, N., Karna, A., & Sud, M. (2022). Entrepreneurship through the lens of dynamic managerial capabilities: a review of the literature. *Journal of Management & Organization*, *28*(3), 605-631. https://doi.org/10.1017/jmo.2022.25

Gerulaitiene, N., Pundziene, A., & Kabasinskas, A. (2024). Managers' emotion-regulation capabilities and family firm innovativeness: a dynamic managerial capability view. *Journal of Strategy and Management*, *17*(1), 78-100. https://doi.org/10.1108/JSMA-02-2023-0021

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109-122. https://doi.org/https://doi.org/10.1002/smj.4250171110

Gusman, Y., & Febrian, E. (2016). The impact of managerial cognition, human capital and social capital on strategic entrepreneurship and firm performance: Evidence from Indonesian Islamic Bank Industry. *Academy of Strategic Management Journal*, *15*, 82-94.

Hamilton, K., Shih, S.-I., & Mohammed, S. (2016). The Development and Validation of the Rational and Intuitive Decision Styles Scale. *Journal of personality assessment*, *98*(5), 523-535. https://doi.org/10.1080/00223891.2015.1132426

Hargadon, A., & Sutton, R. I. (2000). Building an innovation factory. *Harvard business review*, *78*(3), 157-166, 217. http://europepmc.org/abstract/MED/11183977

Helfat, C. E. (2007). Stylized facts, empirical research and theory development in management. *Strategic Organization*, *5*(2), 185-192. https://doi.org/10.1177/1476127007077559

Helfat, C. E., & Martin, J. A. (2014). Dynamic Managerial Capabilities: Review and Assessment of Managerial Impact on Strategic Change. *Journal of management*, *41*(5), 1281-1312. https://doi.org/10.1177/0149206314561301

Helfat, C. E., & Martin, J. A. (2015). Dynamic Managerial Capabilities:Review and Assessment of Managerial Impact on Strategic Change. *Journal of management*, *41*(5), 1281-1312. https://doi.org/10.1177/0149206314561301

Helfat, C. E., & Peteraf, M. A. (2015). Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal*, *36*(6), 831-850. https://doi.org/https://doi.org/10.1002/smj.2247

Helfat, C. E., & Winter, S. G. (2011). Untangling Dynamic and Operational Capabilities: Strategy for the (N)ever-Changing World. *Strategic Management Journal*, *32*(11), 1243-1250. https://doi.org/https://doi.org/10.1002/smj.955

Heubeck, T. (2023). Looking back to look forward: a systematic review of and research agenda for dynamic managerial capabilities. *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00359-z

Heubeck, T., & Meckl, R. (2022a). Antecedents to cognitive business model evaluation: a dynamic managerial capabilities perspective. *Review of Managerial Science*, *16*(8), 2441-2466.

Heubeck, T., & Meckl, R. (2022b). More capable, more innovative? An empirical inquiry into the effects of dynamic managerial capabilities on digital firms' innovativeness. *European Journal of Innovation Management*, *25*(6), 892-915.

Heubeck, T., & Meckl, R. (2023). Microfoundations of innovation: A dynamic CEO capabilities perspective. *Managerial and Decision Economics*, *44*(6), 3108-3126. https://EconPapers.repec.org/RePEc:wly:mgtdec:v:44:y:2023:i:6:p:3108-3126

Hillmann, J., Duchek, S., Meyr, J., & Guenther, E. (2018). Educating Future Managers for Developing Resilient Organizations: The Role of Scenario Planning. *Journal of Management Education*, *42*(4), 461-495. https://doi.org/10.1177/1052562918766350

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms. *The Academy of Management Journal*, *40*(4), 767-798. https://doi.org/10.2307/256948

Iglesias, A. E. A., & Maksimov, V. (2023). How can organizations tackle the challenge of pursuing a social mission? The role of dynamic managerial capabilities. *Development and Learning in Organizations: An International Journal*, *37*(6), 25-28. https://doi.org/https://doi.org/10.1108/DLO-07-2022-0126

Jeretin-Kopf, M., Wuttke, C. C., Haas, R., & Wiesmüller, C. (2016). Methods and Tools for Enabling Employees to Contribute to Technological Progress. *International Journal of Engineering Pedagogy (iJEP)*, *6*(3), pp. 45-52. https://doi.org/10.3991/ijep.v6i3.5779

Kamasak, R., Ozbilgin, M., Kucukaltan, B., & Yavuz, M. (2020). Regendering of dynamic managerial capabilities in the context of binary perspectives on gender diversity. *Gender in Management: An International Journal*, *35*(1), 19-36. https://doi.org/10.1108/GM-05-2019-0063

Karaca, V., & Bağış, M. (2024). Rational versus intuitive cognition and influence of dynamic managerial capabilities on SMEs' perceived international performance: evidence from emerging

economy. *Management Research Review*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/MRR-06-2023-0440

