

EXPLORING ORGANIZATIONAL READINESS FOR LEAN: ENABLERS AND BARRIERS IN PUBLIC POSTAL SERVICES

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Abstract: *Lean management has increasingly become a strategic imperative for organizations seeking to enhance efficiency and responsiveness. While traditionally rooted in manufacturing, Lean principles have found relevance in service sectors such as healthcare, education, and logistics. Postal services are undergoing digital and operational transformation to meet evolving customer expectations and competitive pressures. This paper presents a conceptual analysis of the enablers and barriers to Lean implementation in postal services, with specific reference to Pos Malaysia. Drawing from global, ASEAN, and Malaysian contexts, the paper synthesizes existing literature to propose a conceptual framework that identifies top management support, employee engagement and training, digital integration, and organizational culture as key enablers. Conversely, resistance to change, bureaucratic structures, limited Lean knowledge, and resource constraints emerge as significant barriers. The paper concludes with implications for future research and recommendations for effective Lean deployment in the postal sector*

Keywords: *Lean management, postal services, enablers, barriers, public sector transformation*

Introduction

Lean philosophy, rooted in the Toyota Production System, emphasizes the elimination of waste (muda) and maximization of customer value through continuous improvement and streamlined processes Dinis-Carvalho (2020). While initially designed for manufacturing, Lean has evolved into a widely adopted methodology across diverse sectors, including healthcare, logistics, finance, and public services (Zulkeflee et al., 2022). Postal service organizations globally are increasingly turning to Lean as a strategic response to market liberalization, declining letter volumes, and rising customer expectations. For instance, the United States Postal Service (USPS) has implemented Lean Six Sigma to enhance operational efficiency, reduce mail-processing times, and improve stakeholder satisfaction (Marsilio et al., 2022). Similarly, Royal Mail in the United Kingdom and Japan Post have adopted Lean tools such as 5S, Kaizen, and Value Stream Mapping to modernize delivery systems and eliminate operational bottlenecks (Vadivel et al., 2021). Through these adaptations, organizations in the postal sector can leverage Lean principles to respond effectively to contemporary challenges while enhancing service delivery and customer satisfaction. The continued evolution of Lean practices underscores their relevance and potential impact across various industries, including postal services (Muna et al., 2021).

In the ASEAN region, postal operators are also leveraging Lean to navigate the rapid growth of e-commerce and the demand for more responsive logistics networks. Singapore Post (SingPost) has successfully integrated Lean thinking into its automation initiatives, resulting in higher parcel throughput and better cost efficiency (Tan & Teo, 2020). Meanwhile, Thailand Post and Pos Indonesia have explored Lean for optimizing last-mile delivery and enhancing customer satisfaction in urban and rural areas (ASEAN Post, 2021). However, the implementation of Lean in Southeast Asian postal systems is highly context-dependent, shaped by factors such as leadership commitment, organizational readiness, resource allocation, and employee engagement (Nor et al., 2022).

In Malaysia, Pos Malaysia Berhad as the national postal and courier service provider has embarked on transformation initiatives aimed at remaining competitive in a landscape increasingly dominated by agile private logistics firms. The company's efforts include digitalizing services, automating mail sorting processes, and modernizing customer touchpoints. Nonetheless, Lean implementation remains fragmented and under-researched, especially within the context of public sector governance and institutional inertia. Public service organizations in Malaysia often face bureaucratic constraints, siloed communication, and inconsistent performance measurement systems, which hinder the adoption of Lean principles (Yusof et al., 2021; Rashid & Misnan, 2023).

Given these dynamics, this conceptual paper aims to explore and synthesize the enablers and barriers that influence the implementation of Lean practices in postal services. Specifically, it focuses on Pos Malaysia as a case-in-point to understand how Lean is perceived, operationalized, and challenged within a semi-government organizational context. By integrating global, ASEAN, and national insights, this paper seeks to offer a foundational framework for future empirical studies and provide actionable recommendations for Lean adoption in Malaysia's postal sector.

Literature Review

Lean Management Principles

Lean management, initially derived from the principles of the Toyota Production System (TPS), focuses on optimizing processes to eliminate waste and enhance value for customers. The five core principles of lean management specifically value specification, value stream identification, flow creation, pull-based production, and a relentless pursuit of perfection aim to minimize non-value-adding activities while amplifying customer satisfaction (Bouville & Schmidt, 2020). The adaptability of these principles has seen their application extend beyond manufacturing to various sectors, particularly in service industries where customer-centric processes are more prominent.

In the healthcare sector, lean principles have been effectively implemented. Research indicates that when these principles are meticulously applied, organizations experience significant enhancements in efficiency, quality, and productivity (Ajmera & Jain, 2019). Furthermore, lean leadership attributes, which guide leaders in adjusting their behavior to foster better relationships with employees and optimize processes, have been identified as critical for successful lean implementation in healthcare (Aij & Teunissen, 2017). The case of Virginia Mason Medical Center in Seattle stands as a noteworthy example of lean management implementation leading to enhanced patient care and operational efficiencies (Wang et al., 2023).

Additionally, the integration of lean management principles in various domains brings substantial benefits, including improved collaboration among stakeholders, which is essential in sectors like construction and design management. