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Proof of Concept for Frontline Logistics Organization

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Abstract.

The thesis investigates the design and implementation of a new logistics organization model within a developing regional market. The study focuses on creating a structural operational framework and developing a proof of concept to demonstrate its viability in a real-world environment. Drawing on established logistics theories, organizational design principles, and supply chain methodologies, the research identifies key challenges related to network setup, resource allocation, and operational integration during the establishment of a new logistics function.

A mixed-methods approach was employed, integrating qualitative insights from stakeholder interviews and quantitative analysis of process performance indicators. The resulting model outlines an optimized organizational structure, process workflow, and governance mechanism suitable for early-stage logistics operations. The proof-of-concept implementation validates the proposed framework by evaluating initial operational outcomes, identifying areas of improvement, and confirming alignment with strategic business objectives.

These findings contribute to the broader understanding of how logistics organizations can be effectively established in an emerging operational context. Furthermore, the study provides practical guidance for practitioners involved in designing, launching, or restructuring logistics functions in similar environments.

Keywords: Logistics, Process Improvement, Supply Chain Optimization, Digital Transformation, Organizational design, Stakeholder analysis, Operational Integration, Process Optimization

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Nomenclature / Abbreviations

Abbreviations	Explanation
3PL	Third-Party Logistics
BL	Business Line
CC	Commodity Code
COO	Country of Origin
CPT	Carrier Paid To
ERP	Enterprise Resource Planning
ES	Engineering Support
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FIFO	First In, First Out
GSS	Global Spare Service
IBL	Inbound Logistics
KPI	Key Performance Indicator
LIFO	Last In, First Out
LSP	Logistics Service Provider
LT	Lead Time
MOQ	Minimum Order Quantity
NOR	Notification of readiness
OBL	Outbound Logistics
OC	Order Confirmation
OTD	On Time Delivery
POC	Proof of Concept
R&D	Research and Development
ROI	Return on Investment
SCM	Supply Chain Management
SOP	Standard Operating Procedure
TMS	Transport Management System
WMS	Warehouse Management System

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1 Introduction

Supply chain management has faced numerous major obstacles and changes over the past ten years. Supply networks have had to modify their procedures to become more flexible and responsive due to the worldwide pandemic, geopolitical unrest, and economic instability (Solari et al., 2024). Logistics is important in transporting and managing the people and goods within supply chain management (SCM), which is essential for the prompt transportation of goods from vendors to end customers (Kain & Verma, 2018). Building a robust logistics approach that is well-organized, evaluated, and continuously improved for maximum efficiency is crucial for companies to effectively manage their supply chain operations (Dağdeviren & Erturgut, 2024).

Businesses are always seeking better ways to enhance their logistics and supply chain processes in today's rapidly evolving business landscape. Three elements drive continuous improvement, according to Sanchez-Ruiz & Blanco (2019): shifts in the corporate landscape, the introduction of new administrative networks, and the importance of overall quality management. In this context, the shift toward digitalization has become a crucial enabler of greater operational effectiveness, cost reductions, shorter delivery times, and higher client acceptance (Ben-Daya et al., 2017; Yadav et al., 2023).

1.1 Research Problem

The establishment of a new logistics organization within a regional market presents a multifaceted challenge that requires careful alignment of strategic orientation, operational capability, and organizational culture. Despite the growing importance of logistics as a driver of competitiveness and supply chain resilience, organizations often face significant uncertainty in designing structures that effectively respond to local market expectations, workforce characteristics, and institutional environments. In addition to internal organizational dynamics, external contextual factors such as economic conditions, infrastructural maturity, and cross-border regulatory frameworks have a decisive influence on logistics performance and network configuration.

A further challenge arises during the early phases of implementation, when organizations must determine which key performance indicators provide a meaningful baseline for evaluating service levels, cost structures, reliability, and system readiness. The absence of a standardized

or context-sensitive framework leads to fragmented decision-making and limited visibility into performance drivers. As a result, organizations lack coherent guidance for structuring logistics operations and prioritizing process improvements across regions with varying institutional and operational conditions. This research seeks to address this gap by examining the determinants of successful design and optimization of a logistics organization during its initial implementation phase.

1.2 Aim of research and research questions

This study aims to investigate the organizational, contextual, and operational factors that shape the successful establishment and optimization of a logistics organization within a specific regional context. The research seeks to identify the strategic, operational, cultural, and regulatory conditions that influence logistics design decisions, and to determine how supply chain networks can be configured to generate sustainable competitive advantage. Furthermore, the study aims to specify which performance indicators should be measured during the early stages of implementation and to evaluate opportunities for process improvement that enhance organizational effectiveness.

In addition to investigating the viability of implementing access points in the specific regional context, the research aims to understand how such a system can improve last-mile delivery performance in two markets with different logistical, geographical, and consumer behavior characteristics. The research aims to provide a thorough understanding of the operational realities that shape differences in access point networks by combining quantitative performance metrics with qualitative stakeholder perspectives. This integration approach ensures that the analysis reflects both measurable outcomes and the experiential perspectives of those directly involved in the delivery process.

Another key aim of this thesis is to assess the extent to which access points can contribute to improving communication and competitiveness in a market where alternative delivery models have already established strong customer recognition. The research investigates how access points can leverage pick-up point infrastructure to reduce failed delivery attempts, enhance customer convenience, and optimize courier routes. The goal is to determine whether such a network can effectively address current inefficiencies in urban and rural areas, while also meeting evolving e-commerce delivery operations.

Furthermore, the study seeks to determine the strategic elements that should guide the placement, density, and scalability of access points nationwide. This includes examining demographic patterns, population density, consumer preferences, and regional parcel-volume distribution. By doing so, the research supports the development of access points for a clear, data-driven framework for prioritizing rollout areas, selecting retail partners, and planning operational capacity. The aim is to create a deployment model that is sustainable, scalable, and aligned with long-term market trends.

Finally, this thesis aims to provide practical recommendations for the access point decision-making process by translating research findings into actionable insights. These recommendations will address key operational considerations such as partner onboarding, customer communication, training requirements, and integrating with existing access point infrastructure. By doing so, the study aims to bridge the gap between theoretical analysis and practical application by providing recommendations to facilitate the successful rollout of the pick-up point network in pilot nations.

The research is guided by the following questions:

1. **What operational factors influence the successful establishment of a new logistics organization in a regional implementation context?**
2. **What role do regional infrastructure characteristics frameworks play in shaping the design and implementation of logistics structures?**
3. **Which key performance indicators are essential for evaluation during the first phase of logistics organization implementation?**
4. **How can a supply chain network be optimized to achieve a competitive advantage within the target regional market?**
5. **What process enhancements can be introduced to strengthen logistics performance within the regional context?**

These questions collectively guide an inquiry that integrates organizational, environmental, and operational dimensions to develop a comprehensive understanding of logistics design and optimization.

1.3 Research approach

This research uses a mixed-methods approach, potentially combining qualitative and quantitative methodologies, to generate a comprehensive understanding of the factors influencing logistics organization design and performance. A mixed-method strategy is appropriate because logistics systems involve both quantifiable operational metrics and context-dependent human and institutional factors that cannot be fully captured through a single methodological lens.

A mixed-method design was selected to address the complexity of logistics ecosystem implementations. The deployment of an access point involves operational processes, geographic network planning, customer preferences, carrier constraints, and external partners. A single method would not sufficiently capture these multidimensional factors. Therefore: (i) Quantitative methods provide measurable insights (services, coverage, delivery lead times, failure rates), (ii) Qualitative methods offer interpretation, context, and understanding of human-centric aspects (customer behavior, partner readiness, operational bottlenecks). This methodological triangulation ensures validity, reliability, and depth of findings.

1.3.1 Quantitative Component

Structured survey instruments will be used to collect numerical data from internal and external stakeholders involved in logistics operations. Quantitative analysis will include descriptive statistics, reliability testing, and comparative performance assessment of key operational indicators. This component establishes an empirical baseline for evaluating logistics performance during the implementation phase. The quantitative analysis evaluates whether the introduction of an access point will improve (i) Delivery performance (speed, first- attempt delivery success), (ii) geographic coverage in pilot countries, (iii) Operational efficiency (consolidation rates, courier route optimization), (iv) Cost structure (last-mile transport costs), and (v) Customer adoption rates. These metrics support evidence-based decisions on network expansion, investments, and resource allocation.

The study will use the following quantitative data sources: (i) Current logistics performance data (delivery time performance, missed delivery attempts, current parcel volume distribution across region), (ii) Market and demographic datasets (Urban vs rural population density, e-

commerce penetration rate), (iii) Simulated network coverage (Geospatial data for proposed pick-up point locations, Road network routing simulations), (iv) Customer behaviour analytics (Parcel redirection frequency, technician pick-up preference).

Data collection techniques for quantitative components include descriptive statistics to summarize current operational performance, Geospatial analysis to evaluate the optimal distribution of pickup points, network modeling and simulation to estimate the impact of route optimization, and a survey with structured questions to quantify customer preferences. Data analysis techniques are applied to analyze and quantify the data collected. Those are (i) Regression Analysis (to identify relationship between access point density and delivery performance), (ii) Geospatial cluster analysis (to determine optimal access point locations near population centres and high-volume e-commerce corridors), (iii) Comparative performance analysis (benchmarking access point results with other logistics providers), (iv) Cost-benefit analysis (estimate operational impacts of reducing failed deliveries, consolidating shipment to access points, courier distance reduction in the pilot country)

1.3.2 Qualitative Component

Semi-structured interviews and open-ended survey questions will be conducted to explore strategic priorities, cultural dynamics, infrastructural constraints, and regulatory influences. Thematic analysis will be used to examine qualitative data and identify recurring trends and contextual factors influencing organizational design. Quantitative inquiry explores stakeholder experiences, operational readiness, and the broader ecosystem implications of implementing access points. It addresses questions that numbers cannot fully answer, such as: (i) What factors influence customer willingness to use access points, (ii) What are the concerns of the retail partners hosting access points, (iii) What operational challenges do couriers foresee, (iv) How do access points manage and evaluate market readiness of a product.

The study will use the following qualitative data sources: (i) Semi-structured interviews with operational managers, logistics partners, customer services representatives, logistics supervisors, and ground technicians, (ii) Focus groups with e-commerce customers in both markets, (iii) Document analysis (internal access point process documentation, partner agreement, market expansion guidelines).

Data collection techniques for qualitative components include operational studies at competitors' existing pick-up points, focus groups that support collective insights and behavioral discussions, and semi-structured interviews that allow flexibility and depth. And the data analysis techniques are (i) Thematic analysis to identify common patterns and themes, (ii) Categorical coding for stakeholder sentiment (positive, negative, and neutral), (iii) Cross-case comparison between countries' operational conditions, (iv) Process mapping insights to identify bottlenecks in the last-mile flow.

The research questions are structured in a parallel–parallel–integrative logic. First, internal operational factors (RQ1) and external regional infrastructure characteristics (RQ2) are examined in parallel to establish the foundational conditions for implementing logistics organization. Based on these findings, evaluation metrics (RQ3) and supply chain network optimization strategies (RQ4) are developed in parallel analytical streams. Finally, the results are synthesized in RQ5 to propose process enhancements that strengthen logistics performance in the regional context.

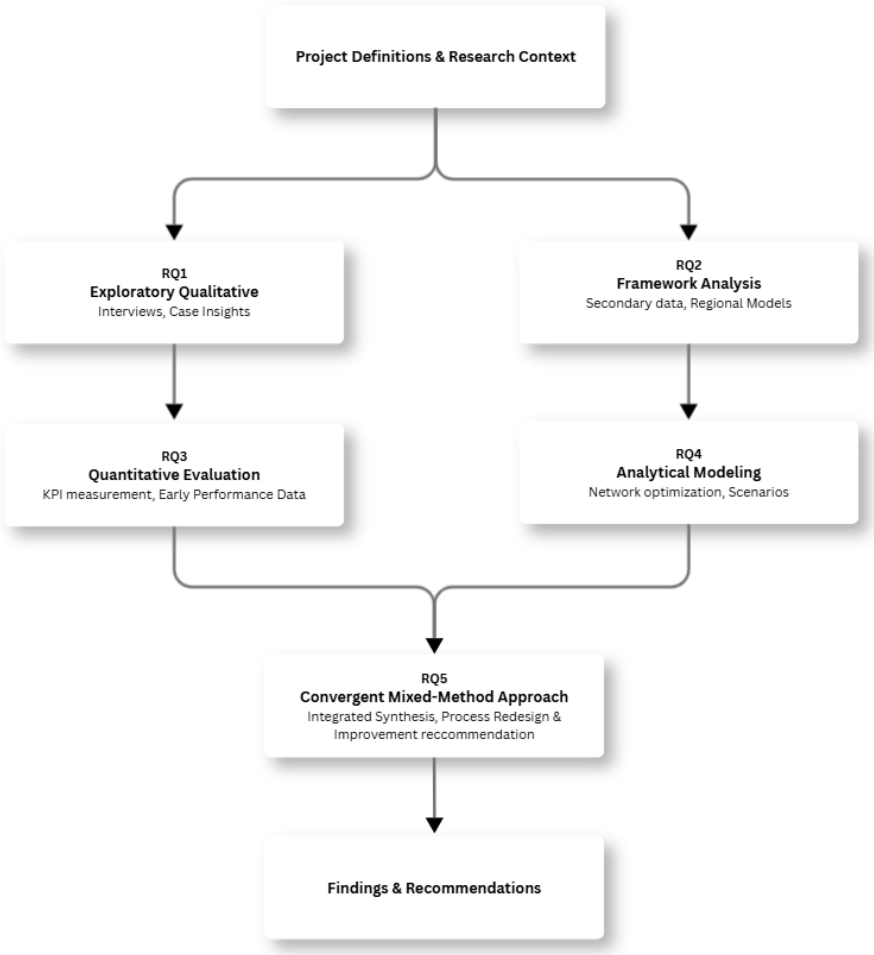

Figure 1. Flow Chart – Mixed Method Approach

2 Literature review

The literature review on process improvement and the implementation of frameworks in the logistics supply chain is covered in this section. To find pertinent material, academic sources like SCOPUS, ResearchGate, and Google Scholar were examined.

2.1 Logistics

Logistics management refers to a component of the supply chain that organizes, executes, and regulates the forward movement and back movement of stocking the items, offerings, and necessary information between the vendor and the consumer to fulfill customers' needs, according to the Council of Supply Chain Management Professionals (CSCMP). To put it simply, logistics facilitates the flow of information and commodities from suppliers to consumers, as well as the disposal of waste and reverse flows. To improve customer value and achieve a competitive edge, Christopher (2016) defines supply chain management and logistics as a strategically integrated approach to coordinate the flow of capital, information, and commodities across organizational boundaries.

Due to global challenges, rising customer expectations, and technological advancements, logistics has changed significantly in recent years. Because it enables companies to expand internationally and establish a presence in foreign markets, logistics is an essential component of economic strength. With a compound annual growth rate (CAGR) of 4.7%, the worldwide freight and logistics sector is expected to reach $6.55 trillion by 2027 (Benchmark International, 2024). The logistics industry is primarily driven by innovations in technology such as e-mobility, traditional sensors (Ben-Daya et al., 2017), digital advancements through blockchain and IoT (Chung, 2021), the adoption of sustainable practices (Kim et al., 2024), improvements in internet retailing, and technology inclusion.

Prior research highlights that regional infrastructure characteristics, such as transportation networks and institutional frameworks, play a critical role in shaping logistics structures and operational feasibility (Banomyong et al., 2008). Supply chain costs, LT reduction, client satisfaction, and competitive advantage are all directly impacted by logistics, which is essential for ensuring supply chain effectiveness and efficiency. Inventory spends less time in the system when logistics procedures are optimized, which will lower standard storage and transportation expenses. For example, improving warehouse management (Luu et al., 2023) and delivery

networks (Sert et al., 2020) can significantly lower costs and boost supply chain efficiency. Additionally, logistics directly impacts product lead times (Kovačić & Ros-McDonnell, 2015). Faster order fulfillment and greater supply chain agility are enabled by streamlining logistics processes (Alnahhal et al., 2021). Maximizing customer happiness requires precise, on-time delivery, which logistics is directly responsible for.

Thus, by integrating manufacturing, distribution, and usage while ensuring effectiveness and customer satisfaction, logistics serves as the cornerstone of supply chain management. Therefore, by leveraging the potential of contemporary logistics processes and finding creative solutions to logistics problems, firms can achieve operational efficiency.

2.2 Process Enhancement

According to Davenport & Ronanki (2018), a process is an organized, quantifiable collection of actions intended to provide a given result for a specified client or aftermarket. This refers to a series of tasks that a company should complete in a specific sequence to provide consumers with value most effectively (Lemaň-Majdzik & Okałglicka, 2015). Effective process enhancements in logistics operations are achieved through integrated supply chain practices that align organizational processes with strategic and regional requirements (Mentzer et al., 2001). Businesses operate more effectively when they are mindful of their procedures than when they are not, according to Reijers (2021). This highlights the necessity of process management to improve company operations and reduce costs (Soli ani, 1998). Businesses must comprehend the data, people, and activities involved at each stage of a business process (Reijers, 2021). Businesses can identify areas for improvement once they understand their current processes.

According to Gunasekaran & Kobu (2002), corporate processes must fundamentally change to achieve meaningful process improvement. Eliminating tasks that have no value (such as rework and repetitive, redundant operations), streamlining processes, and integrating activities are the goals of process enhancement or process re-engineering (Sanchez-Ruiz & Blanco, 2019).

When Japanese approaches such as lean and Kaizen were developed in the 1980s, process enhancement in logistics became popular (Singh & Singh, 2012). Supply chain components are coordinated, and material and information flows are seamlessly integrated through a well-run,

effective logistics operation (Kain & Verma, 2018). To increase productivity and customer satisfaction, businesses must focus on optimizing logistics processes.

Inventory management, order fulfillment, warehouse activities, and transportation scheduling are among the areas in logistics operations that are typically focused on for process improvement. Numerous studies have examined the potential of methods such as resource allocation, real-time inventory operations, and effective pick-and-pack for waste reduction and responsiveness improvements (Chapman, 1989; Zhong et al., 2022). Despite being successful, they are resource-intensive and often rely heavily on human coordination. This reveals a gap where technological changes, specifically the standardization of automation, will add value by streamlining tedious procedures and improving the regularity of logistics process deployment.

Integrating digital transformation with conventional process optimization techniques can greatly help businesses. This enables companies to leverage the framework and power of tried-and-true approaches like six-sigma, lean, and kaizen by augmenting them with data-driven, agile technologies such as data analytics, AI, blockchain, and automation. This gives companies a more comprehensive understanding of the foundation for achieving operational excellence and process improvement. The capacity to foster a culture of continuous improvement is a major benefit of such integration (Singh & Singh, 2012). While digital transformation promotes creativity and experimentation, traditional techniques often rely on tried-and-true procedures and minor adjustments. Organizations can achieve significant advances by fostering an atmosphere that appreciates both stability and creativity.

In conclusion, a strong framework for improving process efficiency emerges when digital transformation and conventional process improvement techniques are combined. Businesses can establish themselves as flexible, resilient, and effective by fostering a culture that values continual improvement, strengthening customer focus, increasing risk management, and stimulating innovation.

