

Synergy Gains in Supply Chain for Automobile Manufacturing in Post-Merger Integration: A Case Study of Stellantis

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Abstract: Mergers in the automotive sector are frequently motivated by the potential for cost synergies, market share enhancement, and operational efficiency. The supply chain is a crucial domain that experiences immediate effects during post-merger integration (PMI). This research examines supply chain efficiency improvements in the automobile manufacturing sector during post-merger integration (PMI), using Stellantis' formation from Fiat Chrysler Automobiles (FCA) and Peugeot S.A. (PSA) as a primary case study. Comparative analyses of ZF Friedrichshafen-WABCO, Geely-BYD, and BMW's Industry 4.0 adoption illustrate the transformative role of IoT and AI in enhancing real-time visibility, predictive analytics, and cost efficiency. However, challenges like Stellantis' 2024 Ram truck recall underscore the need for robust digital risk management and diversified supplier networks. Key findings of the study highlight a 22.7% increase in inventory turnover, a 17.4% reduction in lead times, and a 12.5% decrease in procurement costs per vehicle, driven by supplier consolidation, ERP standardization, and logistics optimization. A predictive model for the Nissan-Honda-Mitsubishi 2025 merger further explores synergies in EV technology, market alignment, and Industry 4.0 integration, emphasizing leadership commitment and cultural cohesion as critical factors. By combining quantitative insights with actionable strategies, this study offers a comprehensive framework for achieving operational excellence and competitive advantage in post-merger scenarios, providing valuable guidance for automakers to navigate the PMI challenges.

Keywords: Post-merger integration (PMI), supply chain efficiency, automobile manufacturing, mergers and acquisitions, Stellantis.

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I. INTRODUCTION

➤ Background

The global automobile sector has undergone numerous mergers and acquisitions (M&As) throughout manufacturing history (Hopkins et al., 1999). Since the first notable automobile merger and General Motors (GM) formation in 1908, M&As have been driven by heightened competition, changing consumer preferences, supply chain issues from bumpers to recent micro-chip crises, technological innovations like electrification, autonomous driving like Advanced Driver Assistance System (ADAS), and Industry 4.0 technologies (Law, 2017). The auto industry thrives on the supply chain of every involved component, whether a digital service like ADAS or a hardware component like a microchip (Iyengar & Bharathi, 2020). Hence, misaligned mergers can be its Achilles' heel. Various mergers and acquisitions fail to achieve their expected value (Renneboog & Vansteenkiste, 2019). In this way, this insight reminds us that success in mergers is less about size and more about synergy.

Moreover, PMI is crucial for realizing the advantages of mergers (Bodner & Capron, 2018). The key impact on cost efficiencies, technology transfer, and supply chain positions can be analyzed through PMI (Bodner & Capron, 2018). Moreover, the supply chains are often the silent game-changers in mergers. This is because the supply chains determine the adaptation pace for companies' integration after the merger. Misaligned supply chain strategies can lead to costly missteps, as the merger between Daimler-Benz and Chrysler in 1998 (Yie et al., 2021).

On the other hand, if applied with strategy, the supply chain can unlock the synergies that mergers are aiming to achieve. The same strategies drive innovation to reduce supply chain expenditure, such as the formation of Stellantis in 2021 have produced significant results in financial improvements (Al-Doori & Management, 2019; Ramos et al., 2024). To analyze the impact of the merger on the Supply Chain of the joining group can be learned from the following four case studies:

- *Stellantis: FCA and PSA Merger*

The merger of FCA and PSA Group to form Stellantis is an example of how supply chain synergies can boost manufacturing efficiency (Lortz, 2024). Stellantis optimized its complicated global supply chain by combining FCA's North American strength with PSA's European superiority. Furthermore, this integration reduced procurement and logistics costs (Zirpoli, 2023). It further improved its production facilities and streamlined its existing supply network. Another key factor worked upon by Stellantis was the improvement in its cross-border logistics by FCA's strong North American supplier network and PSA's European network (Brunel & Thierry, 2024). Hence, supply chain optimization was key to its post-merger success.

- *ZF Friedrichshafen and WABCO Merger*

It was a strategic integration of technology-focused supply chain elements as compared to a conventional one (Keienburg et al., 2019). Duong identified that ZF's deep expertise in driveline and chassis technologies, combined with WABCO's leadership in braking systems, created substantial supply chain synergies in the commercial vehicle sector (Duong & Kryut, 2019). By pooling their resources and technologies, the two companies were able to optimize logistics networks for just-in-time deliveries. The combination of advanced braking and driveline technologies resulted in more integrated production schedules, reducing lead times and increasing overall efficiency in manufacturing

- *Geely's Acquisitions, Including the 2024 BYD Deal*

Geely's landmark acquisition of BYD in 2024, highlights the role of supply chain integration in disrupting the electric vehicle (Yu et al.) market. By consolidating production and technology capabilities, Geely was able to harmonize EV battery sourcing, vehicle assembly, and logistics into a more efficient and cost-effective system. The addition of BYD allowed Geely to strengthen its supply chain for batteries and key EV components.

Geely's focus on vertical integration, combined with strategic acquisitions, helped them establish agile supply chain that can quickly respond to market shifts. The synergy between Geely's manufacturing footprint and BYD's advanced EV technology positions the company to leverage economies of scale.

- *BMW Group's Industry 4.0 Implementation*

BMW's adoption of Industry 4.0 technologies exemplifies how internal supply chain optimization can drive efficiency improvements. By integrating the Internet of Things (Cianciotta & D'Adamo), artificial intelligence (Zhong et al.), and automation into its supply chain operations, it has been able to reduce lead times, lower production costs, and increase flexibility in response to demand fluctuations.

Moreover, the adoption of Industry 4.0 technologies enabled BMW to connect its supply chain more seamlessly across production stages and improve forecasting accuracy. This has allowed the company to manage inventory better, reduce waste, and improve efficiency.

➤ *The Predictive Model*

Based on the analysis of the previous 4 case studies, a predictive model can be assessed for the upcoming Nissan-Honda-Mitsubishi 2025 merger. The following key factors can be considered from the 4 cases that are already present and made capital space in the market:

- **Stellantis** for geographical and market synergies.
- **ZF-WABCO** for technological alignment.
- **Geely-BYD** for market disruption in EVs.
- **BMW Group** for the integration of Industry 4.0 technologies into supply chains.

This model aims to test the hypothesis that supply chain optimization and alignment are the key determinants of merger success in the auto industry. It further forecasts whether their combined hybrid and EV technology strengths can replicate the successes of these 4 successful M&As. This study quantitatively analyzed all these mergers to understand the synergy gains and predicted key points for the 5th biggest merger in Automobile Manufacturing history.

II. LITERATURE REVIEW

➤ *Mergers and Acquisitions in the Automobile Industry*

There can be various factors that contribute to an organization merging and scaling up (Gorigledzhan, 2022). (Gorigledzhan) identified some of the most common factors that contribute to it, such as presented in Figure 1 (Gorigledzhan, 2022).

