Strategic Dynamics in Business: Assessing Pure and Hybrid Competitive Strategies, Firm Size Moderation, and Sector Variations in Firm Performance

By

Saskia H. Visser
2059656 / 195831

Tilburg University
Tilburg School of Economics and Management

Supervisor: Wynand Bodewes
Second reader: Dessy Rutten

Date: 28 June 2024
Word count: 11,738

Acknowledgments

I am deeply indebted to my professors throughout my academic years for their patience, guidance, and feedback. I want to express my sincere gratitude to my supervisor, Wynand Bodewes, for his constructive criticism and expertise. I also appreciate the anticipated feedback from my second reader, Dessy Rutten, which I look forward to receiving during the defense.

Many thanks to my study friends and classmates for their advice, suggestions, and editing help. Your support and encouragement have been invaluable.

Lastly, I would like to recognize my family, especially my parents and grandparents, for their unwavering belief in me and their practical support throughout this journey. In addition, I would like to acknowledge my friends for their continuous encouragement, which helped me get through this challenging period.

Thank you all for your contributions to this academic journey.

Managerial Summary

Analyzing business strategies is crucial for understanding how firms can achieve competitive advantage and optimize performance, especially in today's complex business environment with many influencing factors such as technology, global uncertainties, and sustainability challenges. This research examines the relationship between competitive business strategies and firm performance based on Porter's generic strategies, differentiation, and cost leadership. It also tests the performance effects of a hybrid strategy (combining differentiation and cost leadership) and being stuck in the middle (no strategy). Furthermore, it analyzes firm- and context-specific factors, including size and sector.

Financial data was collected from Orbis for 11,496 firms from 2001 to 2022 to conduct panel data regression analysis for the strategy effects and the moderating effect of firm size, and graphical analysis was used to examine sector differences. The results indicate that differentiation and cost leadership strategies positively impact firm performance and even outperform a hybrid strategy. Firm size moderates these effects, with smaller firms benefiting more from differentiation and larger firms from cost leadership. Additionally, the performance outcomes of these strategies vary significantly across sectors and over time.

These findings challenge previous research suggesting superior performance of hybrid strategies. However, future research should explore alternative hybrid strategy combinations to better understand their potential advantages. This research contributes to the strategic management literature by providing insights into the dynamic nature of strategic benefits. It highlights the need for businesses to adapt their strategies to firm-specific characteristics and market conditions to optimize performance.

Contents

1. Introduction

"The world has never been more connected from an economic point of view, but we are also experiencing unprecedented fragmentation. It's a global paradox." – Ziad Haider (*How to Develop Geopolitical Resilience*, 2023).

In today's global economy, international businesses face significant risks due to geopolitical tensions, such as the Russia-Ukraine war, and the changing position of China, which also includes the deterioration of the US-China relationship. While global trade is still gradually increasing, 40% is concentrated in only a handful of countries, making it difficult for companies to balance economic integration with geopolitical fragmentation, mainly as they rely on specific regions for essential resources (*How to Develop Geopolitical Resilience*, 2023). Within this uncertain economic climate, achieving profitable and sustainable growth has become increasingly challenging. Although growth is crucial for increasing performance, stimulating a positive culture, promoting employee engagement, and driving innovation, only 25% of organizations achieve sustained growth (*Six Strategies for Growth Outperformance*, 2024). This highlights the need for business managers to be courageous and innovative in their strategy and decision-making processes to overcome challenges and ensure long-term success effectively.

Furthermore, digital and artificial intelligence (AI) transformations make firms change their strategic management and planning to fit emerging market needs. For example, earning a customer's trust and long-term loyalty through personalized marketing strategies and tactics can boost revenue by 40% (Colback, 2024). However, while these transformations present great opportunities for companies, there is a risk of getting lost in the possibilities. Therefore, firms must solve specific business problems and ensure that technological advancements align with their fundamental goals to provide meaningful and sustainable progress (*In Digital and AI Transformations, Start With the Problem, Not the Technology*, 2023).

These complex challenges require firms to re-evaluate their business strategies to adapt to the global dynamics and technological changes. Thus, this drove the evolution of corporate strategy, which was traditionally primarily aimed at investment management and synergy enhancement. Dynamism, uncertainty, contingency, connectedness, contextuality, and cognition – six factors driving significant changes to the business environment – force corporate strategies to be qualitatively reconceptualized (Reeves, 2022). To achieve long-term success,

business leaders must identify these driving forces and set clear business goals, such that their business strategy creates value for the benefit of the firm, customers, suppliers, and employees (*What Is Business Strategy & Why Is It Important?*, 2022).

While numerous empirical studies on strategic management exist, research shows significant gaps and contradictions in the literature regarding the relationship between strategy and performance (Banker et al., 2014; Islami et al., 2020). Moreover, there is still an ongoing debate about the effectiveness of combining strategies (also called a hybrid strategy) compared to being "stuck in the middle" – when not committing to one specific strategy (also referred to as pure strategies). These gaps challenge traditional frameworks, making it difficult to develop robust business models that respond to evolving market demands. Addressing these gaps is essential for creating substantial value for the firm and its stakeholders, thereby improving competitive advantage. This is the foundation of my motivation to research the strategy-performance relationship. By applying Porter's (1980) widely accepted framework of generic strategies and using recent financial data, I aim to examine how business strategies interact with firm- and context-specific factors like size and sector. The central question in this research is: *"What is the effect of pure (differentiation and cost leadership) and hybrid business strategies on firm performance? How does firm size moderate the effect, and does it differ across sectors?"* By addressing these questions, this research contributes to the strategy literature by providing empirical and graphical analysis of the variation in the effectiveness of business strategies depending on a firm's size and sector in which it operates, as well as the performance consequences.

Defining strategic direction in today's turbulent environment is increasingly challenging due to rapid technological change and economic uncertainties. Conventional strategies often struggle to adapt to the dual uncertainties of economic shifts and technological disruptions, which may lead to incomplete or misleading results (*Why Strategists Should Embrace Imperfection*, 2024). In response, organizations must adopt a more real-time and dynamic approach to strategy. This includes taking small steps but giant leaps, accepting imperfection and ambiguity, and iterating strategies based on continuous learning and feedback. This approach builds resilience against external shocks and enhances adaptive capabilities essential for managing change and risk in complex and uncertain business environments. These insights are not just valuable, but they are also actionable for business strategists and consultants. By

integrating the findings from this research, they can optimize strategic decisions to stimulate resilience, creativity, innovation, and sustainable growth in dynamic business contexts.

This paper is structured as follows: Chapter 2 provides a comprehensive review of the existing literature on business strategies and their performance outcomes, establishing the conceptual foundation for the study. It introduces foundational theories, particularly Porter's generic strategies, and explores firm size moderation and sector-specific differences influencing strategic effectiveness. Next, the methodology is explained in Chapter 3, including the research design, data collection methods, and analytical techniques. It outlines the empirical approach used to examine the relationship between business strategies and performance, ensuring the study's thoroughness and validity. The findings of the empirical and graphical analysis are discussed in Chapter 4, highlighting the performance impacts of different strategies across various firm sizes and sectors. The results are analyzed and discussed in relation to the hypotheses established in the theoretical framework. The final part, Chapter 5, interprets the results in the context of existing literature and theoretical expectations. It discusses the implications for business strategy, offers recommendations for practitioners, and suggests directions for future research, concluding the study with a synthesis of critical insights and contributions.

2. Theoretical Framework

Strategic Management

Strategic management research aims to understand what drives organizational success or failure and how managerial actions influence these outcomes (Makadok et al., 2018). It integrates various ideas and theories from economics, sociology, psychology, marketing, and finance and themes like behavioral strategy, corporate governance, and innovation. This diverse and interdisciplinary nature helps to address complex issues related to value creation, value appropriation, and competitive advantage. Moreover, strategic management has progressed from focusing on market- and industry-level factors to firm- and individual-level factors, integrating technology and innovation management (Palmié et al., 2023). This shift involves a comprehensive view of competitive advantage despite the challenges of providing a clear definition.

Beard and Dess (1981) highlight a crucial distinction between corporate-level and business-level strategies that impact firm performance. Corporate-level strategy, which involves decisions about industries and markets, focuses on diversification and portfolio management. On the other hand, business-level strategy deals with how firms compete within a given market and resolve questions regarding competitive positioning and resource allocation to achieve competitive advantage. They show that aligning these strategies with organizational goals and environmental conditions is crucial for profitability and overall performance. This alignment is supported by Fuertes et al. (2020), who elaborated further that corporate strategies aim to increase the value of a company's business portfolio by communicating future direction through motivational messaging or specific objectives. Business strategies, however, focus on minimizing financial risks and improving competitive positioning through cost efficiency, differentiation, and operational excellence. Hence, successful strategic management integrates objectives based on resource evaluation and environmental assessment; that is, it emphasizes the need for measurable, precise, resource-efficient, and verifiable strategies. Moreover, Zollo et al. (2017) underscore the importance of an integrative perspective in strategic management: cooperative, growth, and stakeholder strategies should be consistent and generate joint effects on value creation. This helps enhance managerial choices that create an understanding of how different strategies interact towards performance impacts.

Competitive Business Strategies

'Strategy' has evolved from concepts like *administration* or *planification* to now involving competitive dynamics within business environments (Fuertes et al., 2020). This reflects a shift from static and mechanistic views of strategy to more dynamic and organic perspectives, acknowledging the complexity and uncertainty of strategic processes. Business strategy research draws connections between competitive strategy and performance, evolving from industrial organization (IO) economics to Porter's five forces model (Parnell, 2006). The IO framework's limitations led to strategic group analysis and the resource-based view (RBV), focusing on firm-specific resources and capabilities. Modern strategy research integrates industry- and organizational factors to understand the strategy-performance relationship comprehensively.

Porter (1980) introduced the generic strategies framework, which outlines two primary strategies: differentiation and cost leadership. Firms must choose between competing broadly or focusing on specific market segments, known as a focus strategy, allowing them to pursue either cost or differentiation strategies within narrow or broad markets. This framework is widely accepted, internally consistent, and forms a foundational concept in strategic management (David et al., 2002; Hambrick, 1983). According to Porter (1980), these strategies are crucial for achieving competitive advantage and are well-supported in both theoretical frameworks and practical applications. Furthermore, he emphasizes that his framework applies to firms of all sizes, noting that smaller firms often target niche markets. Porter's strategic typology plays a central role in understanding firm performance, categorizing competitive strategies and their effects on performance outcomes (Islami et al., 2020; Salavou, 2015). Moreover, Porter's framework aligns with other strategic typologies, including Miles and Snow's, underscoring its robustness and relevance across diverse organizational contexts (Kim et al., 2004), as well as emphasizing the contemporary effectiveness in explaining business performance variations (Nandakumar et al., 2011).

Douglas and Rhee (1989) argued that the effectiveness of competitive strategies varies across different business environments, suggesting that market conditions such as growth rates and development stages affect strategy performance. However, there remains to be a gap in understanding how various strategic approaches influence firm performance across different contexts. Addressing this gap is central to this thesis. Connecting strategic management

principles to performance outcomes, the theoretical framework explores how differentiation, cost leadership, and hybrid strategies drive organizational success while considering the implications of being "stuck in the middle" and the influence of firm- and sector-specific factors.

2.1 Business Strategy & Firm Performance

This research focuses on the two principal generic strategies – differentiation and cost leadership – setting aside the focus strategy as the differentiator–cost leadership dichotomy is widely recognized as a central dimension of strategy analysis (McAlister et al., 2016). Pursuing a differentiation strategy includes creating unique products or services that add value to customers, allowing firms to command premium prices. In contrast, a cost leadership strategy involves achieving the lowest production and operation costs, allowing firms to offer low-cost benefits over their competitors (Banker et al., 2014). These strategies – often called pure strategies (Thornhill & White, 2007) – require specific investments in resources, control methods, organizational setups, and incentive systems (Leitner & Güldenberg, 2009). Therefore, according to Porter (1980), the generic strategies are incompatible, and firms should explicitly choose one to avoid being stuck in the middle, which means they will fail to achieve any competitive advantage.

Most researchers use survey data in the strategic management literature to investigate strategy effects; however, Banker et al. (2014) argue that financial ratios should be used as a proxy for business strategies due to their objectiveness compared to perceptual measures. Financial data provides a methodologically robust framework for understanding firms' realized strategies, capturing observable patterns of actions and resource allocations (Wu et al., 2015). Realized strategy indicators offer detailed insights into a firm’s tendency towards differentiation or cost leadership (McAlister et al., 2016; David et al., 2002). The absence of empirical studies using financial data may lead to strategic misalignment and contribute to long-term industry decline (Islami et al., 2020). This study will, therefore, measure the relationship between competitive business strategies and firm performance using financial measures to provide a more objective and comprehensive understanding of the strategic choices firms make and their impacts on performance.

Effective firm performance includes efficiently using resources to achieve outcomes aligned with organizational goals, including competitiveness, efficiency, and effectiveness (Suprihono et al., 2021). It covers the successful management of business activities and efficiently realizing company objectives. According to Micheli and Mura (2017), using different performance indicators when analyzing the strategy-performance relationship is essential. More specifically, they show that cost leaders prioritize financial aspects, while organizations pursuing a differentiation strategy emphasize non-financial indicators to enhance customer-centric attributes. Therefore, this study will examine firm performance in two ways: using an accounting-based performance measure, return on assets (ROA), and a market-valuation measure, Tobin's Q.

The rapid transformation of the global business environment over the last two decades has increased the importance of responsiveness as a competitive advantage due to the increased competition and customer demands for fast delivery of products and services (Parnell, 2006). These dynamics pose challenges for traditional strategy models, including Porter's framework. Using recent data to examine the direct performance effect of pure business strategies, this study aims to validate existing theories and uncover new insights.

Differentiation Strategy

A differentiation strategy involves developing unique products or services to place a firm in a unique market position and strengthen high customer loyalty, enabling premium pricing over competitors (Banker et al., 2014). Firms strive to create brand equity and consumer perception of product differentiation by investing in innovation, research and development (R&D), and strategic marketing efforts that improve the firm's image and brand competitiveness (Balsam et al., 2011; Islami et al., 2020). This approach strengthens the market presence and increases the firm's resilience to competitive pressures. By integrating these strategic initiatives with product flexibility and aligning them with customer needs, firms can charge premium prices (Berman et al., 1999; Suprihono et al., 2021), which, in turn, can result in superior performance outcomes (David et al., 2002).

Common financial metrics that indicate a differentiation strategy include the ratio of Sales to Cost of Goods Sold (COGS), R&D expenditure to Sales, and Selling, General, and Administrative (SG&A) expenses to Sales. Higher values of these ratios indicate a

differentiation strategy pursued through investment in innovation, product development, and brand-building activities.

In line with the insights from the literature, the first hypothesis is as follows:

Hypothesis 1.1: There is a positive relationship between a differentiation strategy and firm performance.

Cost Leadership Strategy

A cost leadership strategy requires a firm's commitment to becoming the lowest-cost producer in its industry (Porter, 1980). Firms pursuing this strategy aim to attract price-sensitive customers by offering standardized products at lower costs than competitors, achieving a competitive advantage (Islami et al., 2020). Efficiency is the central aspect of cost leadership, where firms prioritize minimizing costs, including production, operation, and distribution, while maintaining quality standards (Hambrick, 1983). Cost advantages are realized through standardized mass production, tight budget management, and streamlined processes (David et al., 2002). Consequently, successful low-cost strategy implementation is characterized by high efficiency, economies of scale, and thus increased performance.

Most financial data studies capture a cost leadership strategy by ratios such as Sales to Capital Expenditure (Capex), Sales to Property, Plant and Equipment (PPE), and Employees to Assets. Larger ratio values reflect a firm's ability to maximize output given minimal resource input, emphasizing cost efficiency and asset parsimony (Balsam et al., 2011; Berman et al., 1999).

Empirical evidence suggests that firms following a cost leadership strategy leverage cost advantages to offer lower prices, increasing market share and overall financial performance (Hambrick, 1983; Banker et al., 2014). However, sustaining such an advantage requires continuous improvements and innovations to stay ahead of competitors who might imitate these cost-saving measures.

Building on the literature, the second hypothesis is as follows:

Hypothesis 1.2: There is a positive relationship between a cost leadership strategy and firm performance.

2.2 Hybrid Strategies and Stuck in the Middle

Two distinct views have emerged regarding formulating and implementing Porter's generic strategies. Moreover, there has been extensive debate around the viability of simultaneously pursuing a cost leadership and differentiation strategy, also referred to as a 'hybrid strategy,' which remains a contentious topic in strategic management.

The first perspective, supported by Porter (1980), argues that firms choose and commit to only one strategy: cost leadership, differentiation, or focus. This view argues that one typically reduces the effectiveness of the other due to distinct requirements in the value chain, leading successful firms to adopt a single (pure) competitive strategy (Yamin et al., 1999). Even so, Thornhill and White (2007) found a significant relationship between strategic purity and performance in their study across various sectors. They argue that combined strategies are complex and vulnerable to competitive attacks, making it difficult to maintain direction and efficiency.

On the other hand, Nandakumar et al. (2011) and Banker et al. (2014) have provided evidence that firms can successfully integrate differentiation and cost leadership elements, challenging Porter's assertion that firms must avoid combining strategies to prevent inferior performance. This second perspective suggests that a hybrid strategy can lead to competitive advantage under certain conditions, disagreeing with the strategic exclusivity viewpoint.

These insights emphasize that the debate of purity versus hybrid remains contentious, which is also argued by Greckhamer and Gur (2021). However, the conceptualization of the strategies needs to be revised. "Pro-purity" research often compares pure strategies with being stuck in the middle, whereas "pro-hybrid" studies separate hybrid strategies from being stuck in the middle.

This underlines the need for further research, using recent financial data, into different dimensions of hybrid strategies so that they more accurately reflect real-world dynamics (Salavou, 2015). This research will, therefore, focus on two key areas: first, it examines the performance outcomes of hybrid versus pure strategies, and second, the performance results of pure and hybrid strategies are compared to being stuck in the middle.

Pure Versus Hybrid Strategies

Greckhamer and Gur (2021) challenge the debate between pure and hybrid strategies, arguing that both can lead to high performance under specific conditions. Differentiation leads to higher-quality products, which could drive greater market demand and allow for cost reductions through economies of scale, implying that combining differentiation and cost leadership can be profitable (Yamin et al., 1999). Furthermore, drawing a link to the "blue ocean strategy" concept, Islami et al. (2020) argue that redefining market boundaries and creating new market spaces can allow firms to simultaneously achieve low cost and differentiation and outperform traditional approaches.

In the current dynamic and fast-changing market environment, a hybrid strategy may prove even more successful due to its flexibility and adaptability (Spanos et al., 2004; Leitner & Güldenberg, 2010). Even though generic strategies are still relevant in modern technology-driven businesses, integrated strategies outperform pure strategies in e-business firms (Kim et al., 2004). This suggests that hybrid strategies could be particularly profitable in exploiting current technological advancements. In addition, Salavou (2015) emphasizes the complexity of strategic decision-making in contemporary business environments, underscoring the importance of distinguishing between competitive strategies.

This study will show how the decision to commit to a pure strategy (differentiation or cost leadership) compared to combining elements of both strategies could lead to different performance outcomes. In this regard, the following hypotheses are proposed:

Hypothesis 2.1: There is a positive relationship between a hybrid strategy and firm performance.

Hypothesis 2.2: Firms that follow a hybrid strategy outperform firms that follow a pure differentiation strategy.

Hypothesis 2.3: Firms that follow a hybrid strategy outperform firms that follow a pure cost leadership strategy.

Pure and Hybrid Strategies Versus Stuck in the Middle

In the context of competitive strategies, it is crucial to prioritize intentional and purposeful strategic decisions, ensuring a clear distinction between combination strategies and the concept

of being stuck in the middle (Acquaah & Yasai-Ardekani, 2008). This is essential for accurately identifying pure, hybrid, and stuck-in-the-middle strategies and assessing their impact on firm performance (Leitner & Güldenberg, 2010).

