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Supply Chain Concentration of Manufacturing Companies and Its Impact to Financial Performance: Basis for Action Plan

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Abstract. This study examined the impact of supply chain concentration on the financial performance and resilience of manufacturing companies in Chongqing. The respondents primarily consisted of staff from six manufacturing companies, including finance professionals, business leaders in supply chain management, and related personnel. The research considered a wide range of factors, including business diversity, years in operation, product types, scope of operation, and the number of employees, to explore their intricate relationships and their potential influence on supply chain concentration. The comprehensive analysis of profitability, liquidity, efficiency, and stability parameters indicated a consensus that supply chain concentration plays a significant role in positively influencing the financial performance, operational efficiency, and overall resilience of manufacturing companies. These findings underscored the multifaceted benefits of supply chain concentration in the manufacturing sector. However, the analysis of risk exposure and vulnerability to disruptions parameters highlighted another consensus that supply chain concentration in manufacturing firms also introduced amplified strategic and operational risks. This emphasized the importance of adopting a balanced approach that combines the efficiency benefits of concentration with robust risk management strategies to ensure resilience and minimize the financial impact of disruptions. To address the implications of supply chain concentration, a proposed action plan outlined three strategies for enhancing the financial performance of manufacturing firms: Supply Chain Diversification Strategy, Financial Performance Assessment, and Supply Chain Risk Mitigation Strategy. Each strategy spanned a six-month timeline and required specific resources and processes to achieve their respective goals.

Keywords: *Financial performance; Manufacturing companies; Resilience risk management; supply chain concentration*

1. Introduction

In the rapidly evolving landscape of global business, supply chain management has stood as a cornerstone of competitive advantage and operational excellence for manufacturing firms. The intricacies of supply chain networks drew significant attention from researchers and practitioners, with

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supply chain decisions directly impacting various aspects of firms' operations, sustainability, and overall performance. Among the critical factors that underpinned effective supply chain management, the concept of supply chain concentration emerged as a multifaceted phenomenon with profound implications for financial performance. This study delved into the intricate relationship between supply chain concentration and the financial performance of manufacturing firms, seeking to illuminate the mechanisms that drove this connection and provided insights into its practical implications.

Supply chain concentration referred to the presence of a limited number of key suppliers, distributors, or partners who exerted a substantial influence on a firm's supply chain operations. This concentration could manifest as strategic alliances, exclusive partnerships, or high supplier dependencies, shaping the dynamics of procurement, production, and distribution processes. As manufacturing firms increasingly operated in global markets characterized by complexity, volatility, and interdependence, understanding how supply chain concentration influenced their financial performance became essential for strategic decision-making and risk management.

The influence of supply chain concentration on financial performance is a complex phenomenon that encompasses a range of dimensions. Literature in the field offers a multitude of perspectives, with some studies suggesting that concentration could lead to economies of scale, streamlined operations, and enhanced bargaining power with suppliers. Conversely, others argue that a high degree of concentration might introduce vulnerabilities, such as supplier dependencies and heightened exposure to disruptions. Striking a balance between these conflicting viewpoints requires a comprehensive exploration of the mechanisms underlying the relationship between supply chain concentration and financial outcomes.

Existing literature provided a foundation for investigating this phenomenon. Scholars such as Xu & Li (2017) highlighted the potential risks associated with supplier concentration, emphasizing the need for diversified sources and robust risk management strategies. On the other hand, researchers like Chen & Paulraj (2014) posited that strategic supplier partnerships could positively influence financial performance. Amidst these contrasting findings, critical gaps and opportunities for research emerged—specifically, to unravel the nuanced ways in

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which supply chain concentration influenced profitability, liquidity, risk exposure, and overall financial health within the context of manufacturing firms.

Thus, this study aims to bridge the gap by offering a comprehensive exploration of the influence of supply chain concentration on the financial performance of manufacturing firms. Leveraging a multidimensional approach, the research delved into the intricacies of supply chain concentration, its impact on financial metrics, and the moderating factors that shaped this relationship. By addressing these gaps in understanding, this research provided manufacturing firms, practitioners, and policymakers with insights that could guide strategic decisions related to supply chain design, risk management, and overall financial performance optimization.

2. Methodology

The study utilized a descriptive research design as an appropriate approach to investigate the impact of supply chain concentration on the financial performance of manufacturing firms (Domingo, 2023a; Domingo, 2023b; Domingo, 2023c). This method aimed at characterizing and documenting key aspects of the phenomenon without manipulating variables. The approach involved defining the research objectives, collecting data that encompassed financial metrics and supply chain-related information, selecting a diverse sample of manufacturing firms, conducting statistical analyses and visualizations, interpreting the findings, acknowledging the study's limitations and implications, and summarizing the results in a structured report.