2.3 Access Point

As businesses transition to more adaptable, decentralized last-mile distribution models, the usage of access points, or regional pickup places, in logistics has become increasingly important. Innovative last-mile delivery concepts and optimization techniques, such as

improved routing strategies and alternative delivery modes, have been shown to enhance operational efficiency and competitive advantage (Boysen et al., 2021). In this strategy, goods are typically transported from a central warehouse to a strategically located regional access point, where field technicians pick them up. A central enabler of modern access-point logistics is RFID (Radio Frequency Identification) technology. Research consistently shows that RFID in Access Points enhances information visibility, real-time data flow, inventory accuracy, and tracking capabilities, which are key requirements for effective access-point operations. According to the research, companies are under increasing pressure to enhance last-mile delivery performance while concurrently addressing sustainability and environmental issues through more effective distribution network designs (Mangiaracina et al., 2015).

Due to significant changes in infrastructure and process design, traditional processes are often expensive and time-consuming (Yadav et al., 2023). According to Doan (2017), RFID greatly enhances logistics operations by facilitating real-time tracking, improving data accuracy, and strengthening inventory control, thereby supporting distributed pickup systems. In scenarios where materials are frequently moved among warehouses, intermediate hubs, and field technicians, RFID-enabled devices are highly beneficial. Further studies demonstrate how traceability and technician pickup efficiency can be enhanced through RFID and access-point structures. Vijayakumar & Tom (2019) examine bulky-goods logistics and show that RFID-supported regional pickup reduces unnecessary technician movement, improves process efficiency, and aligns with Industry 4.0 objectives. Their work suggests that using regional collection nodes not only optimizes travel time but also enhances overall service responsiveness.

2.3.1 Access Point Benefits

The literature extensively discusses the advantages of implementing access points. The classification provided by Vijayakumar, V., and Tom, A. (2019) is used in the following section. They classified the benefits into three categories: (1) improved traceability, (2) Reduced Unnecessary Motions, and (3) efficient technicians' pickup.

One of the most challenging and expensive elements in the supply chain is last-mile distribution, the final phase of the logistics process in which products are transported from a distribution location to the final consumer (Gevaers et al., 2011). Research shows that implementing an

access point can significantly improve operational efficiency by lowering costs, time, resources, and human labor and increasing productivity. According to studies, an access point can provide overall business savings of about 30% and minimize travel-related expenses by 20–30% through man-hour savings (Jovanović et al., 2018). By automating routine duties, technology improves productivity and allows employees to concentrate on work that adds value (Santos et al., 2019; Sullivan, 2021; Aguirre & Rodriguez, 2017). It also always enables process execution (Feldmann et al., 2021). Sullivan (2021) emphasizes how automation can speed up delivery, automate business processes, and enhance decision-making ability. According to the poll conducted by SCMR and APQC (2018), nearly 57% of participants accept that newer technology simplifies processes. Implementing access points also improves the dependability, uniformity, and economic viability of business processes.

Communication must be the top priority when installing the access point. Every stage involved in creating effective supply lane routes must consider communication and information flow. Additionally, by incorporating automation into the process, repetitive tasks can be automated, reducing the need for human intervention.

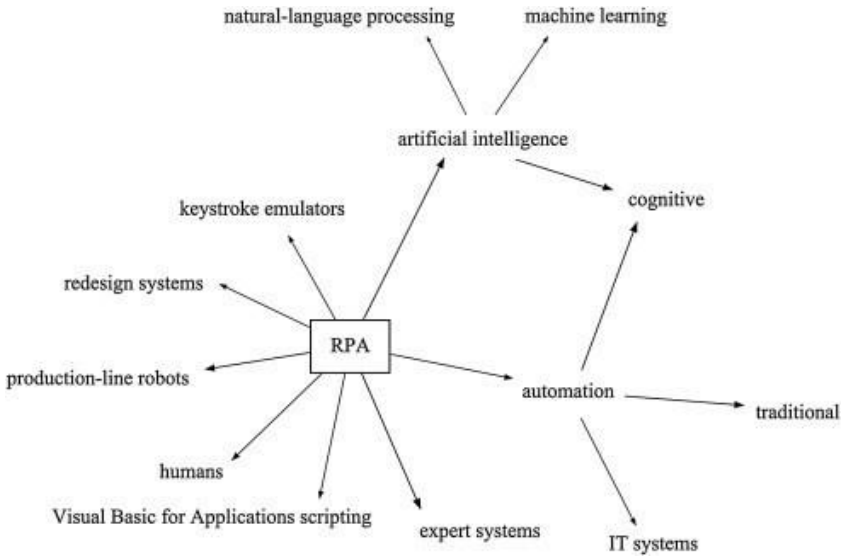

Figure 2. Automation-centric graph (Syed et al., 2020)

The literature emphasizes the importance of automation in improving governance and complying with regulatory procedures. According to Jovanović et al. (2018), a clear procedure is essential for implementing AP, which improves process accountability in companies. Puica (2022) asserts that robotic automation adheres to business regulations and guidelines by

following preset action patterns. Alpers et al. (2019) present a real-world example from a German company in which automation was implemented in accordance with local and national e-change regulations, significantly improving compliance outcomes. Additionally, Taulli (2020) highlights that automation reduces the possibility of fraud by minimizing human participation in data management. Additionally, it generates thorough audit logs for efficient oversight. Similarly, Syed (2020) points out that automated systems can review human transactions and detect noncompliance, thereby strengthening corporate control protocols.

There is significant interaction in logistics processes, and automation can help businesses improve critical connections. Since log data is transparent, supply chains can improve the speed, precision, and compliance of process implementation by automating repetitive tasks (Feldmann et al., 2021). Improved operations and greater consumer satisfaction result from this effective supply chain (Fischer et al., 2023). Supply chain departments can additionally visualize their existing processes and develop a business process flow with automation. Teams may make well-informed decisions thanks to improved traceability, clarity, and data accessibility, which promote productive operations and continuous development.

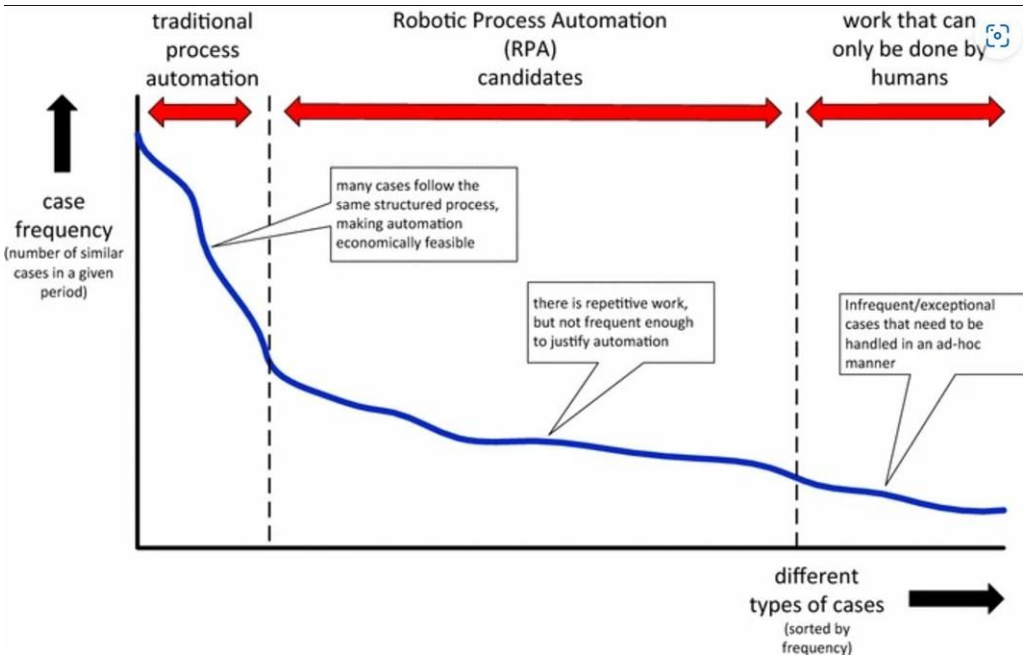

Figure 3. Work in Long Tail (Aalst et al., 2018)

The benefits of installing Access Point can be summed up as follows: (i) cost-effective; (ii) customer satisfaction; (iii) minimizes error; (iv) extensively scalable; (v) improved routes; and (vi) optimizes reverse logistics.

2.3.2 Access Point Challenges and Limitations

Technical difficulties, strategic inconsistencies, operational inefficiencies, and human factors issues are the main hurdles in deploying Access Point. The outcome of implementation can be greatly impacted by each of these. Although deploying access points can improve organizational productivity, there are several important constraints and challenges to consider before doing so. Key constraints found in recent studies are summarized in this section.

- **Process-Related Difficulties**: Finding appropriate access point procedures might be difficult for businesses. The adoption of access points is hampered by a lack of uniformity and reliable workflows in many businesses. Before implementing the access point, an infrastructure inspection and an organizational readiness evaluation must be conducted. Furthermore, it takes significant thought and study to determine which tasks can be finished without human intervention (Pramod, 2022; Leopold et al., 2018).

- **Data Privacy and Security Concern:** Adoption of automation in logistics may have major obstacles, and numerous studies indicate concerns regarding security both inside and outside of companies. Given the risk of an internal system attack, adopting automation alone requires stringent governance to safeguard data. Automation has security consequences that organizations must understand because improper technology management could expose confidential information. Strong control systems and detailed preparation are necessary to reduce these hazards, and a focus on data privacy and security issues is crucial to ensuring the safe implementation of automation (Eulerich et al., 2024; Osmundsen et al., 2019; Fernandez & Aman, 2021).

- **Training Gaps Information**: Deploying access points is difficult if teams are unaware of the procedure and how it is carried out. Members of the supply chain who lack

appropriate knowledge may lead to recurring tasks and misunderstandings, and may spread misleading data. All stakeholders must have a thorough awareness of the procedures and their applications for implementation to be successful. Organizations may struggle to use emerging technologies effectively without the necessary training and expertise, potentially leading to operational setbacks and inefficiencies (Tsang et al., 2024).

- **Organizational Impact**: When access points are implemented, professionals might become unduly dependent on new technology, which can lead to a decline in domain expertise within businesses. Additionally, there is a common misconception that current systems can support higher throughput, which can complicate the implementation of access points (Eulerich et al., 2024; Syed et al., 2020).

- **Cost and Regional Challenges**: Previous studies indicate that last-mile delivery accounts for a disproportionate share of total logistics costs due to fragmented demand, time constraints, and high service expectations, particularly in e-commerce-driven supply chains (Lim et al., 2018). Infrastructure limitations, transportation congestion, and regulatory constraints substantially impact last-mile distribution in urban and regional settings. These factors also affect network design decisions and delivery performance (Cherrett et al., 2012).

- **Compliance Need**: Although organizations may view access points as an effective means of material transportation, there are compliance as well as safety issues. To prevent unwanted access to stuff, particularly valuable goods, widespread collection access points require strict supervision. To prevent misuse of access points in the area, businesses must remain mindful of potential security risks and implement access restrictions.

- **Data Integration**: To manage the information flow between stakeholders and the platform, organizations must comprehend that the establishment of access points comes with a data integration procedure. Real-time synchronization is required between several systems, including ERP, technicians, access points, and warehouses. Inconsistencies in

pickup visibility result from poor integration. Organizations may face challenges when integrating data across several systems. Requiring all necessary information to be exchanged through a single portal and enabling technicians to retrieve objects from the access point easily indicate that the integration is highly complex.

At this point, the thesis has made the case that implementing access points can help businesses by improving accuracy, efficiency, and compliance. However, a thorough implementation structure is necessary for the effective deployment of access points to address major issues, including process uniformity, security concerns, and technical constraints. To ensure successful adoption, organizations must develop clear rules for evaluation, training, and change management while addressing knowledge gaps, strategic misalignment, and staff resistance.

2.3.3 Framework Implementation for Access Point

Despite Access Point's continued growth in popularity, limited research has been conducted on how best to deploy it for businesses. The literature highlights several crucial elements that businesses need to consider when implementing access points. Includes creating a CoE (Center of Excellence) (Willcocks et al., 2019), implementing change management techniques (Tsang et al., 2024), keeping stakeholders informed, and conducting initial testing, execution, and post-deployment evaluation (Osman, 2019). Despite the identification of these essential elements, there remains a significant gap in the thorough implementation of frameworks that integrate them into a cohesive execution plan. While most research continues to focus on general analyses, this gap is especially noticeable in the implementation of logistics-specific frameworks.

A comprehensive paradigm that meets the unique needs of logistics management and incorporates crucial elements of success drawn from both real-world implementation experiences and academic literature is clearly needed, given the constraints of the current study. The ability of access points to interface with current systems without requiring significant change needs to be considered by such a framework. It should also recognize the necessity of maintaining adequate human supervision in automated processes and the greater repercussions of workforce change.

A solid understanding of key success factors and implementation techniques is evident in the latest studies on access point implementation frameworks. To highlight current research on access point frameworks and their key success factors, the following paragraphs summarize findings from key studies. Pre-implementation recommendations, pilot testing and task selection, stakeholder involvement and change management, implementation phases, and regulation maintenance and standards are the five elements that comprise the findings.

Supply chain network design decisions directly influence a firm's ability to achieve competitive advantage through cost efficiency, service level improvements, and strategic responsiveness (Chopra & Meindl, 2022). Prior to adopting access point approaches, the literature frequently emphasizes the necessity of process optimization and redesign. According to Kyheröinen (2018) and Syed et al. (2020), companies need to analyze and re-engineer their operations to integrate new automated features, ensuring that new methods enhance existing processes rather than duplicate them. Likewise, Feldmann et al. (2021) and Herm (2022) stress that process enhancement improves automation's adaptability and increases efficiency. These research investigations also warn that the possible advantages of access point technologies may be limited if processes are not optimized in advance.

A further essential component covered in the literature is stakeholder engagement. According to Nielsen et al. (2023), identifying stakeholders, evaluating their responsibilities, and assessing how automation might affect their work all require a systematic method. Kyheröinen (2018) and Syed et al. (2020) both advice engaging users early to boost acceptability and prevent resistance. A distinct viewpoint is offered by Crisan et al. (2023), who support customized change management techniques that facilitate cooperative planning and transparent communication. All these results show how crucial it is to coordinate stakeholders during the pre-implementation stage to address potential pushback.

Choosing the appropriate tasks and using pilot testing to assess viability are the first steps in a successful access point installation strategy. Lower- to moderate-complexity jobs with clear guidelines are the best options, as stated by Syed et al. (2020) and Herm (2022). Businesses can demonstrate success to leadership teams and stakeholders through proof of concept and foster trust in technology by prioritizing clarity. Additionally, this lays the groundwork for organizations to implement access points more widely. Building on this, Nielsen et al. (2023)

and Feldmann et al. (2021) stress that the pilot programs offer crucial data regarding organizational and technological viability.

For this step, comprehensive documentation and procedure extraction are essential. Process mining can be used to find drawbacks and areas for development, according to Herm (2022) and Nielsen et al. (2023). The development of PDDs (process definition documents) is encouraged by Feldmann et al. (2021). According to him, this type of information ensures consistency, simplifies training, and improves process accuracy. Despite serving as a starting point, these methods still face limitations related to task variance and the necessity for ongoing refinements throughout the pilot phases.

The literature often emphasizes the importance of leadership and multidisciplinary cooperation. According to Kyheröinen (2018) and Nielsen et al. (2023), upper management is essential for securing resources and aligning access point initiatives with the company's strategy. According to Nielsen et al. (2023), multidisciplinary groups offer a more comprehensive approach to execution and a variety of expectations. However, reluctance to change remains a major obstacle. User anxiety and unfamiliarity with access points are common obstacles, according to Crisan et al. (2023) and Nielsen et al. (2023).

Effective methods to address these problems include awareness campaigns, targeted training, and transparent communication. According to Crisan et al. (2023), companies should apply such approaches not only to mitigate employees' anxieties but also to motivate them to work together with new procedures to boost overall productivity. Most access point frameworks support phased implementation. Herm (2022) and Syed et al. (2020) advise beginning with a proof of concept to assess the technology, then proceeding to test projects to refine procedures, and finally scaling up once viability is proven. More specific instructions for these stages, including implementation plans and governance frameworks to ensure long-term sustainability, are provided by Feldmann et al. (2021).

Another recurrent subject is coordinating access point efforts with a company strategy. Herm (2022) and Nielsen et al. (2023) argue the fact that to maximize the impact of access point deployment, these activities must be clearly linked to business objectives. It is also emphasized that mechanisms for continual improvement, bolstered by systems such as task mining and process enhancement, are crucial for preserving the applicability and effectiveness of access

point procedures over time. However, research indicates a lack of information on how businesses can successfully incorporate iterative changes into rapidly changing operational contexts.

A key component of successful access point adoption is governance. The establishment of a center of excellence that serves as a centralized hub containing knowledge and experience is highly recommended by Herm (2022) and Feldmann et al. (2021). CoE will oversee process optimization, performance tracking, and subsequent opportunities for access point workflows. These governance frameworks provide a uniform basis for expanding access points while ensuring accountability and compliance. Knowledge management is just as important. To reduce knowledge loss in organizations, Syed et al. (2020) emphasize the need to maintain complete records and create an automation procedure. This claim is supported by Feldmann et al. (2021), who contend that performance displays and activity logs improve transparency and encourage ongoing learning.

To summarize these perspectives, the implementation of access points depends on several crucial success elements. These include implementing agile approaches and fostering an ethic of continuous business process improvement (BPI). While Syed et al. (2020) and Kyheröinen (2018) stress stakeholder participation as a fundamental component, Crisan et al. (2023) highlight the need to ensure that goals are aligned with overarching organizational objectives. However, challenges such as resistance to change, insufficient IT collaboration, and skills gaps continue to pose significant barriers. According to Crisan et al. (2023), these issues can be resolved by cooperative planning and organized training programs. Nevertheless, there isn't sufficient empirical data in the literature to support these tactics across a variety of organizational settings.

In conclusion, research indicates that the following components are crucial for deploying access points: governance, continuous improvement, a progressive approach, a center of excellence, operational optimization, and stakeholder involvement.