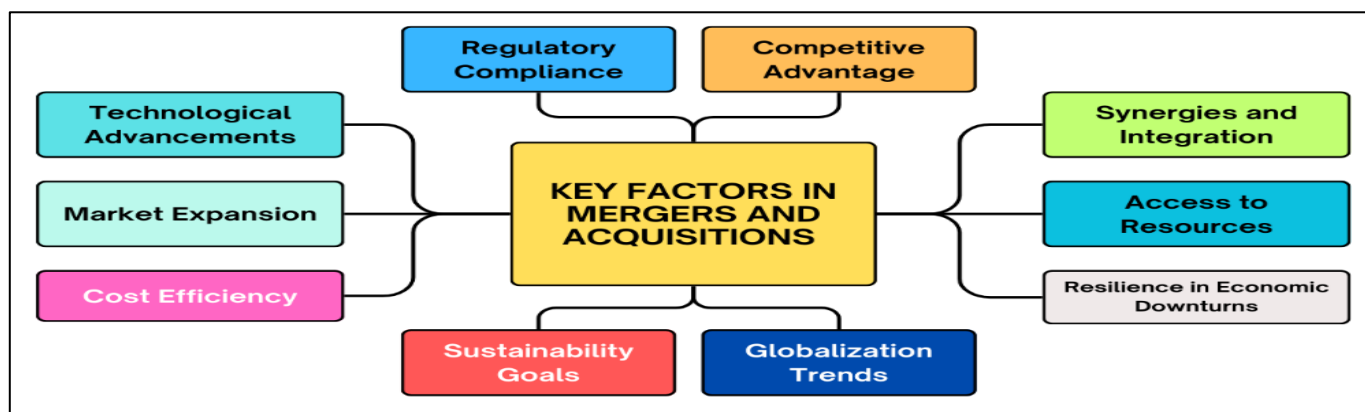


Fig 1 Key Factors in Mergers and Acquisitions in the Automobile Industry

Prominent transactions such as the Daimler–Chrysler merger and the Nissan–Renault alliance are frequently referenced as efforts to enhance global presence and technological capabilities. Although the M&As can theoretically eradicate redundancies, despite these prospective advantages, not all mergers and acquisitions fulfil shareholder or market anticipations (Renneboog & Vansteenkiste, 2019). It usually happens due to cultural conflicts, misaligned strategic objectives, and overvaluation

of synergies. Hence, integrating vast supply chains with diverse product portfolios becomes inevitable.

➤ Supply Chain Integration

A streamlined and optimized supply chain network is the backbone of any manufacturing company (Shukor et al., 2021). Integration in the supply chain refers to coordinating procurement, manufacturing, inventory management, logistics, and all distribution activities among different stakeholders.

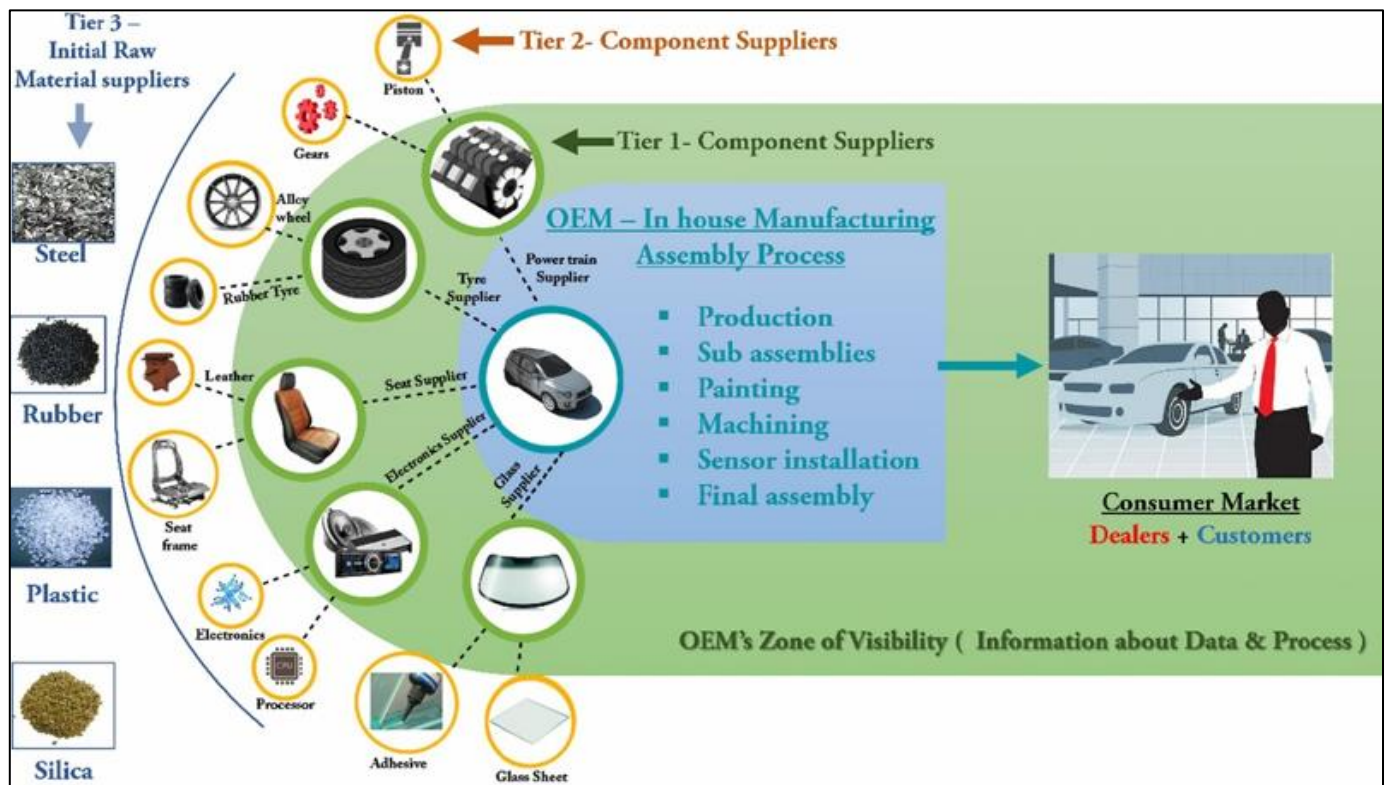


Fig 2 Automotive supply chain Image Source: (Raj Kumar Reddy et al., 2021)

Post-merger integration may be complex due to overlapping supplier networks and disparate enterprise resource planning (ERP) platforms. Such a complexity can be understood from Figure 2. Post-merger supply integration requires a thorough strategy that includes physical (e.g., consolidating logistics facilities), technological (e.g., aligning ERP systems), and relational (e.g., merging organizational cultures) components (Kästle, 2022).

Nonetheless, successful execution of supply chain integration can result in significant efficiency enhancements in production. It additionally improves cost competitiveness and promotes customer service standards (Shukor et al., 2021). Additionally, streamlined procurement procedures help get bulk savings, reduce redundancy, and lower freight costs through integrated transportation networks.

➤ Operational Synergies in Post-Merger Integration

Integrating activities yields operational synergies that include cost reductions, job floor productivity benefits (Back & Jönsson, 2023). Back and Jonsson (2023) contend that operational synergies, especially in supply chain domains, rely on resource sharing, knowledge transfer, and the

effective reconfiguration of processes (Back & Jönsson, 2023). In vehicle manufacturing, the alignment of production systems is crucial for attaining synergy. Just-in-time inventory systems and lean manufacturing principles define it.

Moreover, the concept of horizontal integration is very relevant in the automotive industry. For example, merging companies like Stellantis frequently share technical platforms (Vaghela, 2024). A similar plan was made at the commencement of the Nissan-Honda-Mitsubishi merger proposal. This phenomenon offers distinct chances for enhancing manufacturing lines, such as shifting from multiple brand-specific platforms to consolidated vehicle architectures.