Murray (1988) argues that firms might successfully integrate a differentiation and cost leadership strategy under certain external conditions related to industry structure and customer tastes. Consequently, firms need to carefully analyze their external environment and internal capabilities to determine the feasibility of a hybrid strategy. Additionally, Acquaah and Yasai-Ardekani (2008) empirically show that implementing any well-defined competitive strategy (cost-leadership, differentiation, or combination) leads to a significant performance advantage compared to firms stuck in the middle. These findings are supported by Pertusa-Ortega et al. (2009), emphasizing the critical role of a clear and coherent strategic approach for superior performance outcomes. Therefore, this study will examine performance differences for firms following a pure (differentiation and cost leadership) or a hybrid strategy compared to firms stuck in the middle, testing the following hypotheses:

Hypothesis 3.1: Firms that follow a pure differentiation strategy outperform firms that are stuck in the middle.

Hypothesis 3.2: Firms that follow a pure cost leadership strategy outperform firms that are stuck in the middle.

Hypothesis 3.3: Firms that follow a hybrid strategy outperform firms that are stuck in the middle.

2.3 Firm Size

Firm size influences performance outcomes across various sectors (Beard & Dess, 1981). Large companies typically benefit from advantages over smaller firms, including economies of scale and greater access to resources, significantly contributing to their profitability. Nevertheless, many studies analyze large firms and small to medium-sized enterprises (SMEs) separately, disregarding the comprehensive insights gained when integrating all firm sizes into strategic frameworks. Highlighting the critical role of firm size in strategic contexts, Greckhamer and Gur (2021) emphasize that size defines firms within industries and shapes their strategic decisions and outcomes. This raises the question of how strategic decisions interact with firm size and the consequences for the resulting performance outcomes.

This study will explore how firm size moderates the relationship between strategic choices – such as differentiation and cost leadership – and firm performance to provide insights into how different firm sizes can strategically achieve competitive advantage in their respective markets.

Moderators in Strategic Management

A moderating variable reduces the impact or changes an antecedent's magnitude, direction, or both on an outcome variable (Aguinis et al., 2016). This means that, in this research, the effect of differentiation and cost leadership on firm performance is influenced by the size of a firm. For example, Lumpkin and Dess (1996) propose a framework where organizational factors, including size, structure, and strategy, moderate the effect of entrepreneurial orientation on firm performance. This framework implies that firm size is part of a broader set of moderators that shape strategic outcomes in organizational contexts. Hence, since firm size is an essential factor in explaining performance variation and strategic decisions, it can be expected to have a moderating role in the effect of strategic choices on firm performance.

Strategy Typologies for SMEs

When examining the contingency link between strategy and performance, it is essential to evaluate how these concepts apply to SMEs, considering their unique characteristics. Research by O'Regan and Ghobadian (2006) shows that Miles and Snow's strategy typology (prospector, defender, and analyzer strategies) also applies to SMEs across various sectors. Given that Porter's framework aligns well with Miles and Snow's, this suggests that differentiation and cost leadership strategies are viable for SMEs. This compatibility is further supported by studies from Kim et al. (2004) and Anwar and Hasnu (2016), which draw explicit parallels between Miles & Snow's strategies and Porter's framework. Additionally, Porter (1980) argues that his framework applies to firms of all sizes and that smaller firms often adopt different strategic approaches to achieve competitive advantage. Consequently, this raises the question of how firm size influences strategic decisions and what these differences imply for performance outcomes.

Moreover, studies show that the performance outcomes of small, medium, and large firms vary significantly depending on the strategic approaches adopted from the Miles and Snow typology (Anwar & Hasnu, 2016; Kumar et al., 2012). Leitner and Güldenberg (2010) strengthen this argument by empirically showing that a combination strategy of cost efficiency and differentiation proves profitable for SMEs in the long run. This approach also challenges the conventional view of being stuck in the middle, suggesting that hybrid strategies can increase SME profitability and growth. Furthermore, according to Farida and Setiawan (2022), effective business strategies significantly enhance the competitive advantage of SMEs, emphasizing the importance of strategic clarity and adaptation in competitive environments.

While there is limited research on the moderating influence of firm size on the strategy–performance relationships, Merchant (2014) argues that firm size moderates this dynamic, particularly in joint ventures (JVs). His findings suggest that with their agility and flexibility, smaller firms are better positioned to leverage a combination of cost leadership and differentiation strategies effectively. This underscores the importance of exploring the effectiveness and performance outcomes of differentiation and cost leadership strategies depending on the size of a firm.

Differentiation and Firm Size

Several aspects related to differentiation, such as customer orientation, organizational structure, innovation, and strategic flexibility, can lead to varying performance outcomes based on firm size when pursuing such a strategy.

Firstly, smaller firms often have closer customer relationships (Laforet, 2008), allowing them to gather detailed feedback and rapidly adjust their products or services to better align with customer preferences through product differentiation.

Secondly, small firms generally have flatter organizational structures, which helps them make decisions more quickly and implement differentiation strategies. Additionally, as smaller firms are more likely to compete in niche markets (Porter, 1980), differentiation allows them to effectively meet the needs of the niche market segments and thus gain a competitive advantage and superior performance. On the contrary, large firms may have more complex structures that reduce their flexibility in meeting the needs of niche markets and slow the implementation of strategic initiatives.

Thirdly, Spithoven et al. (2012) show that SMEs are more efficient in simultaneously employing multiple organizational innovation practices when introducing new products to the market. This aligns with the notion that small firms, being more innovative and entrepreneurial (Laforet, 2008), can more effectively implement differentiation strategies.

Fourthly, while small firms may have limitations in terms of resources and scale compared to large firms, they are more adaptable and sensitive to changes in the business environment. This implies an advantage for small firms implementing a differentiation strategy over large firms, which may struggle with bureaucratic inertia, reducing the effectiveness of differentiation (Laforet, 2008). More specifically, engaging in proactive strategic partnerships with suppliers and logistics providers and improving information quality can help SMEs create strategic flexibility and increase their performance (Sen et al., 2022). According to Zhou and Wu (2009), strategic flexibility strengthens the positive relationship between technological capability and exploration, thus improving the innovation capabilities of small firms. However, Leitner and Güldenberg (2010) describe the controversy on whether firms should adopt strategic consistency or flexibility. Proponents of strategic flexibility argue that it is essential to adapt to environmental changes because it leads to higher performance in dynamic industries. The debate highlights the tension between the benefits of strategic consistency and the need for flexibility in response to changing environmental conditions.

These insights into the advantages and challenges firms of different sizes face when implementing a differentiation strategy imply that size plays a crucial role in determining performance outcomes. In line with these insights, the following hypothesis is therefore proposed:

> *Hypothesis 4.1: Firm size negatively moderates the relationship between a differentiation strategy and firm performance, such that smaller firms have higher performance than larger firms when pursuing a differentiation strategy.*

Cost Leadership and Firm Size

A cost leadership strategy's effectiveness depends on a firm's size for factors such as operational efficiency through economies of scale, bargaining power, and distribution networks, which can result in different performance outcomes. First, large firms generally benefit from economies of scale, meaning they can produce goods or services at a lower average cost due to

their higher production volumes. Additionally, larger firms are more likely to internalize upstream activities or collaborate with powerful suppliers, minimizing supply chain disruptions (Franzoni et al., 2023). Consequently, large firms can invest in more efficient technology and processes, negotiate better terms with suppliers, and allocate fixed costs like administration and marketing over a larger output. As a result, these cost advantages allow them to set lower prices than their rivals, thereby gaining a larger market share.

Moreover, due to economies of scale, large firms operate more efficiently than small firms (Steinbrunner, 2024), implying that a cost leadership strategy could result in better performance outcomes for large firms than small firms. Conversely, small firms may need more resources to implement similar efficiencies, which may, in turn, affect their competitiveness in a cost leadership strategy. Secondly, large firms often have greater bargaining power with suppliers, allowing them to negotiate lower prices for raw materials and other inputs (Franzoni et al., 2023). This advantage increases the effectiveness of a cost leadership strategy for large firms compared to small firms, as it allows them to reduce costs and improve profitability. Lastly, large firms can benefit from extensive distribution networks that effectively target a broader market and achieve economies of scale in logistics, resulting in lower per-unit distribution costs (Huggins & Johnston, 2010). This advantage supports their capacity to sustain a cost leadership strategy, improving operational efficiency and market competitiveness. Following these literature perspectives, the following hypothesis is studied:

Hypothesis 4.2: Firm size positively moderates the relationship between a cost leadership strategy and firm performance, such that larger firms have higher performance than larger firms when pursuing a cost leadership strategy.

2.4 Industry Differences

Industry can be defined as a group of organizations operating in similar environmental characteristics, such as competitive dynamics and technological change, and shapes how firms develop and implement their strategies. Accordingly, variations in these factors, known as industry differences, play a crucial role in determining the specific impacts of strategic choices on profitability outcomes (McGahan & Porter, 1997). Strategic types are present in every industry; however, they are not evenly distributed due to industry standards and product characteristics, as supported by multi-industry, single-industry, and cross-country analyses

(Anwar & Hasnu, 2016). Moreover, Hambrick (1983) shows that market leaders tend to adopt strategies favored by their industries, which implies that different strategies lead to varying performance levels within industries.

Therefore, understanding how successful business strategies differ across industries highlights the importance of exploring the sector-specific effectiveness of various strategies (Stimpert & Duhaime, 1997). Integrating a hybrid strategy into Porter's generic strategy framework, Spanos et al. (2004) discuss how firms can strategically adapt to industry challenges and create favorable conditions to overcome structural barriers. A hybrid strategy can also be essential for firm survival in turbulent environments (Lapersonne et al., 2015). Nevertheless, there is a notable scarcity of empirical studies on hybrid strategies in different industries.

Industry characteristics can influence strategy effectiveness in various ways (Hambrick, 1983). More specifically, the globalization and digitalization of firms have increased the uncertainty and ambiguity of strategic decision-making (Islami et al., 2020). For example, industries with high technological and innovation intensity may pose entry barriers to new firms with limited resources, also called “the liability of newness.” On the other hand, established firms may become obsolete if they fail to adapt to the changing environment. Furthermore, the industry life cycle stages can also affect strategy formulation, emphasizing the importance of strategy-sector alignment for achieving superior firm performance (Beal, 2000).

Although many studies still focus on single-industry research, Thornhill and White (2007) observed variations in the relationship between strategic purity and performance across four sectors: manufacturing, construction, retail, and business services. This raises the following questions in relation to this research:

5.1: How do firm performance and strategy measures differ over time and across sectors?

5.2: How does the effectiveness of business strategies (differentiation, cost leadership, and hybrid strategy) on performance vary over time and across sectors?

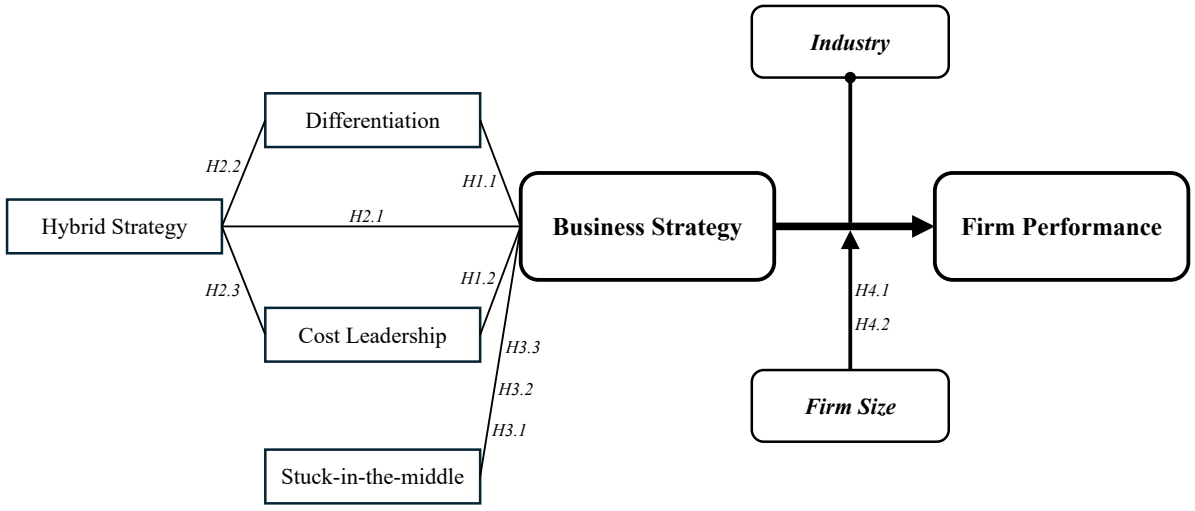
This study clarifies strategic impacts across diverse context-specific factors by graphically examining these strategy-performance differences across different sectors.

2.5 Conceptual Model

Combining the insights from the literature and the purpose of this research, a conceptual model has been developed, presented in Figure 1. This model visually represents the theoretical foundation of this research, outlining the expected relationships between differentiation, cost leadership, hybrid business strategies, and firm performance measured by ROA and Tobin's Q. It also explores the moderating effect of firm size and examines sectoral differences in strategy effectiveness. This model guides the empirical analysis, aiming to comprehensively understand how strategic choices impact firm performance across different firm-specific and context-specific factors. The research questions guiding this study are: (1) *How do differentiation, cost leadership, and hybrid strategies affect firm performance?* (2) *How do business strategies impact firm performance compared to being stuck in the middle?* (3) *Does firm size moderate the relationship between these strategies and performance?* (4) *Are there significant sector-specific differences in the effectiveness of these strategies?*

Figure 1

Conceptual Model



3. Methodology

3.1 Data

Sample

This research uses secondary data to analyze the strategy-performance relationships. It allows for a comprehensive examination of historical performance trends and realized strategies across diverse firms and industries without the logistical and time constraints associated with primary data collection. Measurements for differentiation, cost leadership, and firm performance were identified through an extensive literature review. Then, variables for the dataset were chosen based on the most common (and best representing) measurements in the literature and the data availability in the Orbis database. This data source from Bureau van Dijk is the largest cross-country firm-level database that includes both financial statements and actual activities for public and private firms, allowing for observing fundamental and financial interconnections between firms in the global economy (Kalemli-Özcan et al., 2024).

The information necessary to establish the foundation for the strategy, performance, and control variables is gathered on firms from all countries with available data for 2001 to 2022. Using a large panel dataset offers several advantages, including longitudinal analysis of firm performance, measuring dynamic changes, and increased statistical reliability. In addition, firms from all sectors, except for "public administration," were included because firms in the public sector are heavily regulated. The operations of such firms differ from the interest in this study, which is that firms are expected to have a clear relationship between strategic choice and performance outcomes. Previous studies have mainly focused on individual sectors, ensuring internal validity but accordingly limiting the generalizability of the results (Pertusa-Ortega et al., 2009; Kumar et al., 2012). This multiple-industry research provides insights into strategic dynamics across diverse environments. The final dataset used for analysis in StataMP includes 11,496 firm-year observations, resulting in 252,516 observations. This extensive database allows for a comprehensive examination of the strategy-performance relationships in different industries and over time.

Variables

Firm Performance – Dependent Variable. When studying the performance outcomes of strategic approaches, it is vital to use different performance indicators since cost leaders prioritize different financial aspects over differentiators (Micheli & Mura, 2017). Following Bhandari (2017), this research analyses two performance metrics, return on assets (ROA) as an accounting-based measure and Tobin's Q as a market-valuation measure, to enhance reliability and reduce potential biases. Accounting performance provides a reliable measure of economic returns, focusing on a firm's past activities rather than anticipating future performance. Contrarily, financial market performance reflects a forward-looking perspective, theoretically valuing firms based on the present value of expected future cash flows (Greckhamer & Gur, 2021). This approach allows for a more robust evaluation of how strategic choices impact overall firm success.

Return on Assets (ROA) = Net Income / Total Assets. ROA assesses how efficiently a firm generates earnings from its assets, combining profit margin and asset turnover (Selling & Stickney, 1989). Many studies (for example, Banker et al., 2014; Anwar & Hasnu, 2016; Balsam et al., 2011) have used ROA to evaluate the performance impacts of competitive strategies (David et al., 2002). This performance measure explains how business strategies affect the firm's operations and financial outcomes.

Tobin's Q = Market Value / Total Assets. Accounting-based performance measures are widely adopted in many studies. However, in today's dynamic competitive environment, companies are more future-focused, especially regarding strategy implementation and adaptation. Hence, a forward-looking measure like Tobin's Q could provide different insights into these strategy-performance relationships. A firm's market value shows how efficiently it manages its investments and how much growth potential it has (McAlister et al., 2016).

Business Strategies – Independent Variables. Based on prior research (Balsam et al., 2011; Banker et al., 2014; Berman et al., 1999; Juniarti et al., 2022), four variables are identified to capture each of the strategic positions (differentiation and cost leadership) of firms.

Diff 1: Sales/COGS. A high ratio indicates a firm's ability to generate significant sales relative to its cost of goods sold, reflecting its success in differentiating its products or services.

Diff 2: SGA/Sales. A higher ratio shows more extensive spending on selling, general, and administrative expenses than sales, suggesting a focus on differentiation through marketing, branding, and customer service.

CL 1: Sales/Capex. A high ratio indicates efficiency in generating sales from capital expenditures, signifying a cost leadership strategy based on optimizing capital use.

CL 2: Employees/Assets. A higher ratio indicates a cost leadership strategy that efficiently utilizes human resources, measured by the number of employees relative to total assets, thus maximizing productivity.

All four variables are calculated as percentages and winsorized at 1% to control for the impact of extreme outliers (McAlister et al., 2016; Agustia et al., 2020). Furthermore, this research used the lagged five-year average strategy values calculated for each year to effectively capture a firm's strategic direction (Anwar & Hasnu, 2016; Zajac & Shortell, 1989; Banker et al., 2014). Then, Confirmatory Factor Analysis (CFA) is used to compose the *Differentiation* variable from *Diff 1* and *Diff 2*, and similarly, the *Cost Leadership* variable is constructed from *CL 1* and *CL 2*.

Dummy Variables. The 5-year average values for *Diff 1*, *Diff 2*, *CL 1*, and *CL 2* indicate whether a firm is pursuing a specific strategy each year or not through dummy variables. While most studies (for example, Acquaah & Yasai-Ardekani, 2008; Yamin et al., 1999; Leitner & Güldenberg, 2010; Bhandari, 2017) use sample means to construct these strategy indicating dummies, this research uses a firm's 5-year sector-average value to create more context-specific benchmarks. These strategy types are classified as follows:

The *Differentiation dummy* equals one if a firm's five-year average *Diff 1* value is larger than or equal to its five-year sector average value of *Diff 1* or if the same holds for the firm's *Diff 2* value. Similarly, the *Cost Leadership dummy* equals one if a firm's five-year average *CL 1* value is larger than or equal to its five-year sector average value of *CL 1* or if the same applies to its *CL 2* value. In addition, a dummy variable, *Hybrid Strategy*, is constructed, which equals one if both the *Differentiation* and *Cost Leadership* dummies are equal to 1. Conversely, the *Stuck-in-the-middle* dummy equals one if the *Differentiation* and *Cost Leadership* dummies are both equal to 0.

Firm Size = *ln*(Number of Employees). A firm's size can be defined using several proxies, such as total assets (Agustia et al., 2020), industry-relative sales (Banker et al., 2014), and number of employees. This research defines *Firm Size* as the natural logarithm of the total number of employees, a commonly used measure in empirical research (Shalit & Sankar, 1977). Furthermore, a categorical variable, *Firm Size Category*, is constructed to analyze the size distribution in the data and to conduct separate analyses per size category for additional insights into size differences in the strategy effects.

Control Variables. Based on prior research (Banker et al., 2014; Juniarti et al., 2022; McAlister et al., 2016; Agustia et al., 2020; Wu et al., 2015), the following control variables are included in the regressions: *Firm Age*, *Leverage*, and *Gross margin*. Confounding factors – factors that influence the dependent and independent variables – cause biased results when not included in the regression analysis. Controlling for these potential confounding factors helps to isolate the individual impact of the strategy variables on firm performance, increasing the credibility of the analysis and allowing for a more accurate assessment of the strategy-performance relationships.

Firm Age = Year$_t$ – Year of incorporation. Older firms often have advantages such as market experience and resources that determine their ability to adapt to the changing environment (Greckhamer & Gur, 2021). On the other hand, younger firms may be affected by a "liability of newness" and face challenges such as limited resources and market recognition (Islami et al., 2020). Therefore, including firm age as a control variable is essential because age-related factors can affect performance outcomes independently of their business strategies.

Leverage = (Total Liabilities / Total Assets). High leverage can increase performance during periods of economic upturn but can also exacerbate losses during downturns, thus affecting the impact of business strategies on firm performance.