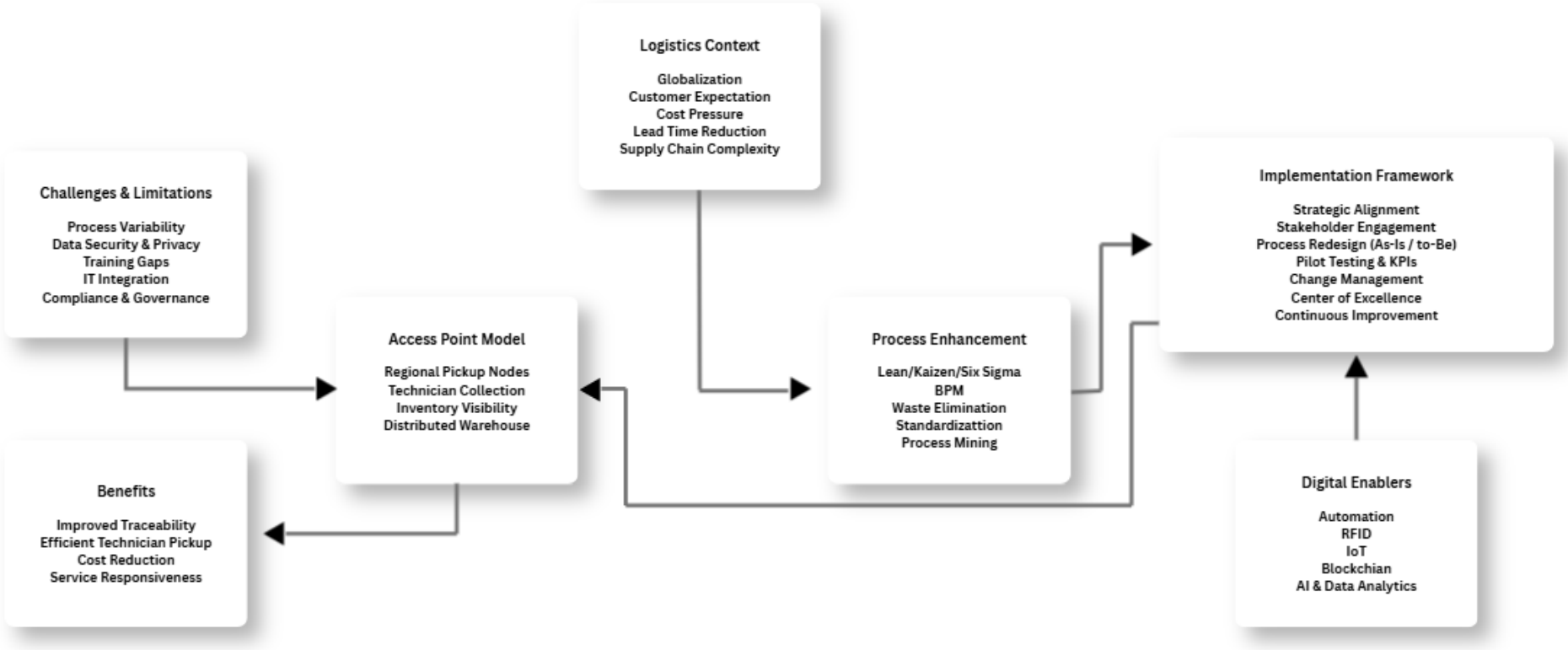

Figure 4. Integrated Theoretical Elements – Literature Review Synthesis

2.3.4 Initial Framework Proposal for Access Point Implementation

A structured approach is required for implementing access points in logistics, ensuring that all processes are aligned with a unified execution strategy. A basic framework is created based on literature, as shown in Figure 4. The designed structure and the crucial phases of access point installation in logistics are explained in this section.

Aligning access point process activities with the organization's overarching strategic goals is the first step in deploying access points. Selecting a team to oversee the access point implementation is crucial at this stage. According to published research, rather than being a logistics specialist, the project lead for access point deployment needs to have a thorough understanding of the business process. The access point process manager in logistics should understand the entire supply chain and have sufficient expertise in access point processes to oversee the project successfully. To evaluate the strategic alignment of access point efforts, businesses must then create a business case (Herm, 2022; Nielsen et al., 2023). It includes evaluating the possible advantages, expenditures, and threats of deploying access points.

Another crucial element at this point is identifying stakeholders. Syed et al. (2020) and Crisan et al. (2023) emphasize the necessity of determining teams' responsibilities and maintaining clear communication during the entire procedure. Teams responsible for quoting, order processing, purchasing, warehouse management, company growth, financial management, and trade legislation are stakeholders in a logistics organization. Manufacturers, suppliers, transportation providers, shipping forwarders, third-party logistics firms, and final consumers are examples of external stakeholders. To guarantee seamless implementation and prevent opposition to access point processes, everyone in these entities must be engaged with this procedure from the start. For ensuring the success of access point deployments, it is critical to choose the right processes. Finding appropriate mechanisms for access points is the next step in the framework. Using techniques such as the As-Is analysis, which provides an initial basis for understanding present inefficiencies, the process begins by charting the existing logistics process (Syed et al., 2020; Nielsen et al., 2023).

After the study, procedures are assessed to identify areas for improvement. Research indicates that ideation techniques, such as brainstorming sessions and standardized workshops, are useful for confirming the viability of novel procedures (Taulli, 2020; Herm, 2022). Process mining

and other advanced techniques help identify manual jobs, bottlenecks, and variations in workflows (Osman, 2019). The task's appropriateness for execution at the access point is determined by several factors.

To confirm both the technical and commercial viability of the proposed implementation, the third stage focuses on a pilot. Creating a thorough process design document detailing process modifications, stakeholder roles, and functional requirements is the first step in this phase. The next step is to choose a suitable job for pilot testing. To properly demonstrate access point capabilities, a team poll can be used to determine the testing job, prioritizing high-volume yet simple procedures. Key performance indicators (KPIs) must be established when tasks are defined to track cost, time, and error savings over the period. End users receive concurrent training to ensure they are ready for the initial evaluation stage. They are essential at this point, as their input highlights areas that need improvement before final deployment. After the pilot is over, the outcomes are compared to predetermined objectives. Furthermore, an evaluation of the costs and benefits is carried out to see if the pilot's economic outcomes justify full-scale implementation.

Pilot testing gives way to complete execution during the fourth phase, namely development and execution. During this stage, change management is essential and requires transparency with all parties involved to address potential resistance. Proactive involvement to minimize interruptions is emphasized by Kyheröinen (2018) and Tsang et al. (2024). In this phase, specifications and appropriate user instructional materials are added to the process definition documentation (PDD) (Syed et al., 2020; Feldmann et al., 2021). Robust user training ensures that access point processes are seamlessly integrated into existing workflows prior to implementation, reducing the likelihood of inefficiencies. Processes are implemented in the production system once end users have been taught and access point modules have been tested.

To guarantee long-term success, the final stage of access point implementation focuses on observation and continuous development. This requires tracking KPIs that evaluate process efficiency, not just access-point indicators (Osmundsen et al., 2019). Productivity and decision-making are further improved by integrating access point operations with centrally stored data platforms, such as TMS and ERP. The process of implementing access points to enhance processes is cyclical and iterative.

The final stage of the framework's development emphasizes the need for ongoing identification and assessment of logistics-related issues. New responsibilities and procedures become potential options for access point integration as organizations expand and demands change. Following the identification of these activities, stage 3 of the framework, which focuses on pilot implementation, needs to be reviewed. This guarantees that, prior to large-scale deployment, the latest developed processes are properly validated for both technical and administrative feasibility. In addition to enabling gradual process improvement, this iterative methodology enables the access point ecosystem to adjust to shifting business conditions. Organizations can optimize the long-term benefits of their access point activities by methodically revisiting earlier phases of the framework.

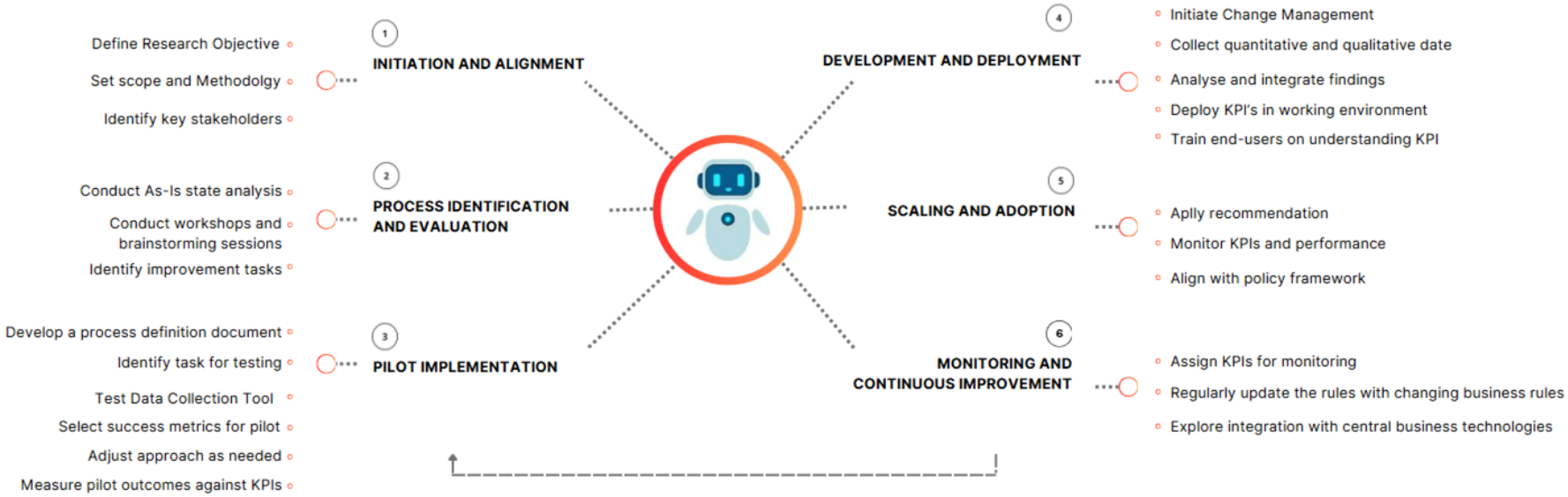

Figure 5. Initial Framework Proposal for Access Point Implementation in Logistics

3 Research resources and methods

The study began with a discussion of process optimization within the logistics team of the case organization. A mixed-method research strategy for the initiative was made possible because the case organization was exploring new ways to enhance its existing logistics operation.

3.1 Case Organization

The logistics and purchasing team working in the business line service unit of a multinational industrial tech provider is the main subject of this thesis. Throughout this thesis, the firm will be designated as "the case organization." It is a global business with a substantial presence in the elevator and escalator sectors. It produces sustainable approaches, offerings, and innovations for clients. The case organization, which operates in more than 70 countries, integrates technical know-how with a high priority on longevity and aftermarket service. The thesis focused line of business is a highly significant division of the company that offers technical services, specific process machinery, and comprehensive unit services for metal processing.

The aftermarket marketing services, which involve the distribution of modernization parts, complete machining equipment, and service offerings, are a crucial source of income. The goal of aftermarket services is to help customers maintain performance and extend the life of their machinery. The need for aftermarket service is constant and crucial to maintain long-term client relationships.

The aftermarket services in the supply chain play an essential operational and tactical part. It oversees the process of ensuring that customer orders are completed accurately, quickly, and economically. The BL is designed to support both logistics management and tactical purchasing. The team's responsibilities include order fulfillment, inventory management, regulatory compliance, inbound and outbound logistics, vendor relationship coordination, and forecasting. The aftermarket division has many supply chain difficulties. Since customers tend to place orders based on immediate operational requirements rather than anticipated schedules, demand for both machinery and spare parts is usually inconsistent and unpredictable. Stock management and fulfillment processes become more complicated as a

result of this uncertainty. Furthermore, low-velocity goods that are highly specific and customized for particular setups account for a significant share of orders. It is challenging to justify keeping large quantities of these "long-tail" goods in store because they are essential yet rarely ordered. Therefore, to prevent both surplus stock and potential shortages that could delay consumer operations, the organization must strike a balance between availability and expense management. The worldwide scope of the supply and distribution network presents another difficulty. Customers, suppliers, and manufacturing sites for the case organization are dispersed throughout continents. As a result, international shipping, immigration laws, cargo operator management, and geopolitical risks must all be handled by the logistics department. To ensure that the necessary documentation is accessible to carry out logistical duties, it is necessary to maintain strong relationships with stakeholders and supplier management.

The case organization's broad success and profitability are greatly enhanced by the logistics department, which plays a role that extends beyond mere support. Because of the industry's complexity, the quality of service, operational stability, and enduring business relationships are directly affected by the ability to distribute spare components in a timely, reliable, and economical manner. The efficiency of supply chain processes is crucial in obtaining revenue from aftermarket services. Any inconsistencies in logistics and procurement might result in losing client trust, delivery delays, and price hikes. Because of its critical position in the value chain, the logistics function has significant potential to improve organizational performance. Therefore, it is important to focus this thesis on enhancing the team's logistics procedures. It offers opportunities for research to address practical issues and contribute to the development of more effective and adaptable supply chain processes that align with the company's objectives.

3.2 Integration and Research Framing

The study is framed within contemporary logistics management and supply chain design theory, drawing on concepts such as network optimization, organizational alignment, and institutional context. Findings from the qualitative and quantitative components will be integrated through triangulation and joint-display comparison to produce a coherent analytical framework. This integrated approach ensures that the research captures both the measurable and experiential aspects of logistics implementation, thereby offering a comprehensive and context-sensitive foundation for decision-making.

Access point implementation is both a technical logistics challenge and a customer behavior transformation. Quantitative data alone cannot reveal: (i) why customers prefer home delivery over pick up, (ii) why certain retail partners hesitate to participate, (iii) how local infrastructure influences courier efficiency. Likewise, qualitative insights require numerical validation. The study uses convergent mixed-methods integration, in which quantitative and qualitative findings are collected in parallel and merged during interpretation. The benefits of mixed-method integrations are increased reliability through triangulation, a holistic understanding of operational, market, and behavioral factors, strong strategic recommendations for access point leadership, clear identification of high-value locations for pilot rollout, and evidence-based decision-making grounded in both statistics and stakeholder insights.

The objective of the framework is to assess current logistics constraints in the pilot country, determine the operational and financial impacts of access points, evaluate customer readiness and behavioral willingness to adopt access-point services, identify strategic regions for the pilot and gradual rollout, and prepare actionable recommendations for access-point management. The conceptual framework interlinks: (i) Logistics performance indicators (lead time, first – attempt success), (ii) Customer behavior factors (convenience, accessibility, and trust), (iii) Market dynamics (competition, retail partnership), (iv) Geographical constraints (urban vs rural differences). These components form the analytical foundation of the study.

3.3 Research Methods and Datasets

The research questions, objectives, methodological methods, datasets, and expected findings from the study are aligned in the core mapping table. Its main purpose is to provide methodology, coherence, and traceability throughout the research design. The table shows how empirical evidence develops and how the results gradually address the main research goal, understanding, designing, and improving a logistics organization within a regional implementation context by clearly connecting each research question to analytical techniques and data sources.

From exploratory evaluation to contextual and performance evaluation to optimization and prescriptive improvement, the study design ensures credibility. To represent the complexity of logistics organization setup and performance in regionally constrained situations, this evolution

reflects a mixed-methods technique that purposefully combines qualitative and quantitative methodologies.

The first research question focuses on identifying the operational factors that influence the successful establishment of a new logistics organization within a regional context. The purpose of this research question is primarily exploratory and diagnostic, aiming to uncover the structural, procedural, and managerial factors that enable or hinder effective organizational setup. A qualitative case study methodology, supported by process analysis, is employed to address this research question. The case study approach is appropriate given the context-specific nature of establishing logistics organizations, where operational realities are shaped by regional constraints, organizational maturity, and stakeholder interactions. Process analysis helps this approach by providing a systematic examination of workflow sequences, decision points, and operational interfaces that shape daily logistics activities.

Organizational process documentation, as-is operational processes, and interviews with key logistics and regional stakeholders are among the datasets utilized for RQ1. Process documentation and workflow descriptions allow us to reconstruct how the organization currently operates or is intended to operate during its establishment phase. Interviews add depth to the analysis by capturing experiential knowledge, perceptions of operational challenges, and informal practices that are often not reflected in formal documents. The output of RQ1 is a consolidated list of critical operational success factors and enabling conditions. These factors may include coordination mechanisms, resource availability, process standardization, governance structures, or workforce capabilities. This output establishes a foundational understanding of the operational realities faced by new logistics organizations and serves as an input for subsequent research questions by defining the baseline conditions under which logistics structures are designed and evaluated.

The second research question examines how regional infrastructure frameworks and characteristics influence the design and execution of logistics structures. RQ2's contextual and analytical goal is to examine how institutional, regulatory, and physical infrastructure conditions affect organizational design and logistical decision-making. A structured literature study is used in addition to a qualitative analytical method to accomplish this goal. The integration of conceptual frameworks from logistics and infrastructure studies with empirical regional data is facilitated by qualitative analysis. The analysis's theoretical foundation and the

interpretation of regional observations within accepted analytical models are ensured by the literature review component.

The resources for RQ2 contain existing infrastructure and logistics frameworks from literature, regulations and policy documents, and regional infrastructure data (such as transportation networks, facility availability, and connection). Regional infrastructure data provides empirical evidence of physical and institutional constraints, while policy documents reveal governance mechanisms that shape logistics operations. Frameworks from academic literature provide analytical lenses through which these regional characteristics can be systematically interpreted. The output of RQ2 represents the influence of regional infrastructure characteristics on logistics structure design and implementation. This mapping clarifies how infrastructure availability, regulatory conditions, and institutional frameworks constrain or enable organizational choices. The findings from RQ2 are essential for ensuring that logistics designs and solutions proposed later in the study are contextually realistic and regionally feasible.

The identification of key performance indicators (KPIs) crucial for assessing the success of logistics organizations in the initial stage of implementation is the primary focus of the third research topic. This research problem is evaluative in its approach, with a priority on monitoring and measurement throughout the initial phases of organizational growth. For RQ3, a quantitative and descriptive analytical method is chosen. Because they enable objective comparison, trend analysis, and benchmarking, quantitative approaches are especially well-suited for performance evaluation. When evaluating performance levels and variations rather than establishing long-term causal relationships, descriptive analysis is suitable for early implementation phases.

The datasets used for this research question include KPI definitions from academic and industrial literature, early-stage operational performance data, and data from comparable logistics organizations and regional contexts. While empirical performance data enables practical validation, literature-based KPI definitions align with standard performance assessment procedures. Benchmarking data supports comparative evaluation and helps contextualize performance results. The output of RQ3 is a prioritized set of essential KPIs for evaluating early-phase logistics organizations. These KPIs may include measures of service level, cost efficiency, lead time, capacity utilization, and reliability. The output provides a structured performance measurement framework that supports decision-making during the

critical initial phase of logistics organization implementation and informs subsequent optimization efforts.

The fourth research question investigates how a supply chain network can be optimized to achieve a competitive advantage within the target regional market. The purpose of RQ4 is both analytical and strategic, focusing on network design and performance optimization as sources of competitive differentiation. To address this question, network analysis, optimization modeling, and comparative analysis are employed. Network analysis enables the structural examination of supply chain configurations, including node locations, linkages, and material flows. Optimization modeling supports the identification of alternative network configurations that improve performance under given constraints. Comparative analysis allows the evaluation of proposed configurations against existing or baseline network designs.

The datasets for RQ4 include supply chain network data, transportation and cost data, demand information, and regional market characteristics. Network data supports structural modeling, while cost, demand, and distance data provide quantitative inputs for optimization. Regional market characteristics ensure that competitive advantage is evaluated in a market-specific context rather than in abstract terms. The output of RQ4 is an optimized supply chain network configuration accompanied by performance and competitive advantage metrics. These metrics demonstrate how optimization contributes to cost leadership, responsiveness, service differentiation, or resilience. The findings from RQ4 provide evidence-based insights into how logistics and supply chain design choices can support strategic positioning in regional markets.