Furthermore, improved relationships with suppliers can increase innovation. The coordination, such as collaborative research and development (R&D) efforts, enables the swift incorporation of emerging technologies, including electric drivetrains, BYD's battery technologies for Geely's group, and ADAS for BMW Group.

➤ Theoretical Frameworks

Diverse theoretical frameworks have been employed to analyze the determinants of success or failure in post-merger supply chain integration. Each framework offers a distinct viewpoint for evaluating the elements for efficient PMI:

• Resource-Based View (RBV)

RBV suggests that unique resources and capabilities form the basis of competitive advantage as shown in Figure 3. It includes supplier relationships, proprietary

manufacturing processes, and brand reputation (Yu et al., 2018). Combining these resources for PMI can lead to stronger market presence. For instance, in Stellantis, if one entity excels in manufacturing efficiency while the other has better supplier networks, merging has created a “superior bundle” of resources that competitors find difficult to replicate.



Fig 3 Competitive Advantage Flow Diagram in RBV

• Transaction Cost Economics (TCE)

TCE posits that the governance frameworks of transactions. It states that supplier agreements, technology licensing, and distribution channel ownership influence efficiency (Um & Kim, 2019). Furthermore, supply chain reconfiguration in PMI typically seeks to decrease transaction costs and alleviate uncertainties. It can be achieved by streamlining supplier relationships and standardizing contractual frameworks to enhance information flow.

• Organizational Culture Theory

Cultural integration is a significant factor in determining PMI's success and failure. The case of the merger between Daimler-Benz and Chrysler in 1998 is one of the examples of how the PMI fails when organizational culture mismatches (Renneboog & Vansteenkiste, 2019).

This idea underscores cultural integration as crucial for facilitating effective post-merger operations (Thelisson, 2023). Divergent company cultures may impede supply chain synchronization initiatives, as employees may oppose new procedures or harbor distrust toward new leadership. Hence, effective cultural management is crucial for PMI success.

➤ The Growing Role of IoT and AI in Supply Chain Integration

Ageron (2020) emphasizes the significant influence of IoT and AI in enabling PMI in the M&A supply chain (Ageron et al., 2020). The IoT facilitates instantaneous data acquisition from tangible assets, whether automotive parts, industrial machinery, or transportation fleets, to establish a digital thread encompassing the entire value chain (Ben-Daya et al., 2019).

One key example is, after PSA Group acquired Opel/Vauxhall, IoT sensors were deployed throughout factories and logistics fleets to oversee manufacturing lines and monitor real-time shipments. This integration enabled the organization to pinpoint inefficiencies, including redundant transport routes and underutilized assembly stations.

Simultaneously, as shown in Figure 4, AI-driven analytics, encompassing machine learning and predictive modeling, can enhance efficiency by providing detailed insights into demand projections, inventory levels, and supplier performance (Ben-Daya et al., 2019).

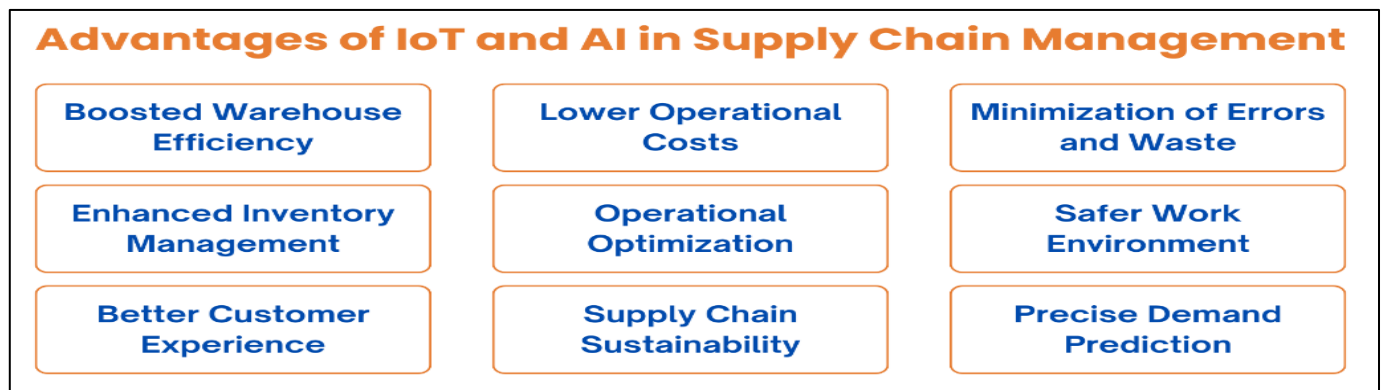


Fig 4 Advantages of IoT and AI in Supply Chain Management

Merged firms connected their databases and employed AI algorithms to predict disruptions, such as supplier delays or market demand swings, rather than depending on isolated historical data sets (Ghadge et al., 2022). For instance, Geely's acquisition of BYD in 2024 exemplified this synergy. Artificial intelligence methods were utilized to forecast battery demand and electric vehicle sales trends, minimizing lead times and averting overproduction (Jahangir et al., 2019). These technologies enhanced supply chain efficiency and facilitated agility, ensuring the firm remained resilient to market fluctuations.

➤ *Synthesis and Research Gap*

Existing research shows that M&As can boost automotive operations and strategy. Bodner & Capron stated that PMI is difficult in complicated global supply networks (Bodner & Capron, 2018). While (Kästle, 2022) have

extensively studied PMI's financial, cultural, and operational aspects, few have empirically examined how IoT and AI can overcome integration hurdles and secure supply chain efficiencies (micro-chip, raw material, batteries) for automobile production. This gap widens in large-scale automotive mergers, which include global R&D centres, production lines, supplier contracts, and distribution networks. This research examines prominent automotive merger cases like Stellantis's M&As and implementation of Industry 4.0 Technologies, aiming to make recommendations for upcoming mergers to show how IoT, AI, and Industry 4.0 can optimize global automotive supply chains after mergers.

III. RESEARCH METHODOLOGY

This research seeks to achieve four key objectives as shown in Figure 5:

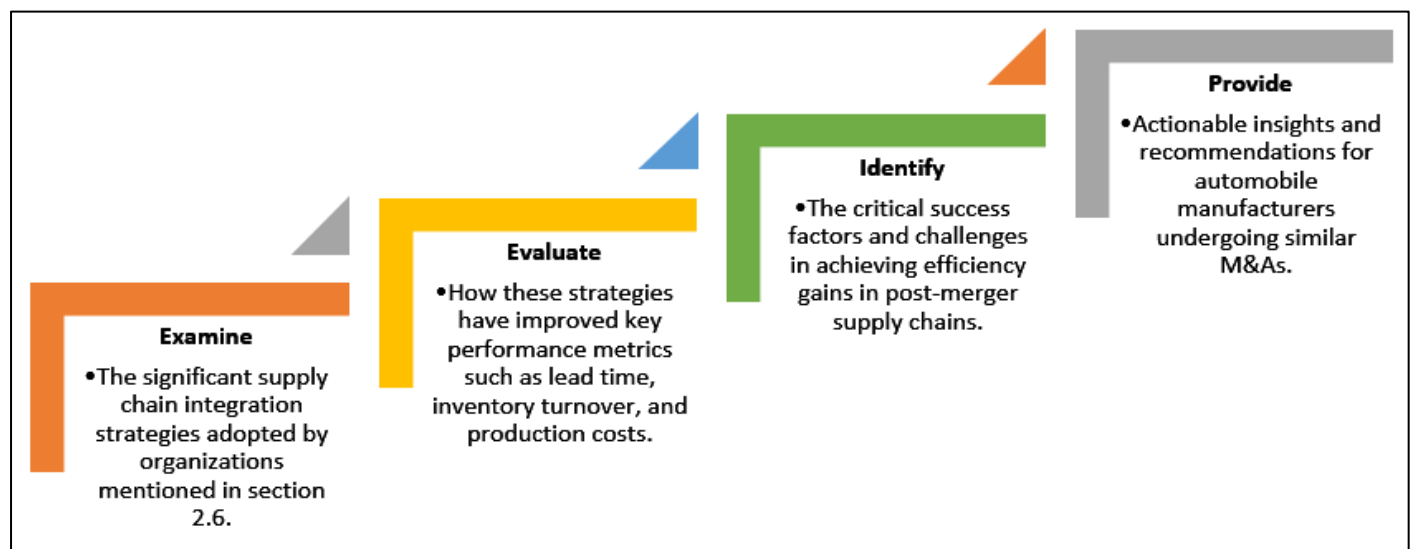


Fig 5 Key Research Objectives

The methodology integrates quantitative techniques within a case study framework to address these objectives, enabling an in-depth and context-rich investigation.

➤ *Research Design*

Given the complexity of post-merger supply chains, a mixed-methods approach provides comprehensive insights and quantifiable results in post-merger integration (PMI) (Almeida, 2018).

A case study methodology was chosen to gain an understanding of the complex post-merger supply chain integration processes. It was divided into 4 steps as shown in Figure 6. The case study approach allows for a detailed exploration of how corporate strategies are operationalized and provides real-world context to the observed outcomes.

➤ Data Collection

The data collection process was designed to align directly with the research objectives, using a multi-pronged approach. Corporate reports from within Stellantis were acquired, and it provided baseline and post-merger performance metrics, strategic decisions, and validation of reported achievements. Moreover, academic journals and news articles supplied background on M&A trends, PMI practices, and sector-specific challenges.

➤ Data Analysis

Quantitative analyses utilized descriptive statistics to assess PMI effectiveness and trend analysis to evaluate operational and financial improvements. These findings were synthesized into actionable recommendations to provide a comprehensive view of post-merger supply chain performance.

➤ Scope and Limitations

Table 1 presents an overview of the study's scope, limitations, and future research implications.

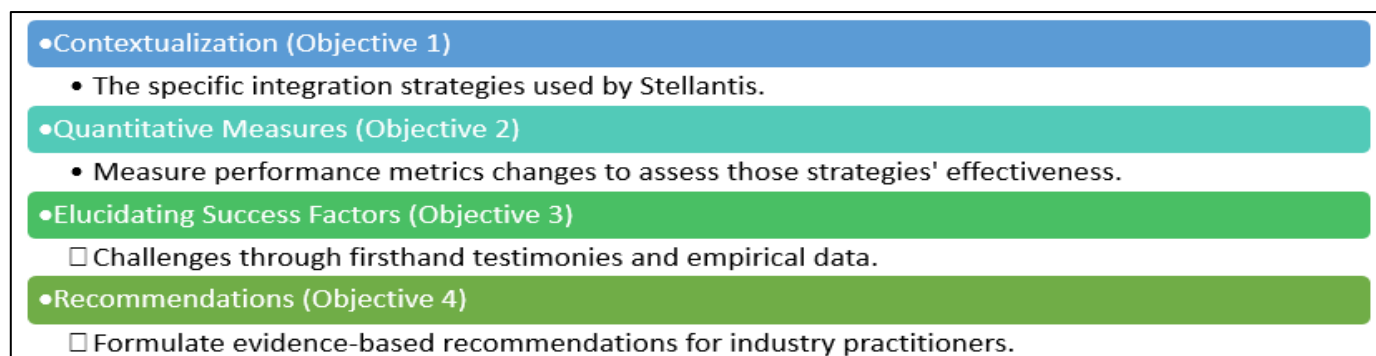


Fig 6 Steps in Research Design

Table 1 Scope and Limitations of the Research

Aspect	Details
Scope	Stellantis's PMI journey (Jan 2021–Dec 2023).
	Focused on supply chain integration in North America and Europe.
Limitations	Findings may not fully apply to smaller firms or other industries.
	Limited access to confidential strategic and financial data.
	Potential biases in interviews and surveys were mitigated through triangulation.

The findings could inspire research into scalable PMI strategies tailored for smaller automakers and the development of affordable digital tools to enhance supply chain integration and resilience in less resource-intensive settings.

IV. CASE STUDY OF STELLANTIS SUPPLY CHAIN MANAGEMENT

➤ Merger Background

The formation of Stellantis was finalized on January 16, 2021 (Lortz, 2024). The new entity aimed to harness synergy in research and development (especially in electric vehicles) and

technology sharing (Zickenheiner, 2023). This M&A created a vast global supply chain network to be streamlined with some critical challenges on its way (Al-Doori & Management, 2019). The pre-merger challenges are highlighted in the next section, followed by post-merger strategies and outcomes.

➤ Supply Chain Challenges Pre-Merger

Before the merger, both Groupe PSA and FCA grappled with overlapping suppliers, redundant logistics networks, and distinct ERP platforms. Critical challenges, such as those shown in Figure 7, were identified (Ramos et al., 2024).

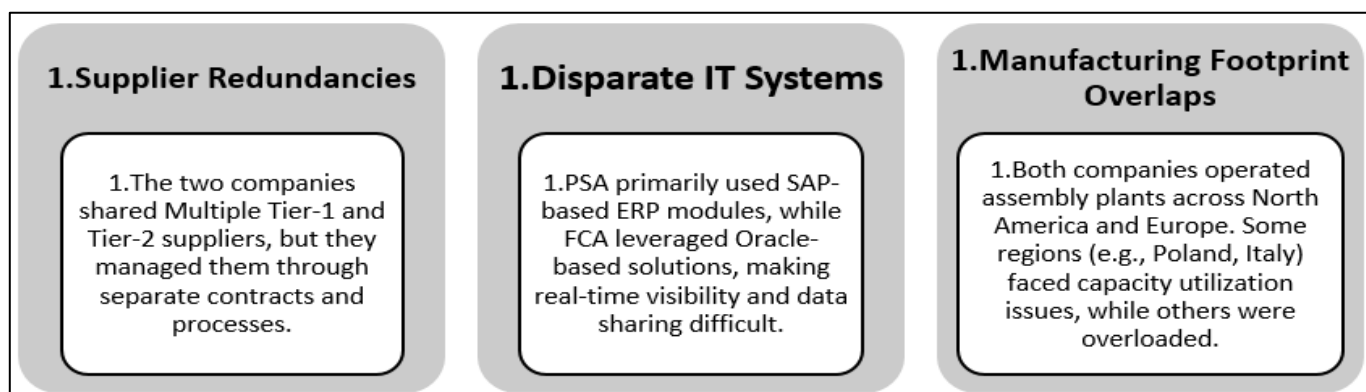


Fig 7 Pre-merger challenges in Supply Chain for FCA and PSA

➤ *Post-Merger Integration Strategies*

Considering the existing challenges of PSA and FCA, Stellantis employed the following post-merger strategies to improve its global supply chain efficiency (Cianciotta & D'Adamo, 2021):

- Setting up a global procurement office to facilitate the volume discounts by purchasing larger raw materials and components under standardized terms.
- Reduction in complexity by eliminating duplicate contracts, consolidating vendors, and standardizing parts.
- Migration to a single ERP system was another priority. It standardized data to streamline procurement,

manufacturing, and logistics. This minimized human errors and provided real-time inventory and supplier insights.