Gross Margin = [(Revenue – COGS) / Revenue] * 100. By accounting for gross margin, which reflects a firm's core profitability, the impact of business strategies on performance is more accurately isolated because it minimizes potential confounding factors related to profitability differences that can arise from sales. Similar profitability variables used in prior studies include growth (Wu et al., 2015) or profit margin (McAlister et al., 2016; David et al., 2002).

Sector / Industry. Sector and industry classify firms based on similarities in economic activities and the nature of goods or services they provide. ‘Sectors’ are more general classifications that group related industries, whereas ‘industries’ are subcategories within sectors more closely related to their economic activity and the products or services they provide. This research defines a firm's sector by the first three digits of the Standard Industrial Classification (SIC) code, as shown in Table 1. Some studies use a four-digit SIC code to achieve greater specificity in identifying the industry or sub-industry in which a company operates.

Table 1

Sector Classification

Sector		US SIC code		
(1)	Agriculture, Forestry, and Fishing	100	-	999
(2)	Mining	1000	-	1499
(3)	Construction	1500	-	1799
(4)	Manufacturing	2000	-	3999
(5)	Transportation, Communication, Electric, Gas, and Sanitary Services	4000	-	4999
(6)	Wholesale Trade	5000	-	5199
(7)	Retail Trade	5200	-	5999
(8)	Finance, Insurance, and Real Estate	6000	-	6799
(9)	Services	7000	-	8999
(10)	Public Administration	9000	-	9999

Note. Firms from Public Administration sector are not included. Source: https://www.osha.gov/data/sic-manual & https://www3.epa.gov/npdes/pubs/app-c.pdf

Descriptive Statistics

Exploratory data analysis should be conducted before regression analysis to gain insights into the variables' nature and distribution, their central tendency and variability, and their relation. Table 2 provides an overview of the descriptive statistics of the main variables from the dataset used in this research.

Table 2

Descriptive Statistics of the Total Dataset

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
ID	252,516			1	11,496
Year	252,516			2001	2022
ROA	212,047	4.99	9.85	-99.62	99.92
Tobin's Q	169,802	2.22	256.84	0.00	81,923.05
Diff 1 (Sales/COGS)	210,809	225.38	292.68	84.02	2,413.42
Diff 1 Sector average	195,126	223.87	67.63	144.55	364.87
Diff 2 (SGA/Sales)	211,148	33.53	31.67	2.39	221.78
Diff 2 Sector average	195,126	32.94	6.18	16.63	49.34
Differentiation	174,632	$1.59*10^{-10}$	0.66	-0.62	5.76
CL 1 (Sales/Capex)	202,417	7,165.37	11,503.68	$3.73*10^{-8}$	107,607.00
CL 1 Sector average	195,126	7,045.82	3,088.10	2,493.22	18,702.46
CL 2 (Employees/Assets)	191,938	0.0007	0.001	$6.47*10^{-6}$	0.007
CL 2 Sector average	195,126	0.0007	0.0002	0.0002	0.002
Cost Leadership	161,928	$3.82*10^{-12}$	0.12	-0.88	1.09
Employees	191,959	7,648.54	36,482.13	1	2,300,000
Firm Size	191,959	6.98	1.93	0	14.65
Firm Age	252,516	39.24	31.87	1	503
Leverage	212,637	0.65	36.94	0.000056	16,244.44
Gross Margin	210,048	38.20	22.70	-99.59	100
Sector	252,516			1	10

As can be seen in Table 2, there are significant differences between the strategy variables (*Diff 1*, *Diff 2*, *CL 1*, and *CL 2*), which might partially be due to incorrect data, measurement errors, or outliers. The means of *Diff 1* and *Diff 2* are significantly different, and this variation is even more significant for the means of *CL 1* and *CL 2*. Consequently, the combined strategy variables, *Differentiation* and *Cost Leadership*, could be unbalanced and potentially lead to biased results. The *ROA* variable consists of values within a stable range of -100 to 100. However, *Tobin's Q* values and the four strategy variables are more dispersed, as indicated by their large standard deviation relative to the mean. This could influence the estimates' precision and the findings' significance, affecting the regression analyses' reliability and interpretability. In addition, the skewness suggests deviations from normality for some variables, particularly *Tobin's Q*, which could further impact the regression results. To address these issues, data transformations, such as log transformation, may be applied to stabilize variance and achieve

more normally distributed data. The normality curve in the histograms of the variables showed that the variables *Tobin's Q* and *Leverage* were not normally distributed and were, therefore, transformed using the natural logarithm.

As mentioned in the description of the variables, several dummy variables and two categorical variables (*Firm Size Category* and *Sector*) are constructed. These strategy indicator dummy variables will 'split' the data for each year into firms pursuing the strategy – indicated by the dummy variable being equal to one – or not pursuing the strategy – when the dummy variable is equal to 0. Therefore, it is essential to examine the proportion of 1s versus 0s to understand the distribution of firms across different strategic approaches (see Appendix D, Table 1). This examination ensures that the sample sizes are adequate for robust statistical analysis and helps identify any potential biases or imbalances in the data, which could influence the reliability and validity of the research findings. Even so, for the categorical variables, the frequency in the data and distribution across sectors (see Appendix D, Table 2) and across size categories (see Appendix D, Table 3) indicate if the sample is well-represented across different sectors and firm sizes. The distribution analysis shows if the data captures a diverse range of firm-specific contexts, enhancing the generalizability and applicability of the research findings.

The pairwise correlations in Table C are analyzed to understand the relationships between the variables. This analysis helps identify any high correlations between independent variables that could lead to biased estimates and unreliable results in the regression models.

Table 3

Pairwise Correlations of Main Variables

	ROA	Tobin's Q	Diff 1 (Sales / COGS)	Diff 2 (SGA / Sales)	Differentiation	CL 1 (Sales / Capex)	CL 2 (Employees / Assets)	Cost Leadership	Firm Size	Firm Age	Leverage	Gross margin	Sector
ROA	1.00												
Tobin's Q	0.26***	1.00											
Diff 1 (Sales / COGS)	0.10***	0.17***	1.00										
Diff 2 (SGA / Sales)	0.05***	0.19***	0.38***	1.00									
Differentiation	0.13***	0.29***	0.71***	0.69***	1.00								
CL 1 (Sales / Capex)	-0.004*	-0.08***	-0.06***	-0.14***	-0.11***	1.00							
CL 2 (Employees / Assets)	0.02***	0.04***	-0.04***	-0.04***	-0.05***	0.02***	1.00						
Cost Leadership	0.001***	0.06***	-0.08***	-0.15***	0.02***	0.33***	0.66***	1.00					
Firm Size	-0.009***	-0.01**	-0.07***	-0.18***	-0.15***	-0.13***	0.06***	0.07***	1.00				
Firm Age	-0.06***	-0.14***	-0.03***	-0.04***	-0.05***	-0.01***	-0.08***	-0.08***	0.22***	1.00			
Leverage	-0.16***	-0.03***	-0.09***	-0.12***	-0.12***	0.01***	0.03***	0.01***	0.26***	0.07***	1.00		
Gross margin	0.19***	0.25***	0.65***	0.61***	0.72***	-0.18***	-0.08***	-0.22***	-0.04***	-0.01***	-0.19***	1.00	
Sector	0.0002	0.02***	0.11***	0.09***	0.13***	0.03***	-0.002	-0.03***	-0.01***	-0.07***	0.01***	0.11***	1.000

Note. Significance levels are as follows: *p<0.10, **p<0.05, ***p<0.01

As shown in Table 3, the correlation coefficients of the independent variables (Differentiation and Cost Leadership) and the dependent variables (ROA and Tobin's Q) are statistically significant, indicating that changes in the independent variables are associated with

changes in the dependent variables. More specifically, the correlation coefficients show a positive relationship between cost leadership and ROA, while they suggest a negative relationship with Tobin's Q. Moreover, the negative correlation coefficient between firm size and differentiation supports the hypothesis of a negative moderation effect. Similarly, the positive correlation between firm size and cost leadership supports the proposed positive moderating effect. Although the magnitudes of the correlation coefficients between the strategy variables are relatively small, they remain statistically significant. Even so, the control variables and independent variables show significant correlations. This may suggest multicollinearity and potentially affect the reliability of the regression results. To address this, the Variance Inflation Factor (VIF) is calculated for the regression variables on both performance measures to assess the extent of multicollinearity and ensure the validity of the regression analysis. The VIF results (see Appendix C, Table 1) reveal that multicollinearity is not a concern in this research, as all values are below 10 (Balsam et al., 2011).

3.2 Regression Analysis

Regression analysis is useful for studying business strategies and firm performance as it allows researchers to quantify the relationship between strategy variables and performance outcomes while controlling for confounding factors. The regression results provide insights into the strength and direction of the impact of differentiation and cost leadership on a firm's ROA and Tobin's Q. Additionally, the results indicate performance differences between pure, hybrid, and stuck-in-the-middle strategies and identify the size-related impact on the strategy's effectiveness.

Regression Models

The strategy variables (Differentiation and Cost Leadership) can be included in the same regression equation, and their impacts on firm performance can be assessed accurately, as multicollinearity is not an issue. Following Acquaah and Yasai-Ardekani (2008), the regression models include three key components: First, the direct effect of pure and hybrid strategies will be examined, followed by a comparison of pure and hybrid strategies, and finally, the performance impact of pure and hybrid strategies is compared to firms that are stuck in the

middle. These comparative effects are operationalized through dummy variables, which are constructed as follows:

'Hybrid vs. Differentiation' equals 1 when *Hybrid Strategy* equals 1, and 0 if only the *Differentiation dummy* equals 1.

'Hybrid vs. Cost Leadership' equals 1 when *Hybrid Strategy* equals 1, and 0 if only the *Cost Leadership dummy* equals 1.

'Differentiation vs. Stuck' equals 1 when *Stuck in the middle* equals 1, and 0 if only the *Differentiation dummy* equals 1.

'Cost Leadership vs. Stuck' equals 1 when *Stuck in the middle* equals 1, and 0 if only the *Cost Leadership dummy* equals 1.

'Hybrid vs. Stuck' equals 1 when *Stuck in the middle* equals 1, and 0 if the *Hybrid Strategy* dummy equals 1.

Additionally, to test the moderating role of firm size, the interaction effect between *Differentiation* and *Firm Size* and between *Cost Leadership* and *Firm Size* is included in the regression model (Berman et al., 1999). This results in a total of eight regression models for both performance measures.

Panel Data Analysis

Due to the longitudinal nature of the data used in this study, fixed effects (FE) and random effects (RE) regression analyses are preferred over the Pooled Least Squares (Pooled-OLS) method. FE and RE methods control for unobserved characteristics within entities (firms) that are constant over time, thereby reducing potential bias and providing more reliable estimates. Following Juniarti et al. (2022), two tests are conducted to determine the appropriate regression method.

First, the Breusch-Pagan Lagrange Multiplier (LM) test is applied to check for random effects and heteroscedasticity, that is, whether the variance of the errors is systematically related to the values of the independent variables. The LM test results (see Appendix C, Table 2) indicate that the RE method is preferred over OLS for all regression models at a 1% significance level, thus capturing unobserved heterogeneity across firms. Secondly, the Hausman test determines if a FE regression model is preferred over a RE model. This test examines if there

are correlations between individual-specific effects and regressors. The findings (see Appendix C, Table 3) show that the FE model is preferred at a 1% significance level for all regression models.

Sector Differences Analysis

The FE method effectively controls for time-invariant unobserved heterogeneity at the firm level, capturing persistent firm-specific characteristics over time (Petersen, 2009). When the *Sector* variable is included in the FE method regression analysis, Stata reports this variable as omitted due to collinearity. This indicates that the sectoral effect is already captured in the fixed effects for each firm, meaning that the analysis focuses on within-firm variations over time. Consequently, controlling for time-invariant characteristics, such as sector, is unnecessary. However, this research aims to identify sector-specific differences in the strategy-performance relationship. Therefore, two types of graphical analyses are conducted, examining four key sectors: manufacturing, services, retail trade, and wholesale trade, similar to Thornhill & White (2007).

The graphical analyses include, firstly, the five-yearly averages of both performance measures (ROA and Tobin's Q) and the four strategy measures (*Diff 1*; *Diff 2*, *CL 1*, *CL 2*) for each of the four sectors separately to examine potential differences in performance and strategy values across sectors over time. Secondly, the average performance over time for firms pursuing a specific strategy (differentiation, cost leadership, and hybrid) compared to those not pursuing these strategies, which is indicated by their dummy variables, is analyzed for each sector separately. This analysis helps to identify performance differences for strategies across sectors.

4. Results

4.1 Regression Results

To examine the effects of pure and hybrid strategies on firm performance and analyze how firm size moderates these relationships, this study formulates four sub-questions and their corresponding hypotheses, summarized in Table 4. Table 5 and Table 6 present the regression results with the dependent variable firm performance measured as ROA and Tobin's Q, respectively.

Table 4

Hypotheses Overview

(1) *What is the direct effect of a pure business strategy (Differentiation and Cost Leadership) on firm performance?*	
H1.1	There is a positive relationship between a Differentiation strategy and firm performance.
H1.2	There is a positive relationship between a Cost Leadership strategy and firm performance.
(2) *What is the difference in the effect on firm performance for firms pursuing a pure strategy compared to a Hybrid strategy?*	
H2.1	There is a positive relationship between a Hybrid strategy and firm performance.
H2.2	Firms that follow a Hybrid strategy outperform firms that follow a pure Differentiation strategy.
H2.3	Firms that follow a Hybrid strategy outperform firms that follow a pure Cost Leadership strategy.
(3) *Do firms that follow a pure or a Hybrid strategy outperform firms that are "stuck in the middle"?*	
H3.1	Firms that follow a pure Differentiation strategy outperform firms that are stuck in the middle.
H3.2	Firms that follow a pure Cost Leadership strategy outperform firms that are stuck in the middle.
H3.3	Firms that follow a Hybrid strategy outperform firms that are stuck in the middle.
(4) *How does firm size moderate the relationship between business strategies and firm performance?*	
H4.1	Firm size negatively moderates the relationship between a Differentiation strategy and firm performance, such that smaller firms have higher performance compared to larger firms when pursuing a Differentiation strategy.
H4.2	Firm size positively moderates the relationship between a Cost Leadership strategy and firm performance, such that larger firms have higher performance compared to smaller firms when pursuing a Cost leadership strategy.

Table 5

Fixed Effects Regression Results for Firm Performance Measured as ROA

	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA
Strategy Variables								
Differentiation	1.220***	1.221***						6.570***
	(0.246)	(0.250)						(0.635)
Cost Leadership	1.858***	1.920***						-5.104**
	(0.550)	(0.578)						(2.166)
Strategy Dummies								
Hybrid Strategy [a]		-0.186						
		(0.142)						
Stuck-in-the-middle [b]		-0.108						
		(0.079)						
Hybrid vs. Differentiation [c]			-0.110					
			(0.157)					
Hybrid vs. Cost Leadership [d]				-1.186***				
				(0.225)				
Differentiation vs. Stuck [e]					-0.716***			
					(0.152)			
Cost Leadership vs. Stuck [f]						0.458***		
						(0.078)		
Hybrid vs. Stuck [g]							-0.360	
							(0.302)	
Interaction Effects								
Differentiation * Firm Size								-0.902***
								(0.082)
Cost Leadership * Firm Size								1.101***
								(0.311)
Control Variables								
Firm Size	0.036	0.033	-0.796***	0.111	-0.468***	0.156	-0.278*	0.155
	(0.097)	(0.097)	(0.172)	(0.147)	(0.128)	(0.112)	(0.168)	(0.095)
Firm Age	-0.062***	-0.062***	-0.072***	-0.076***	-0.058***	-0.067***	-0.055***	-0.057***
	(0.008)	(0.008)	(0.016)	(0.012)	(0.010)	(0.008)	(0.012)	(0.008)
Leverage	-3.704***	-3.704***	-2.561***	-3.768***	-3.100***	-3.934***	-3.563***	-3.685***
	(0.180)	(0.180)	(0.277)	(0.250)	(0.224)	(0.198)	(0.291)	(0.179)
Gross Margin	0.162***	0.162***	0.117***	0.211***	0.144***	0.214***	0.181***	0.164***
	(0.006)	(0.006)	(0.008)	(0.009)	(0.007)	(0.007)	(0.008)	(0.006)
Constant	-2.669***	-2.593***	4.065***	-3.195***	1.152	-4.534***	-1.513	-3.995***
	(0.722)	(0.725)	(1.347)	(1.059)	(0.949)	(0.777)	(1.124)	(0.703)
Observations	156,942	156,942	63,399	79,129	106,429	122,159	69,601	156,942
Number of ID	11,466	11,466	6,209	9,315	9,795	10,631	8,896	11,466
Adjusted R-squared	0.067	0.067	0.032	0.076	0.048	0.090	0.067	0.073

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

Table 6

Fixed Effects Regression Results for Performance Measured as Tobin's Q

	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q
Strategy Variables								
Differentiation	0.272***	0.274***						0.379***
	(0.018)	(0.018)						(0.047)
Cost Leadership	0.154***	0.144**						-0.454**
	(0.054)	(0.057)						(0.226)
Strategy Dummies								
Hybrid Strategy [a]		-0.004						
		(0.011)						
Stuck-in-the-middle [b]		0.007						
		(0.008)						
Hybrid vs. Differentiation [c]			-0.057***					
			(0.013)					
Hybrid vs. Cost Leadership [d]				-0.003				
				(0.020)				
Differentiation vs. Stuck [e]					0.032**			
					(0.013)			
Cost Leadership vs. Stuck [f]						0.012		
						(0.008)		
Hybrid vs. Stuck [g]							0.067***	
							(0.024)	
Interaction Effects								
Differentiation * Firm Size								-0.018**
								(0.007)
Cost Leadership * Firm Size								0.096***
								(0.033)
Control Variables								
Firm Size	-0.040***	-0.040***	-0.051***	-0.073***	-0.046***	-0.058***	-0.056***	-0.038***
	(0.009)	(0.009)	(0.014)	(0.014)	(0.010)	(0.011)	(0.014)	(0.009)
Firm Age	0.002***	0.002***	0.007***	0.005***	0.002**	0.001	0.001	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	0.097***	0.097***	0.055***	0.106***	0.080***	0.123***	0.110***	0.098***
	(0.013)	(0.013)	(0.018)	(0.019)	(0.015)	(0.016)	(0.020)	(0.013)
Gross Margin	0.005***	0.005***	0.005***	0.007***	0.006***	0.007***	0.006***	0.005***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Constant	-0.144**	-0.142**	-0.099	-0.069	-0.130	-0.066	-0.095	-0.181***
	(0.067)	(0.066)	(0.109)	(0.109)	(0.080)	(0.080)	(0.102)	(0.066)
Observations	135,515	135,515	54,006	65,866	92,693	104,553	60,560	135,515
Number of ID	10,299	10,299	5,487	8,171	8,870	9,460	7,983	10,299
Adjusted R-squared	0.029	0.029	0.012	0.014	0.012	0.015	0.015	0.030

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

The results for model 2, in Table 5 and Table 6, show a positive and significant effect of Cost Leadership and Differentiation on ROA and Tobin's Q, supporting hypotheses 1.1 and 1.2. On the other hand, Table 5 and Table 6 show no significant effect of a hybrid strategy on firm performance; therefore, hypothesis 2.1 is not supported.

In Table 6, the coefficient of the dummy variable *Hybrid vs. Differentiation* in model 3 is negative and significant, indicating that firms following a pure differentiation strategy will outperform those following a hybrid strategy, as opposed to the hypothesized effect. Additionally, Table 5 shows that the ROA of firms that pursue a differentiation strategy is not significantly different from firms following a hybrid strategy. Thus, hypothesis 2.2 is not supported.

Similarly, the coefficient of the dummy variable *Hybrid vs. Cost Leadership* in model 4 is negative but not significant for performance measured as Tobin's Q. However, it is significant in Table 5, indicating that a pure cost leadership strategy will result in a higher ROA than a hybrid strategy. Therefore, hypothesis 2.3 is also not supported.