The final research question focuses on identifying process enhancements to strengthen logistics performance in the regional context. The purpose of RQ5 is prescriptive and solution-oriented, aiming to translate analytical findings into actionable improvement initiatives. A design science approach combined with process reengineering methods is employed to address this research question. Design science is particularly appropriate for developing and refining practical solutions grounded in empirical research. Process reengineering supports the systematic redesign of logistics workflows to eliminate inefficiencies and enhance performance.

The datasets for RQ5 include synthesized findings from RQ1–RQ4, best-practice logistics process models, and stakeholder feedback obtained through workshops or pilot implementations. Synthesized research findings ensure that process enhancements are

evidence-based, while best-practice models provide reference solutions. Stakeholder feedback and pilot results support validation and refinement of proposed enhancements. The output of RQ5 consists of recommended process enhancements and a logistics performance improvement roadmap tailored to the regional context. This output represents the study's integrative contribution, translating diagnostic, evaluative, and optimization insights into concrete improvement actions to guide practitioners and decision-makers.

Taken together, the core mapping table illustrates a coherent and methodologically robust research design. The sequential progression from operational diagnosis (RQ1), contextual analysis (RQ2), performance measurement (RQ3), strategic optimization (RQ4), and prescriptive improvement (RQ5) ensures comprehensive coverage of the research problem. Each research question builds on the outputs of the previous ones, creating a clear analytical flow and reinforcing the study's internal validity.

By aligning research questions, methods, datasets, and outputs, the core mapping table also enhances transparency and replicability. It demonstrates that research decisions are not arbitrary but driven by the nature of the questions posed and the type of knowledge sought. As such, the table serves both as a planning instrument and as a methodological justification for the chosen research approach, thereby strengthening the study's academic and practical contributions.

Table 1. Core Mapping Table

Research Question	Research Purpose	Research Methods	Datasets	Expected Output
RQ1	Identify operational factors influencing the establishment of a new logistics organization in a regional context	Qualitative case study and Process Analysis	• Organizational process documentation • As-is operational workflows • Interviews with key logistics and regional stakeholders	List of critical operational success factors and enabling conditions
RQ2	Examine the role of regional infrastructure characteristics and frameworks in logistics design and implementation	Qualitative Analysis and Literature Review	• Regional infrastructure data • Policy and regulatory documents • Logistics infrastructure frameworks from the literature	Mapped influence of regional infrastructure characteristics on logistics structure design
RQ3	Identify key performance indicators for evaluation during the initial implementation phase	Quantitative and Descriptive Analysis	• KPI definitions • Early-stage operational performance data • Benchmarking data	Set of essential KPIs for early-phase logistics organization evaluation
RQ4	Analyze how supply chain network design can be optimized to achieve a competitive advantage in the regional market	Comparative Analysis	• Supply chain network data • Transportation, cost, and demand data • Regional market characteristics	Optimized supply chain network configuration and competitive advantage metrics
RQ5	Identify process enhancements to improve logistics performance within the regional context	Design and approach	• Findings from RQ1–RQ4 • Best-practice logistics process models • Stakeholder feedback and pilot results	Recommended process enhancements and performance improvement roadmap

4 Empirical Study

To identify limitations, inefficiencies, and potential enhancements, the empirical study in the current research began with a thorough investigation of the logistics processes within the case organization. Creating the foundation for a feasible approach was the procedure's main goal. In addition to being useful in an organizational context, the proposed approach would have to be flexible to evolve. The strategy used to do this was iterative. Over time, it was developed, evaluated, and improved. The thesis adhered to a mixed-methods research framework.

To understand operational problems from a management perspective, preliminary conversations were held with the senior member of the procurement and logistics team. These conversations helped define the department's strategic aims and focus on the research. Several conversations were held with team members actively involved in daily logistics duties to deepen this substantial understanding. The combined perspective of operational personnel and leadership enabled the comprehensive identification of problems in logistics. Numerous difficulties were brought to light during the encounter. The research scope was narrowed after evaluating the issue's practicality and applicability. Access Point Model, PR-to-PO conversion, reverse logistics, communications, and warehouse-related procedures would be the main areas of focus for the evaluation. Nevertheless, the final scope did not include the warehouse management component. This choice was taken since it involved numerous multidisciplinary groups and relied on a larger infrastructure.

Deliverables were found to be highly inefficient during the data collection phase. The logistics staff and frontline employees who assist clients were burdened by those inefficient duties. In addition to taking up a large amount of staff time, those ineffective tasks contributed to delays and consistency issues in regular operations. This led to an investigation into the access point model, particularly its potential for process improvement through implementation. Because the logistics team has a higher proportion of operations than other business units within the company, Access Point implementation was an appropriate fit. Significantly, access point projects for logistical operations have not been prioritized by the logistics business line, enabling this research to capitalize on an opportunity for widespread innovation. The research goal was defined as follows, once Access Point was determined to be a workable solution: "How can the logistics team implement an access point to optimize processes?" The focus of this investigation was on developing a streamlined, adaptable, and easily replicable approach

intended to motivate logistics teams to independently execute access point procedures, even though several academic and business-oriented studies have examined access point execution in standard supply chain contexts. Key stakeholders from the logistics, purchasing, and warehouse departments were briefed on this objective. Stakeholders acknowledged that the access points have the potential to lower delays, improve system visibility, and boost process dependability, and the idea was unanimously approved and supported. Following this agreement, the study entered the official steps of the MMR framework. The definition of the problem was the first step, followed by the collection of both qualitative and quantitative data.

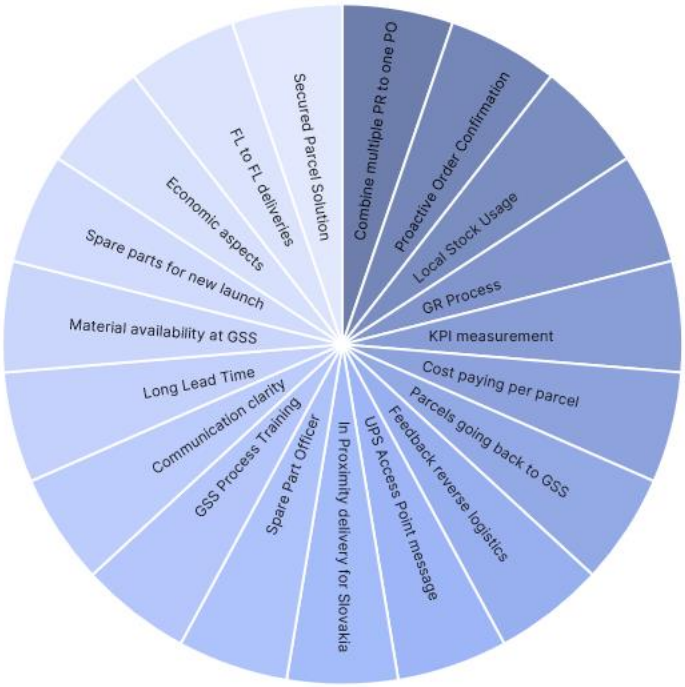

Figure 6. Pain points

A comprehensive assessment of the logistics process revealed a diverse set of operational pain points spanning procurement, warehousing, transportation, communication, and reverse logistics. The analysis highlighted significant inefficiencies such as fragmented procurement practices, particularly the reliance on multiple PRs for the same supplier, which created unnecessary administrative workload and higher freight expenditure. Issues surrounding order confirmation and local stock usage indicated gaps in supplier alignment and internal material planning, often resulting in delayed GR processing and inconsistent KPI measurement across teams. Elevated parcel-level shipping expenses, an overuse of individual parcel shipments, and

insufficient consolidation strategies further intensified cost pressures. Reverse logistics presented additional challenges, with parcels frequently routed back to GSS due to unclear documentation, limited feedback loops, and inconsistent Access Point messaging. On the warehouse and operational side, spare-parts handling exhibited vulnerabilities stemming from long lead times, insufficient process training, and communication gaps, particularly for new product launches that require the timely availability of GSS material. Broader structural issues, such as economic constraints, inadequate FT-to-FT delivery flows, and the absence of a secure parcel solution across regions, further compounded operational friction. Collectively, these pain points underscore the need for standardized communication protocols, streamlined processes, proactive planning, and data-driven performance oversight, forming the foundation for subsequent improvement initiatives to strengthen efficiency, cost control, and stakeholder collaboration across the entire logistics chain.

A more thorough examination of logistics operations found a wide range of issues in procurement, warehousing, transportation, reverse logistics, and communication services. These difficulties, when viewed holistically, revealed disconnects that hampered operational efficiency, visibility, cost control, and service continuity. One key difficulty observed was the need to merge multiple PRs into a single PO, as teams often created separate PRs for the same supplier. For example, three PRs submitted individually for small quantities resulted in three separate shipments, increasing freight costs and administrative complexity. Similarly, issues with proactive order confirmation arose from suppliers' failure to update their delivery commitments promptly. Several cases required multiple follow-ups to obtain order confirmations, delaying warehouse planning and material readiness. The local stock usage procedure also revealed gaps; for example, available items in local stock were neglected, resulting in extra reorder points and longer lead times.

Operational inefficiencies were also evident in the Goods Receipt (GR) process, where delays in posting GRs led to discrepancies in inventory visibility. In several cases, inbound cargo remained in storage for days before GR posting, delaying production withdrawals. Furthermore, the lack of effective KPI monitoring led to performance issues that went untracked. For example, selecting accuracy problems and carrier delivery failures were not tracked regularly, limiting data-driven improvements. Cost control was hampered by the high per-packet cost, especially when supplies were sent individually. A minor spare item transported alone costs the same as a big, combined shipment, resulting in much higher per-unit freight costs.

Compounding this was the issue of parcels being routed back to GSS due to label errors or incomplete documentation. Shipments were returned due to incorrect invoice details, resulting in both delays and additional transport costs.

Reverse logistics presented additional complexities. Feedback on returned items was inconsistent, delaying credit claims and supplier replacement cycles. Return parcels without defective descriptions are one example, prompting suppliers to request additional clarity and extending processing delays. The Access Point messaging system also lacked clarity, leading to customer misunderstandings. Some parcels went uncollected because customers received confusing or delayed pickup notifications. Regional distribution issues were noticeable, especially for in-proximity delivery in Slovakia, where courier routes were not optimized. Drivers routinely ignored effective access points, resulting in longer delivery lead times. The Spare Part Officer function also encountered difficulties due to confusing duty distribution. For example, responsibility for new launch parts was not clearly defined between logistical and technical teams, resulting in delays in readiness.

Training and communication deficiencies arose repeatedly. GSS process training anomalies led to problems with documentation, packaging, and routing. New team members frequently relied on informal instruction rather than standardized procedures, resulting in inconsistent process quality. Communication clarity was a persistent concern, with fragmented exchanges among the logistics, procurement, and warehouse departments resulting in misalignment. A common example is procurement not being notified of urgent stock-outs, leading to delayed orders. Another major source of frustration was managing lead times. Long lead times resulted from sluggish supplier communication and logistical obstacles. Certain spare components took more than three weeks to arrive due to supplier delays and a lack of shipment consolidation.

The difficulties extended to material availability at GSS, where unpredictable stock shortages hampered downstream operations. For example, GSS occasionally ran short of supplies needed for field teams, necessitating last-minute emergency shipments. Fresh program rollouts faced challenges obtaining extra parts for launches, as forecasting errors led to shortages during launch weeks. Parts for new models were occasionally unavailable at launch because the required quantities were underestimated. Economic worries included increased courier rates and import expenses, which put pressure on budget planning. Finally, the need for a secure parcel solution became apparent due to the possibility of loss or damage during transit. Several

items containing sensitive components were sent without adequate protective packaging, resulting in damage claims.

Before implementing business cases related to the logistics process, we need to understand the overall concept of both inbound and outbound logistics. The complexity of the process drives us to identify areas for improvement in the procedures. The entire aftermarket seems to be one of the most complex processes in the entire business model. Different Stakeholders, a complex process, and communication flows with a heavy load of logistics data make it difficult to streamline the process and run a business case. The complete process is explained with the figures below.

Figure 7 illustrates the complete end-to-end workflow for managing both inbound and outbound deliveries within the logistics operations, integrating warehouse activities with SAP system processes. This workflow highlights how materials move from the supplier to the warehouse, how the aftermarket logistics teams verify stocks and initiate packing, and how final shipping documentation and transportation bookings are executed. The process ensures traceability, accuracy, and operational efficiency across the logistics chain.

The process begins with inbound delivery creation, initiated once products are ready at the supplier's location. At this stage, the supplier confirms the availability of the ordered items, and the inbound delivery document is created in SAP to formally register the shipment. This document serves as the digital foundation for tracking inbound materials throughout the process. When the goods are dispatched, they enter the Transportation to Warehouse phase, during which the goods are physically moved. Upon arrival at the warehouse, the products are registered as Inbound at the warehouse, marking their official receipt and allowing warehouse personnel to begin handling them.

Once the goods are received, the Aftermarket Logistics Team begins its operational involvement. Their first task is to check stock availability for packing in SAP, ensuring the system reflects accurate inventory levels. This verification is essential because it determines whether items can be packed immediately or require additional coordination. If the items are available, the team generates and sends a packing request to the warehouse, which triggers the warehouse staff to begin preparing the shipment. This stage is directly linked to outbound

delivery creation, where an outbound delivery document is generated in SAP to initiate the formal shipping process.

The warehouse then packs products, physically preparing them for shipment according to customer requirements or internal specifications. This operation feeds into picking and packing in SAP, ensuring that all physical activities are mirrored within the system. SAP updates ensure that inventory quantities decrease appropriately, and all materials used for packing are recorded.

Once packing is complete at the warehouse level, the logistics team checks SAP to ensure it is complete. This verification step confirms that the digital and physical statues match, preventing discrepancies that could lead to shipment delays or audit issues. After packing is confirmed, the system allows the generation of packing lists and invoices, which are essential documents accompanying the shipment. The packing list identifies the content, while the invoice outlines the billing details.

With documentation prepared, the next stage is Transportation booking, where the logistics team arranges for a carrier or freight forwarder to collect and transport the shipment to the destination. This booking includes selecting service levels, confirming pickup times, and ensuring all regulatory or customs requirements are met. Following transportation booking, the shipment is handed over to the logistics provider, entering the final phase: Ship to Party, where the goods are delivered to the customer or receiving entity.

Overall, the diagram represents a tightly integrated workflow that synchronizes warehouse operations with SAP system activities. It ensures transparency, reduces operational errors, and maintains smooth coordination across suppliers, the warehouse team, and outbound logistics. This structured approach strengthens process reliability and supports efficient fulfillment operations within the organization’s supply chain.

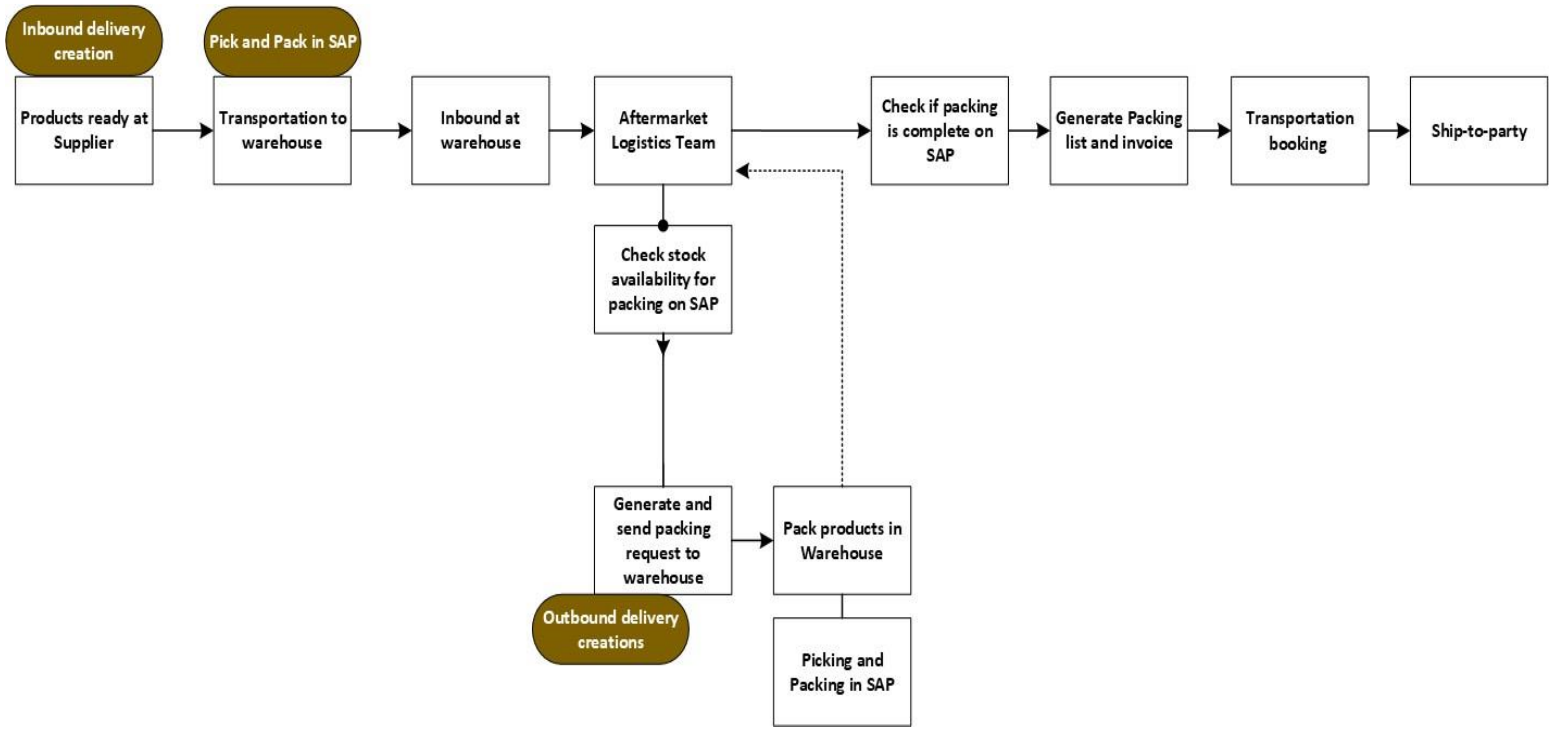

Figure 7. Overview of the Case Organization's Logistics Process Flow

Figure 8 illustrates a detailed, multi-stage workflow for managing inbound materials within the logistics environment, integrating supplier communication, warehouse activities, SAP transactions, discrepancy handling, and documentation management. This end-to-end process ensures that every incoming shipment is monitored, verified, recorded, and, in the event of irregularities, resolved, ultimately supporting accurate inventory management and smooth operational execution.

A crucial part of the overall functioning of the supply chain, inbound logistics includes all activities pertaining to the transportation, storage, and coordination of incoming products from suppliers to production or distribution facilities (Bowersox et al., 2019). Close collaboration with suppliers is essential for efficient incoming logistics procedures. This includes coordinating delivery schedules, exchanging information, and integrating procurement and transportation operations (Monczka et al., 2020). The need for organized process management and control mechanisms is highlighted by earlier research showing that poorly designed inbound logistics processes frequently lead to higher inventory holding costs, inefficient material handling, and disruptions in downstream operations (Rushton et al., 2022).