- Based on the existing sales and sales forecasting of different vehicle types (as shown in Figure 8), facilities were designated to focus on specific vehicle types (e.g., SUVs, small city cars, luxury sedans) and platforms, improving economies of scale (Bond Jr, 2024).
- Underutilized plants in Europe were aligned to support booming segments, while saturated North American plants received expansions for popular brands such as Jeep and RAM.

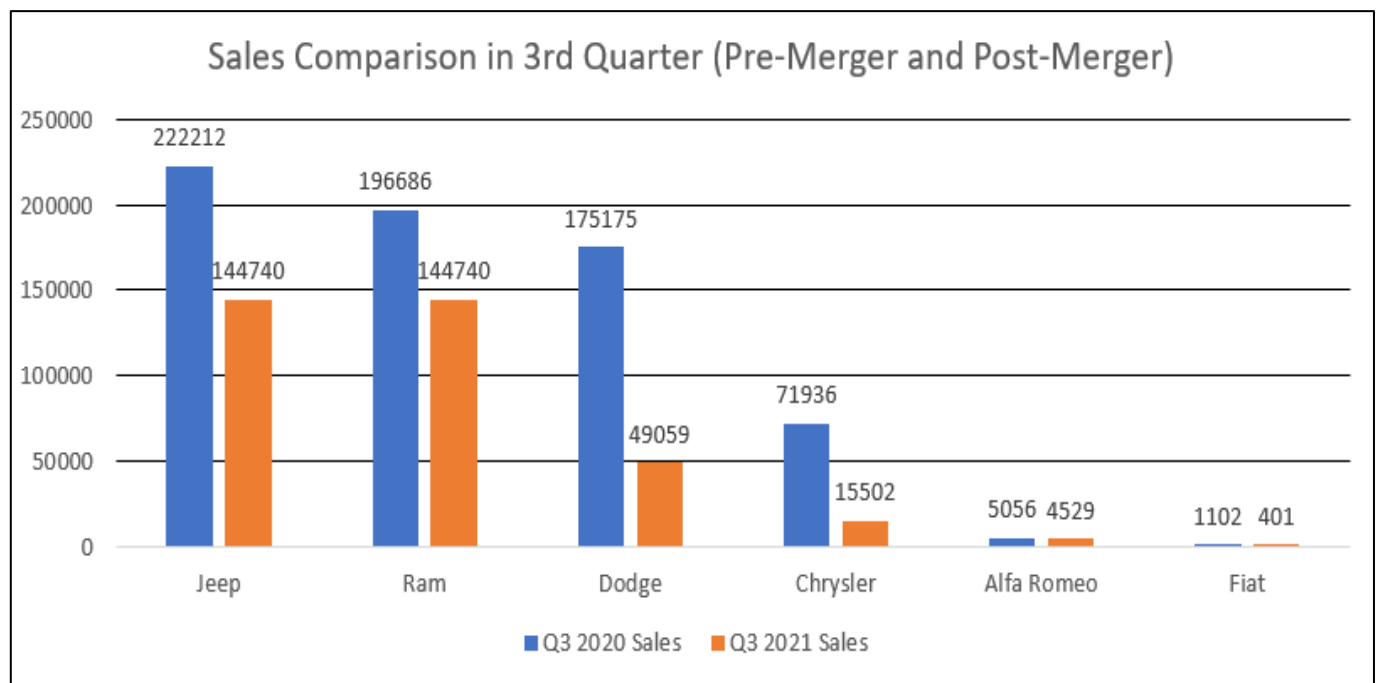


Fig 8 Analysis of Sales in Sales Comparison in 3rd Quarter (Pre-Merger and Post-Merger)

- Stellantis reorganized its logistics processes to form collaborative transportation networks by centralizing inbound and outbound freight management. By doing this it achieved reduced Freight Costs and optimized Routing to reduce lead times and cut fuel expenses.

➤ *Stellantis and Zeta Energy Partnership to Enhance EV Supply Chain*

Stellantis and Zeta Energy partnered strategically to develop advanced lithium-sulfur batteries for electric vehicles (EVs) (Brunel & Thierry, 2024). The aim was to improve the EV supply chain's resilience and performance significantly. Following are the key improvements in the supply chain of Stellantis that happened due to this partnership:

- Cost reduction has been achieved through the development of lithium-sulfur batteries, which are projected to cost less than half the price per kWh compared to current lithium-ion batteries.
- The new batteries offer "game-changing gravimetric energy density" and volumetric energy density comparable to existing lithium-ion technology. This

results in lighter batteries that provide improved vehicle range and performance.

- Enhanced battery performance allows for more efficient logistics and reduces the environmental impact associated with transportation.
- The partnership focuses on producing batteries using waste materials, including methane and unrefined sulfur. This leads to lower CO₂ emissions than traditional battery technologies significantly. It also supports Stellantis' goal of achieving carbon neutrality by 2038.
- Zeta Energy's technology eliminates the need for essential materials like graphite, cobalt, manganese, and nickel. This reduction decreases reliance on scarce and geopolitically sensitive resources. It reduces risks related to material shortages and market fluctuations.
- The lithium-sulfur batteries are designed to utilize a "short, entirely domestic supply chain" within Europe or North America, where gross sales and revenue are much higher than in other regions (Figure 9) (Bond Jr, 2024). Due to this localization, the supply chain has been enhanced and is more responsive. It further lowers transportation costs and minimizes the carbon footprint from long-distance logistics.

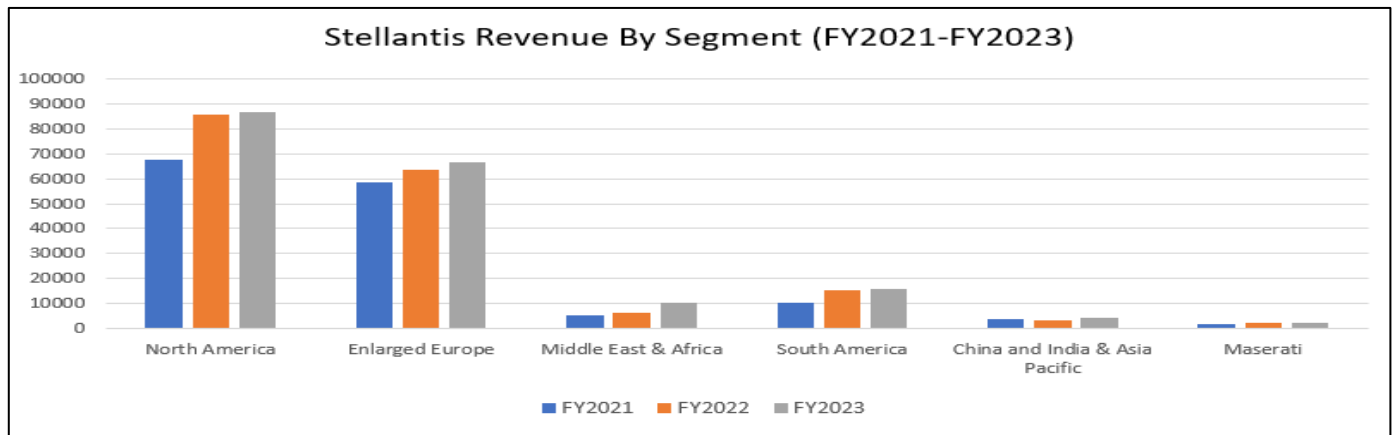


Fig 9 Stellantis Revenue by Segment (FY2021-FY2023)

- The supply chain will undergo significant reconfiguration to support Stellantis' Dare Forward 2030 plan, which aims to offer over 75 battery EV models.