Models 5–7 compare pure and hybrid strategies with being stuck in the middle. The differentiation strategy shows conflicting results for firm performance measured as ROA in Table 5, compared to performance as Tobin's Q in Table 6. The negative significant coefficient of the dummy variable *Differentiation vs. Stuck* in model 5 of Table 5 indicates that stuck-in-the-middle firms will outperform those following a differentiation strategy when using ROA as a performance measure. Conversely, performance measured by Tobin's Q, the positive significant coefficient, indicates that a differentiation strategy will result in better performance compared to being stuck in the middle, supporting hypothesis 3.1.

Although the coefficient of the dummy variable *Cost Leadership vs. Stuck* in model 6 of Table 6 is positive, it is not significant, suggesting no performance difference for pursuing a cost leadership strategy or being stuck in the middle. The coefficient in Table 5, on the other hand, is significant, supporting hypothesis 3.2 that pursuing a cost leadership strategy leads to better performance than being stuck in the middle.

For model 7 in Table 5, the coefficient of the dummy variable *Hybrid vs. Stuck* is negative but not significant. However, in Table 6, the coefficient is positive and significant, indicating that firms pursuing a hybrid strategy will outperform those stuck in the middle when measuring performance through Tobin's Q, supporting hypothesis 3.3.

The moderating effect of firm size is analyzed through the coefficient of the interaction effects, as shown in model 8. Both Table 5 and Table 6 show a negative and significant coefficient of the interaction term of Differentiation and Firm Size, supporting hypothesis 4.1. The results show that the positive effect of a differentiation strategy on firm performance decreases as firm size increases. In addition, the positive significant coefficient of the interaction term of Cost Leadership and Firm Size supports hypothesis 4.2, suggesting that the positive effect of a cost leadership strategy on performance increases as firm size increases. It is important to note that while the direct effect of a cost leadership strategy on performance is positive in model 2, this coefficient is negative in model 8.

4.2 Robustness Tests – Internal Validity

While the fixed-effects regression results provide valuable insights into the relationships between business strategies and firm performance, verifying their reliability and consistency is crucial. Therefore, two types of robustness tests are conducted to ensure the validity of the findings.

First, instead of using the fixed effects method, as presented in Table 5 and Table 6, the same regression analysis is conducted using the random effects method to test the robustness of the results. This helps determine whether the observed relationships between competitive strategies and firm performance hold when accounting for both time-invariant and time-varying unobserved heterogeneity. This means that the sector variable has to be included in the regression models to control for sector-specific variations and account for potential unobserved heterogeneity across sectors. The RE method is a valid robustness test because it captures both within- and between-firm variations, ensuring the consistency of the findings across different analytical approaches. Overall, the RE regression results (see Appendix A, Table 1, and Table 2) are consistent with the main FE results. However, some differences highlight the influence of between-firm variations, which can be seen in the significance and sign changes for certain strategy variables. This suggests that firm-specific effects are crucial in understanding the strategy-performance relationship. The dummy variables' differing signs and significance levels indicate potential variability in how different strategies interact with firm performance, depending on whether the model focuses on within-firm changes over time (FE) or both within-firm and between-firm variations (RE).

Secondly, FE regression analysis is conducted for the total data (2001–2022) with yearly values instead of the lagged five-year average values. This approach provides a robustness test by examining whether similar patterns in the strategy-performance relationship emerge when considering annual data, thereby validating the stability of findings across different temporal aggregations. Analyzing the findings of this robustness test (see Appendix A, Table 3, and Table 4) reveals changes in the significance and direction of certain strategy variables, indicating potential variability that was smoothed out over time in the main results. This variability could be due to shifts in market conditions, strategic adaptations, or other time-dependent factors not captured by the five-year averages in the primary analysis. However, the overall regression results indicate robust findings, with consistent relationships observed between strategy variables and firm performance.

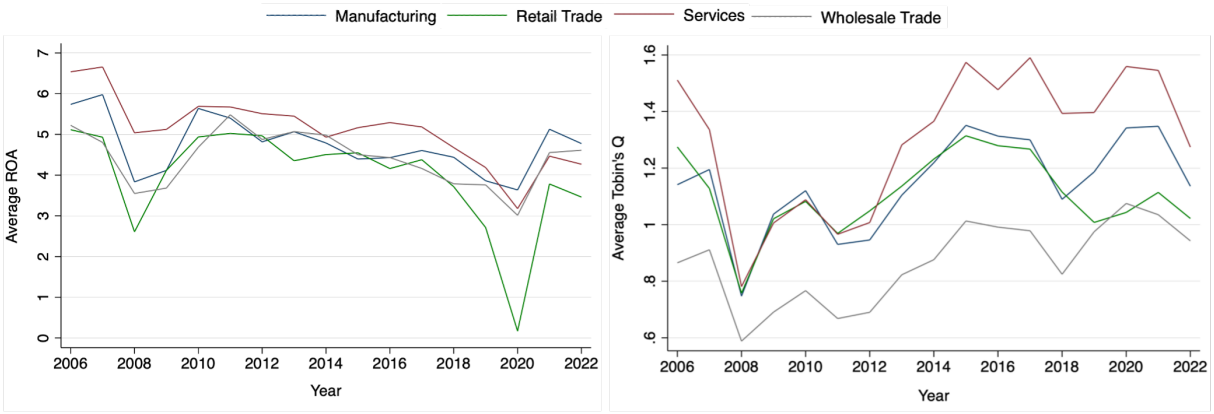
4.3 Graphical Analysis – Sector Differences

Potential sector differences are first graphically examined by the average performance (ROA and Tobin's Q) and strategy metrics (*Diff 1*, *Diff 2*, *CL 1*, and *CL 2*) across the four sectors (manufacturing, services, retail trade, and wholesale trade) to identify any significant pattern differences. Secondly, the graphical analysis focuses on differences in average performance over time between firms pursuing differentiation, cost leadership, and hybrid strategies (for which the dummy variable is 1) versus those not pursuing these strategies (indicated by the dummy variable being equal to 0). These differences are then compared between the four sectors. Lastly, as an additional empirical analysis, the eight regression models are conducted using FE for the four sectors as separate data subsets to investigate further whether the coefficients of the effects differ between sectors. Although most coefficients are not statistically significant, these results (see Appendix B, Table 1 and Table 2) indicate that the effectiveness and performance outcomes of pursuing a competitive strategy differ between sectors.

Average Performance and Strategy Measures Over Time

Figure 2

Average Firm Performance (ROA and Tobin's Q) Over Time per Sector

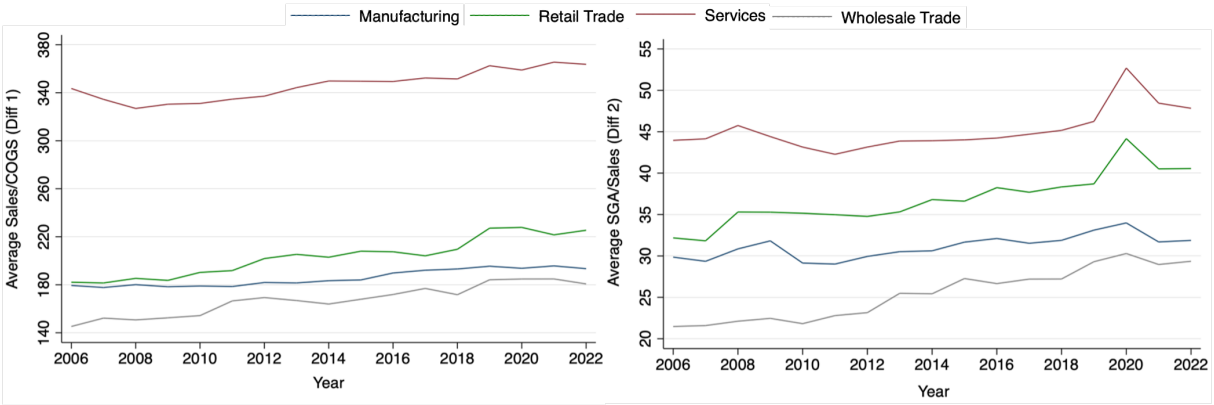


Note. These patterns are compared to the average firm performance (ROA and Tobin's Q) over time for the total dataset (see Appendix B, Figure 1).

Figure 2 shows that the average performance for ROA and Tobin's Q, respectively, follows similar trends in all four sectors. The services sector consistently showed the highest ROA values up to 2019/2020, when the manufacturing sector overtook this leading position. Similarly, the services sector has consistently shown the highest average Tobin's Q values since 2012.

Figure 3

Average Sales/COGS (Diff 1) and SGA/Sales (Diff 2) Over Time per Sector



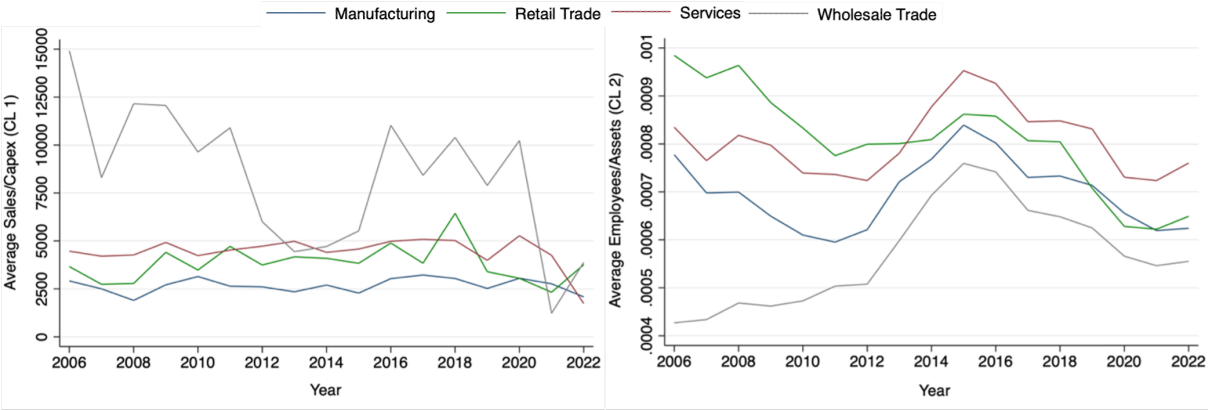
Note. These patterns are compared to the average Diff 1 and Diff 2 over time for the total dataset (see Appendix B, Figure 2).

As can be seen from Figure 3, the average differentiation measures significantly differ across the four sectors. The services sector consistently shows the highest average values for

Sales/COGS (Diff 1) and SGA/Sales (Diff 2). The retail trade sector has the second-highest average values, followed by the manufacturing sector, and then the wholesale trade sector, which has the lowest values.

Figure 4

Average Sales/Capex (CL 1) and Employees/Assets (CL 2) Over Time Per Sector



Note. These patterns are compared to the average CL 1 and CL 2 over time for the total dataset (see Appendix B, Figure 3).

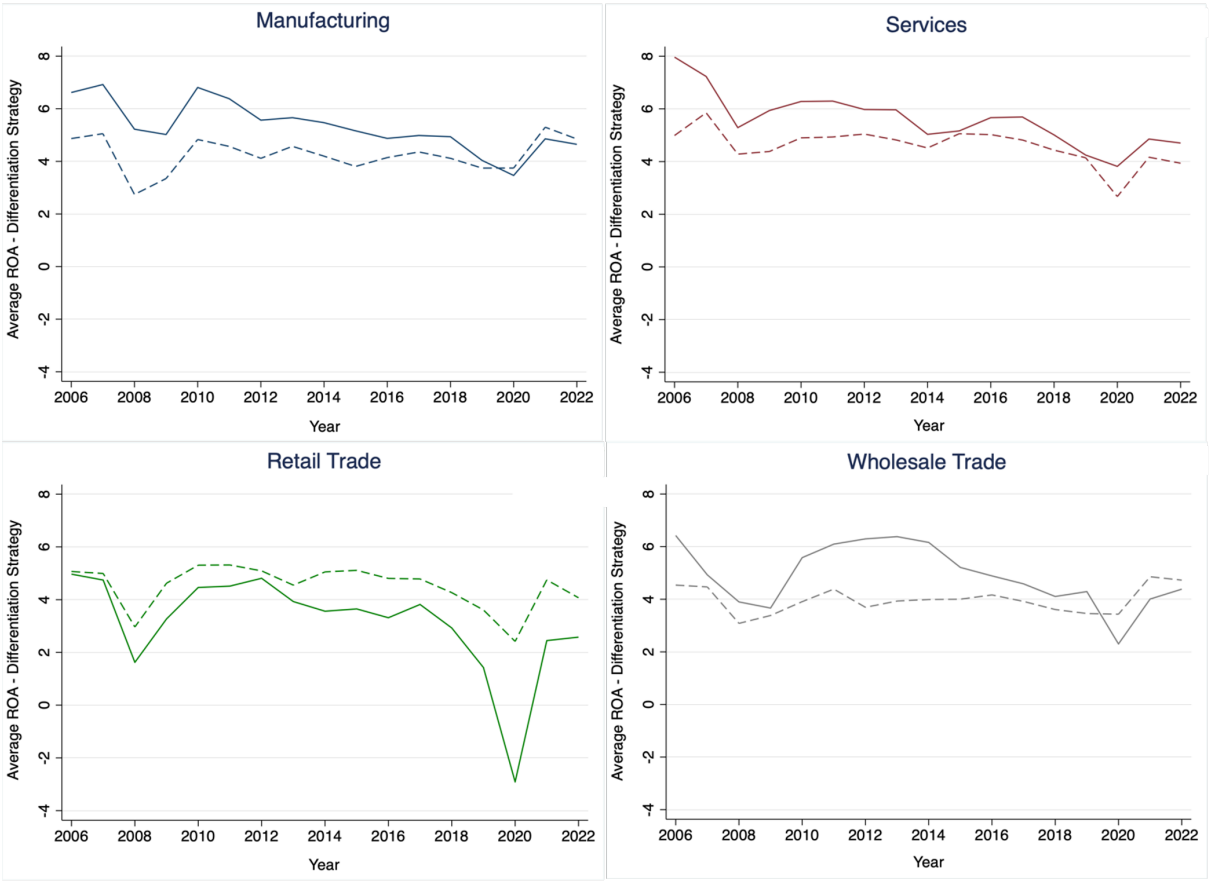
The cost leadership indicators in Figure 4 show different trends across the four sectors. The wholesale trade sector shows a fluctuating pattern for Sales/Capex (CL 1). On the other hand, the manufacturing and services sectors show similar trends, while the retail trade sector follows these trends but with slightly higher volatility. The average trend of the ratio of Employees/Assets (CL 2) is generally similar for all four sectors, with the services sector showing the highest values since 2013. Although there has been a downward trend since 2015, all four sectors began to show an increase beginning in 2022.

Average Performance Differences Over Time for Pursuing a Strategy

Differentiation Strategy

Figure 5

Average ROA for Firms Pursuing a Differentiation Strategy Versus not Pursuing Differentiation



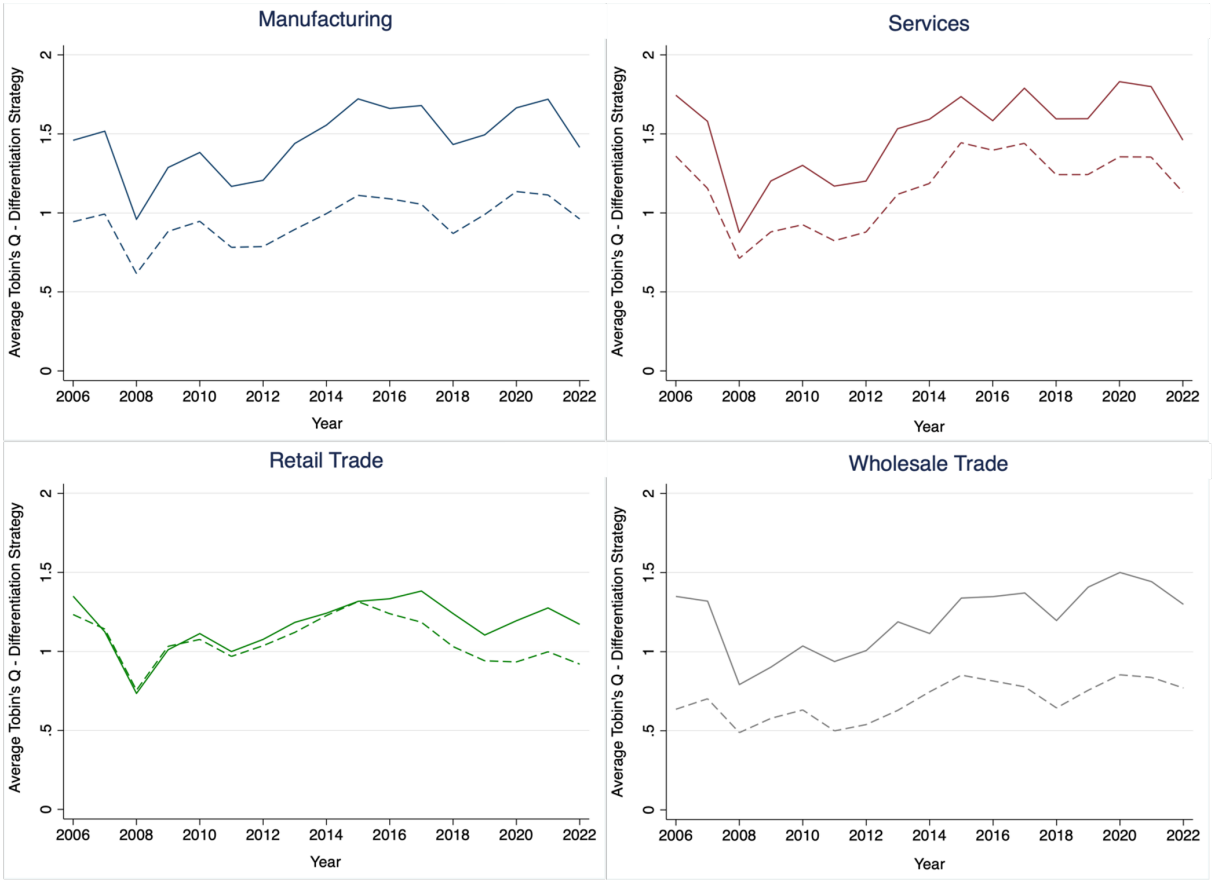
Note. The solid line indicates that the Differentiation Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Differentiation Dummy = 0.

Figure 5 shows sector-specific variations for the effect of a differentiation strategy on firm performance, measured as ROA. In the manufacturing sector, firms that followed the differentiation strategy initially had higher ROA values than those that did not pursue differentiation. However, since 2019, the opposite trend is seen with a slightly better performance for not pursuing a differentiation strategy. On the other hand, the services sector had a higher average ROA for firms that adopted the differentiation strategy throughout the analysis period. The retail trade sector, however, shows an opposite pattern, with firms not pursuing differentiation consistently outperforming those that did. In wholesale trade,

differentiation showed a higher ROA until 2019, but since then, not pursuing differentiation resulted in better performance.