The workflow begins with the inbound aftermarket inbox, the initial point of entry for all supplier notifications. Logistics teams follow up with the supplier at least two weeks before the agreed delivery date if NOR (Notification of Readiness) or shipping documents are missing. Once the supplier sends the NOR, the inbound team records it in both an internal inbox and associated SharePoint channels. The team also checks CN code and COO (Country of Origin) details in Excel, ensuring compliance-related information is available before the shipment arrives. After verifying the documents, the aftermarket logistics team books transportation. Details are simultaneously updated in the inbound Excel sheet, which acts as a central tracking tool. Once transportation is arranged, the shipment's progress is monitored until it arrives at the warehouse. Upon arrival, the warehouse IB team registers the shipment as inbound, triggering the inspection process.

The warehouse performs two critical checks: material mismatch and physical damage. These checks ensure that what was delivered aligns with the purchase order and documentation. If no issues are found, the process continues smoothly; however, if discrepancies or damage are detected, the system shifts to the issue-handling workflow. In this scenario, the warehouse files a discrepancy report and notifies the Service Logistics mailbox. The issue is then escalated to

Procurement, who determines whether the product is damaged, the documentation is mismatched, or additional clarification from the supplier is required. In a complex case, such as a missing drawing – GQS, the supply, or the LSP team may be involved to provide technical or commercial input.

If no issues are present, the warehouse performs a Good Receipt (GR) in SAP, which officially registers the inbound materials in the system. A label is printed from SAP and attached to the items for identification and traceability. The warehouse also performs data entry for product details and locations, updating the inbound Excel file for central visibility. At this stage, photographs of the received goods are taken and uploaded to the warehouse's inbound SharePoint directory to maintain a digital record for audit, verification, and future reference.

After all system updates and uploads are complete, the products are physically placed into stock within the warehouse. This marks the final stages of the inbound process. The Aftermarket Logistics Team then takes over the next steps to address additional operational needs, such as preparing items for customer shipments, service orders, or internal projects. Overall, this workflow represents a highly structured and controlled inbound logistics process that synchronizes communication, system updates, warehouse execution, and issue management. It ensures that all materials are accurately recorded, discrepancies are managed promptly, and supporting documents are centrally stored. The integration of SAP, SharePoint, and Excel safeguards transparency and operational consistency while minimizing the risk of data errors or stock inaccuracies.

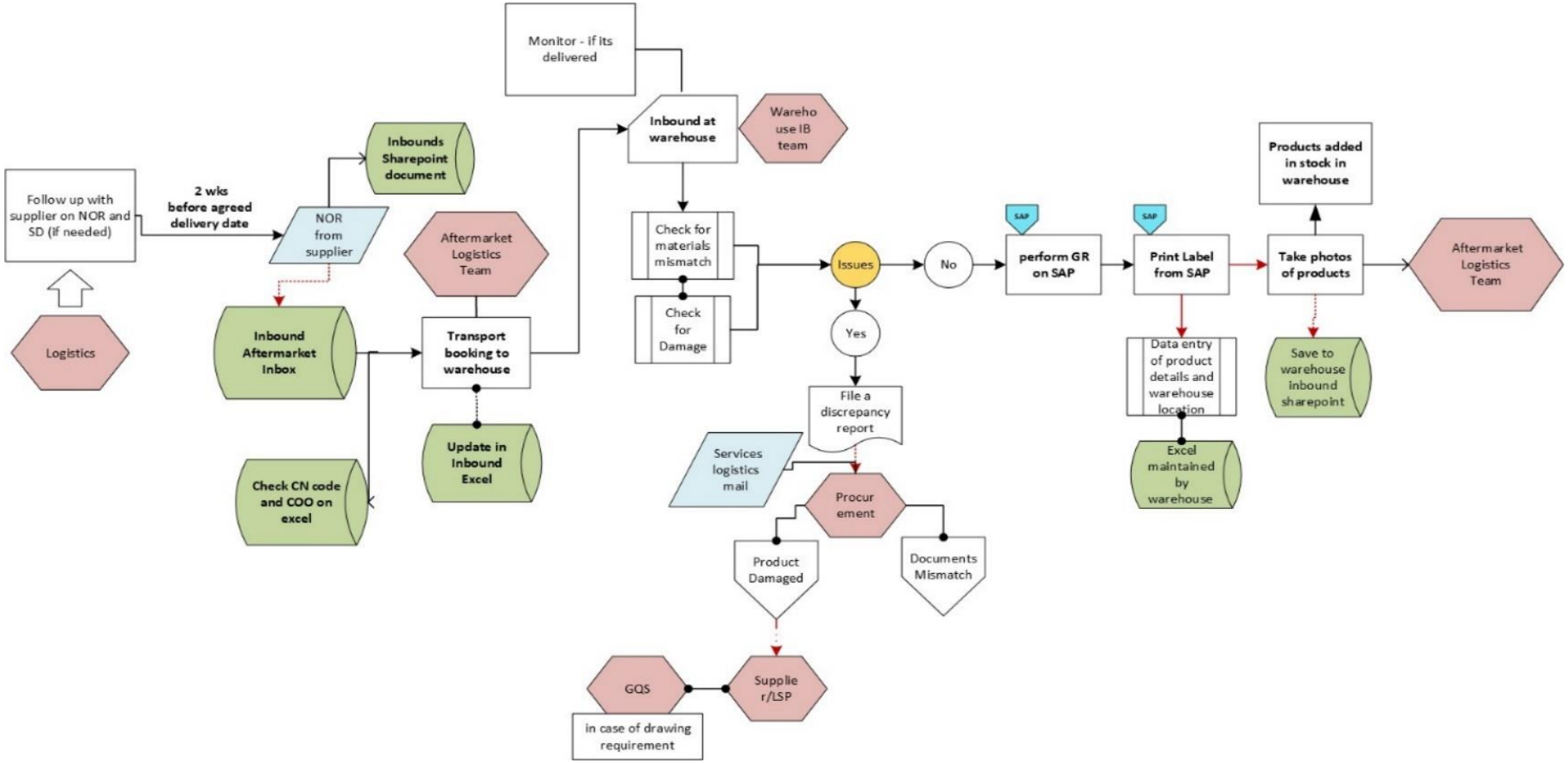

Figure 8. Inbound Logistics Process Flowchart of the Case Organization

Figure 9 represents a structured workflow used by the Aftermarket Logistics Team to manage outbound deliveries from verifying sales order readiness to generating delivery documents and shipping packing requests to the warehouse. This process ensures accuracy, compliance with Incoterm, and full alignment between SAP transactions, warehouse execution, and documentation storage.

To ensure timely and cost-efficient fulfillment of customer demand, effective outbound logistics requires the coordination of warehousing, order picking, transportation, and delivery planning (Rushton et al., 2022). Indicators, including order fulfillment accuracy, on-time delivery, lead time, and distribution costs, are frequently used to evaluate the performance of outbound logistics operations because they provide insight into efficiency and service quality (Gunasekaran et al., 2001).

The workflow begins with the Aftermarket Logistics team, who are responsible for monitoring all open sales orders to determine whether any items are ready for shipment. This includes checking stock availability, validating order completeness, and ensuring all prerequisites for dispatch are satisfied. The first major action point is the SAP check to verify if any sales orders are ready for shipping. This step determines whether the order qualifies for complete delivery, in which all line items are shipped together, or for partial delivery, which is allowed only if the order permits split shipments. If partial delivery is considered, the team must verify eligibility and ensure the customer or commercial team has approved this option.

Once delivery eligibility is confirmed, the next step is to generate the Delivery Number in SAP. The delivery number is a central identifier used to manage the outbound logistics process, communicate with the warehouse, and link all subsequent documentation. Before finalizing the delivery, the logistics team also checks for any special instructions within the sales order. These may include customer-specific requirements, packing conditions, or documentation needs that must be communicated to the warehouse. The team also confirms the appropriate Incoterms, typically FCA (Free Carrier) or CPT (Carriage Paid to), which determine transportation responsibilities and logistics handover points.

After the instruction and incoterms are validated, the process moves to generate a packing request in SAP. This step formally instructs the warehouse to begin the pick-and-pack operation. The delivery number is noted, as it is needed for labeling, documentation, and

tracking. Once the packing request is generated, it must be communicated to the warehouse team. This is done by sending a packing request to the warehouse, ensuring that warehouse personnel receive timely and accurate instructions to fulfill the order.

In parallel with warehouse communication, the logistics team also manages documentation. All relevant logistics documents, such as the delivery note, packing request, and any customer instructions, are saved to SharePoint to maintain a digital record. This centralized documentation storage supports traceability, auditability, and coordination between logistics, warehousing, and customer service teams. Overall, this workflow ensures that all outbound sales orders are processed systematically, with consistent communication between SAP, logistics, and warehouse teams. By validating delivery requirements, generating SAP documents, and storing logistics records in a structured manner, the process minimizes errors, supports operational efficiency, and ensures compliance with customer expectations and Incoterm obligations. The diagram highlights the logical, sequential nature of the process, reinforcing the importance of system accuracy and proper coordination for reliable outbound logistics operations.

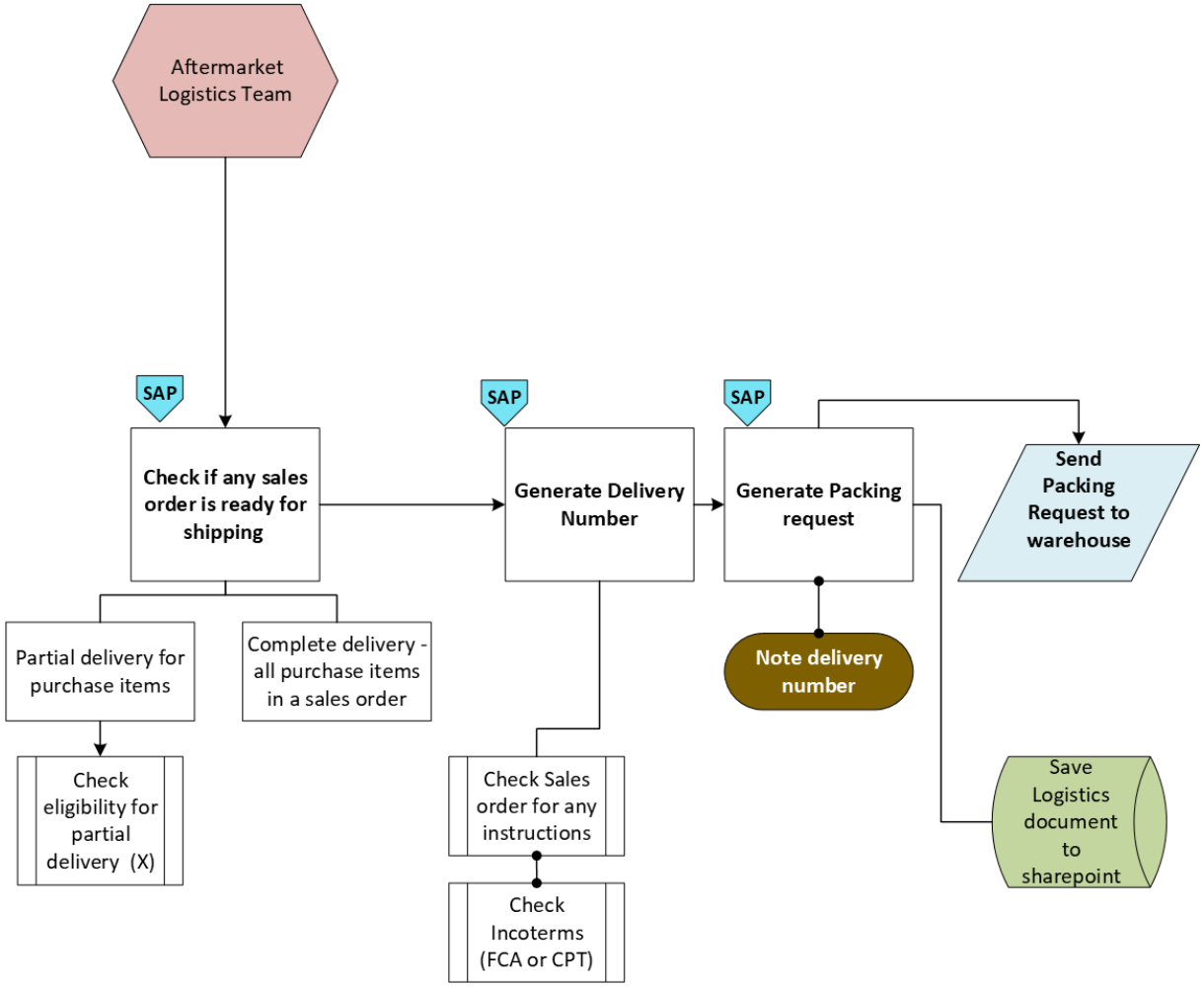

Figure 9. Case Organization: SAP Process Flow Chart for Detailed Outbound Logistics

Figure 10 illustrates the complete end-to-end workflow for managing outbound deliveries, including generating packing lists and invoices, coordinating with the logistics service provider (LSP), handling export-related documentation, tracking updates, and post-delivery customer follow-up. This detailed process ensures that all outbound shipments are executed in full compliance with SAP system requirements, commercial terms (Incoterms), export regulations, and internal documentation protocols.

As an essential component of the relationship between the company and its markets, outbound logistics encompasses all operations related to the handling, storage, and delivery of finished goods from manufacturing or distribution facilities to final consumers (Bowersox et al., 2019). As distribution responsiveness and service availability directly affect perceived value and market competitiveness, previous research emphasizes that outbound logistics systems must be developed with a strong customer orientation (Kotler et al., 2021).

The workflow begins once the warehouse has packed the items according to the packing request. The logistics team monitors SAP to verify that the warehouse has picked and packed the correct materials. When the system confirms completion, the logistics team generates the packing list in SAP, which serves as the formal document detailing the shipment's contents, quantities, and packaging information. Immediately after creation, the packing list is saved to the outbound SharePoint site, ensuring proper archiving and visibility for internal stakeholders. In parallel, the warehouse generates an invoice for the packed items, which is then sent to the Invoice Team via email for validation and processing. This step ensures that financial documentation is synchronized with physical shipment activities and complies with the customer’s billing requirements.

After the document is created, the next step is Freight Booking, which depends on the agreed Incoterms. Under CPT (Carriage Paid To), the logistics team is responsible for arranging transportation. For FCA (Free Carrier) shipments, the customer is notified that the goods are ready for collection. This email includes the packing list, invoice, and any additional required photos, depending on country-specific customs or regulatory requirements for documents and communications with the customs broker.

Once the freight booking is completed, the logistics teams receive the waybill from the LSP. This waybill is then saved to SharePoint, ensuring consistent traceability and accessibility for

audit and operational purposes. Simultaneously, the logistics team sends the warehouse a notification containing the tracking details and waybill number, confirming that the shipment is ready for outbound departure (OB). This ensures synchronization between the administrative and physical dispatch activities. The shipment details are then added to the Delivery Tracking Excel, a central monitoring tool used to track shipment progress, verify status updates, and support timely communication with customers. For FCA shipment, follow-up is performed within a two-week window to ensure the customer has collected the goods. For CPT shipments, tracking updates from the LSP are monitored until the delivery is completed, ensuring proactive management of delivery performance.

Finally, the workflow concludes with customer follow-up and post-delivery service, in which the logistics team verifies shipment receipt, investigates any delays or discrepancies, and provides after-delivery support as required. This step reinforces customer satisfaction and ensures any issues are resolved promptly. Overall, the diagram presents a highly coordinated outbound logistics process that integrates SAP transactions, documentation flows, freight coordination, compliance activities, and customer communication. The workflow ensures transparency, accuracy, and efficiency at every stage, from packing and documentation generation to tracking, export processing, and final proof-of-delivery confirmation. By aligning all activities within a structured process, the organization strengthens its operational reliability and maintains high service quality across the supply chain.

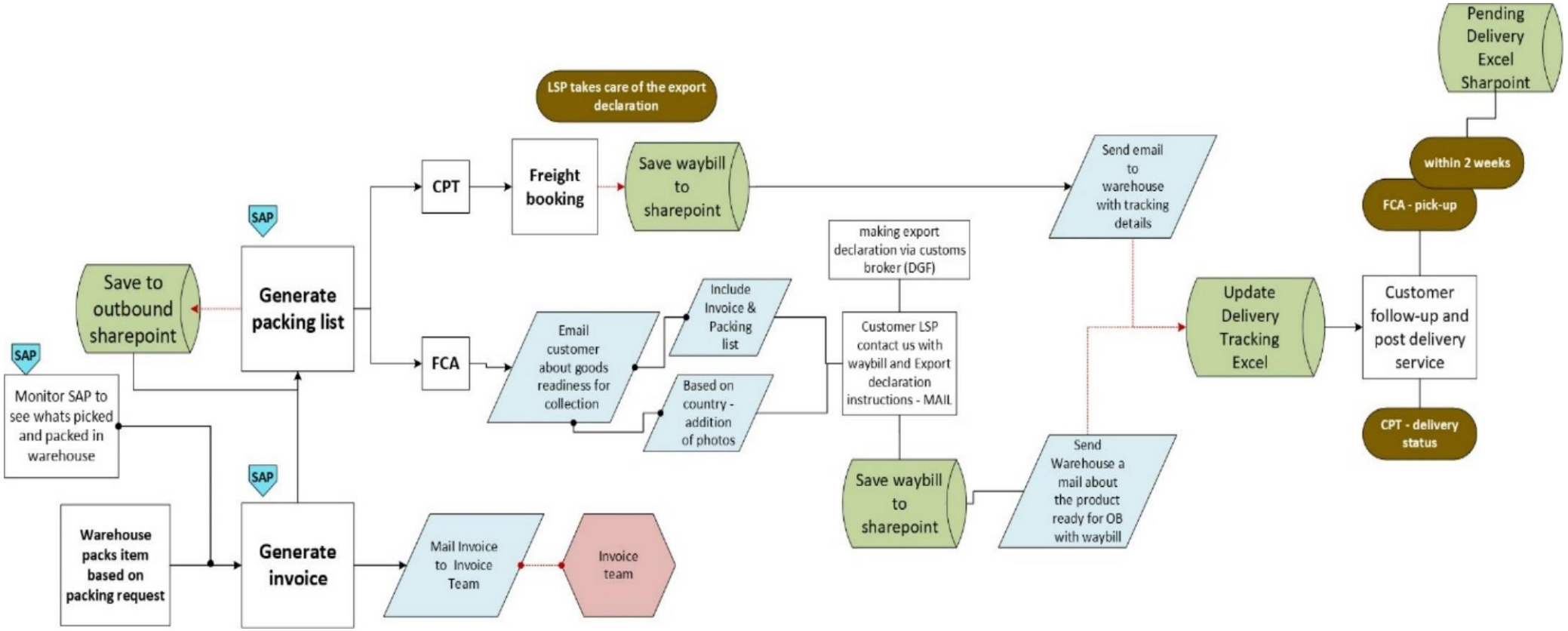

Figure 10. Case Organization: Logistics Flow Chart for Detailed Outbound Process

A comprehensive evaluation of the organization's logistics workflow, including procurement coordination, warehouse operations, inbound and outbound movement, and stakeholder communication, revealed the need for a more structured and efficient operating framework. This comprehensive understanding of the logistics process laid the groundwork for a new round of targeted implementations to close critical performance gaps and improve process dependability. Based on the analysis, the organization implemented strategic enhancements like standardized communication protocols, KPI-driven performance governance, Access Point integration, and PR-PO consolidation to improve material flow, reduce operational delays, and strengthen cross-functional collaboration. New logistics implementations aim to improve efficiency, accuracy, and operational excellence over time.