2.1. Sampling Procedure

Purposive sampling was used to select the respondents for the study. This non-probability sampling technique was employed to determine the sample population needed for the research's specific objectives. A purposive sample is chosen based on the characteristics of the population and the study's goals. In the context of the study on the influence of supply chain concentration on the financial performance of manufacturing firms, 272 financial personnel were selected as respondents from six manufacturing companies in Chongqing, China.

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2.2. Respondents

The respondents of the study were predominantly consisted of staff from six manufacturing companies in Chongqing, including finance personnel, business leaders in the supply chain management department, and related personnel. Finance staff provided financial data and insights, business leaders offered operational-level perspectives, and other related personnel included purchasing staff, sales staff, etc., who provided more information related to the supply chain and business operations. This choice ensured a comprehensive perspective on the topic of the paper, leading to a fuller understanding of the impact of supply chain concentration on the financial performance of manufacturing firms.

2.2.1 Research Site

The study was conducted in Chongqing, China, which served as an apt locale for investigating the impact of supply chain concentration on the financial performance of manufacturing firms. The city's status as a major manufacturing hub, coupled with its diverse supply chain landscape, varying levels of supplier concentration, economic significance, and government policies, made it a suitable setting for this research. Additionally, the availability of data, consideration of regional nuances, potential for comparative analysis, implications for future supply chain strategies, and the opportunity to contribute to academic insights about the relationship between supply chain concentration and financial performance within the manufacturing sector further justified Chongqing as the chosen locale for this study.

Table 1 Distribution of Respondents in Manufacturing Firms

MANUFACTURING FIRMS	POPULATION	SAMPLE SIZE	% OF SAMPLE
Chongqing Changan Automobile Company Limited	59	17	6.36
Seres Group Co., Ltd.	177	52	19.07
Dima Holdings Co., Ltd.	225	66	24.25

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Chongqing Taiji Industry (Group) Co., Ltd.	213	63	22.95
Huapont Life Sciences Co., Ltd.	148	43	15.95
Chongqing Wankai New Materials Technology Co., Ltd.	106	31	11.42
TOTAL	928	272	100

3. Results and Discussion

3.1 The Profile of Manufacturing Companies

The manufacturing companies consist of one partnership and five corporations, emphasizing the potential impact of corporate structure on supply chain concentration and financial performance due to the presumed complexity and diversification of corporate supply chains.

In terms of years of operation, the study reveals that most companies fall into the 31-40 years category, suggesting that longer-operating firms may have had time to optimize their supply chains, potentially positively affecting financial performance.

The study shows that two companies fall under the Industrial Goods category, and four provide Services, highlighting the complex relationship between product types and supply chain concentration. Consumer Goods typically involve more complex supply chains, while Industrial Goods and Services have different supply chain requirements.

In terms of the scope of operation, the study indicates an equal number of companies operating locally and internationally. This underscores the significant impact of the scope of operation on supply chain concentration and financial performance, with local companies potentially having simplified supply chains, and international ones facing both risks and opportunities associated with complexity and market access.

Regarding the number of employees, the study demonstrates the distribution of companies based on the number of employees, suggesting that

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smaller companies may have more concentrated supply chains due to their limited capacity, while larger companies could handle more diversified supply chains. This can impact their financial performance.

3.2 The financial performance on supply chain concentration of manufacturing companies

3.2.1 Profitability. The presented parameters indicate that supply chain concentration positively influences manufacturing companies' profitability, as supported by multiple studies, with agreement scores ranging from 2.68 to 3.73. Overall, the mean score of 3.19 suggests a consensus that emphasizing supply chain concentration can lead to increased profits, improved ROI, better adaptability to market fluctuations, and significant cost savings for manufacturing companies. This is in line with the work of Li et al. (2016). Their research found that cost savings were a significant outcome of a concentrated supply chain approach.

3.2.2 Liquidity. The presented parameters indicate that supply chain concentration positively influences the liquidity and financial flexibility of manufacturing companies, with agreement scores ranging from 2.05 to 3.30. Overall, the mean score of 2.75 suggests a general consensus that emphasizing supply chain concentration can lead to improved cash flow, sufficient working capital, better management of short-term financial obligations, and a potential buffer against economic challenges, despite some variations in agreement strength across the parameters. This aligns with the research conducted by Corsi et al. (2018). Their work demonstrated that a well-managed supply chain concentration strategy can help companies meet short-term financial commitments more efficiently, particularly by optimizing supplier payment terms.