Figure 6

Average Tobin's Q for Firms Pursuing a Differentiation Strategy Versus not Pursuing Differentiation



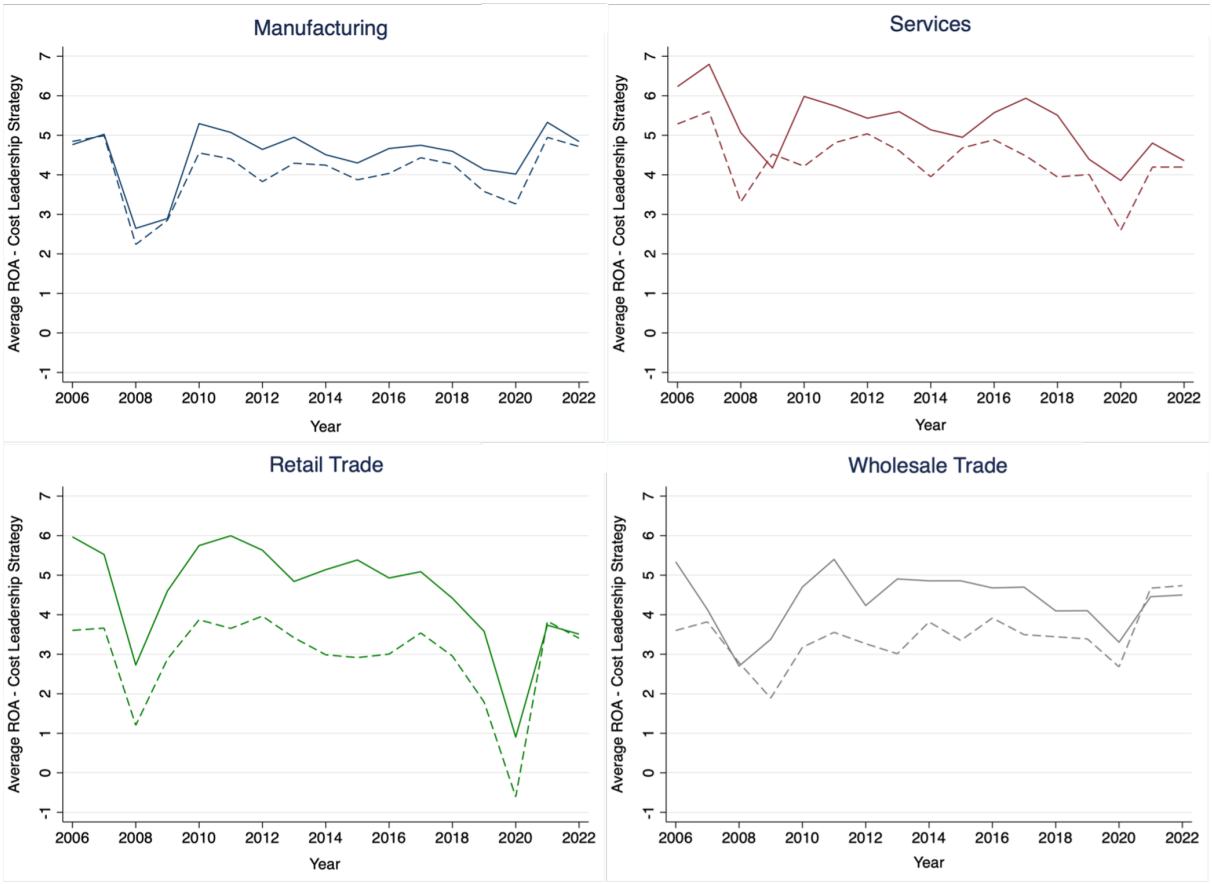
Note. The solid line indicates that the Differentiation Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Differentiation Dummy = 0.

Figure 6 shows the effectiveness of a differentiation strategy on a firm's Tobin's Q. The differentiation strategy generally resulted in superior performance across the manufacturing, services, and wholesale trade sectors, with these firms showing higher average Tobin's Q values than those that did not pursue differentiation. There was no significant performance difference in retail trade until 2015; however, after that, firms pursuing a differentiation strategy had higher performance values measured as Tobin's Q.

Cost Leadership Strategy

Figure 7

Average ROA for Firms Pursuing a Cost Leadership Strategy Versus not Pursuing Cost Leadership



Note. The solid line indicates that the Cost Leadership Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Cost Leadership Dummy = 0.

In Figure 7, the graphical results indicate sector-specific differences in the performance outcomes regarding a firm's ROA for a cost leadership strategy. In the manufacturing and services sectors, firms that followed a cost leadership strategy consistently had higher average ROA values than firms that did not. Nevertheless, the services sector shows larger fluctuations but, on average, higher performance values. The same trend is seen in the retail trade and wholesale trade sectors until shortly after 2020. However, there was no significant difference in the subsequent period in retail trade, while wholesale trade reported slightly better ROA for firms that did not pursue a cost leadership strategy.

Figure 8

Average Tobin's Q for Firms Pursuing a Cost Leadership Strategy Versus not Pursuing Cost Leadership

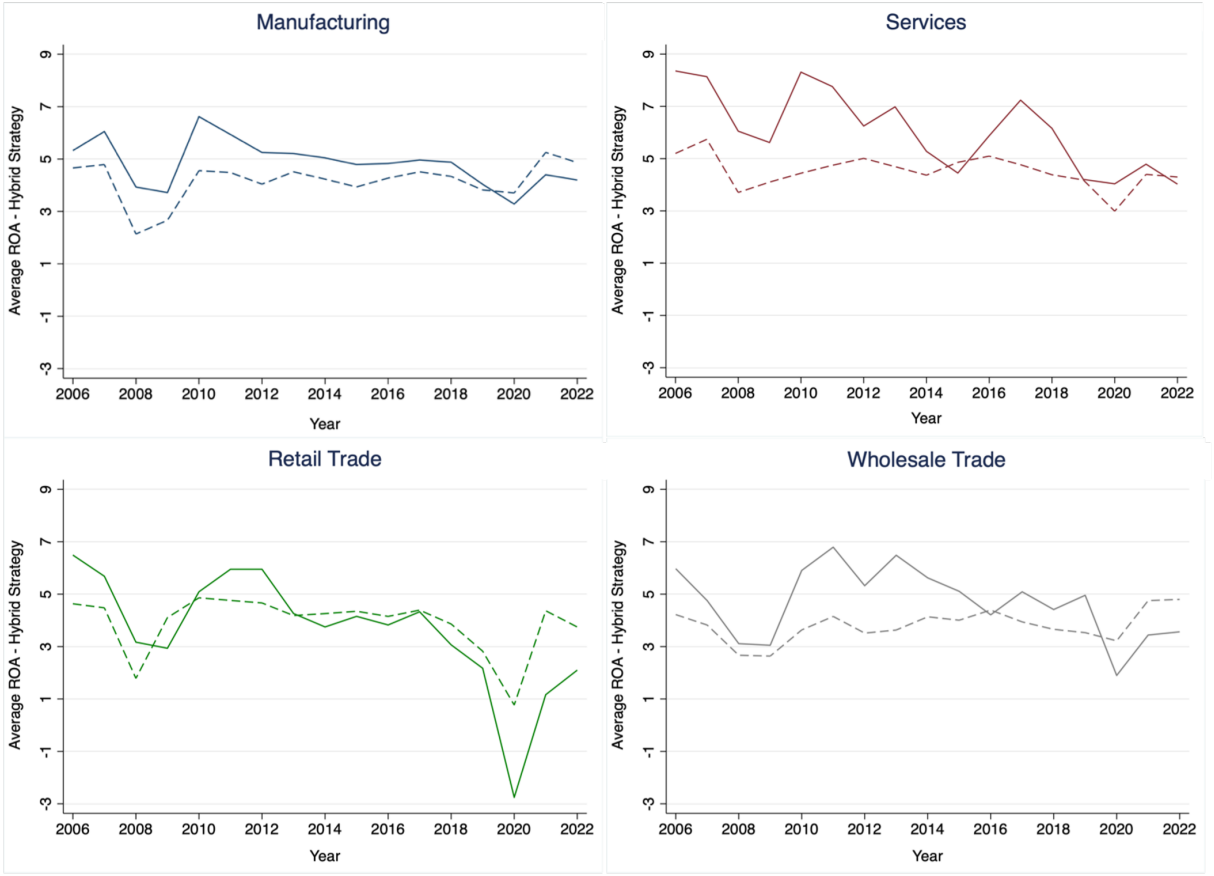
Note. The solid line indicates that the Cost Leadership Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Cost Leadership Dummy = 0.

As shown in Figure 8, the performance patterns are slightly different when analyzing Tobin's Q compared to the ROA trends. In the manufacturing and services sectors, firms that followed a cost leadership strategy performed better or similarly until 2017, after which not pursuing cost leadership resulted in better performance. The Tobin's Q of retail trade firms that implemented a cost leadership strategy was higher than those that did not until 2020; however, the performance difference is relatively small. Additionally, while wholesale trade firms had higher Tobin's Q values when implementing cost leadership strategy until 2015, this advantage was impeded after 2015; even so, the opposite effect is visible from 2019 onward.

Hybrid Strategy

Figure 9

Average ROA for Firms Pursuing a Hybrid Strategy Versus not Pursuing a Hybrid Strategy

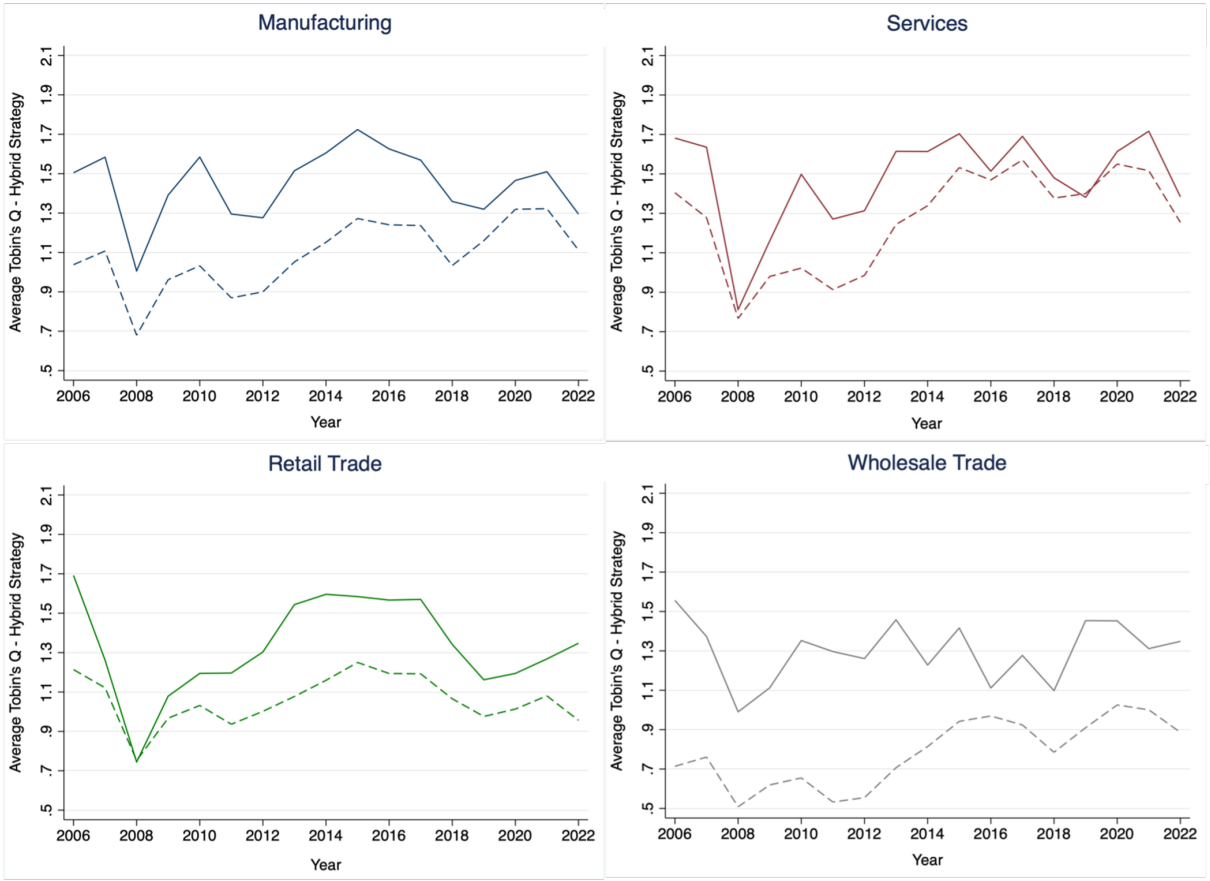


Note. The solid line indicates that the Hybrid Strategy Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Hybrid Strategy Dummy = 0.

Figure 9 shows the performance outcomes measured by ROA of pursuing a hybrid strategy across sectors. A hybrid strategy in the manufacturing and wholesale trade sectors resulted in higher ROA values until 2019, after which the opposite effect continued. The services sector shows generally higher ROA for firms with hybrid strategies, although the performance difference was less significant after 2021. Firms in the retail trade sector that did not pursue a hybrid strategy consistently outperformed those that did, except for brief periods.

Figure 10

Average Tobin's Q for Firms Pursuing a Hybrid Strategy Versus not Pursuing a Hybrid Strategy



Note. The solid line indicates that the Hybrid Strategy Dummy = 1 (indicating that the firm is pursuing this strategy). The dashed line indicates that the Hybrid Strategy Dummy = 0.

As shown in Figure 10, hybrid strategies consistently resulted in better performance, measured by Tobin's Q, compared to no hybrid strategy across all four sectors. However, the services sector showed more variations and periods where the performance difference was minimal. Nevertheless, on average, Tobin's Q values of the four sectors fluctuate around the same level.

5. Discussion & Conclusion

5.1 Discussion

Results

This research analyzed the strategy-performance relationship for pure (differentiation and cost leadership), hybrid, and stuck-in-the-middle business strategies while including firm- and context-specific factors such as size and sector. The results indicate that differentiation and cost leadership strategies can improve firm performance, as measured by accounting and market value metrics. Contrasting results were obtained for firms that follow a hybrid strategy (pursuing differentiation and cost leadership simultaneously), with a differentiation strategy outperforming a hybrid strategy when measured by Tobin's Q and a cost leadership strategy resulting in better performance compared to a hybrid strategy when measured by ROA. In addition, varying results were found for firms stuck in the middle. The findings show a negative moderating effect of firm size on differentiation and a positive moderating effect of firm size on cost leadership. Furthermore, the graphical analysis showed differences in the effectiveness of differentiation, cost leadership, and hybrid strategies across sectors and over time.

Interpretations

The results support the hypotheses derived from the generic strategies literature that differentiation and cost leadership strategies enhance firm performance. On the other hand, the findings contradict prior research, such as those of Spanos et al. (2004), who found significant performance benefits of hybrid strategies over pure strategies. This deviation might be explained due to the imbalance in most of the dummy variables, where only a few observations are equal to 1 proportionally. In line with the hypothesized moderation effects of firm size, the results indicate that smaller firms benefit more from a differentiation strategy than larger firms. In comparison, larger firms may better leverage a cost leadership strategy than smaller firms. However, the individual effect of cost leadership becomes negative when firm size moderation is included in the regression model, contrary to the positive relationship with firm performance in the direct effects model. This suggests that the effectiveness of a cost leadership strategy may be context-dependent, with firm size playing a crucial role in moderating this relationship.

Although some sector graphs show unusual fluctuating patterns, which data inconsistencies may partially explain, the graphical analyses show that strategy and performance measures differ across sectors. Moreover, it indicates that the effectiveness of differentiation strategies varies across sectors, with the most significant differences observed when performance is measured by ROA. In contrast, similar patterns are observed across all sectors except retail trade for Tobin's Q as performance. For cost leadership, the benefits are more consistent but significantly different across sectors and performance indicators. Moreover, the graphs show that hybrid strategies can effectively improve firm performance, as reflected in Tobin's Q, although the impact on ROA may be more sector-specific.

Implications

These results confirm the findings of prior research on positive performance outcomes for generic strategies using a 22-year dataset with recent financial data across all countries and sectors. When using ROA to measure firm performance, the results show that a pure cost leadership strategy is favored over a hybrid strategy and, similarly, for a differentiation strategy with Tobin's Q as a performance measure. These results align with Thornhill and White (2007), who found that pure strategies consistently performed as well as and often outperformed hybrid strategies. However, these results contradict most prior research, which found that hybrid strategies often lead to higher performance than single strategies, suggesting the need to re-evaluate the conceptualization and implementation of hybrid strategies.

The analysis with different performance measures provides insights into the varying impacts of business strategies. Differentiation results in better performance than being stuck in the middle only when Tobin's Q measures firm performance. In contrast, the opposite effect is seen for firm performance measured by ROA. This is in line with the notion of Balsam et al. (2011) that differentiators prioritize value creation through, among other things, marketing initiatives, which are less reflected in accounting measures such as ROA.

While previous studies have not considered the individual moderating effect of firm size in the relationship between business strategies and firm performance, these findings underline the importance of contextual factors such as firm size and sector characteristics in determining strategy effectiveness. This highlights the need for a refined approach to strategy formulation, where external factors should be considered in the strategy frameworks. The results contribute

to a clearer understanding of how business strategies evolve and perform over time and across sectors, emphasizing the need for businesses to remain adaptable in their strategic approaches to changing environments. These insights should encourage firms to periodically review their strategic positions and adapt the business strategy to its size and the current market conditions.

5.2 Limitations and Future Research

Although this study uses an extensive dataset of firms from different countries and industries, relying on a single database, such as Orbis, may introduce biases or limitations in data quality or coverage (Kalemli-Özcan et al., 2024). The accuracy and completeness of the data can vary across countries and firms, which can affect the reliability of analyses. Furthermore, differences in accounting standards and reporting practices across countries may pose challenges in comparability and consistency in data analysis. Specific sectors or types of firms may be under-represented or inaccurately categorized in the database, impacting the generalizability of the findings. Additionally, the variation in how business strategies are defined and measured may influence the validity and comparability of results with other studies.

This research uses only financial measures for performance; however, to effectively analyze strategy-performance effects to improve organizational performance aligned with stakeholder needs, comprehensive performance measurement systems should include both financial and non-financial metrics (Suprihono et al., 2021; Venkatraman & Ramanujam, 1986; Yamin et al., 1999). Future studies could improve the analysis by including non-financial measures to provide a broader range of firm performance dimensions.

Furthermore, the business strategies, differentiation and cost leadership, are defined by only two measurements in this study. Nevertheless, a firm with low Sales/COGS (Diff 1) and SGA/Sales (Diff 2) ratios could still be pursuing a differentiation strategy when it focuses on product innovations through R&D spending (Leitner & Güldenberg, 2010). To a certain extent, this limitation is addressed by introducing the differentiation and cost leadership dummy variables, which are set to 1 if either or both measures exceed the average values of firms within the same sector. Future studies should consider multiple dimensions for each business strategy and examine the values and individual impacts of these metrics to add to the existing literature on strategy-performance relationships.

Additionally, future research is needed to establish different hybrid strategy combinations, as the effectiveness of a combined strategy depends on the simultaneous emphasis on multiple generic dimensions, such that firms with complex and multidimensional strategic profiles are more challenging to imitate and potentially more profitable (Pertusa-Ortega et al., 2009). For example, Lee et al. (2021) show that the advantage of hybrid strategies over pure strategies can vary based on the specific combination of strategy measures used.

5.3 Conclusion

This research explored the effects of pure (differentiation and cost leadership) and hybrid business strategies on firm performance, considering the moderating effect of firm size and sectoral differences. Based on a graphical and empirical analysis of a large panel dataset, it can be concluded that differentiation and cost leadership strategies generally enhance firm performance. However, the effectiveness of these strategies is moderated by firm size and varies across sectors and over time. The results indicate that smaller firms benefit more from a differentiation strategy, while larger firms may better leverage a cost leadership strategy. While some limitations restrict the validity of the results, this approach provides new insights into the strategy-performance relationship by incorporating firm size and sector characteristics. This research clearly illustrates the importance of context-specific factors in strategy effectiveness but also raises questions about the broader applicability of hybrid strategies.

Based on these conclusions, business managers should consider the context in which their strategies are implemented, particularly firm size and sector characteristics, to optimize performance outcomes. To better understand the implications of these results, future studies could address the inclusion of non-financial performance measures and multiple dimensions for each business strategy. Further research is needed to determine the causes of differences in strategy effectiveness and the relationship between strategic choices and performance across different contexts. This research helps solve the problem of understanding how different competitive strategies impact firm performance, considering firm size and sector differences. By addressing a gap in the literature on the moderating effects of firm size and sector characteristics, this study contributes to a deeper understanding of strategic management. The findings confirm some existing theories while challenging others, particularly regarding the effectiveness of hybrid strategies.

In conclusion, this research contributes to the strategic management literature by examining the effects of pure (differentiation and cost leadership) and hybrid strategies on firm performance across diverse firm sizes and sectors, highlighting the importance of aligning strategies with firm-specific characteristics. Additionally, this study shows that the effectiveness of a strategy also varies between sectors and over time. Understanding these different effects of pure and hybrid strategies allows strategists and business managers to make more informed strategic decisions. Finally, this study guides strategic decision-makers to optimize performance by adjusting their strategies based on firm-specific characteristics and market conditions.