4.1 Access Point Implementation

Last-mile distribution is a highly difficult and costly stage in logistics. The final delivery of goods to the destination is sometimes hindered by issues such as delivery failures, inefficient routes, customer unavailability, and rising transportation costs. To optimize last-mile logistics, strategically positioned Access Points (APs) provide designated collecting areas for parcel delivery, storage, and retrieval. The addition of Access Points to the organization's distribution network not only solved operational inefficiencies but also greatly improved communication clarity, stakeholder participation, and cost performance. This portion provides an academic analysis of the implementation, outlining the process improvements implemented and demonstrating the measurable accomplishments of this strategic project.

4.1.1 Rationale for Implementing Access Points in Last-Mile Distribution

Prior to implementing Access Points, the organization's last-mile distribution was inefficient, with repeated delivery attempts, poor route planning, and inconsistent communication among transport providers, warehouse teams, and end users. These inefficiencies led to unwarranted cost increases, higher carbon emissions, and consumer discontent due to unpredictable delivery delays. Operational complexity increased in areas where end users were unavailable during regular delivery hours, leading to several unsuccessful attempts.

The use of Access Points was found to be a viable option for these issues. Access Points provide flexible collection times, centralized locations, and improved delivery accuracy, enabling last-mile operations to shift from personalized house deliveries to consolidated commercial drop-offs. This change not only reduces the logistical burden on couriers but also improves delivery reliability by ensuring items are delivered to secure, easily accessible locations. Academically, the use of Access Points is consistent with current supply chain models that emphasize consolidation, sustainable logistics, and customer-centric service design.

4.1.2 Implementation Process and Enhancement of Communication Clarity

The successful implementation of Access Points required a structured and collaborative communication framework. The initiative:

- Mapped high-demand delivery zones to determine optimal AP placements.
- Established standardized communication protocols to be followed between logistics teams, distribution partners, and Access Point operators.
- Introduced new data-tracking and reporting mechanisms, enabling accurate monitoring of parcel flows to and from Access Points.
- Developed clear SOPs outlining the expectations for AP operations, including receiving procedures, storage timelines, and customer notifications.

Communication clarity was critical in ensuring that stakeholders shared a common understanding of duties. Prior to the deployment, communication for last-mile delivery was fragmented. Couriers lacked visibility regarding delivery limits, end-users received inaccurate notifications, and warehouses had little input on delivery failures. These gaps were greatly reduced by establishing structured communication channels supported by centralized information systems and standardized formats.

For example, warehouse teams now provide consolidated dispatch lists to Access Points in clearly defined forms, ensuring that AP operators are ready for incoming shipments. Transport companies provide real-time updates on delivery completion, increasing transparency and enabling instant status verification. Consistent, automated parcel availability notifications reduce uncertainty, leading to fewer customer service requests and missed deliveries. These gains show that clear communication improves reliability and efficiency in last-mile operations.

4.1.3 Streamlining the Last-Mile Distribution Process

The implementation of Access Points contributed directly to streamlining several components of last-mile distribution. The most notable enhancements include:

- **Reduction of Failed Delivery Attempts** - Access points reduced delivery failures by eliminating the need for end-user availability. Rather than returning undeliverable items to depots, which historically required significant time and fuel, couriers now make a single consolidated delivery to predefined destinations. This resulted in significant reductions in operational disruptions and courier workloads.
- **Route Optimization and Improved Fleet Utilization** - Access Points helped reconsider last-mile routes, reducing unnecessary mileage. Fleet operations switched from broadly spread residential routes to strategically concentrated AP routes. This consolidation enabled couriers to make more deliveries in less time, increasing daily productivity while reducing fleet wear and fuel consumption.

- **Enhanced Parcel Visibility and Tracking Accuracy** - A centralized tracking mechanism was implemented expressly for Access Point operations, allowing stakeholders to monitor parcel movement more accurately. AP scanning procedures enable real-time data updates, giving customers, logistics teams, and service providers full visibility into parcel status. Improved transparency increased accountability among stakeholders.

- **Improved delivery flexibility for End-Users** - One of the major operational improvements was the enhanced flexibility available to consumers. Access Points accommodated a variety of customer schedules by offering longer pickup hours and secure storage facilities. This flexibility lowered delivery-related client frustrations, boosting overall service impression.

4.1.4 Demonstrated Successes of the Access Point Implementation

Implementing Access Points and optimizing last-mile distribution resulted in significant cost savings, an improved customer experience, greater sustainability, and increased organizational productivity.

- **Reduction in Last-Mile Delivery Costs** - The aggregation of deliveries into Access Points greatly decreased the cost of each delivery by:

    1. Fewer delivery attempts.
    2. Reduced fleet mileage.
    3. Reduced fuel usage
    4. Fewer driver hours spent on repetitive stops.

  The transition from fragmented residential routes to integrated AP routes led to direct cost reductions, benefiting the logistics budget. The lower expenses per parcel indicated better asset utilization and reduced operational redundancy.

- **Improved Delivery Lead Times** - Parcels arrived at distribution sites faster due to fewer failed delivery attempts and optimized route planning. Access Points allowed for a more predictable and stable flow of parcels, reducing delays caused by route complexity or customer unavailability. These efficiency gains improved the reliability of delivery commitments.

- **Enhanced Customer Satisfaction and Service Quality** - Customer comments suggested significant increases in service quality owing to:

    1. Increased delivery predictability
    2. Extended pickup availability.
    3. Secure parcel storage.
    4. Reduced chance of missed deliveries

  This change helped to increase customer retention while decreasing the number of customer service inquiries about delayed or failed delivery.

- **Strengthened Stakeholder Collaboration** - Clear communication encouraged improved coordination among logistics teams, AP operators, and distribution partners. Stakeholders reported fewer communication failures, faster problem resolution, and improved process alignment. This improved cooperation led to a more efficient operating flow and greater process ownership.

- **Sustainability Benefits** - The company considerably reduced its environmental footprint by minimizing the number of repeated delivery efforts as well as overall delivery mileage. Fuel savings immediately reduced carbon emissions, supporting business sustainability goals. Furthermore, consolidated delivery reduced packaging requirements in some cases, demonstrating the organization's dedication to environmentally responsible operations.

- **Increased Operational Visibility and Data Quality** - Improved tracking systems and scanning techniques resulted in higher-quality data for parcel flows, delivery timings, and Access Point performance. This data helped managers make informed decisions, detect bottlenecks, and continuously improve last-mile initiatives.

4.1.5 Long-Term Organizational Impact

The successful adoption of Access Points has laid a solid platform for future logistical innovation in the business. This project emphasized the importance of clear communication, cross-functional collaboration, systematic process design, and operational efficiency. Long-term, the organization is poised to:

- Expand its Access Point network in response to volume trends.
- Integrate further automation, such as smart lockers.
- Enhance route planning algorithms with additional data.
- Improve supplier and customer relationships through dependable service.
- Continue to reduce the environmental impact at the last mile.

The effort improved last-mile distribution, making it more efficient and measurable in the logistics chain.

The implementation of Access Points and the streamlining of last-mile distribution represent a significant advancement in the organization’s logistics capability. Through clearer communication, consolidated delivery processes, and enhanced stakeholder collaboration, the organization achieved notable successes, including reduced costs, increased customer satisfaction, improved sustainability, and strengthened operational visibility. These outcomes

demonstrate that Access Points are not merely an incremental improvement but a transformational step toward a more integrated, efficient, and future-ready logistics ecosystem. By establishing this enhanced framework, the organization has positioned itself for continued innovation and long-term operational excellence.

4.2 Multiple PR to PO

Consolidating several Purchase Requisitions (PRs) into a single Purchase Order (PO) was a big improvement endeavor implemented in the logistics and procurement interface. Prior to this intervention, the business used a fragmented requisition process in which various departments frequently submitted multiple PRs for the same products, periods, or sources. The fragmentation led to more small-quantity shipments, duplicated administrative effort, and greater transportation costs per parcel. Furthermore, communication gaps among internal stakeholders, procurement teams, and external suppliers frequently resulted in errors in order quantities, delivery deadlines, and documentation accuracy.

To improve efficiency, a structured initiative for communication and process alignment was developed to transition from individual PR creation to a consolidated PR-PO model. This improved process ensured that requisitions from multiple departments were reviewed together and, whenever possible, consolidated into a single PO. The unification process necessitated clearer communication, as divisions needed to exchange accurate projections, consistent material descriptions, and synchronized timetables. By enabling more transparent information flow across departments, the business achieved a unified view of ordering requirements, minimizing redundancies and strengthening procurement planning.

Establishing a consolidated communication framework among logistics, procurement, and end-user departments was critical to the initiative's success. Clear standards were established for when PRs should be raised, how requirements should be communicated, and what information must be included to assist consolidation. This clarity eliminated diversity in request quality and the need for iterative clarifications between stakeholders. Through systematic coordination meetings and shared scheduling tools, stakeholders improved demand-cycle synchronization, enabling the procurement team to proactively explore consolidation opportunities.

The consolidation of multiple PRs into a single PO resulted in considerable operational and budgetary gains. Most notably, transportation costs per parcel fell significantly when suppliers switched from delivering numerous tiny parcels to fewer, aggregated shipments. This resulted in lower freight rates, more efficient packing, and decreased administrative handling expenses for both incoming logistics and warehouse operations. The warehouse crew observed increased receiving efficiency, as fewer individual goods meant less scanning, inspection, and documentation workload. These enhancements also helped to reduce congestion during peak reception periods, hence improving process flow.

Beyond cost reductions, the PR-PO consolidation program enhanced supplier relationships and supply chain reliability. Suppliers profited from improved order visibility, more predictable demand patterns, and lower administrative complexity involved with processing many small orders. Improved communication led to better lead-time planning, fewer partial deliveries, and the elimination of billing problems caused by fragmented ordering methods. Supplier performance indicators show significant improvements in on-time delivery rates and order accuracy.

Internally, the process enhanced transparency and accountability. Departments became more aware of their requisitioning practices, leading to more deliberate, coordinated planning rather than isolated, hurried demands. This behavioral adjustment was aided by increased communication clarity about the strategic objective of consolidation and the operational ramifications of fragmented ordering. Stakeholders adopted a collaborative mindset, recognizing that coordinated procurement actions directly affected cost-efficiency and process-optimization projects.

Furthermore, the combined PR-PO approach helped to achieve sustainability goals. Fewer shipments led to less packaging waste, lower transportation-related carbon emissions, and greater utilization of logistics resources. These environmental benefits, along with the financial and operational improvements, underscore the broader organizational value of enhancing communication clarity in procurement and logistics processes.

The success of this initiative emphasizes the importance of effective communication in allowing process improvements across many functions. The company reduced procurement fragmentation, reduced shipping costs, and enhanced logistics workflow efficiency through

clear communication, standardization, and cross-departmental collaboration. These findings support the value of communication clarity as a strategic enabler of operational excellence and continuous improvement in the logistics industry.

4.3 Reverse Logistics

Reverse logistics is an important aspect of supply chain management that involves the return, repair, recycling, or disposal of products and materials. However, it is often overlooked. Compared with standard forward logistics, reverse logistics procedures involve greater unpredictability, greater variability in product condition, and more complex coordination requirements among internal and external parties. These difficulties highlight the importance of clear communication, as the successful execution of reverse logistics depends on the precise and timely transmission of information about return reasons, product condition, paperwork requirements, and disposition instructions. Prior to implementing structured communication interventions, the organization's reverse logistics processes experienced issues, including inconsistent return documentation, delayed feedback loops, and misalignment among warehouse teams, customer service units, and transport partners. These gaps resulted in increased processing times, higher operational costs, and reduced visibility over returned assets.

To address these issues, a methodical approach was implemented to improve communication clarity throughout the reverse logistics cycle. The first important enhancement was the creation of a uniform return authorization structure. Previously, return requests were submitted in various formats, often missing critical information such as serial numbers, defect descriptions, or supporting documentation. This ambiguity led to repeated clarification cycles and inefficient resource allocation. By using standardized return request forms and essential information sections, the organization guaranteed that all stakeholders got comprehensive and precise data at the start of the reverse logistics process. This modification greatly decreased administrative delays, allowing warehouse staff to better prepare for incoming return inspections.

A second significant improvement was the creation of clear communication channels between customer service, logistics teams, and external transportation providers. In the early phases, communication about the timing and condition of the collected goods was fragmented, often via email or distributed message threads. This resulted in misplaced expectations and inconsistent communication among stakeholders. Centralizing communication through a

dedicated digital platform enabled unified tracking of return status, consistent message distribution, and real-time updates accessible to all relevant stakeholders. This structure modification reduced information loss, improved coordination for collection scheduling, and increased accountability among participating units.

The reverse logistics inspection and assessment stage benefited significantly from clearer communication. Historically, warehouse inspectors assessed returned items based on inconsistent or insufficient data. This led to misclassification, poor root-cause diagnosis, and lengthy decision-making for repair, refurbishment, or disposal. The implementation of explicit defect classification rules, uniform evaluation reports, and structured escalation procedures greatly improved accuracy at this stage. These new communication standards provided more trustworthy evaluation results and speedier decision cycles for product disposition. The improvements were further aided by regular alignment meetings, in which inspectors, engineers, and logistics coordinators collaborated to revise evaluation criteria in response to recurring field difficulties.

Improved communication also strengthened external stakeholder relationships, notably with transport partners and suppliers involved in warranty returns. Clearer instructions on packaging standards, paperwork expectations, and timetables for supplier credit claims helped to eliminate disagreements and delays in processing warranty expenses. Similarly, clearer communication boosted supplier confidence in the organization's reverse logistics process, resulting in smoother collaboration and faster resolution cycles.

Measurable performance outcomes can show that communication enhancements in reverse logistics were successful. Standardized templates and unified communication channels resulted in much shorter return-processing lead times, as items moved more quickly from authorization to final disposal. Error rates in return documentation decreased significantly, reducing the operational burden of rework and clarification. Improved defect classification accuracy leads to better decision-making and prevents waste of recovered commodities. Financially, the firm saw a faster recovery of warranty credits and lower storage expenses due to increased throughput of returned items.

Furthermore, clearer communication increased operational transparency, allowing stakeholders to monitor key performance indicators such as return volumes, processing times, and product

recovery rates. This enhanced visibility facilitated better planning, resource allocation, and continuous improvement initiatives. Teams that had previously operated in isolation developed a stronger feeling of shared responsibility as communication improved, allowing them to interact more effectively across departmental boundaries.

To summarize, improving communication clarity within reverse logistics significantly enhanced process efficiency, accuracy, and stakeholder collaboration. The organization improved reverse logistics performance by using standardized templates, centralized communication platforms, and defined evaluation procedures, and by strengthening cross-functional connections. The measurable gains, such as shorter lead times, greater defect assessment accuracy, stronger supplier engagement, and increased asset value recovery, highlight the importance of clear communication in optimizing reverse logistics processes. These favorable outcomes not only improved day-to-day operations but also contributed to long-term resilience, sustainability, and customer happiness.

4.4 Adoption of Automation Technologies

In contemporary supply chain environments, the increasing complexity and volume of operational activities have intensified the need for more efficient, reliable, and scalable process management. Within logistics functions, repetitive manual tasks not only consume significant labor resources but also increase the likelihood of operational delays and human error. As organizations seek to enhance process accuracy and improve overall workflow performance, adopting automation technologies presents a strategic opportunity to streamline routine activities, optimize resource utilization, and strengthen data-driven decision-making. A few logistics processes have been examined and streamlined through automation to improve the team's operational efficiency and contribute to broader organizational productivity and continuous improvement initiatives.

4.4.1 Supplier Declaration

Firstly, suppliers are notified to submit their Supplier Declaration (SD) forms for the selected first job. BL needed to examine every line in the sales order to determine whether the document in question was necessary, a predominantly manual operation. Two requirements had to be met: (1) the country of destination had to be one where a certificate was required, and (2) the COO (country of origin) had to be in the EMEA region. Following these verifications, the group would search for a SharePoint folder to find whether the legitimate declaration had already been maintained. If not, the provider had to send the necessary paperwork by email using a pre-designed template. There was a lot of back-and-forth movement between systems during this process. Microsoft Excel, Microsoft SharePoint, and Microsoft Outlook provided the information, but some conditions still had to be checked manually. Figure XX shows the course of the manual procedure. By automating this process, time was saved, and no situations were overlooked. Every day, the automation flow was programmed to check for new items and automatically send out reminders.

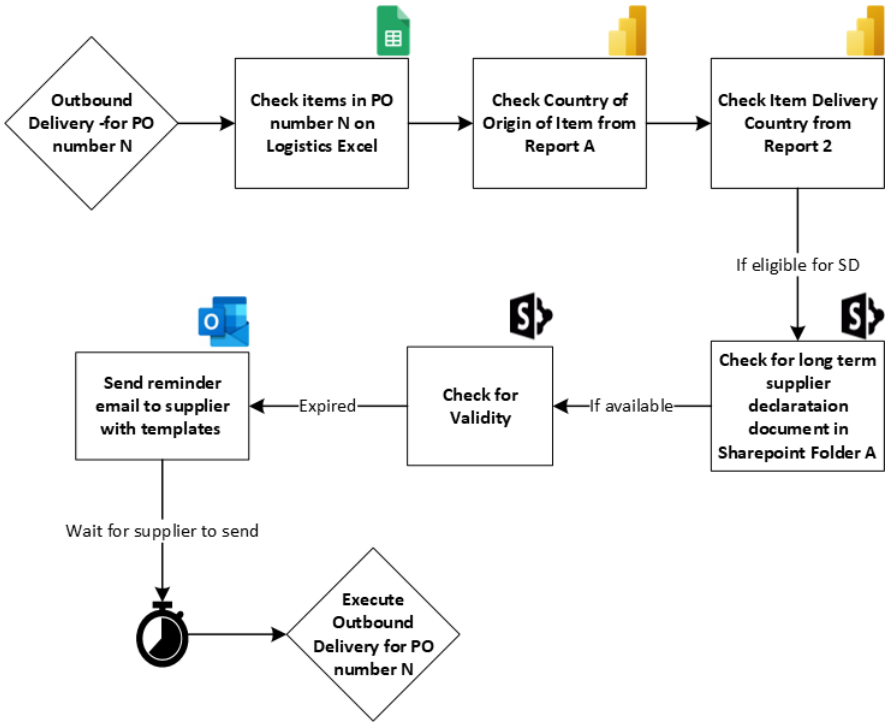

Figure 11. Supplier Declaration – Manual Process

4.4.2 Commodity Code and COO

The subsequent task that was chosen was considerably more difficult. It required locating the appropriate COO and CC for item codes. At the time of outward delivery, these details were frequently missing, causing delays and prompting immediate follow-up. The group had to search for this information across a variety of documents manually. The codes may be found in the NOR document, the supplier's order confirmation, or the primary procurement spreadsheet. The purchasing team typically followed up with vendors and tracked missing codes using a Power BI report. However, the logistics staff nevertheless needed to manually verify through the outbound distribution procedure. They had to email procurement (ES Team) when the data was unavailable. Figure 12 shows the course of the manual method. Power Automate's AI skills are used to build automation to optimize this. The flow was intended to generate a weekly summary report by reading and extracting the codes from accessible documents. The procurement team received this report to update SAP. To ensure completeness, the report was sent to the concerned team for follow-up on any unaccounted unusual cases before outbound delivery.