The Stellantis-Zeta Energy collaboration is set to redefine the electric vehicle supply chain by introducing more sustainable, cost-effective, and resilient battery technology.

➤ Key Partners in Supply Chain for Procurement of Parts for Stellantis

Stellantis relies on a vast network of vendors and suppliers to support its extensive vehicle production and innovation initiatives for all group members (Lortz, 2024). These suppliers provide essential components, technologies, and services across various domains, ensuring Stellantis can deliver a wide range of vehicles that meet global quality, safety, and performance standards. Figure 10 presents an overview of some key vendors and the categories they serve within Stellantis' supply chain.

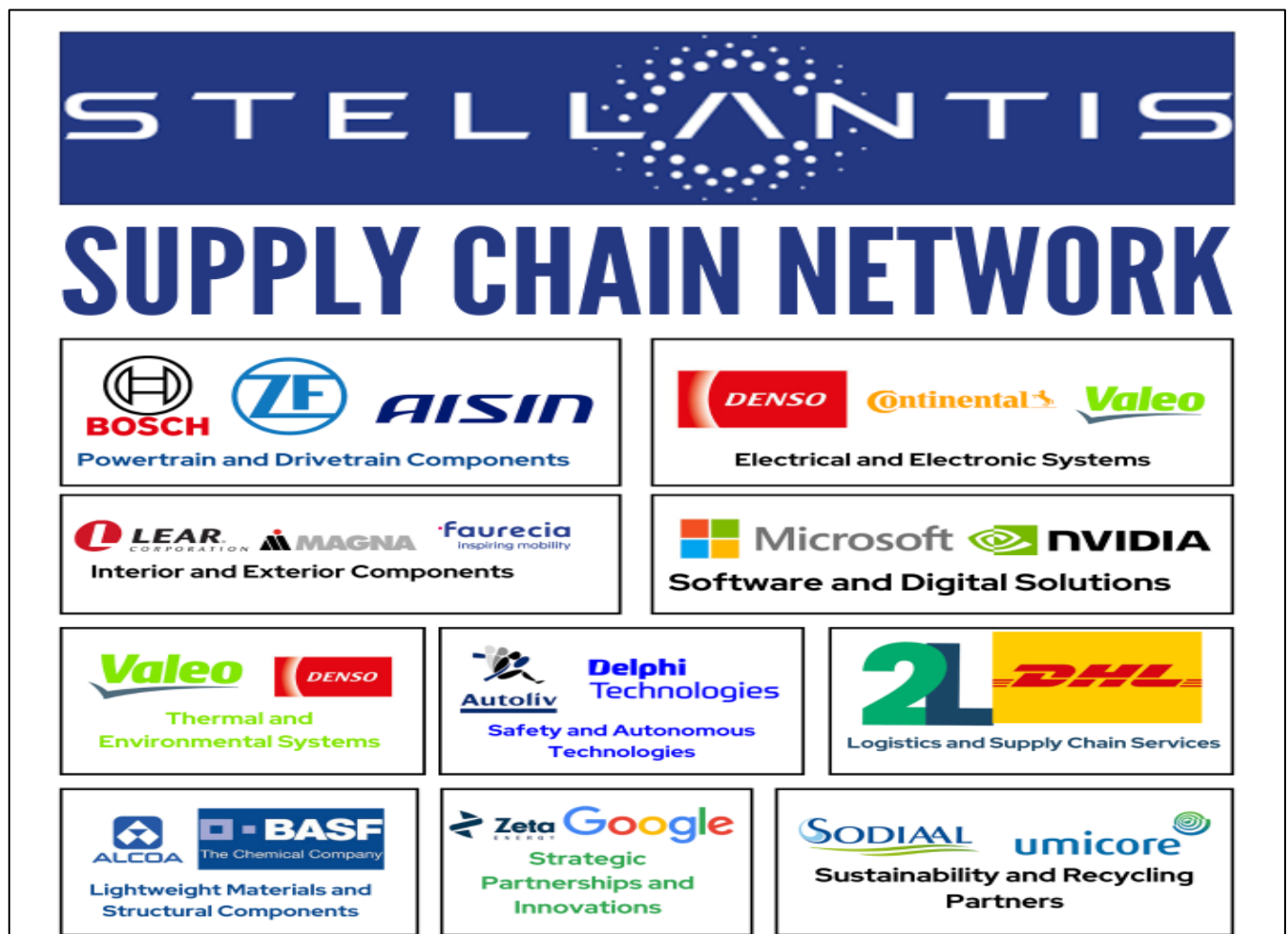


Fig 10 Vendors Network of Stellantis for different components

Stellantis' robust and diversified supplier network is integral to its ability to produce vehicles that meet diverse market demands. However, sometimes, product recalls, as occurred in 2022, disrupt the whole supply chain network. The following is a short case study: When Stellantis recalled one of its products, it impacted the whole of its supply chain.

➤ *Case Study of Supply Chain Disruptions from Product Recalls at Stellantis*

In the automotive industry, product recalls are critical events that extend beyond consumer dissatisfaction and significantly impact the entire supply chain ecosystem (Brunel & Thierry, 2024). The 2024 Stellantis recall of over one million Ram trucks due to a software glitch shows ripple

effects on suppliers, logistics partners, and the overall financial stability of organizations.

• *The Issue Explored*

The Stellantis recall highlights fundamental vulnerabilities such as consumer trust and the web of supply chain operations. Product recalls compel companies to reallocate resources, thereby disrupting regular operations (Tomlin & Wang, 2011). Additionally, suppliers may experience delays, renegotiations, or even insolvency as they struggle to meet the financial and operational demands of fulfilling recall-related obligations. Figure 11 shows the key factors, issues and how they have impacted Stellantis and all associated stake-holders with this product recall.

Key Issue	Issue	Impact	Strategic Focus
Supply Chain Visibility	Recalls reveal gaps in supply chain transparency, especially beyond direct suppliers.	Lack of visibility into second- and third-tier suppliers can hinder the ability to manage risks effectively.	Enhance transparency across all supply chain tiers to identify and mitigate hidden dependencies
Software's Hidden Liability	Increasing reliance on digital components introduces new vulnerabilities.	Software flaws can trigger widespread recalls, affecting multiple aspects of the supply chain.	Integrate digital risk management into overall supply chain risk frameworks.
Regulatory Scrutiny	Recalls often lead to heightened regulatory attention.	Increased demand for compliance and potential for stricter future regulations.	Proactively engage in regulatory conversations and shape safety standards.
Supplier Flexibility	High concentration of suppliers can create vulnerabilities during recalls.	Over-reliance on key suppliers increases the risk of significant disruptions.	Diversify the supplier base to enhance resilience against supplier-specific disruptions.
Operational Agility During Crisis	Effective crisis response is critical to managing recalls.	Slow or uncoordinated responses can exacerbate supply chain disruptions.	Foster cross-functional collaboration and streamline internal processes for rapid crisis management.
Post-Recall Innovation	Recalls, while challenging, can drive innovation.	Opportunities to improve operational processes and customer engagement.	Leverage lessons from recalls to innovate and strengthen the supply chain.