6. References

Acquaah, M., & Yasai-Ardekani, M. (2008). Does the implementation of a combination competitive strategy yield incremental performance benefits? A new perspective from a transition economy in Sub-Saharan Africa. *Journal of Business Research*, *61*(4), 346–354. https://doi.org/10.1016/j.jbusres.2007.06.021

Aguinis, H., Edwards, J. R., & Bradley, K. J. (2016). Improving our understanding of moderation and mediation in strategic management research. *Organizational Research Methods*, *20*(4), 665–685. https://doi.org/10.1177/1094428115627498

Agustia, D., Muhammad, N. P. A., & Permatasari, Y. (2020). Earnings management, business strategy, and bankruptcy risk: evidence from Indonesia. *Heliyon*, *6*(2), e03317. https://doi.org/10.1016/j.heliyon.2020.e03317

Anwar, J., & Hasnu, S. (2016). Business strategy and firm performance: a multi-industry analysis. *Journal of Strategy and Management*, *9*(3), 361–382. https://doi.org/10.1108/jsma-09-2015-0071

Balsam, S., Fernando, G. D., & Tripathy, A. (2011). The impact of firm strategy on performance measures used in executive compensation. *Journal of Business Research*, *64*(2), 187–193. https://doi.org/10.1016/j.jbusres.2010.01.006

Banker, R. D., Mashruwala, R., & Tripathy, A. (2014). Does a differentiation strategy lead to more sustainable financial performance than a cost leadership strategy? *Management Decision*, *52*(5), 872–896. https://doi.org/10.1108/md-05-2013-0282

Beal, R. M. (2000). Competing effectively: Environmental scanning, competitive strategy, and organizational performance in small manufacturing firms. *Journal of Small Business Management*, *38*(1), 27–47. https://www.proquest.com/openview/5b090c8496beb1a733234cdf64bdb950/1?pq-origsite=gscholar&cbl=49244

Beard, D. W., & Dess, G. G. (1981). Corporate-Level Strategy, Business-Level Strategy, and Firm performance. *Academy of Management Journal*, *24*(4), 663–688. https://doi.org/10.5465/256169

Berman, S. L., Wicks, A. C., Kotha, S., & Jones, T. M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal*, *42*(5), 488–506. https://doi.org/10.5465/256972

Bhandari, K. R. (2017). *Internationalization and organizational ambidexterity for sustainable performance: moderating effects of firm-specific advantages and competitive strategies*. https://osuva.uwasa.fi/bitstream/10024/7235/1/isbn_978-952-476-753-8.pdf

Colback, L. (2024, February 1). Personalisation and the battle for customers' attention. *Financial Times*. https://www.ft.com/content/eae952f8-5290-449b-9447-b17b395e3643

David, J. S., Hwang, Y., Pei, B. K. W., & Reneau, J. H. (2002). The performance effects of congruence between product competitive strategies and purchasing management design. *Management Science*, *48*(7), 866–885. https://doi.org/10.1287/mnsc.48.7.866.2819

Douglas, S. P., & Rhee, D. K. (1989). Examining generic competitive strategy types in U.S. and European markets. *Journal of International Business Studies*, *20*(3), 437–463. https://doi.org/10.1057/palgrave.jibs.8490855

Farida, I., & Setiawan, D. (2022). Business Strategies and Competitive Advantage: The role of Performance and innovation. *Journal of Open Innovation*, *8*(3), 163. https://doi.org/10.3390/joitmc8030163

Franzoni, F. A., Giannetti, M., & Tubaldi, R. (2023). Supply chain shortages, large firms' market power, and inflation. *Social Science Research Network*. https://doi.org/10.2139/ssrn.4586302

Fuertes, G., Alfaro, M., Vargas, M., Gutierrez, S., Ternero, R., & Sabattin, J. (2020). Conceptual Framework for the Strategic Management: A Literature Review—Descriptive. *Journal of Engineering*, *2020*, 1–21. https://doi.org/10.1155/2020/6253013

Greckhamer, T., & Gur, F. A. (2021). Disentangling combinations and contingencies of generic strategies: A set-theoretic configurational approach. *Long Range Planning*, *54*(2), 101951. https://doi.org/10.1016/j.lrp.2019.101951

Hambrick, D. C. (1983). High profit strategies in mature capital goods Industries: A Contingency approach. *Academy of Management Journal*, *26*(4), 687–707. https://doi.org/10.5465/255916

How to develop geopolitical resilience. (2023, November 10). McKinsey & Company. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-to-develop-geopolitical-resilience

Huggins, R., & Johnston, A. (2010). Knowledge flow and inter-firm networks: The influence of network resources, spatial proximity and firm size. *Entrepreneurship and Regional Development/Entrepreneurship & Regional Development*, *22*(5), 457–484. https://doi.org/10.1080/08985620903171350

In digital and AI transformations, start with the problem, not the technology. (2023, November 22). McKinsey & Company. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/in-digital-and-ai-transformations-start-with-the-problem-not-the-technology

Islami, X., Mustafa, N., & Latkovikj, M. T. (2020). Linking Porter's generic strategies to firm performance. *Future Business Journal*, *6*(1). https://doi.org/10.1186/s43093-020-0009-1

Juniarti, J., Simanjaya, C., Chandra, M., & Soesetyo, Z. E. (2022). Differentiation Strategy and cost leadership Strategy: their contribution to achieving sustainable financial performance. In *Springer proceedings in business and economics* (pp. 197–219). https://doi.org/10.1007/978-3-031-07265-9_16

Kalemlİ-Özcan, Ş., Sørensen, B. E., Villegas-Sanchez, C., Volosovych, V., & Yeşiltaş, S. (2024). How to Construct Nationally Representative Firm-Level Data from the Orbis Global Database: New Facts on SMEs and Aggregate Implications for Industry Concentration. *American Economic Journal. Macroeconomics/American Economic Journal, Macroeconomics*, *16*(2), 353–374. https://doi.org/10.1257/mac.20220036

Kim, E., Nam, D., & Stimpert, J. L. (2004). The applicability of Porter's generic strategies in the digital age: assumptions, conjectures, and suggestions. *Journal of Management*, *30*(5), 569–589. https://doi.org/10.1016/j.jm.2003.12.001

Kumar, K., Boesso, G., Favotto, F., & Menini, A. (2012). Strategic orientation, innovation patterns and performances of SMEs and large companies. *Journal of Small Business and Enterprise Development*, *19*(1), 132–145. https://doi.org/10.1108/14626001211196442

Laforet, S. (2008). Size, strategic, and market orientation affects on innovation. *Journal of Business Research*, *61*(7), 753–764. https://doi.org/10.1016/j.jbusres.2007.08.002

Lapersonne, A., Sanghavi, N., & De Mattos, C. (2015). Hybrid Strategy, Ambidexterity and Environment: toward an Integrated Typology. *Universal Journal of Management*, *3*(12), 497–508. https://doi.org/10.13189/ujm.2015.031204

Lee, C., Hoehn-Weiss, M. N., & Karim, S. (2021). Competing both ways: How combining Porter's low-cost and focus strategies hurts firm performance. *Strategic Management Journal*, *42*(12), 2218–2244. https://doi.org/10.1002/smj.3279

Leitner, K., & Güldenberg, S. (2010). Generic strategies and firm performance in SMEs: a longitudinal study of Austrian SMEs. *Small Business Economics*, *35*(2), 169–189. https://doi.org/10.1007/s11187-009-9239-x

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *the Academy of Management Review*, *21*(1), 135–172. https://doi.org/10.5465/amr.1996.9602161568

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/10.1002/smj.2789

McAlister, L., Srinivasan, R., Jindal, N., & Cannella, A. A. (2016). Advertising Effectiveness: The moderating effect of firm strategy. *Journal of Marketing Research*, *53*(2), 207–224. https://doi.org/10.1509/jmr.13.0285

McGahan, A. M., & Porter, M. E. (1997). How Much does Industry Matter, Really? *Strategic Management Journal*, *18*(S1), 15–30. https://doi.org/10.1002/(sici)1097-0266(199707)18:1

Merchant, H. (2014). Configurations of governance structure, generic strategy, and firm size: opening the black box of value creation in international joint ventures. *Global Strategy Journal*, *4*(4), 292–309. https://doi.org/10.1002/gsj.1084

Micheli, P., & Mura, M. (2017). Executing strategy through comprehensive performance measurement systems. *International Journal of Operations & Production Management*, *37*(4), 423–443. https://doi.org/10.1108/ijopm-08-2015-0472

Murray, A. I. (1988). A contingency view of Porter's "Generic Strategies". *the Academy of Management Review*, *13*(3), 390–400. https://doi.org/10.5465/amr.1988.4306951

Nandakumar, M., Ghobadian, A., & O'Regan, N. (2011). Generic strategies and performance – evidence from manufacturing firms. *International Journal of Productivity and Performance Management*, *60*(3), 222–251. https://doi.org/10.1108/17410401111111970

O'Regan, N., & Ghobadian, A. (2006). Perceptions of generic strategies of small and medium sized engineering and electronics manufacturers in the UK. *Journal of Manufacturing Technology Management*, *17*(5), 603–620. https://doi.org/10.1108/17410380610668540

Palmié, M., Rüegger, S., & Parida, V. (2023). Microfoundations in the strategic management of technology and innovation: Definitions, systematic literature review, integrative framework, and research agenda. *Journal of Business Research*, *154*, 113351. https://doi.org/10.1016/j.jbusres.2022.113351

Parnell, J. A. (2006). Generic strategies after two decades: a reconceptualization of competitive strategy. *Management Decision*, *44*(8), 1139–1154. https://doi.org/10.1108/00251740610690667

Pertusa-Ortega, E. M., Molina-Azorín, J. F., & Claver-Cortés, E. (2009). Competitive Strategies and Firm Performance: a Comparative Analysis of Pure, Hybrid and 'Stuck-in-the-middle' Strategies in Spanish Firms. *British Journal of Management*, *20*(4), 508–523. https://doi.org/10.1111/j.1467-8551.2008.00597.x

Petersen, M. A. (2009). Estimating standard errors in Finance Panel data sets: Comparing approaches. *Review of Financial Studies*, *22*(1), 435–480. https://doi.org/10.1093/rfs/hhn053

Porter, M. E. (1980). Industry structure and competitive strategy: keys to profitability. *Financial Analysts Journal*, *36*(4), 30–41. https://doi.org/10.2469/faj.v36.n4.30

Reeves, M. (2022, June 8). *6 factors driving changes to today's corporate strategies*. Harvard Business Review. https://hbr.org/2022/06/6-factors-driving-changes-to-todays-corporate-strategies?ab=hero-subleft-2

Salavou, H. E. (2015). Competitive strategies and their shift to the future. *European Business Review*, *27*(1), 80–99. https://doi.org/10.1108/ebr-04-2013-0073

Selling, T. I., & Stickney, C. P. (1989). The effects of business environment and strategy on a firm's rate of return on assets. *Financial Analysts Journal*, *45*(1), 43–52. https://doi.org/10.2469/faj.v45.n1.43

Sen, S., Savitskie, K., Mahto, R. V., Kumar, S., & Khanin, D. (2022). Strategic flexibility in small firms. *Journal of Strategic Marketing*, *31*(5), 1053–1070. https://doi.org/10.1080/0965254x.2022.2036223

Six strategies for growth outperformance. (2024, May 15). McKinsey & Company. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/six-strategies-for-growth-outperformance

Spanos, Y. E., Zaralis, G., & Lioukas, S. (2004). Strategy and industry effects on profitability: evidence from Greece. *Strategic Management Journal*, *25*(2), 139–165. https://doi.org/10.1002/smj.369

Spithoven, A., Vanhaverbeke, W., & Roijakkers, N. (2012). Open innovation practices in SMEs and large enterprises. *Small Business Economics*, *41*(3), 537–562. https://doi.org/10.1007/s11187-012-9453-9

Steinbrunner, P. (2024). Is larger really better? Productivity and firm size in European electricity generation sectors. *Journal of Cleaner Production*, *446*, 141382. https://doi.org/10.1016/j.jclepro.2024.141382

Stimpert, J. L., & Duhaime, I. M. (1997). Seeing the big picture: the influence of industry, diversification, and business strategy on performance. *Academy of Management Journal*, *40*(3), 560–583. https://doi.org/10.5465/257053

Suprihono, S., Prasetya, A., & Abdillah, Y. (2021). Improving firm performance through Competitive Advantage, differentiation strategy and cost leadership: A Literature Review. *International Journal of Artificial Intelligence Research*, *6*(1). https://doi.org/10.29099/ijair.v6i1.331

Thornhill, S., & White, R. E. (2007). Strategic purity: A multi-industry evaluation of pure vs. hybrid business strategies. *Strategic Management Journal*, *28*(5), 553–561. https://doi.org/10.1002/smj.606

Venkatraman, N., & Ramanujam, V. (1986). Measurement of Business performance in Strategy Research: A comparison of Approaches. *the Academy of Management Review*, *11*(4), 801–814. https://doi.org/10.5465/amr.1986.4283976

What is business strategy & why is it important? (2022, October 20). Business Insights Blog. https://online.hbs.edu/blog/post/what-is-business-strategy

Why strategists should embrace imperfection. (2024, April 8). McKinsey & Company. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/why-strategists-should-embrace-imperfection

Wu, P., Gao, L., & Gu, T. (2015). Business strategy, market competition and earnings management. *Chinese Management Studies*, *9*(3), 401–424. https://doi.org/10.1108/cms-12-2014-0225

Yamin, S., Gunasekaran, A., & Mavondo, F. T. (1999). Relationship between generic strategies, competitive advantage and organizational performance: an empirical analysis. *Technovation*, *19*(8), 507–518. https://doi.org/10.1016/s0166-4972(99)00024-3

Zajac, E. J., & Shortell, S. M. (1989). Changing generic strategies: Likelihood, direction, and performance implications. *Strategic Management Journal*, *10*(5), 413–430. https://doi.org/10.1002/smj.4250100503

Zhou, K. Z., & Wu, F. (2009). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, *31*(5), 547–561. https://doi.org/10.1002/smj.830

Zollo, M., Minoja, M., & Coda, V. (2017). Toward an integrated theory of strategy. *Strategic Management Journal*, *39*(6), 1753–1778. https://doi.org/10.1002/smj.2712

Appendix A

Robustness Tests

This appendix presents two types of robustness tests conducted to validate the findings of the fixed effects (FE) regression analysis performed in this thesis. The robustness tests assess the stability and reliability of the thesis findings by examining the sensitivity of results to different methodological approaches and data aggregation levels.

Random Effect Regression Analysis

This section includes the results of regression analyses using the random effects (RE) method. Table 1 presents the findings for firm performance measured by return on assets (ROA), while Table 2 presents the results for Tobin's Q as a measure of firm performance. The RE method allows for consideration of time-invariant unobserved heterogeneity across firms.

Table 1

Random Effects Regression Results for Performance Measured as ROA

	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA
Strategy Variables								
Differentiation	-0.015	0.035						4.719***
	(0.207)	(0.210)						(0.497)
Cost Leadership	1.282***	1.260***						-5.051***
	(0.425)	(0.430)						(1.680)
Strategy Dummies								
Hybrid Strategy [a]		-0.627***						
		(0.126)						
Stuck-in-the-middle [b]		-0.056						
		(0.069)						
Hybrid vs. Differentiation [c]			0.131					
			(0.137)					
Hybrid vs. Cost Leadership [d]				-3.168***				
				(0.187)				
Differentiation vs. Stuck [e]					-1.847***			
					(0.132)			
Cost Leadership vs. Stuck [f]						0.373***		
						(0.070)		
Hybrid vs. Stuck [g]							-2.149***	
							(0.191)	
Interaction Effects								
Differentiation * Firm Size								-0.794***
								(0.064)
Cost Leadership * Firm Size								0.990***
								(0.237)
Control Variables								
Firm Size	0.341***	0.332***	0.165***	0.405***	0.201***	0.434***	0.320***	0.416***
	(0.040)	(0.040)	(0.063)	(0.051)	(0.046)	(0.046)	(0.052)	(0.039)
Firm Age	-0.012***	-0.013***	-0.014***	-0.011***	-0.010***	-0.013***	-0.009***	-0.012***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	-3.165***	-3.163***	-2.289***	-3.055***	-2.669***	-3.328***	-2.888***	-3.114***
	(0.141)	(0.140)	(0.198)	(0.178)	(0.161)	(0.153)	(0.195)	(0.140)
Gross Margin	0.130***	0.131***	0.127***	0.173***	0.134***	0.162***	0.161***	0.135***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Sector [1]								
Agriculture, Forestry, and Fishing	-0.219	-0.226	-0.293	0.725*	-0.273	0.480	0.599	-0.250
	(0.389)	(0.388)	(0.551)	(0.430)	(0.415)	(0.410)	(0.505)	(0.390)
Construction	0.672***	0.669***	-0.833**	0.878***	0.433*	1.198***	0.972***	0.692***
	(0.221)	(0.219)	(0.397)	(0.240)	(0.244)	(0.236)	(0.279)	(0.218)
Finance, Insurance, and Real Estate	-1.498***	-1.547***	-2.449***	-1.753***	-1.759***	-1.608***	-1.644***	-1.798***
	(0.250)	(0.251)	(0.341)	(0.328)	(0.256)	(0.284)	(0.295)	(0.261)
Mining	0.102	0.059	-1.406**	0.630	-0.717*	0.350	-0.598	0.064
	(0.417)	(0.415)	(0.557)	(0.559)	(0.386)	(0.469)	(0.468)	(0.423)
Retail Trade	-1.065***	-1.073***	-2.427***	-1.154***	-1.432***	-0.981***	-1.149***	-1.213***
	(0.256)	(0.255)	(0.367)	(0.287)	(0.269)	(0.279)	(0.305)	(0.252)
Services	-1.647***	-1.702***	-2.542***	-1.518***	-2.151***	-1.664***	-2.253***	-1.486***
	(0.197)	(0.198)	(0.321)	(0.236)	(0.226)	(0.203)	(0.251)	(0.193)
Transportation, Communication,	-1.698***	-1.737***	-2.168***	-1.582***	-1.671***	-1.471***	-1.488***	-1.387***
Electric, Gas, and Sanitary Services	(0.188)	(0.188)	(0.287)	(0.233)	(0.197)	(0.197)	(0.210)	(0.186)
Wholesale Trade	0.920***	0.928***	0.109	1.440***	0.673***	1.441***	1.266***	0.950***
	(0.234)	(0.232)	(0.413)	(0.264)	(0.260)	(0.249)	(0.290)	(0.234)
Constant	-4.881***	-4.711***	-4.373***	-5.215***	-3.436***	-6.638***	-5.368***	-5.772***
	(0.415)	(0.414)	(0.683)	(0.465)	(0.451)	(0.411)	(0.488)	(0.392)
Observations	156,942	156,942	63,399	79,129	106,429	122,159	69,601	156,942
Number of ID	11,466	11,466	6,209	9,315	9,795	10,631	8,896	11,466
Adjusted R-squared	0.076	0.078	0.077	0.110	0.089	0.097	0.111	0.083

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

[1] Reference category = Manufacturing sector

Table 2

Random Effects Regression Results for Performance Measured as Tobin's Q

	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q
Strategy Variables								
Differentiation	0.287***	0.289***						0.414***
	(0.015)	(0.015)						(0.041)
Cost Leadership	0.100**	0.089*						-0.377*
	(0.049)	(0.051)						(0.205)
Strategy Dummies								
Hybrid Strategy [a]		-0.010						
		(0.011)						
Stuck-in-the-middle [b]		0.008						
		(0.007)						
Hybrid vs. Differentiation [c]			-0.064***					
			(0.013)					
Hybrid vs. Cost Leadership [d]				0.031*				
				(0.017)				
Differentiation vs. Stuck [e]					0.075***			
					(0.012)			
Cost Leadership vs. Stuck [f]						0.016**		
						(0.008)		
Hybrid vs. Stuck [g]							0.096***	
							(0.018)	
Interaction Effects								
Differentiation * Firm Size								-0.021***
								(0.006)
Cost Leadership * Firm Size								0.074**
								(0.030)
Control Variables								
Firm Size	-0.004	-0.004	-0.018**	-0.015**	-0.012**	-0.016**	-0.008	-0.002
	(0.005)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.005)
Firm Age	-0.002***	-0.002***	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	0.083***	0.083***	0.048***	0.091***	0.068***	0.110***	0.098***	0.084***
	(0.011)	(0.011)	(0.016)	(0.016)	(0.013)	(0.014)	(0.017)	(0.011)
Gross Margin	0.006***	0.006***	0.006***	0.009***	0.008***	0.009***	0.008***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sector [1]								
Agriculture, Forestry, and Fishing	0.066	0.067	0.168**	0.030	0.173***	0.032	0.089	0.057
	(0.066)	(0.066)	(0.073)	(0.079)	(0.056)	(0.069)	(0.072)	(0.066)
Construction	-0.600***	-0.600***	-0.552***	-0.616***	-0.627***	-0.623***	-0.643***	-0.597***
	(0.040)	(0.040)	(0.069)	(0.049)	(0.046)	(0.043)	(0.050)	(0.040)
Finance, Insurance, and Real Estate	-0.285***	-0.288***	-0.274***	-0.265***	-0.260***	-0.285***	-0.293***	-0.295***
	(0.031)	(0.031)	(0.046)	(0.043)	(0.035)	(0.036)	(0.040)	(0.031)
Mining	-0.080*	-0.081*	-0.118*	-0.002	-0.019	-0.018	0.006	-0.080*
	(0.044)	(0.044)	(0.066)	(0.056)	(0.050)	(0.048)	(0.057)	(0.044)
Retail Trade	-0.069**	-0.069**	-0.167***	0.021	-0.119***	-0.006	-0.078**	-0.075**
	(0.032)	(0.032)	(0.048)	(0.037)	(0.035)	(0.034)	(0.039)	(0.032)
Services	-0.039	-0.041*	0.070**	0.030	0.053**	0.019	0.026	-0.035
	(0.025)	(0.025)	(0.034)	(0.031)	(0.027)	(0.027)	(0.031)	(0.024)
Transportation, Communication, Electric, Gas, and Sanitary Services	-0.175***	-0.177***	-0.155***	-0.123***	-0.101***	-0.110***	-0.082***	-0.165***
	(0.025)	(0.025)	(0.036)	(0.034)	(0.025)	(0.027)	(0.029)	(0.024)
Wholesale Trade	-0.250***	-0.251***	-0.138**	-0.231***	-0.263***	-0.237***	-0.236***	-0.250***
	(0.036)	(0.036)	(0.055)	(0.041)	(0.040)	(0.038)	(0.043)	(0.035)
Constant	-0.157***	-0.155***	0.017	-0.228***	-0.213***	-0.199***	-0.255***	-0.188***
	(0.044)	(0.044)	(0.061)	(0.059)	(0.048)	(0.050)	(0.056)	(0.044)
Observations	135,515	135,515	54,006	65,866	92,693	104,553	60,560	135,515
Number of ID	10,299	10,299	5,487	8,171	8,870	9,460	7,983	10,299
Adjusted R-squared	0.141	0.141	0.077	0.106	0.140	0.114	0.139	0.143

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

[1] Reference category = Manufacturing sector

Regression Analysis Using Yearly Data

In addition to the primary analysis using 5-yearly averages, this section presents regression results using annual data points. Table 3 outlines the regression findings for ROA, whereas Table 4 presents the results for Tobin's Q as a performance measure. Using yearly data provides insights into the year-to-year variations in the relationship between competitive business strategies and firm performance.