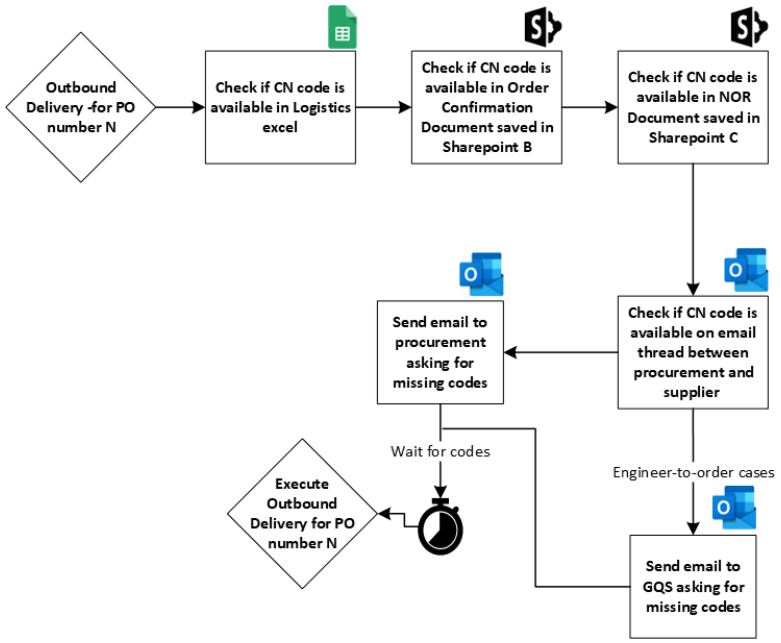

Figure 12. COO and CC – Manual Process

A few more suggestions were made, but the clarity of that procedure was not established because of the process's complexity. Those will be significantly worked on in future automation projects.

4.5 Communication Clarity

Effective communication is a critical component in the successful implementation of logistics operations within modern enterprises. Logistics procedures inherently involve several interdependent tasks, such as procurement coordination, inventory management, transportation planning, order fulfillment, and customer service, which necessitate smooth communication among diverse internal and external stakeholders. These stakeholders frequently include logistics teams, warehouse personnel, suppliers, production units, sales departments, finance teams, and third-party service providers such as freight forwarders or carriers. Transparent communication is essential in a diverse context to maintain operational continuity, reduce errors, and enable rapid decision-making. Communication problems can result in shipment delays, incorrect documentation, resource misallocation, and customer dissatisfaction.

The development of clearer communication in the logistics process is a fundamental intervention that has resulted in demonstrable gains in operational effectiveness and stakeholder alignment. Prior to the establishment of structured communication techniques, the organization's logistics operations were characterized by fragmented information flows, inconsistent documentation formats, and differing interpretations of procedural requirements. These situations resulted in operational inefficiencies, including delayed order processing, misallocated resources, and frequent errors in shipment and inventory reporting. Following a rigorous review of these deficiencies, specific enhancements were implemented to create a communication structure that supports accuracy, transparency, and timely information flow across all logistical stakeholders.

Standardized communication protocols helped to reduce uncertainty and improve the consistency of information communicated across teams. A crucial project was the creation of standard templates for basic logistical communications, such as transport requests, inventory updates, delivery confirmations, and stakeholder notifications. These templates ensured that critical data elements, such as shipment identifiers, delivery time windows, material codes, and priority levels, were consistently captured and conveyed. By removing variances in message

structure, stakeholders were able to interpret and act on information more quickly, resulting in a considerable decrease in clarification requests and operational misunderstandings. The measurable improvement from this intervention was demonstrated by a significant decrease in email and message traffic for corrective clarifications, as stakeholders received complete and understandable information from the start.

In addition to document standardization, communication routes were rearranged to improve information accessibility and ensure crucial messages reached their intended recipients on time. Previously, logistics-related communication was generally routed through informal or decentralized routes, resulting in information loss or delayed responses. The implementation of centralized communication systems and clearly defined channel hierarchies meant that stakeholders received timely updates during critical process phases. For example, providing separate channels for inbound deliveries, export shipments, and urgent escalations allowed stakeholders to watch workflow developments more precisely. This upgrade increased operational responsiveness, especially during time-sensitive logistics activities, where communication delays had previously led to missed transport cut-offs or uncoordinated warehouse preparations.

The implementation of scheduled cross-functional alignment meetings with logistics, procurement, warehouse, and external partner teams was critical to closing the communication gap. These sessions fostered a shared understanding of operational requirements, anticipated bottlenecks, and upcoming workload changes. Through open talks and data-driven evaluations, stakeholders were able to raise issues proactively rather than reactively, allowing for timely actions that reduced potential disruptions. These alignment meetings also helped foster a stronger sense of shared responsibility among stakeholders, minimizing compartmentalized behavior that had previously hampered successful collaboration. This initiative's effectiveness was demonstrated by increased planning accuracy, fewer last-minute change requests, and better collaboration during peak operational hours.

Furthermore, focusing on communication clarity resulted in demonstrable improvements in key logistics performance measures. For example, adopting regular communication methods led to a considerable reduction in delivery discrepancies and paperwork errors. On-time delivery performance improved as logistics planners and warehouse operators communicated more transparently about scheduling. Inventory accuracy improved as communication about stock

movements became more thorough and consistent, resulting in more reliable reconciliation and reporting. These enhancements were more than just procedural; they directly contributed to broader corporate goals, including higher customer satisfaction, lower operating expenses, and better compliance with regulatory or contractual requirements.

Training and competency development were also important in maintaining the gains made. Stakeholders were taught best practices for effective communication, such as using clear language, reporting precise facts, and adhering to defined patterns and channels. As stakeholders improved their ability to deliver and interpret clear information, communication errors decreased. This cultural shift toward communication discipline established a long-term foundation for operational excellence in the logistics function. The training programs also promoted a common professional vocabulary among teams, minimizing uncertainties caused by inconsistent terminology or differing interpretations of logistics principles.

Improved communication clarity led to stronger connections with external service providers. The organization achieved fewer carrier conflicts, lower detention and demurrage expenses, and smoother contact with customs and regulatory agencies by providing specific instructions, uniform shipment documentation, and early communication of changes. External partners, in turn, expressed greater confidence in the organization's logistical procedures, leading to improved service reliability and mutual trust. These enhancements highlight how clear internal communication directly impacts the efficiency of external supply chain interactions.

Finally, the systematic increase of communication clarity in logistics operations has resulted in large, demonstrable advantages for all stakeholder groups. By standardizing communication methods, streamlining information channels, improving cross-functional alignment, and investing in training, the company successfully overcame communication gaps, resulting in a more integrated and robust logistics environment. These improvements not only increased daily operating efficiency but also helped to achieve strategic goals by building stakeholder relationships, lowering error-related costs, and improving overall process reliability. The success indicated by these measured outcomes justifies the importance of clear communication in logistics performance and continual development.

4.6 KPI

The implementation of Key Performance Indicators (KPIs) marks a significant step forward in the management and continual development of logistics and warehouse operations. Prior to the structured deployment of KPIs, organizational performance was often evaluated informally or subjectively, rather than through systematic, data-driven measurements. This lack of quantitative information made it difficult for logistics and warehouse teams to identify process bottlenecks, assess operational strengths, and understand the underlying causes of recurring inefficiencies. The implementation of formal KPIs revolutionized the atmosphere by creating measurable, objective, and transparent benchmarks for performance evaluation. This section introduces the KPIs, explains their importance in logistics and warehouse management, and presents the results of their application.

4.6.1 Justification for Implementing KPIs in Logistics and Warehouse Operations.

Modern logistics environments are under increasing pressure to increase efficiency, service reliability, cost control, and response to demand variations. Without standardized measures, these goals are difficult to monitor and enhance. KPIs serve as the analytical underpinning for performance evaluation, transforming operational outputs into quantitative measurements. The execution of them includes clarity, accountability, and continual improvement approaches. Initially, the logistics and warehouse staff experienced several recurring challenges:

- Limited visibility into operational delays
- Difficulty identifying workforce productivity trends
- Inconsistent tracking of delivery accuracy
- Lack of structured reporting mechanisms
- Reactive decision-making instead of proactive planning

Implementing KPIs enabled a systematic approach to addressing challenges and a shift from subjective analysis to performance-driven management. The implementation of KPIs resulted in a common vocabulary for measuring operations, improving communication across divisions, and aligning individual activities with larger organizational goals.

4.6.2 Implemented KPIs and Their Strategic Importance

A series of KPIs was introduced to measure core logistics and warehouse activities. Each KPI was selected based on its relevance to operational efficiency, customer satisfaction, compliance, and cost optimization. The following KPIs were implemented:

- **On-Time Delivery Rate (OTD)** - Measures the percentage of shipments delivered on or before the expected delivery date. It reflects the reliability of logistics operations, strengthens customer satisfaction by ensuring predictable delivery commitments, and identifies weaknesses in transportation planning, routing, or warehouse dispatch timing. This KPI provided the organization with clear visibility into delivery reliability, allowing route planning and dispatch scheduling to be redesigned based on real performance data.

- **Order Picking Accuracy (OPA)** - Monitors the proportion of orders picked correctly without errors. It reduces customer complaints and return rates, enhances trust between logistics teams and internal stakeholders, and minimizes rework, labor costs, and process delays. The implementation of this KPI helped identify training needs among warehouse staff and incentivized better accuracy in daily operations.

- **Cost per Shipment** - Calculates the total cost associated with each shipment, including transport, packaging, labor, and handling. It helps monitor financial performance and identify cost-saving opportunities, supports negotiations with transport providers, and enables comparison between different shipping methods or routes. Through this KPI, the organization identified clear cost-reduction opportunities, particularly in consolidating shipments and optimizing transport routes.

- **Return Rate / Reverse Logistics Effectiveness** - Measures the percentage of deliveries returned and evaluates the efficiency of the reverse logistics process. It indicates product handling quality, delivery accuracy, and customer satisfaction, it helps identify issues in packaging, documentation, or carrier performance and enables streamlined processing of returns and reduced lead times. Tracking this KPI

supported improvements in Access Point returns, defect inspections, and communication between logistics and customer service.

- **Inventory Accuracy Rate** - Compares system-recorded inventory levels with actual physical stock counts. It prevents stockouts and overstocking, reduces financial discrepancies and improves planning reliability, and supports efficient procurement and forecasting activities. With this KPI, the case organization improved communication between the warehouse, procurement, and planning teams, creating a more synchronized material-flow environment.

4.6.3 Enhanced Communication Clarity Through KPI Adoption

KPIs improved communication clarity among logistics and warehouse teams and cross-functional stakeholders. Prior to this program, information flow was primarily informal, with no regular reporting cycles or standardized performance measures. KPIs were introduced:

- Clear definitions of performance expectations
- Consistent reporting formats are accessible to all stakeholders
- Transparent dashboards enabling shared understanding of operational conditions
- Regular KPI review meetings where issues and opportunities were openly discussed

This clarity strengthened collaboration, reduced ambiguity, and established accountability. Teams were able to discuss performance using precise data rather than subjective interpretations, enabling constructive problem-solving and joint decision-making.

4.6.4 Demonstrated Success Following KPI Implementation

The implementation of KPIs resulted in measurable operational improvements across multiple dimensions.

- **Increased Delivery Accuracy and Customer Satisfaction -** The order picking accuracy KPI reduced the number of wrongly picked items, significantly decreasing

the volume of customer complaints and internal incident logs. Customers benefited from more accurate deliveries, translating into higher satisfaction and fewer disruptions to operational readiness. Additionally, the on-time delivery rate improved due to optimized dispatch coordination and closer monitoring of carrier performance. Delivery reliability became more predictable, enhancing customer trust and service perception.

- **Cost Reduction and Financial Improvements -** The cost per shipment KPI enabled the organization to identify inefficiencies in transportation spending. Insights gained (i) Consolidation of multiple shipments, (ii) Better route planning, (iii) More effective negotiations with carriers, and (iv) Reduction in premium freight usage. As a result, the organization achieved measurable cost savings, contributing directly to improved budget performance.

- **Improved Inventory Control and Stock Accuracy -** Monitoring inventory accuracy rate revealed misalignments between physical stock and system records. Addressing these discrepancies improved forecasting reliability and reduced emergency procurements. The improved alignment also strengthened trust between the warehouse and procurement teams by eliminating uncertainty in stock availability data.

- **Strengthened Continuous Improvement Culture -** KPI adoption cultivated a culture of continuous improvement. Regular performance reviews encouraged teams to identify root causes, propose corrective actions, and monitor progress over time. The transparency associated with KPIs fostered shared responsibility and collective ownership of performance outcomes. This shift strengthened team cohesion and improved overall workplace morale.

As a result, implementing KPIs in logistics and warehouse operations led to considerable gains in operational efficiency, cost performance, service reliability, and cross-functional communication. By implementing measurable, standardized, and transparent performance indicators, the business increased responsibility, improved process clarity, and fostered a culture of continuous improvement. KPIs play a crucial role in promoting logistics excellence and ensuring long-term performance, as demonstrated by the results achieved.

5 Case Study

This case study examines a logistics process improvement initiative undertaken within a Western European industrial organization operating in a multi-site supply environment. The company's sophisticated use of digital technology to establish logistics infrastructure and its emphasis on process standardization led to its selection as a reference case. This case study has two main goals. It begins by outlining the reference organization's logistics improvement strategy and results. Second, it critically explains how the insights and examples derived from this case supported the design, analysis, and development of this thesis.

By serving as a comparative and illustrative benchmark, the case study provided methodological guidance and empirical grounding for the logistics research conducted for this thesis.

5.1 Organizational Context and Initial Logistics Challenges

Managing incoming and outgoing flows across several production and distribution sites, the case organization functions within a fully connected supply chain. The logistics function had several operational and structural difficulties that limited its performance before the improvement plan was implemented. One of the most notable issues was the lack of end-to-end process standardization. Enterprise systems supported fundamental logistics operations, although personnel and locales used different execution strategies. Transportation reservations, shipping paperwork, and exception management were handled inconsistently due to this variability.

Additionally, limited performance transparency hindered effective decision-making. Despite the availability of operational data, it was not regularly examined using well-defined key performance indicators (KPIs). Because of this, logistics performance monitoring remained mostly reactive, resolving problems only after they had become more serious. Furthermore, cross-departmental coordination between logistics coordinators, execution support teams, and external transport service providers was affected by unclear task ownership. Occasionally, this resulted in duplication of effort, delayed problem-solving, and ineffective communication.

These challenges highlighted the need for a structured improvement initiative to increase process transparency, performance control, and operational reliability within the logistics function.

5.2 Logistics Improvement Approach

5.2.1 Process Structuring and Last-Mile Implementation

The implementation of the organized last-mile points in the logistics execution process was a key component of the improvement program. Before moving on to the next stage of the process, these last-mile points served as predetermined checkpoints to confirm crucial logistics data and execution criteria. For example, a last-mile point was implemented to verify that transportation reservations, delivery paperwork, and system records were accurate and complete before outbound shipment execution. This strategy eliminated the requirement for corrective actions during shipping execution and decreased the likelihood of downstream problems. To ensure that control mechanisms are integrated into current workflows rather than added as stand-alone checks, last-mile points are implemented deliberately and systematically. This integration enhanced process dependability while preserving operational efficiency.

5.2.2 KPI Identification and Performance Measurement

Another critical aspect of the improvement initiative was the development of a structured KPI framework to support logistics performance management. KPIs were selected based on their relevance to organizational objectives, such as delivery reliability, booking accuracy, lead-time adherence, and issue resolution effectiveness.

Rather than focusing on many metrics, the organization prioritized a limited set of meaningful indicators. This facilitated focused performance reviews and supported data-driven decision-making. Performance results were reviewed regularly, enabling early identification of recurring issues and underlying process deficiencies. Importantly, KPIs also functioned as a communication mechanism, aligning expectations among logistics stakeholders and fostering a shared understanding of performance targets.

5.2.3 Utilizing Digital Systems and Validating Data

The improvement project also highlighted increased use of digital logistics solutions, especially enterprise platforms for shipment tracking and transportation planning. To improve data accuracy and consistency across logistics operations, standardized data-entry procedures were implemented. These systems produced operational reports that were methodically examined. For explanation, any unusual or unaccounted-for cases were forwarded to the execution support

teams. This ensured that logistical data was completed and verified before outbound delivery and the subsequent performance review.

5.3 Outcomes

The implementation of the logistics improvement measures resulted in notable operational benefits. Process transparency increased due to standardized workflows and clearly defined control points. Logistics coordinators gained improved visibility into shipment execution and exception handling.

The introduction of KPI-based performance monitoring enabled a transition from reactive problem-solving to proactive performance management. Additionally, clarifying roles and responsibilities improved cross-functional coordination and reduced process fragmentation. From an organizational perspective, the logistics function evolved into a more performance-oriented, value-adding capability within the broader supply chain.

5.4 Contribution

5.4.1 Methodological Support

One of the most significant contributions of this case study to this thesis was its influence on the research methodology. The structured approach to process analysis, KPI formulation, and performance tracking informed the design of the semi-structured interview guide and data collection framework used in this context. The thematic focus of the interviews, such as performance measurement practices, data sources, and process ownership, was directly inspired by the reference case, thereby strengthening methodological consistency.

5.4.2 Empirical Benchmarking and Comparative Analysis

The case study offered a useful benchmark by which this thesis might be analyzed. To compare the viability and efficacy of various operational settings, concepts such as access point implementation and KPI-driven performance management were adapted and evaluated within the case company. This study demonstrated a broad application of structured logistics improvement principles while enabling the detection of contextual variations, such as task variability and organizational maturity.

5.4.3 Validation of Improvement Recommendations

The observed outcomes of the reference case study played a key role in validating the recommendations proposed in this thesis. The successful implementation of standardized processes and performance measurement reinforced the practical relevance of similar improvement proposals for the case organization. By grounding the recommendations in an empirical case rather than purely theoretical models, the thesis achieved stronger academic robustness and practical relevance.

5.5 Discussion and Insights

The Western European case study provided insightful information but also highlighted crucial implementation issues. Because of operational complexity and workload variety, the improvement program required progressive modifications during pilot phases. By highlighting the necessity of adaptability and ongoing improvement throughout implementation, the research offered insights into this thesis. The case illustrated that improving logistics is a continuous process that requires ongoing alignment among organizational skills, systems, and processes, rather than a one-time intervention.