Fig 11 Supply Chain Issues due to product recall

The necessity to coordinate the return and replacement further complicates logistics operations, adding another layer of complexity to the supply chain. Consequently, the financial costs incurred from managing recalls can jeopardize the financial health of the manufacturer and its supply chain partners.

V. RESULTS AND DISCUSSION

➤ *Quantitative Analysis*

Stellantis has markedly enhanced its operational efficiency by increasing inventory turnover from 7.5 to 9.2, shortening lead times from 23 to 19 days, and lowering procurement costs per vehicle by 12.5% via supplier

consolidation and improved contracts (Figure 12). The on-time delivery rate rose by four percentage points, indicating improved coordination between suppliers and manufacturing facilities. These accomplishments illustrate Stellantis' dedication to enhancing its supply chain and promoting cost efficiency.

Graph 1 delineates essential performance metrics contrasting the inaugural complete year post-merger 2022 with 2023.

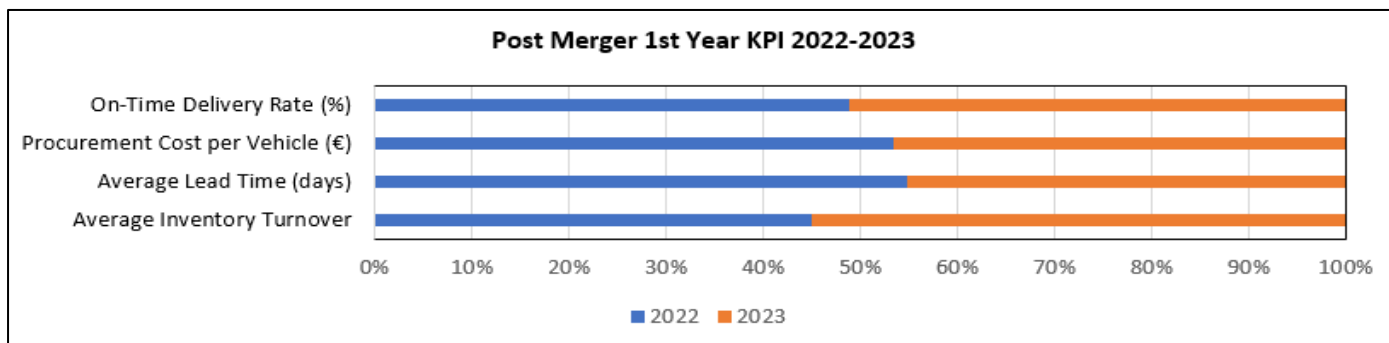


Fig 12 Key Performance Metrics (PMI in Supply Chain of Stellantis)

Figure 13 shows the annual synergies achieved among different categories as found by (Zirpoli), such as

procurement synergy, logistics and distribution synergy, R&D synergy, and others (Zirpoli, 2023).

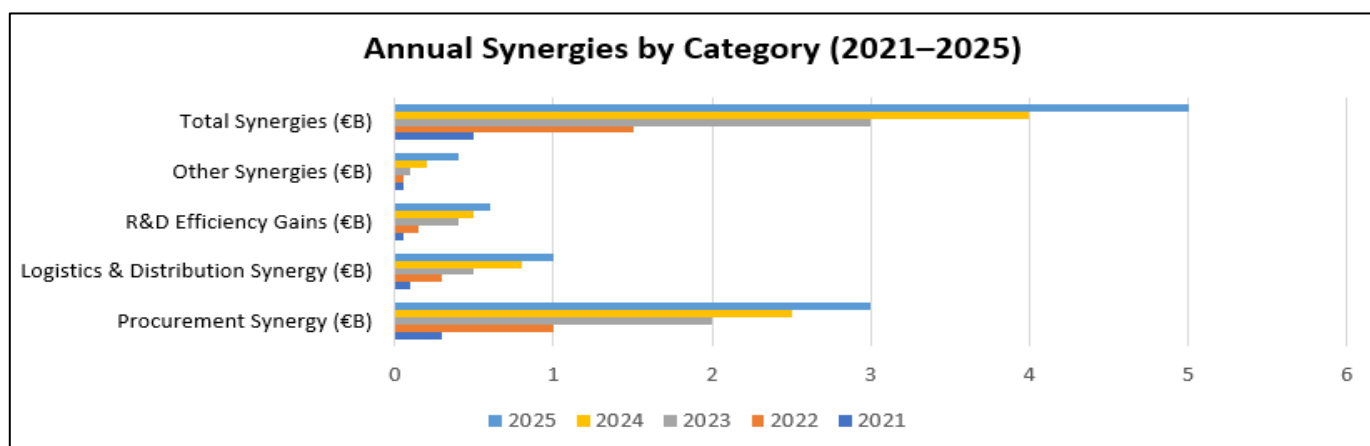


Fig 13 Existing Synergy Gains and Forecasting for 2025

Stellantis has substantially reorganized its supply chain and logistics operations by reallocating these responsibilities from the purchasing department to the Chief Manufacturing Officer, Arnaud Deboeuf. The strategy based on the incoming CMO has a strategy initiative, and based on it, the cost reduction plan was formulated. Based on the past 4 years' trends, forecasting was done for the upcoming fiscal year (figure 14), which seeks to eliminate organizational silos, improve shared technologies, and augment operational flexibility throughout the company's global operations (Thelisson, 2023).

It further aims to streamline its automotive supply chain and attain even more synergies by integrating logistics, supply chain, and production services. The reform entails optimizing transportation strategies, enhancing supply chain transparency, and investing in digitalization and artificial intelligence to optimize operations and minimize expenses. Stellantis prioritizes the fortification of supplier relationships and enhances cross-functional collaboration with engineering and buying teams to augment efficiency and resilience. These modifications aim to tackle the difficulties of a volatile global landscape, bolster Stellantis' strategic goals, and prepare the company for enduring growth and operational superiority in the transforming automotive sector.