Table 3

Fixed Effects Regression Results for Performance Measured as ROA

	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA
Strategy Variables								
Differentiation	-0.565**	1.221***						6.570***
	(0.256)	(0.250)						(0.635)
Cost Leadership	0.606	1.920***						-5.104**
	(0.459)	(0.578)						(2.166)
Strategy Dummies								
Hybrid Strategy [a]		-0.186						
		(0.142)						
Stuck-in-the-middle [b]		-0.108						
		(0.079)						
Hybrid vs. Differentiation [c]			-0.110					
			(0.157)					
Hybrid vs. Cost Leadership [d]				-1.186***				
				(0.225)				
Differentiation vs. Stuck [e]					-0.716***			
					(0.152)			
Cost Leadership vs. Stuck [f]						0.458***		
						(0.078)		
Hybrid vs. Stuck [g]							-0.360	
							(0.302)	
Interaction Effects								
Differentiation * Firm Size								-0.902***
								(0.082)
Cost Leadership * Firm Size								1.101***
								(0.311)
Control Variables								
Firm Size	-0.229***	0.033	-0.796***	0.111	-0.468***	0.156	-0.278*	0.155
	(0.077)	(0.097)	(0.172)	(0.147)	(0.128)	(0.112)	(0.168)	(0.095)
Firm Age	-0.142***	-0.062***	-0.072***	-0.076***	-0.058***	-0.067***	-0.055***	-0.057***
	(0.007)	(0.008)	(0.016)	(0.012)	(0.010)	(0.008)	(0.012)	(0.008)
Leverage	-2.520***	-3.704***	-2.561***	-3.768***	-3.100***	-3.934***	-3.563***	-3.685***
	(0.156)	(0.180)	(0.277)	(0.250)	(0.224)	(0.198)	(0.291)	(0.179)
Gross Margin	0.150***	0.162***	0.117***	0.211***	0.144***	0.214***	0.181***	0.164***
	(0.008)	(0.006)	(0.008)	(0.009)	(0.007)	(0.007)	(0.008)	(0.006)
Constant	4.762***	-2.593***	4.065***	-3.195***	1.152	-4.534***	-1.513	-3.995***
	(0.634)	(0.725)	(1.347)	(1.059)	(0.949)	(0.777)	(1.124)	(0.703)
Observations	184,337	156,942	63,399	79,129	106,429	122,159	69,601	156,942
Number of ID	11,459	11,466	6,209	9,315	9,795	10,631	8,896	11,466
Adjusted R-squared	0.051	0.067	0.032	0.076	0.048	0.090	0.067	0.073

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

Table 4

Fixed Effects Regression Results for Performance Measured as Tobin's Q

	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q
Strategy Variables								
Differentiation	0.113***	0.274***						0.379***
	(0.014)	(0.018)						(0.047)
Cost Leadership	0.147***	0.144**						-0.454**
	(0.053)	(0.057)						(0.226)
Strategy Dummies								
Hybrid Strategy [a]		-0.004						
		(0.011)						
Stuck-in-the-middle [b]		0.007						
		(0.008)						
Hybrid vs. Differentiation [c]			-0.057***					
			(0.013)					
Hybrid vs. Cost Leadership [d]				-0.003				
				(0.020)				
Differentiation vs. Stuck [e]					0.032**			
					(0.013)			
Cost Leadership vs. Stuck [f]						0.012		
						(0.008)		
Hybrid vs. Stuck [g]							0.067***	
							(0.024)	
Interaction Effects								
Differentiation * Firm Size								-0.018**
								(0.007)
Cost Leadership * Firm Size								0.096***
								(0.033)
Control Variables								
Firm Size	-0.038***	-0.040***	-0.051***	-0.073***	-0.046***	-0.058***	-0.056***	-0.038***
	(0.008)	(0.009)	(0.014)	(0.014)	(0.010)	(0.011)	(0.014)	(0.009)
Firm Age	-0.031***	0.002***	0.007***	0.005***	0.002**	0.001	0.001	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	0.121***	0.097***	0.055***	0.106***	0.080***	0.123***	0.110***	0.098***
	(0.013)	(0.013)	(0.018)	(0.019)	(0.015)	(0.016)	(0.020)	(0.013)
Gross Margin	0.006***	0.005***	0.005***	0.007***	0.006***	0.007***	0.006***	0.005***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Constant	1.413***	-0.142**	-0.099	-0.069	-0.130	-0.066	-0.095	-0.181***
	(0.062)	(0.066)	(0.109)	(0.109)	(0.080)	(0.080)	(0.102)	(0.066)
Observations	152,531	135,515	54,006	65,866	92,693	104,553	60,560	135,515
Number of ID	10,299	10,299	5,487	8,171	8,870	9,460	7,983	10,299
Adjusted R-squared	0.072	0.029	0.012	0.014	0.012	0.015	0.015	0.030

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

Appendix B

Sector Analysis

Appendix B presents a detailed sectoral analysis to examine the effects of competitive business strategies on firm performance across different sectors. It consists of an empirical and a graphical part, contributing to a deeper understanding of how variations in sectoral dynamics influence the outcomes of strategic choices.

Fixed Effect Regression Analysis for Data Subsets of the 4 Sectors

This section presents the Fixed Effects (FE) regression analysis results conducted separately for four key sectors: manufacturing, services, retail trade, and wholesale trade. These analyses aim to explore whether the coefficients of strategy effects differ across sectors. The findings of these eight regression models are summarized in Table 1 (ROA performance) and Table 2 (Tobin's Q performance).

Table 1

Fixed Effects Regression Results for Performance Measured as ROA

	Manufacturing Sector								Services Sector							
	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA
Strategy Variables																
Differentiation	2.036***	2.054***						10.991***	1.171***	1.132***						6.047***
	(0.556)	(0.564)						(1.451)	(0.411)	(0.416)						(1.071)
Cost Leadership	2.686***	2.673***						-5.507	0.610	0.851						-5.507
	(0.962)	(1.002)						(4.030)	(1.686)	(1.703)						(6.344)
Strategy Dummies																
Hybrid Strategy [a]		-0.311*								-0.026						
		(0.186)								(0.533)						
Stuck-in-the-middle [b]		-0.108								-0.334						
		(0.103)								(0.315)						
Hybrid vs. Differentiation [c]			-0.129								0.354					
			(0.206)								(0.560)					
Hybrid vs. Cost Leadership [d]				-1.301***								-1.782**				
				(0.285)								(0.786)				
Differentiation vs. Stuck [e]					-0.778***								-0.864			
					(0.210)								(0.530)			
Cost Leadership vs. Stuck [f]						0.395***								1.251***		
						(0.099)								(0.362)		
Hybrid vs. Stuck [g]							-0.727*								0.270	
							(0.373)								(1.342)	
Interaction Effects																
Differentiation * Firm Size								-1.589***								-0.776***
								(0.200)								(0.134)
Cost Leadership * Firm Size								1.250**								1.045
								(0.561)								(0.882)
Control Variables																
Firm Size	0.091	0.084	-0.955***	0.246	-0.639***	0.229	-0.463*	0.059	-0.720**	-0.718**	-2.047***	-0.872**	-1.333***	-0.452	-1.028**	-0.309
	(0.138)	(0.138)	(0.256)	(0.185)	(0.196)	(0.153)	(0.240)	(0.137)	(0.297)	(0.297)	(0.515)	(0.411)	(0.397)	(0.322)	(0.510)	(0.295)
Firm Age	-0.066***	-0.067***	-0.063***	-0.076***	-0.050***	-0.065***	-0.038**	-0.056***	-0.005	-0.003	0.054	0.012	0.007	-0.032	-0.039	-0.005
	(0.011)	(0.011)	(0.023)	(0.015)	(0.015)	(0.011)	(0.016)	(0.011)	(0.029)	(0.029)	(0.054)	(0.042)	(0.037)	(0.031)	(0.045)	(0.029)
Leverage	-3.983***	-3.980***	-3.093***	-3.974***	-3.442***	-3.984***	-3.755***	-3.924***	-2.403***	-2.411***	-0.992	-2.909***	-1.768***	-3.197***	-2.667***	-2.379***
	(0.254)	(0.254)	(0.424)	(0.335)	(0.332)	(0.263)	(0.407)	(0.251)	(0.463)	(0.462)	(0.675)	(0.666)	(0.550)	(0.512)	(0.701)	(0.461)
Gross Margin	0.206***	0.206***	0.156***	0.252***	0.190***	0.262***	0.235***	0.210***	0.122***	0.122***	0.081***	0.134***	0.129***	0.172***	0.168***	0.124***
	(0.011)	(0.011)	(0.015)	(0.014)	(0.012)	(0.012)	(0.015)	(0.011)	(0.016)	(0.016)	(0.021)	(0.020)	(0.018)	(0.017)	(0.021)	(0.016)
Constant	-3.927***	-3.773***	3.442	-5.266***	0.665	-6.241***	-2.381	-4.763***	1.103	1.137	9.579***	2.851	4.549*	-1.934	1.835	-1.798
	(1.077)	(1.087)	(2.097)	(1.386)	(1.473)	(1.094)	(1.652)	(1.037)	(1.918)	(1.922)	(3.273)	(2.694)	(2.531)	(2.092)	(3.149)	(1.916)
Observations	85,722	85,722	34,048	44,703	57,264	67,919	38,449	85,722	19,963	19,963	8,535	9,531	13,906	14,902	8,573	19,963
Number of ID	6,219	6,219	3,347	5,312	5,314	5,878	4,936	6,219	1,487	1,487	802	1,080	1,227	1,337	1,068	1,487
Adjusted R-squared	0.082	0.083	0.041	0.092	0.060	0.105	0.081	0.090	0.036	0.036	0.018	0.032	0.030	0.057	0.050	0.042

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

Table 1 (continued).

	Retail Trade Sector								Wholesale Trade Sector							
	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(7) ROA	(8) ROA
Strategy Variables																
Differentiation	0.536	0.518						4.371	3.497**	3.470**						9.887***
	(0.967)	(0.969)						(2.724)	(1.572)	(1.562)						(3.430)
Cost Leadership	3.117	3.285						-11.855	1.379	1.799						-2.672
	(2.323)	(2.480)						(11.103)	(0.961)	(1.200)						(5.080)
Strategy Dummies																
Hybrid Strategy [a]		-0.224								0.083						
		(0.497)								(0.573)						
Stuck-in-the-middle [b]		-0.244								-0.289						
		(0.302)								(0.285)						
Hybrid vs. Differentiation [c]			-0.465								0.223					
			(0.538)								(0.633)					
Hybrid vs. Cost Leadership [d]				0.274								-2.455***				
				(1.012)								(0.797)				
Differentiation vs. Stuck [e]					-1.400**								-1.080			
					(0.636)								(0.676)			
Cost Leadership vs. Stuck [f]						0.399								0.423**		
						(0.276)								(0.192)		
Hybrid vs. Stuck [g]							-0.795								0.554	
							(1.267)								(1.154)	
Interaction Effects																
Differentiation * Firm Size								-0.688								-1.335**
								(0.428)								(0.540)
Cost Leadership * Firm Size								2.253								0.692
								(1.434)								(0.779)
Control Variables																
Firm Size	0.532	0.523	0.361	0.400	0.528	0.240	0.414	0.502	0.026	0.016	-0.873	-0.051	-0.596	0.183	0.103	-0.027
	(0.399)	(0.400)	(0.793)	(0.754)	(0.537)	(0.491)	(0.720)	(0.398)	(0.505)	(0.506)	(1.020)	(0.784)	(0.749)	(0.575)	(1.083)	(0.533)
Firm Age	-0.126***	-0.126***	-0.242***	-0.138***	-0.178***	-0.100***	-0.120***	-0.117***	-0.088***	-0.085***	-0.158**	-0.096**	-0.085*	-0.072**	-0.030	-0.087***
	(0.028)	(0.028)	(0.048)	(0.040)	(0.035)	(0.031)	(0.046)	(0.027)	(0.030)	(0.030)	(0.079)	(0.044)	(0.048)	(0.031)	(0.055)	(0.030)
Leverage	-5.112***	-5.122***	-5.401***	-5.067***	-5.322***	-4.852***	-5.348***	-5.098***	-4.569***	-4.563***	-2.104*	-5.050***	-2.932***	-5.554***	-5.257***	-4.614***
	(0.728)	(0.729)	(0.888)	(0.869)	(0.770)	(0.792)	(0.982)	(0.719)	(0.747)	(0.748)	(1.102)	(1.278)	(0.909)	(0.966)	(1.463)	(0.742)
Gross Margin	0.123***	0.123***	0.163***	0.172***	0.121***	0.135***	0.141***	0.124***	0.146***	0.146***	0.152***	0.203***	0.149***	0.181***	0.134**	0.151***
	(0.027)	(0.027)	(0.035)	(0.042)	(0.025)	(0.028)	(0.032)	(0.027)	(0.037)	(0.037)	(0.045)	(0.060)	(0.039)	(0.044)	(0.053)	(0.037)
Constant	-3.750	-3.625	-3.767	-3.233	-2.234	-1.810	-3.784	-4.255	1.017	1.024	7.124	0.635	4.536	-2.537	-3.954	0.408
	(3.095)	(3.103)	(5.915)	(6.154)	(3.933)	(3.769)	(5.019)	(3.132)	(3.262)	(3.206)	(7.319)	(4.792)	(5.053)	(3.425)	(6.347)	(3.259)
Observations	8,187	8,187	3,462	4,448	5,344	6,330	3,379	8,187	8,984	8,984	3,306	4,879	5,771	7,344	3,961	8,984
Number of ID	564	564	302	480	477	523	434	564	688	688	339	579	588	643	540	688
Adjusted R-squared	0.067	0.067	0.081	0.074	0.070	0.068	0.078	0.070	0.065	0.065	0.031	0.071	0.034	0.075	0.050	0.070

Table 2

Fixed Effects regression Results for Performance Measured as Tobin's Q

	Manufacturing Sector								Services Sector							
	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q
Strategy Variables																
Differentiation	0.221***	0.224***						0.387***	0.223***	0.223***						0.417***
	(0.030)	(0.030)						(0.079)	(0.034)	(0.035)						(0.079)
Cost Leadership	0.180**	0.159**						-0.642*	0.139	0.145						-0.267
	(0.076)	(0.079)						(0.331)	(0.171)	(0.174)						(0.686)
Strategy Dummies																
Hybrid Strategy [a]		-0.010								-0.031						
		(0.013)								(0.043)						
Stuck-in-the-middle [b]		0.012								-0.014						
		(0.010)								(0.029)						
Hybrid vs. Differentiation [c]			-0.043***								-0.061					
			(0.015)								(0.051)					
Hybrid vs. Cost Leadership [d]				-0.049**								-0.038				
				(0.023)								(0.072)				
Differentiation vs. Stuck [e]					-0.004								0.001			
					(0.018)								(0.043)			
Cost Leadership vs. Stuck [f]						-0.005								0.084**		
						(0.010)								(0.034)		
Hybrid vs. Stuck [g]							0.010								0.131	
							(0.028)								(0.104)	
Interaction Effects																
Differentiation * Firm Size								-0.029**								-0.030***
								(0.013)								(0.010)
Cost Leadership * Firm Size								0.126***								0.065
								(0.048)								(0.100)
Control Variables																
Firm Size	-0.062***	-0.062***	-0.064***	-0.098***	-0.056***	-0.081***	-0.067***	-0.064***	-0.018	-0.018	-0.069*	-0.029	-0.059**	-0.010	-0.053	-0.000
	(0.013)	(0.013)	(0.020)	(0.018)	(0.015)	(0.014)	(0.019)	(0.012)	(0.023)	(0.023)	(0.036)	(0.041)	(0.028)	(0.031)	(0.044)	(0.024)
Firm Age	0.004***	0.003***	0.011***	0.004***	0.004***	0.000	0.001	0.004***	0.020***	0.020***	0.021***	0.027***	0.019***	0.021***	0.021***	0.020***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
Leverage	0.120***	0.120***	0.081***	0.119***	0.112***	0.144***	0.146***	0.122***	0.021	0.019	-0.002	-0.013	0.010	0.015	0.003	0.022
	(0.016)	(0.016)	(0.023)	(0.024)	(0.019)	(0.020)	(0.026)	(0.016)	(0.035)	(0.035)	(0.050)	(0.054)	(0.041)	(0.044)	(0.048)	(0.035)
Gross Margin	0.007***	0.007***	0.006***	0.008***	0.007***	0.009***	0.008***	0.007***	0.002**	0.002**	0.004***	0.002	0.005***	0.004***	0.005***	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.045	-0.039	-0.267*	0.144	-0.133	0.157	0.035	-0.071	-0.733***	-0.726***	-0.190	-0.833***	-0.445**	-0.981***	-0.684**	-0.860***
	(0.097)	(0.097)	(0.155)	(0.143)	(0.116)	(0.110)	(0.142)	(0.096)	(0.155)	(0.156)	(0.253)	(0.283)	(0.188)	(0.209)	(0.284)	(0.164)
Observations	75,166	75,166	29,499	37,812	50,668	58,981	33,891	75,166	16,983	16,983	7,208	7,725	12,000	12,517	7,381	16,983
Number of ID	5,672	5,672	2,994	4,718	4,879	5,312	4,490	5,672	1,315	1,315	715	926	1,100	1,164	943	1,315
Adjusted R-squared	0.027	0.027	0.018	0.019	0.016	0.020	0.019	0.028	0.038	0.038	0.020	0.026	0.023	0.025	0.027	0.040

Note. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. 'Sector' omitted due to collinearity.

[a] Dummy variable coded as: '1' if Differentiation dummy = 1 and Cost Leadership dummy = 1, '0' if either Cost Leadership dummy = 1 or Differentiation dummy = 1.