This case study illustrated how a structured logistics improvement initiative implemented within a Western European organization supported the development of this thesis, which was conducted in the case organization. Through practical examples of process standardization, KPI-based performance management, and data validation, the case study provided methodological guidance and empirical support. The findings reinforced the strategic importance of logistics in value creation and demonstrated the transferability of best practices across organizational and national contexts. As such, the case study played a significant role in shaping both the analytical framework and improvement recommendations of this thesis.

6 Findings in Relation to the Research Questions

This section provides clear and structured answers to the research questions posed in this study. Each research question is addressed individually by synthesizing the empirical and analytical findings derived from the applied methods and datasets. The purpose of this section is to consolidate the key insights obtained across the study and to demonstrate how the research objectives have been met. A summary table is presented at the end of the section to provide a concise overview of the answers to all research questions.

- **RQ1 -** The findings indicate that the successful establishment of a new logistics organization in a regional context is strongly influenced by a combination of structural, procedural, and human-centered operational factors. Clarity in organizational roles and responsibilities emerged as a primary success factor, as ambiguous accountability structures delayed decision-making and disrupted workflow coordination. Additionally, process standardization during the early implementation phase was identified as critical for ensuring consistency across logistics operations and for enabling scalable growth. Resource availability, particularly skilled personnel and operational infrastructure, also plays a decisive role. Regions with limited access to logistics expertise or supporting services require additional training efforts and external support mechanisms. Furthermore, effective coordination and communication mechanisms between central management and regional stakeholders were found to significantly influence implementation speed and operational stability. Collectively, these findings demonstrate that operational success is not determined by isolated factors but rather by the alignment of processes, resources, governance structures, and stakeholder engagement.

- **RQ2 -** The analysis reveals that regional infrastructure characteristics critically shape both the design and implementation of logistics structures. Physical infrastructure elements, such as transportation networks, warehouse availability, and geographic accessibility, directly influence facility location decisions, transport modes, and network configuration. Regions with constrained infrastructure require adaptive logistics designs, often prioritizing flexibility and redundancy over efficiency-maximizing structures. In addition to physical infrastructure, institutional and regulatory frameworks significantly affect the feasibility of implementation.

Regional policies, customs procedures, and governance arrangements were found to influence operational autonomy and process complexity. The use of established infrastructure frameworks from the literature enabled systematic interpretation of these regional characteristics, highlighting the interaction between infrastructure maturity and logistics system design. Overall, regional infrastructure acts as both an enabler and a constraint, requiring logistics organizations to align structural choices with contextual realities to ensure viable implementation.

- **RQ3 -** The findings identify a focused set of key performance indicators (KPIs) as essential for evaluating early-stage logistics organization performance. During the first phase of implementation, emphasis should be placed on operational stability and service reliability rather than long-term efficiency optimization. Core KPIs include service-level metrics, lead-time performance, cost-control indicators, and basic capacity-utilization measures. The study further shows that early-stage KPIs must balance simplicity and relevance, ensuring that data collection is feasible while still providing meaningful insights for managerial decision-making. Benchmarking against comparable organizations or industry standards enhances the interpretability of performance outcomes during this transitional phase. These KPIs serve as early warning indicators, enabling timely corrective actions and supporting structured performance governance during organizational maturation.

- **RQ4 -** The results demonstrate that supply chain network optimization is a key driver of competitive advantage when aligned with regional market characteristics. Optimization efforts focusing on network structure, such as facility location, transportation routing, and inventory placement, were shown to improve cost efficiency and responsiveness simultaneously. The integration of demand patterns and regional constraints into network design models proved essential for achieving market-relevant optimization outcomes. Rather than relying on a single optimization objective, the findings highlight the importance of multi-criteria optimization that balances cost, service performance, and resilience. In regional markets with infrastructure variability, flexible network configurations and strategic buffer capacities contribute to sustained competitive positioning. Consequently, competitive advantage emerges from the strategic configuration of the supply chain network rather than from isolated efficiency improvements.

- **RQ5 -** The study identifies several process enhancements that can significantly strengthen logistics performance within a regional context. Process integration and cross-functional coordination were found to reduce operational silos and improve information flow across logistics activities. Standardized operating procedures, supported by clear performance ownership, contributed to increased transparency and consistency in day-to-day operations. The adoption of continuous improvement mechanisms, such as structured performance reviews and feedback loops, further enhanced adaptability and learning during implementation. Importantly, the findings demonstrate that process enhancements must be context-sensitive, reflecting regional infrastructure constraints and workforce capabilities. The resulting performance improvement roadmap provides a structured pathway for transitioning from initial implementation to stable and scalable logistics operations.

Table 2. Key Findings for Research Questions

Research Questions	**Key Findings**
RQ1	Successful establishment depends on aligned operational structures, standardized processes, resource availability, and effective stakeholder coordination.
RQ2	Regional infrastructure characteristics and frameworks strongly shape the feasibility of logistics design and implementation, acting as both enablers and constraints.
RQ3	Early implementation evaluation requires a focused set of KPIs emphasizing service reliability, lead times, cost control, and capacity utilization.
RQ4	Competitive advantage is achieved by optimizing a regionally aligned supply chain network, balancing cost, service, and resilience objectives.
RQ5	Context-sensitive process enhancements and structured improvement mechanisms significantly strengthen regional logistics performance.

7 Conclusion

This thesis examined the development and validation of a new logistics organizational model tailored for a region undergoing operational transformation. Through the design of an organizational structure, a process framework, and an initial proof-of-concept implementation, the study demonstrated that a structured, methodical approach can support the successful establishment of a logistics function in an emerging operational environment. The findings indicate that clear governance mechanisms, well-defined workflows, and alignment with broader strategic objectives are essential for ensuring operational readiness and long-term scalability.

This study's convergent mixed-methods research approach integrated qualitative and quantitative data to create a thorough understanding of logistics and warehousing process improvements. By combining numerical performance indicators with stakeholders' experiences, perspectives, and behavioral patterns, the study not only validated the implemented operational changes but also provided deeper insights into why these improvements were successful and how similar initiatives could be sustained in the future.

The quantitative findings revealed significant gains across multiple operational domains, particularly in communication clarity, reverse logistics efficiency, Access Point utilization, PR-PO consolidation, and the implementation of established Key Performance Indicators (KPIs). Metrics such as on-time delivery rates, order-picking accuracy, reduced cost per shipment, inventory accuracy, and shorter reverse-logistics processing times demonstrated improved logistics performance. The initiatives resulted in improved workflow predictability, reduced operational waste, and better alignment among logistics teams, warehouse personnel, procurement units, external partners, and end users. The quantitative nature of these results demonstrated the interventions' concrete, long-term operational impacts.

Complementing these measurable outcomes, the qualitative data provided an enriched layer of understanding regarding the human and organizational dimensions of the process improvements. Feedback from logistics coordinators, warehouse operators, procurement specialists, carriers, Access Point workers, and internal customers indicated a common focus on better clarity, cross-functional collaboration, and operational trust. Stakeholders repeatedly stated that communication had been more structured, expectations more transparent, and duties more defined. Participants reported favorable behavioral improvements, including proactive

problem-solving, reduced uncertainty in tasks, and enhanced accountability across teams. These qualitative insights demonstrated that the implemented improvements had a far-reaching impact on organizational culture and day-to-day operational processes.

The convergent research method was especially valuable in this study, as it enabled the simultaneous investigation of performance outcomes and human factors. By combining qualitative insights and quantitative measures, the study avoided the limitations inherent in relying on a single data type. Quantitative findings supplied the evidence needed to establish that operational improvements had happened, while qualitative narratives contextualized these changes by explaining the procedures, motivations, and perceptions that contributed to their success. The combination of these two data streams resulted in a more comprehensive and convincing conclusion than either approach could deliver alone. This methodological complementarity is especially important in logistics contexts, where both measurable performance metrics and human-driven coordination influence total efficiency.

One of the most striking conclusions from the convergent analysis was the substantial relationship between communication clarity and operational performance. Quantitative data revealed significant reductions in picking errors, shipment inconsistencies, and delivery variances when communication protocols were standardized. Simultaneously, qualitative interviews suggested that stakeholders felt more aligned, educated, and confident in carrying out their tasks. Together, these data points indicated that communication clarity does more than accompany operational success; it actively facilitates it. This insight reinforces the strategic importance of communication frameworks in supporting logistics and warehouse excellence, suggesting that future initiatives should continue to prioritize communication as a key driver of performance.

The study also found that process standardization, notably in reverse logistics and PR-PO consolidation, enhanced productivity and encouraged closer communication among previously isolated departments. Quantitative gains in reverse logistics cycle time and warranty cost recovery were accompanied by qualitative improvements, including greater procedural clarity and reduced frustration among warehouse personnel and transportation partners. Similarly, the cost savings realized through PR-PO consolidation were accompanied by increased trust and coordination between procurement and warehouse staff. These findings highlight the need to combine technical process improvements with clear communication and structured workflows, which yield both operational and relationship benefits.

Implementing Access Points and improving last-mile distribution highlighted the effectiveness of targeted logistical interventions based on data and stakeholder engagement. Quantitative findings showed fewer delivery failures, higher routing efficiency, and lower costs, while qualitative feedback from consumers and couriers highlighted the process's increased convenience, predictability, and professionalism. These results show that customer-centric and strategically developed delivery methods lead to significant improvements for all stakeholders.

The implementation of KPIs established a platform for long-term improvement. KPIs provided accurate diagnostic and monitoring data, while data-driven evaluation increased team motivation, alignment, and engagement through transparency and fairness. This dual impact demonstrates that KPIs are more than just measurement tools; they are strategic accelerators of corporate learning, behavior change, and performance responsibility.

The overall findings of the study show that mixing qualitative and quantitative approaches is not only methodologically helpful but also necessary in complex logistics systems. Logistics operations are influenced by both quantitative workflow motions and the human decisions that drive them. Understanding these systems necessitates a combination of empirical evidence and experiential knowledge. This study's convergent mixed methods design balanced numerical validation with contextual understanding of operational successes.

Looking ahead, the study's results and lessons provide a solid foundation for future improvement. The usage of convergent data should continue to be an important component of future organizational development activities. The qualitative insights gained from this research suggest areas where more training, stakeholder engagement, and communication refinement will improve operations. Quantitative KPIs provide a consistent way to monitor performance, detect concerns, and make data-driven decisions.

Research shows that businesses that integrate organized communication, established processes, and evidence-based performance evaluation are more likely to achieve sustainable progress. This study demonstrated how rigorous analysis, cross-functional collaboration, and methodical implementation can lead to large and demonstrable gains in logistics and warehouse operations.

Finally, using qualitative and quantitative data within a convergent mixed-methods framework yielded actionable insights that improved logistics and warehouse operations. Measurable improvements in communication clarity, process efficiency, reverse logistics, last-mile distribution, cost control, and KPI-based governance highlight the revolutionary power of data-

driven operational methods. Equally important, qualitative data gave critical insights into team dynamics, stakeholder perceptions, and cultural adjustments that enabled these outcomes. The insights generated from this research not only reveal the way to continuing greatness but also serve as a reproducible blueprint for future endeavors. As the organization continues forward, these insights will serve as guiding principles, ensuring that continuous improvement is ingrained in its culture, procedures, and performance.

7.1 Limitations

Despite the valuable insights generated, the research faced several limitations inherent to the six-month project timeframe. The compressed schedule restricted the ability to conduct extended longitudinal analysis, preventing a full assessment of long-term performance trends, organizational adaptation, and continuous improvement outcomes. The timeframe limited the scope of stakeholder engagement; broader participation across additional functions or external partners may have enriched the findings and provided deeper validation of the proposed model. The proof-of-concept implementation remained limited in scale, meaning that certain elements, such as advanced process automation, technology integration, or cross-regional synchronization, could not be examined in depth. Finally, the accelerated pace of development may have constrained opportunities to test alternative organizational configurations, thereby narrowing the range of design options evaluated.

First, this study is limited by its context-specific focus. The empirical investigation is situated within a specific regional implementation context characterized by unique infrastructure conditions, regulatory frameworks, and organizational dynamics. While this contextual embeddedness enhances the practical relevance of the findings, it simultaneously constrains their generalizability. Logistics organizations operating in regions with substantially different economic, infrastructure, or institutional environments may encounter alternative challenges and success factors. As a result, the conclusions and frameworks developed in this study should be interpreted as analytically transferable rather than universally applicable.

Second, the study relies partly on qualitative data obtained through interviews, workshops, and internal documentation, which introduces a degree of subjectivity. Although systematic analytical methods were applied to reduce researcher bias, such data inherently reflect the

perceptions, experiences, and assumptions of participating stakeholders. Differences in individual viewpoints, organizational roles, or levels of involvement may have influenced how operational challenges and improvement opportunities were articulated. Additionally, social desirability bias may have affected interview responses, particularly when discussing organizational weaknesses or implementation shortcomings.

Additionally, the study examined technological considerations primarily from an operational and process-oriented perspective. While technology is recognized as an enabling factor, the research does not conduct a detailed technical assessment of information systems, digital integration levels, or advanced analytics capabilities. As digitalization increasingly influences logistics competitiveness, future research could expand on this dimension to provide a more comprehensive evaluation of technology-driven performance enhancement.

Finally, the study is constrained by organizational access and confidentiality considerations. Certain strategic decisions, financial data, and governance mechanisms could not be examined in full detail due to data sensitivity. Although sufficient information was available to meet the study's objectives, limited access may have reduced analytical depth in some areas, particularly concerning cost structures and strategic trade-offs at the corporate level.

In summary, while the study provides theoretically grounded and empirically informed insights into the establishment and performance of logistics organizations within a regional context, its findings should be interpreted with the identified limitations in mind. These limitations do not undermine the validity of the research outcomes; rather, they define the boundaries within which the findings are applicable. By acknowledging these constraints, the study contributes transparently to academic discourse and provides a sound foundation for future research to extend and refine the presented insights.

8 Future Research

Future studies could expand on this work by conducting longitudinal evaluations of the proposed organizational model, with a particular focus on its evolution across subsequent phases of operational maturity. Research could also explore the impact of digitalization and automation technologies on newly established logistics functions, assessing how advanced analytics, process automation, or integrated planning tools reshape organizational requirements. Additionally, comparative studies across multiple regions or industries could provide broader insights into the model's generalizability and identify contextual factors that influence its success. Further investigation into change management strategies, workforce capability development, and cross-functional integration would also contribute to a more comprehensive understanding of effective logistics organization design in dynamic environments.

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10 Appendix 1: Research Interview Guide

Title: Guide for Semi-Structured Interviews on Logistics Process

Objectives: Acquiring a qualitative understanding of the case organization's logistics, existing procedures, task inconsistencies, system utilization, and automation prospects.

Questions:

1. **The entire logistics procedure**

    a) Could you explain the general logistical procedure you work on?

    b) What is the usual shift from procurement operations to logistics operations?

    c) What are the main phases and procedures that your logistics operations go through?

    d) Do you adhere to any written Standard Operating Procedures (SOPs) regarding these practices?

2. **Warehouse Management**

    e) In your logistics processes, how many nations do you usually coordinate with?

    f) What is the location of the warehouses you deal with

    g) Could you explain the standard warehouse procedures and how your logistics staff works with them?

3. **SAP Transactions**

    a) What kinds of SAP transactions do you utilize in your work?

    b) Are transportation bookings handled through SAP?

4. **Overview**

    a) How are you able to monitor or obtain data on logistics procedures?

    b) What systems or technologies are employed to monitor logistical operations?

5. Reporting and Metrics

a) Does your team regularly monitor any Key Performance Indicators (KPIs)?

b) What sources do you use to obtain data for assessing these KPIs?

c) Is there an established process for tracking performance, and what is it used for?

6. Automation

a) Are you utilizing Power Automate or other automation technologies for your tasks? If so, could you give some examples?

b) Have you given low-code automation techniques any thought?

7. Miscellaneous

a) How do suppliers, warehouses, and the logistics team usually exchange information?

b) What criteria do you use to decide which KPIs are important to monitor?

c) Name the standard procedures your group employs to guarantee delivery on schedule?

d) List out the ongoing difficulties and issues that you encounter with logistics procedures?

11 Appendix 2: Survey Instrument Used in the Study

Title: Understanding Pain Points and Current Process - Survey

Objectives: Assist in identifying areas for Access Point implementations; systematically collect data on task frequency, system utilization, labor practices, and problems in current logistics practices.

Questions:

Section 1: Overview Information

1. What's your role in the logistics team?

Open-ended response

2. What exactly is your task within the group?

Open-ended response

Section 2: Understanding Existing Procedures

3. What are your biggest challenges with the current delivery method?

Open-ended response

4. Describe a situation where delayed delivery affected your service job?

Open-ended response

5. Which step of the procedure takes the longest, in your opinion?

    a) Scheduling and monitoring of incoming transportation

    b) Monitoring items that are delivered to the warehouse

    c) Communication (such as emails to the billing team, warehouse, and suppliers)

    d) Storing and accessing documents (Document Management)

    e) SAP transaction (such as tracking sales orders, generating packaging requests, and outbound delivery procedures)

Other:

6. How much time do you think the following steps take? (1 = Low time-consuming, 5 = High time-consuming)

Scheduling and monitoring of incoming transportation	1	2	3	4	5
Collecting and monitoring items at the storage facility	1	2	3	4	5
S4 transactions (Outbound delivery, packing request creation, and SO tracking)	1	2	3	4	5
Communication (Supplier mail, Third-Party Logistics, Finance)	1	2	3	4	5
Storing and accessing documents	1	2	3	4	5

7. Do you think your tasks are sufficiently supported by the present systems and technologies (such as S4, TMS, and WMS)? If not, kindly outline the restrictions.

Open-ended response

8. Number of documents, such as bills, invoices, packaging lists, and confirmation letters, do you typically handle each day?

    a) Less than 3

    b) 3–5

    c) 3–10

    d) More than 10

Section 3: Pain Points and Challenges

9. If you could redesign the entire spare-parts delivery workflow, what changes would eliminate your biggest pain points?

10. What is the biggest obstacle you face when coordinating between logistics, warehouse, and courier deliveries?

Open-ended response

11. Explain the biggest obstacles that were encountered in your everyday duties.

Open-ended response

12. Do you think routine jobs take up extra time? If so, kindly enumerate them.

Open-ended response

13. How frequently do mistakes (such as improper data input or missing communication) occur in the process?

    a. Often
    b. Sometimes
    c. Not often
    d. Never

14. What are some of the most frequent reasons why mistakes happen?

Open-ended response

Section 4: Automation Improvements

15. Do you feel like any procedures or duties could be automated to cut down on errors or save time?

Open-ended response

16. Did you work with any automation system like Power Automate in your work?

Open-ended response

Section 5: Suggestions and Feedback

17. To enhance teams' performance, is there any process or system that needs to be streamlined?

Open-ended response

18. How do you evaluate the team's internal and external stakeholder communication (vendors, warehouse, and billing team)?

(1 - Bad, 5 – Very Good)

19. What other resources or assistance would enable you to complete the process successfully?

Open-ended response

20. Will you make other comments and recommendations about the existing procedures or possible enhancements?

Open-ended response