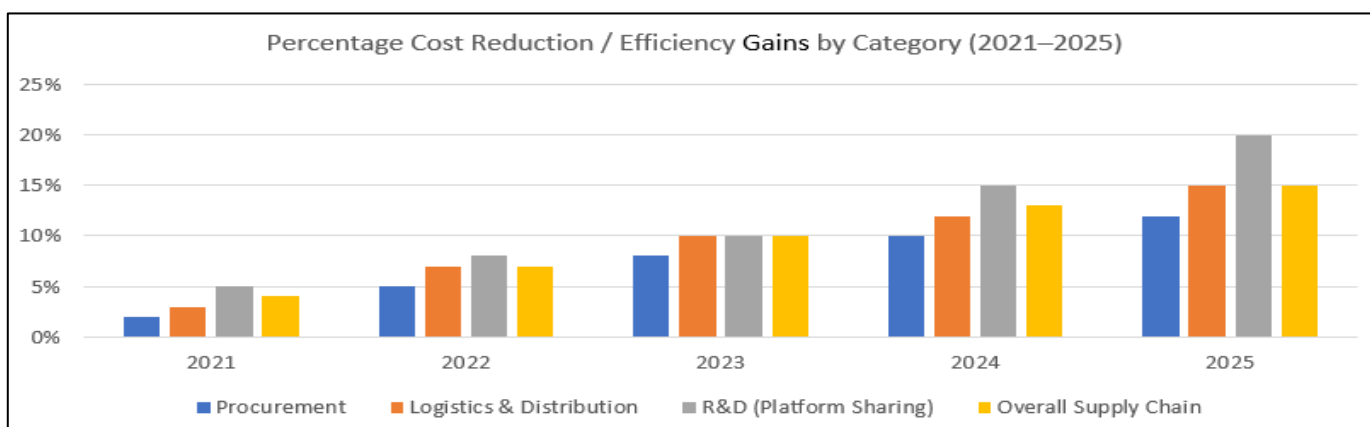


Fig 14 Cost Reduction Trends in the Supply Chain Process of Stellantis

➤ *Implications Due to Disruptions in Supply Chain*

Supply chain disruptions provide substantial challenges for board members and executive teams. It necessitates smart and proactive measures to sustain organizational resilience. To cope with such situations, board members must evaluate supply chain visibility by guaranteeing complete transparency throughout all supply chain levels. Meanwhile, executive teams should diminish reliance on primary suppliers and alleviate the risks associated with supplier failure.

Moreover, improving crisis response can entail formulating and optimizing crisis management protocols to guarantee prompt and efficient reactions during disturbances. Furthermore, encouraging innovation following a recall enables firms to utilize recall experiences to enhance improvements and stimulate innovation throughout the supply chain, thus bolstering overall resilience. By focusing on these aspects, supply chain interruptions can be managed adeptly.

VI. DISCUSSION

➤ The Stellantis initiative succeeded because of following contributing factors:

- Senior Management Support Provided steadfast leadership that aligned and propelled all teams toward common objectives
- Stakeholder Engagement Restructured contracts to facilitate seamless transitions that promptly engaged key suppliers and maintained consistent communication.
- A structured, phased approach effectively managed project complexity by systematically addressing technological and cultural challenges. This method minimized disruptions, facilitated ongoing improvements, and ensured a smooth transition.
- Leveraging real-time data enabled the identification of bottlenecks and prompt corrective actions. This approach supported informed, adaptive decisions, ensuring the organization remained responsive to evolving circumstances.

➤ *Challenges and Mitigation*

Corporate cultures were difficult to align throughout integration. A comprehensive change management practice focused on regular and transparent communications to keep stakeholders informed and involved. Moreover, the joint workshops helped merging teams collaborate with each other.

• *IT Compatibility Problems*

Integrating two large ERP systems needed substantial customization and data harmonization for seamless operations. To resolve this issue, a staggered rollout method allowed incremental integration and technical issue resolution to minimize disruptions. Hybrid solutions were used during transitions to minimize downtime and maintain business processes.

• *Antitrust and Regulatory Constraints*

Stellantis struggled with regulatory and antitrust issues in Europe, where it had a large market share. However, it managed these pressures and achieved its strategic goals by engaging in delicate negotiations and being flexible.

• *Theoretical Implications*

Stellantis adeptly managed its merger by utilizing insights from Resource-Based View (RBV), Transaction Cost Economics (TCE), and Organizational Culture Theory to establish a framework for competitive advantage, cost efficiency, and cultural cohesion such as:

- ✓ Supplier ties, unique platforms, and production technologies gave Stellantis a sustainable competitive advantage.
- ✓ Leveraged internal capabilities to help align strategically for improved operations and long-term growth.
- ✓ Supplier consolidation and standardized contracts reduced supply chain costs.
- ✓ Post-merger cost savings and resilience-supported TCEs.
- ✓ Managed PMI cultural harmony, which was achieved through collaborative workshops.
- ✓ A unified organizational culture was developed to enhance collaboration and transitions.

➤ *Actionable Recommendations for Failure in Supply Chain*

This research offers the following actionable recommendations when a situation like a product recall occurs and the supply chain is disrupted:

- Stellantis should regularly evaluate its supply chain transparency. It needs to perform thorough audits to detect and rectify visibility deficiencies at each layer of the supply chain.
- Digital risk management must be incorporated through advanced AI tools, IoT, and emerging technologies of Industry 4.0. The software vulnerabilities should be included in the supply chain risk framework (Cianciotta & D'Adamo, 2021).
- The supplier and vendor base should be expanded because broadening the supplier pool will enhance supply chain resilience and fortify overall supply chains.
- The crisis management protocols need to be enhanced further. To do so, Stellantis can develop and routinely revise crisis response procedures to ensure prompt and efficient action during recalls or unforeseen incidents.
- Proactive engagement with regulators helps in compliance with standards. Stellantis must participate in regulatory forums and engage with authorities to influence safety and compliance standards.
- Finally, the recalls should give a point of innovation instead of making it a challenge. Stellantis can employ insights gained from recalls to propel supply chain innovations and enhance operational efficiencies.

➤ *Recommendations for Nissan-Honda-Mitsubishi Merger and Acquisition*

The collaboration of Nissan, Honda, and Mitsubishi has the potential to revolutionize the automotive industry. The trio can achieve significant technological advancements,

efficiency, and market reach by combining their expertise and resources. Below are the key areas where this collaboration could yield substantial benefits.

- Honda's fuel cell expertise, Nissan's electric vehicle innovations, and their combined advances in autonomous driving (ADAS and data-driven methodologies) and unified software platforms (infotainment, telematics, over-the-air updates) can accelerate solid-state battery development, self-driving technology, software costs, and user experiences.
- The collaboration can reduce global chip shortages, save money, reduce transportation costs, and improve supply chain resilience and efficiency by consolidating semiconductor procurement, sourcing lithium, cobalt, and rare earth elements, and optimizing logistics through shared shipping routes and warehouses.
- Sharing vehicle platforms, centralizing manufacturing in critical locations, and sharing resources can save development and production costs, boost operational efficiency, speed up model rollouts, and maintain product quality across all segments.
- The collaboration can expand access to emerging markets, strengthen its luxury segment presence, and build resilience against economic and market fluctuations through a diversified global footprint by leveraging Mitsubishi's dominance in Southeast Asia, Nissan's growth in Latin America, and Honda's Acura with Nissan's premium offerings.
- Successful collaboration requires cultural integration, brand identity harmonization to maintain customer loyalty and value, and competition authority permissions to solve legal and regulatory issues.

Nissan, Honda, and Mitsubishi's partnership will create a global automotive standard. Collaboration may boost innovation and lower costs by focusing on pooled R&D, simplified supply chains, integrated manufacturing, and strategic market development. To succeed, cultural integration and regulatory requirements must be carefully managed. These companies can transformatively grow and strengthen their automotive industry leadership.

VII. CONCLUSION

This study's findings indicate that strategic supply chain integration can realize significant efficiency gains after a substantial vehicle merger, exemplified by the Stellantis merger. Stellantis markedly enhanced critical operational metrics, including inventory turnover, lead time, and procurement costs by consolidating suppliers, integrating information technology systems, and minimizing manufacturing footprints. These accomplishments illustrate the need for leadership commitment, incremental implementation, and cultural integration to achieve post-merger synergies. These findings compelled managers to adopt a phased integration strategy for complex IT migrations and supplier consolidations, centralize procurement to enhance purchasing power and negotiate superior contracts, promote cultural alignment via change management initiatives, and utilize data analytics by implementing

advanced ERP and analytics systems that offer real-time visibility and expedite decision-making. All of these recommendations were formulated in reaction to the findings.

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