Kazakov, R., Petrova, P., & Kazakova, Y. (2024). Managerial Dynamic Cognitive Capabilities in a Complex Market Environment. In *Understanding and Managing Socioeconomic Systems Behaviour: Applications of Qualitative and Quantitative System Dynamics and Agent-Based Modelling in Healthcare and Pharmaceuticals, Finance, Arts and Culture, Sociology and Education Systems* (pp. 91-118). Springer International Publishing. https://doi.org/10.1007/978-3-031-57057-5_6

Kevill, A., Trehan, K., Harrington, S., & Kars-Unluoglu, S. (2020). Dynamic managerial capabilities in micro-enterprises: Stability, vulnerability and the role of managerial time allocation. *International Small Business Journal*, *39*(6), 507-531. https://doi.org/10.1177/0266242620970473

Khan, K. U., Atlas, F., Ghani, U., Akhtar, S., & Khan, F. (2021). Impact of intangible resources (dominant logic) on SMEs innovation performance, the mediating role of dynamic managerial capabilities: evidence from China. *European Journal of Innovation Management*, *24*(5), 1679-1699. https://doi.org/10.1108/EJIM-07-2020-0276

Kor, Y. Y., & Mesko, A. (2013). Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal*, *34*(2), 233-244. https://doi.org/https://doi.org/10.1002/smj.2000

Kryeziu, L., Kurutkan, M. N., Krasniqi, B. A., Ramadani, V., Hajrullahu, V., & Haziri, A. (2024). Cognitive styles and dynamic managerial capabilities: implications for SMEs in a transition economy. *International Journal of Entrepreneurial Behavior & Research*, *30*(1), 200-231. https://doi.org/10.1108/IJEBR-04-2023-0406

Kulkarni, S., Cristofaro, M., & Ramamoorthy, N. (2024). Evolutionary sensemaking: a managerial metacognitive dynamic capability to reduce information asymmetry. *Management Decision*, *62*(13), 201-222. https://doi.org/10.1108/MD-10-2023-1858

Lee, C., Hallak, R., & Shaheer, I. (2024). Chapter 5: Human capital, social capital, and psychological capital of tourism entrepreneurs. Handbook of Tourism Entrepreneurship. In (pp. 56-68). Edward Elgar Publishing. https://doi.org/10.4337/9781803920023.00012

Lenihan, H., McGuirk, H., & Murphy, K. R. (2019). Driving innovation: Public policy and human capital. *Research policy*, *48*(9), 103791. https://doi.org/https://doi.org/10.1016/j.respol.2019.04.015

Levasseur, L., Foss, N. J., & Klein, P. G. (2022). Time Perspective, Firm Resources, and Dynamic Capabilities. *Academy of Management Proceedings*, *2022*(1), 12395. https://doi.org/10.5465/AMBPP.2022.12395abstract

Liu, C.-H., & Lee, T. (2015). Promoting entrepreneurial orientation through the accumulation of social capital, and knowledge management. *International Journal of Hospitality Management*, *46*, 138-150. https://doi.org/https://doi.org/10.1016/j.ijhm.2015.01.016

Luoma, J., & Martela, F. (2021). A dual-processing view of three cognitive strategies in strategic decision making: Intuition, analytic reasoning, and reframing. *Long range planning*, *54*(3), 102065. https://doi.org/https://doi.org/10.1016/j.lrp.2020.102065

Ma, W. W. K., Sun, K., & Ma, J. (2012). The influence of cognitive learning styles on the use of online learning environments. Hybrid Learning: 5th International Conference, ICHL 2012, Guangzhou, China, August 13-15, 2012. Proceedings 5,

Makadok, R., Burton, R., & Barney, J. (2018). A practical guide for making theory contributions in strategic management. *Strategic Management Journal*, *39*(6), 1530-1545. https://doi.org/https://doi.org/10.1002/smj.2789

Mehta, A. M., & Ali, S. A. (2021). Dynamic managerial capabilities and sustainable market competencies: role of organisational climate. *International Journal of Ethics and Systems*, *37*(2), 245-262. https://doi.org/10.1108/IJOES-07-2020-0121

Mostafiz, M. I., Sambasivan, M., & Goh, S. K. (2019). Impacts of dynamic managerial capability and international opportunity identification on firm performance. *Multinational Business Review*, *27*(4), 339-363. https://doi.org/10.1108/MBR-09-2018-0061

Mostafiz, M. I., Sambasivan, M., & Goh, S. K. (2020). The performance of export manufacturing firms: roles of international entrepreneurial capability and international opportunity recognition. *International Journal of Emerging Markets*.