[b] Dummy variable coded as: '1' if Differentiation dummy = 0 and Cost Leadership dummy = 0, '0' otherwise.

[c] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Differentiation dummy = 1.

[d] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if only Cost Leadership dummy = 1.

[e] Dummy variable coded as: '1' if Differentiation dummy = 1, '0' if Stuck in the middle dummy = 1.

[f] Dummy variable coded as: '1' if Cost Leadership dummy = 1, '0' if Stuck in the middle dummy = 1.

[g] Dummy variable coded as: '1' if Hybrid Strategy dummy = 1, '0' if Stuck in the middle dummy = 1.

Table 2 (continued).

	Retail Trade Sector								Wholesale Trade Sector							
	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q	(7) Tobin's Q	(8) Tobin's Q
Strategy Variables																
Differentiation	0.175**	0.167**						0.240	0.419***	0.417***						0.510*
	(0.083)	(0.084)						(0.273)	(0.113)	(0.113)						(0.262)
Cost Leadership	0.235	0.285						0.268	0.097	0.105						-0.466
	(0.228)	(0.242)						(1.049)	(0.130)	(0.159)						(0.803)
Strategy Dummies																
Hybrid Strategy [a]		0.040								0.058						
		(0.045)								(0.059)						
Stuck-in-the-middle [b]		-0.024								-0.000						
		(0.035)								(0.035)						
Hybrid vs. Differentiation [c]			0.014								-0.075					
			(0.045)								(0.063)					
Hybrid vs. Cost Leadership [d]				-0.009								0.081				
				(0.087)								(0.128)				
Differentiation vs. Stuck [e]					0.041								0.037			
					(0.059)								(0.068)			
Cost Leadership vs. Stuck [f]						0.019								-0.009		
						(0.036)								(0.028)		
Hybrid vs. Stuck [g]							-0.010								-0.083	
							(0.106)								(0.104)	
Interaction Effects																
Differentiation * Firm Size								-0.011								-0.019
								(0.047)								(0.054)
Cost Leadership * Firm Size								-0.004								0.093
								(0.141)								(0.121)
Control Variables																
Firm Size	-0.012	-0.012	-0.021	-0.032	-0.017	-0.015	-0.028	-0.012	0.030	0.031	-0.003	0.071	0.026	0.053	0.093	0.033
	(0.037)	(0.037)	(0.068)	(0.068)	(0.048)	(0.046)	(0.066)	(0.037)	(0.040)	(0.041)	(0.071)	(0.064)	(0.055)	(0.049)	(0.078)	(0.041)
Firm Age	-0.005	-0.005	-0.007	-0.009**	-0.005	-0.006*	-0.005	-0.005	0.000	0.001	-0.004	0.005	-0.003	-0.001	-0.004	0.000
	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.006)	(0.005)	(0.004)	(0.004)	(0.005)	(0.003)
Leverage	0.122*	0.121*	0.142	0.023	0.136*	0.081	0.071	0.121*	0.136**	0.138**	0.099	0.199**	0.094	0.174**	0.118	0.134**
	(0.068)	(0.067)	(0.092)	(0.077)	(0.077)	(0.082)	(0.104)	(0.068)	(0.062)	(0.063)	(0.108)	(0.088)	(0.088)	(0.072)	(0.114)	(0.063)
Gross Margin	0.001	0.001	0.005*	0.006*	0.003	0.004*	0.005*	0.001	0.001	0.001	0.001	0.005	0.003	0.005*	0.004	0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Constant	0.148	0.131	0.156	0.313	0.068	0.084	0.080	0.144	-0.586*	-0.623**	0.107	-1.278***	-0.512	-0.949***	-0.984*	-0.623**
	(0.288)	(0.287)	(0.505)	(0.553)	(0.345)	(0.365)	(0.505)	(0.292)	(0.301)	(0.299)	(0.563)	(0.447)	(0.426)	(0.342)	(0.534)	(0.309)
Observations	7,578	7,578	3,182	4,081	4,961	5,860	3,160	7,578	7,423	7,423	2,538	3,822	4,719	6,003	3,223	7,423
Number of ID	542	542	291	460	462	500	418	542	576	576	264	478	493	534	448	576
Adjusted R-squared	0.010	0.010	0.009	0.008	0.007	0.006	0.006	0.010	0.022	0.023	0.003	0.011	0.003	0.007	0.008	0.023

Sectoral Trends Comparison with Total Data

This section includes three graphical analyses that compare sectoral trends with the overall dataset, focusing on key performance indicators and strategy metrics. Figure 1 illustrates the average trend over time for firm performance (ROA and Tobin's Q). Figure 2 shows the average pattern of the differentiation strategy metrics (Sales/COGS and SGA/Sales) over time. Similarly, Figure 3 shows the average cost leadership measurements (Sales/Capex and Employees/Assets). These comparative analyses illustrate how sectoral characteristics impact the adoption and outcomes of differentiation and cost leadership strategies compared to the aggregate dataset.

Figure 1

Average Firm Performance (ROA and Tobin's Q) Over Time for Total Data

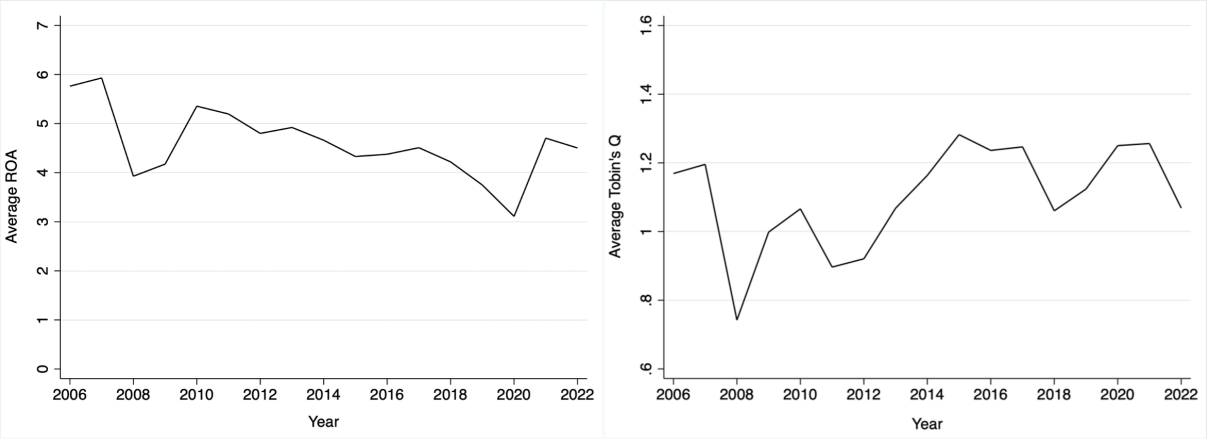


Figure 2

Average Sales/COGS (Diff 1) and SGA/Sales (Diff 2) Over Time for Total Data

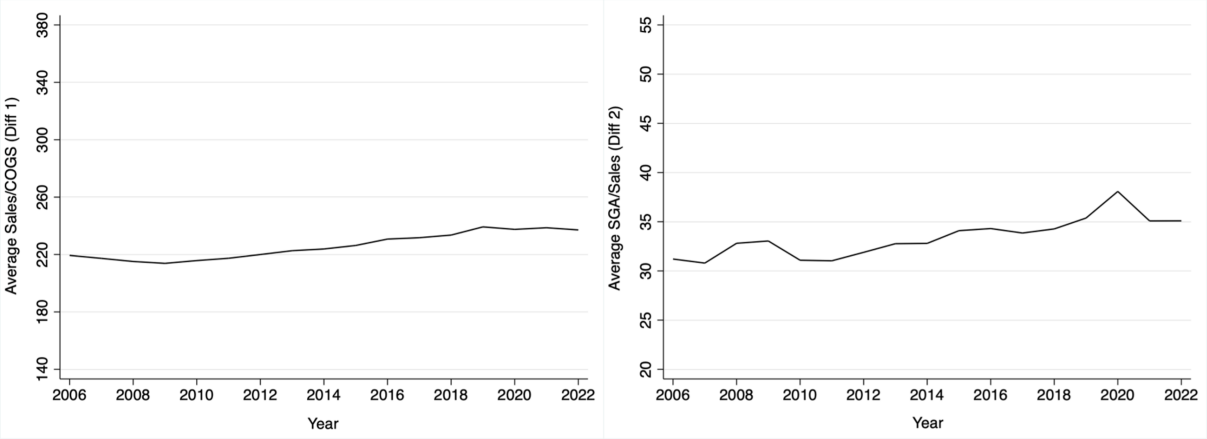
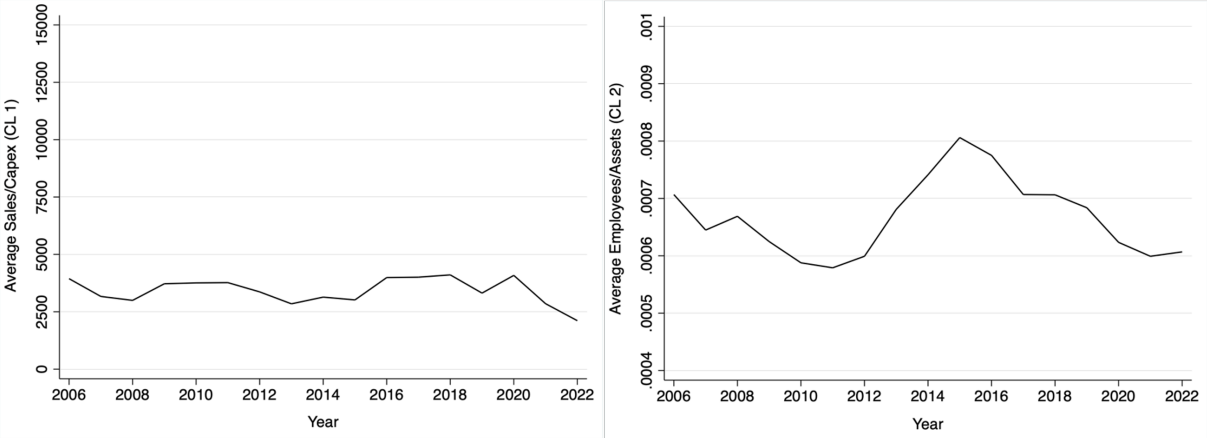


Figure 3

Average Sales/Capex (CL 1) and Employees/Assets (CL 2) Over Time for Total Data



Appendix C

Regression Analysis

This appendix provides additional diagnostic tests related to the regression analysis conducted in this research to enhance the overall methodological correctness of the study, providing additional insights into the reliability and validity of the empirical findings. Table 1 presents the results of the Variance Inflation Factor (VIF) calculations for the regression models using both ROA and Tobin's Q as performance measures. The VIF measures assess multicollinearity among predictor variables to prevent biased regression estimates. Table 2 shows the outcomes of the LM-test conducted for all eight regression models used in the analysis. The LM-test assesses model specification errors, providing insights into the adequacy and correctness of the regression specifications. Table 3 outlines the results of the Hausman test performed for all eight regression models. The Hausman test evaluates whether the FE or RE estimation method is more appropriate for the panel data analysis, ensuring the robustness of the regression results against potential endogeneity issues.

Table 1

Variance Inflation Factor (VIF)

Variance Inflation Factor:	VIF
ROA -	
Differentiation	2.20
Cost Leadership	1.01
Firm Size	1.16
Firm Age	1.05
Leverage	1.12
Gross Margin	2.22
Tobin's Q -	
Differentiation	2.24
Cost Leadership	1.02
Firm Size	1.16
Firm Age	1.05
Leverage	1.12
Gross margin	2.25

Table 2

LM Test Results

	Breusch and Pagan Lagrangian Multiplier (LM) test H_0 : Var(u) = 0 (no heteroskedasticity)							
	Y = ROA				Y = Tobin's Q			
	Var(u)	Chi^2	p-value	Type	Var(u)	Chi^2	p-value	Type
Model (1)	27.926	88,453.97	0.000	Panel data method	0.494	2.6*10^5	0.000	Panel data method
Model (2)	29.597	79,275.72	0.000	Panel data method	0.523	2.9*10^5	0.000	Panel data method
Model (3)	38.962	28,484.41	0.000	Panel data method	0.570	89,350.29	0.000	Panel data method
Model (4)	31.165	36,313.71	0.000	Panel data method	0.576	1.0*10^5	0.000	Panel data method
Model (5)	29.926	45,979.05	0.000	Panel data method	0.540	1.6*10^5	0.000	Panel data method
Model (6)	31.924	57,203.08	0.000	Panel data method	0.548	2.0*10^5	0.000	Panel data method
Model (7)	33.811	23,171.73	0.000	Panel data method	0.595	85,393.52	0.000	Panel data method
Model (8)	29.637	78,818.58	0.000	Panel data method	0.520	2.9*10^5	0.000	Panel data method

Table 3

Hausman Test Results

	Hausman test H_0 : Firm-specific effects are uncorrelated with independent variables					
	Y = ROA			Y = Tobin's Q		
	Chi^2	p-value	Type	Chi^2	p-value	Type
Model (1)	1,696.45	0.000	Fixed Effects method	635.39	0.000	Fixed Effects method
Model (2)	1,878.40	0.000	Fixed Effects method	515.46	0.000	Fixed Effects method
Model (3)	306.93	0.000	Fixed Effects method	337.90	0.000	Fixed Effects method
Model (4)	990.45	0.000	Fixed Effects method	571.94	0.000	Fixed Effects method
Model (5)	681.99	0.000	Fixed Effects method	631.87	0.000	Fixed Effects method
Model (6)	1,698.25	0.000	Fixed Effects method	566.57	0.000	Fixed Effects method
Model (7)	556.76	0.000	Fixed Effects method	351.87	0.000	Fixed Effects method
Model (8)	1,751.57	0.000	Fixed Effects method	539.49	0.000	Fixed Effects method

Appendix D

Descriptive Statistics

Appendix D presents additional descriptive statistics of the dataset used in this thesis to offer foundational insights into the composition and distribution of the variables and increase transparency. They provide a detailed overview of the dataset characteristics and distributions, which is essential for interpreting the regression analyses and empirical findings in this study. First, Table 1 shows the frequencies of '0's and '1's across the strategy dummy variables included in the regression analyses. Secondly, Table 2 presents the distribution of firms across different sector categories within the dataset. Thirdly, Table 3 outlines the distribution of firms categorized by firm size categories within the dataset. Lastly, Table 4 presents a cross-tabulation of the dataset's Sector and Firm Size Category variables. This table examines the distribution of firms across different sectors based on their size categories.

Table 1

Frequencies in Dataset of Dummy Variables

Dummy variables	0	1
Differentiation Strategy	60.55%	39.45%
Cost Leadership Strategy	49.42%	50.58%
Hybrid Strategy	82.89%	17.11%
Stuck-in-the-middle	72.98%	27.02%
Hybrid vs. Differentiation	59.90%	40.10%
Hybrid vs. Cost Leadership	66.27%	33.73%
Differentiation vs. Stuck	38.77%	61.23%
Cost Leadership vs. Stuck	34.75%	65.25%
Hybrid vs. Stuck	61.22%	38.78%

Table 2

Distribution of 'Sector' Categories in Dataset

Sector	
Agriculture, Forestry, and Fishing	1.56%
Construction	3.61%
Finance, Insurance, and Real Estate	5.07%
Manufacturing	54.25%
Mining	2.20%
Retail Trade	4.91%
Services	12.96%
Transportation, Communication, Electric, Gas, and Sanitary Services	9.44%
Wholesale Trade	5.99%

Table 3

Distribution of 'Firm Size' Categories in Dataset

Firm Size Category	
Small firms	3.85%
Medium firms	13.18%
Large firms	20.78%
Very large firms	22.38%
Mega firms	39.82%

Note. Categorization based on the Number of Employees (E) is as follows: Small if $E \leq 49$; Medium if $50 \leq E \leq 249$; Large if $250 \leq E \leq 999$; Very large if $1{,}000 \leq E \leq 4{,}999$; Mega if $E \geq 5{,}000$.

Table 4

Cross-Table for the Frequencies of the Sector and Firm Size Category Variables

Frequency in SUBSET

	Small	Medium	Large	Very large	Mega	
Manufacturing	1.95%	8.22%	14.68%	16.89%	27.70%	69.44%
Retail Trade	0.10%	0.53%	1.36%	1.52%	2.78%	6.29%
Services	0.80%	2.86%	3.58%	3.19%	6.16%	16.59%
Wholesale Trade	0.31%	1.26%	1.98%	1.26%	2.87%	7.67%
	3.15%	12.88%	21.61%	22.86%	39.50%	100%

Frequency in TOTAL DATASET

	Small	Medium	Large	Very large	Mega	
Manufacturing	1.52%	6.42%	11.47%	13.20%	21.64%	54.25%
Retail Trade	0.08%	0.41%	1.07%	1.18%	2.17%	4.91%
Services	0.62%	2.24%	2.80%	2.49%	4.81%	12.96%
Wholesale Trade	0.24%	0.99%	1.55%	0.98%	2.24%	5.99%
	2.46%	10.06%	16.88%	17.86%	30.86%	78.12%

Note. Categorization based on the Number of Employees (E) is as follows: Small if $E \leq 49$; Medium if $50 \leq E \leq 249$; Large if $250 \leq E \leq 999$; Very large if $1{,}000 \leq E \leq 4{,}999$; Mega if $E \geq 5{,}000$.

Appendix E

Disclosure of the use of AI Tools

In the preparation of this thesis, AI tools were used to enhance the quality and accuracy of the research and writing process. Specifically, ChatGPT, developed by OpenAI and Grammarly, was employed for various purposes, including grammar and style correction, idea structuring, summary generation, detailed explanations, and ensuring adherence to academic writing standards. These tools significantly contributed to the quality and thoroughness of my thesis by enhancing the writing process, providing clarity, and offering detailed insights on complex topics. All outputs generated were reviewed and integrated with critical analysis to ensure academic integrity and originality. Below, a detailed overview of how these tools were used is provided. This disclosure ensures transparency in the use of AI tools and their contribution to the development of this thesis.

Name of the AI tool:	**ChatGPT**
Date of Access:	Throughout the entire research and writing process.
URL of the Interface:	https://www.openai.com/chatgpt
Purpose and use:	Below is a summary of the specific ways ChatGPT was utilized, including examples of specific prompts or queries used during the thesis development:

1. Grammar and style correction:

ChatGPT is used to review and correct grammar, punctuation, and style to ensure clarity and coherence.

"Is this sentence correct?"

"Suggest improvements for clarity and coherence in this section."

2. Idea structuring and outlining:

It helped structure the thesis outline and organize sections and subsections logically.

"What topics could I discuss in the introduction section of my thesis on business strategies and firm performance, and how should it be structured such that it attracts the interest of the readers?"

"How should I structure the discussion and conclusion section regarding my thesis?"

3. Summary generation:

ChatGPT was used to generate concise summaries for complex sections and papers, refining key points and helping clarify effectively.

"Summarize the key findings from the regression results in my thesis."

"Provide a short summary of the following insights from the paper by …."

4. Detailed explanations:

Providing detailed explanations of complex concepts and additional context to enrich content was useful with the help of ChatGPT.

"Explain the interpretations of correlations between independent, dependent, and control variables."

“What is meant by …?”

5. Research and data analysis:

ChatGPT assisted in formulating the hypotheses, interpreting the results, and discussing the implications of the findings.

"How should a moderation effect be interpreted, and what is the implication of a positive versus negative moderation effect of firm size for the effect of cost leadership and differentiation on firm performance.”

Name of the AI tool:	**Grammarly**
Date of Access:	Throughout the entire research and writing process.
URL of the Interface:	https://app.grammarly.com/
Purpose and use:	Grammarly was employed throughout my thesis for several purposes, primarily focusing on grammar and style correction, ensuring adherence to academic writing standards, and enhancing the overall readability of the document. Below is a summary of the specific ways Grammarly was utilized:

1. Grammar and punctuation correction:

Grammarly identifies and corrects grammatical errors and punctuation mistakes.

2. Style, tone improvement, and consistency.

Grammarly was used to provide suggestions to improve the style and tone of the writing to ensure a formal, scholarly manner. Additionally, it ensured consistency in tense usage, formatting, and terminology and suggested revisions to enhance the clarity and conciseness of sentences and paragraphs.

3. Plagiarism detection:

The plagiarism detection tool in Grammarly was used to ensure originality and proper citation of all content.