3.2.3 Efficiency. The presented parameters indicate that supply chain concentration positively influences the operational efficiency of manufacturing companies, with agreement scores ranging from 2.58 to 2.93. Overall, the mean score of 2.78 suggests a consensus that emphasizing supply chain concentration can lead to streamlined production processes, reduced waste, improved delivery performance, effective resource allocation, and enhanced communication and collaboration, contributing to greater operational efficiency and cost

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savings within manufacturing companies. This aligns with the research conducted by Christopher (2016). In his work, Christopher emphasized that a focused supply chain strategy, characterized by concentration and simplification, can lead to improved operational efficiency by reducing complexity and enhancing process flow.

3.2.4 Stability. The presented parameters indicate a consensus that supply chain concentration significantly contributes to the stability and resilience of manufacturing companies, with agreement scores ranging from 2.73 to 3.58. The mean score of 3.25 underscores the agreement that a focused supply chain approach helps companies weather economic turbulence, reduce exposure to risks like supply disruptions and currency fluctuations, and enhances long-term stability and resilience, emphasizing the financial benefits of supply chain concentration in risk mitigation and stability. This aligns with the research by Ivanov, et al. (2017). They argued that supply chain concentration can lead to better risk management and greater stability by reducing exposure to uncertainties associated with a wide network of suppliers, thus supporting the notion of increased stability during turbulent economic times.

3.3 The potential impact of supply chain concentration of manufacturing companies

3.3.1 Risk exposure. The presented parameters show a consensus that supply chain concentration amplifies strategic and operational risks for manufacturing firms, with mean scores ranging from 2.58 to 3.53. The overall mean score of 3.00 emphasizes the need for manufacturers to strike a balance between concentration and diversification in supply chain strategies to optimize efficiency while mitigating the potential vulnerabilities and challenges associated with concentrated supply chains.

3.3.2 Vulnerability to disruptions. The presented parameters indicate a consensus that supply chain concentration increases the vulnerability of manufacturing firms to various disruptions, with mean scores ranging from 2.55 to 3.58. The overall mean score of 2.96 underscores the importance of comprehensive risk management strategies to ensure resilience and continuity in the face of potential disruptions, which can significantly impact the financial performance and operations of manufacturing

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companies. The findings emphasize the need for a balanced approach that considers both the benefits and risks of supply chain concentration.

3.4 Proposed Action Plan

The proposed action plan consists of three key strategies: The Supply Chain Diversification Strategy, is designed to alleviate supply chain concentration by establishing a diverse supplier network, ultimately enhancing financial performance. The implementation of this plan necessitates resources such as supply chain experts, data analytics tools, a budget for onboarding new suppliers, and crucial management support. The timeline for this strategy spans six months. The Financial Performance Assessment, focuses on scrutinizing financial metrics in relation to supply chain concentration. Employing financial analysts, specialized software, historical data, and a dedicated six-month timeframe, this plan aims to gain insights into the financial implications of supply chain decisions. The Supply Chain Risk Mitigation Strategy, aims to counter disruptions arising from concentration by engaging risk management experts, utilizing supply chain data, fostering collaboration, and implementing real-time monitoring over a six-month period. Regular reviews and updates ensure adaptability to changing circumstances and emerging risks throughout the execution of this plan.

4 Conclusions

The multifaceted examination of diverse business attributes within the dataset underscores the intricate relationship between factors such as business forms, years in operation, product types, scope of operation, and number of employees, shedding light on their collective impact on supply chain concentration and subsequent financial performance in the manufacturing sector. The comprehensive analysis of financial parameters reveals a consensus that supply chain concentration significantly contributes to positive influences on financial performance, operational efficiency, and overall resilience of manufacturing companies, underscoring its multifaceted benefits in the industry. However, the evaluation of risk exposure and vulnerability to disruptions parameters underscores the strategic and operational risks associated with supply chain concentration, emphasizing the need for a balanced approach that combines its efficiency benefits with robust risk management strategies to ensure resilience and minimize the financial impact of disruptions. To address these findings, the proposed action plan introduces three strategic initiatives—Supply Chain Diversification Strategy, Financial Performance Assessment, and Supply Chain Risk Mitigation Strategy—each spanning a six-month timeline and requiring specific resources and processes to enhance manufacturing firms' financial performance by effectively managing supply chain concentration.

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