Mostafiz, M. I., Sambasivan, M., & Goh, S. K. (2021). Antecedents and consequences of market orientation in international B2B market: role of export assistance as a moderator. *Journal of Business & Industrial Marketing*, *36*(6), 1058-1075. https://doi.org/10.1108/JBIM-09-2019-0411

Muhammad Ahmed, A. (2024). Entrepreneurial Mindset: Fostering Innovation in Business Management. *Advance Journal of Econometrics and Finance*, *1*(3), 1-9. http://ajeaf.com/index.php/Journal/article/view/12

Nahapiet, J., & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review*, *23*(2), 242-266. https://doi.org/10.2307/259373

Narayan, S. (2020). *Essays on Managerial Cognition, Diversity and Business Model Innovation* (Publication Number EPS-2020-497-S&E) [Ph.D. thesis, http://hdl.handle.net/1765/126857

Ņikitina, T., & Lapiņa, I. (2018). The concept of manager: critical analysis and competencies required. Proceedings of the 10th International Scientific Conference" Business and Management,

Nugroho, B., & Zulfiani, Z. (2021). A Causal-Comparative Study of Inquiry-Based Science Learning Based on Levels of Students' Cognitive Learning Outcomes: Systematic Review. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, *9*(4), 655-670.

O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in organizational behavior*, *28*, 185-206. https://doi.org/https://doi.org/10.1016/j.riob.2008.06.002

Papa, A., Santoro, G., Tirabeni, L., & Monge, F. (2018). Social media as tool for facilitating knowledge creation and innovation in small and medium enterprises. *Baltic Journal of Management*, *13*(3), 329-344. https://doi.org/10.1108/BJM-04-2017-0125

Podsakoff, P. M., Podsakoff, N. P., Williams, L. J., Huang, C., & Yang, J. (2024). Common Method Bias: It's Bad, It's Complex, It's Widespread, and It's Not Easy to Fix. *Annual Review of Organizational Psychology and Organizational Behavior*, *11*(Volume 11, 2024), 17-61. https://doi.org/https://doi.org/10.1146/annurev-orgpsych-110721-040030

Quigley, T. J., & Hambrick, D. C. (2012). When the former ceo stays on as board chair: effects on successor discretion, strategic change, and performance. *Strategic Management Journal*, *33*(7), 834-859. https://doi.org/https://doi.org/10.1002/smj.1945

Saunila, M. (2020). Innovation capability in SMEs: A systematic review of the literature. *Journal of Innovation & Knowledge*, *5*(4), 260-265. https://doi.org/https://doi.org/10.1016/j.jik.2019.11.002

Schmitt, R., & Almeida, F. (2020). Building a culture of continuous innovation: How Pixar and Google address this challenge? *Journal of Management, Economics, and Industrial Organization*, *4*(1), 22-39.

Shiferaw, R. M., & Amentie Kero, C. (2024). Dynamic capabilities view practices of business firms: a systematic literature review. *Cogent Business & Management*, *11*(1), 2336309. https://doi.org/10.1080/23311975.2024.2336309

Singh, J. V. (2001). McKinsey's Managing Director Rajat Gupta on leading a knowledge-based global consulting organization. *Academy of Management Perspectives*, *15*(2), 34-44. https://doi.org/10.5465/ame.2001.4614868

Talebi, K., & Ghavamipour, M. (2012). SMALL-MEDIUM ENTERPRISES IN IRAN: PRIORITIZE FACTORS AFFECTING SUCCESS USING ANP METHOD. *Advances in Business-Related Scientific Research*, 77.

Talebi, K., Ghavamipour, M., & Irandust, A. (2012). Innovation in Iran's small and medium size enterprises (SMEs): Prioritize influence factors affecting innovation of SMEs, using analytic network process (ANP) method. *African Journal of Business Management*, *6*(43), 10775-10785. https://doi.org/DOI: 10.5897/AJBM11.1679

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319-1350. https://doi.org/https://doi.org/10.1002/smj.640

Teece, D. J. (2014a). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of international business studies*, *45*(1), 8-37.

Teece, D. J. (2014b). The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives*, *28*(4), 328-352.

Timothy, V. L. (2022). The effect of top managers' human capital on SME productivity: the mediating role of innovation. *Heliyon*, *8*(4), e09330. https://doi.org/https://doi.org/10.1016/j.heliyon.2022.e09330

Xu, Y. (2011). Entrepreneurial social capital and cognitive model of innovation. *Management Research Review*, *34*(8), 910-926. https://doi.org/10.1108/01409171111152510

Yang, D., Wang, A. X., Zhou, K. Z., & Jiang, W. (2019). Environmental Strategy, Institutional Force, and Innovation Capability: A Managerial Cognition Perspective. *Journal of Business Ethics*, *159*(4), 1147-1161. https://doi.org/10.1007/s10551-018-3830-5

Zahra, S. A., Neubaum, D. O., & Larrañeta, B. (2007). Knowledge sharing and technological capabilities: The moderating role of family involvement. *Journal of Business Research*, *60*(10), 1070-1079. https://doi.org/https://doi.org/10.1016/j.jbusres.2006.12.014

Zhou, K. Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, *31*(5), 547-561.

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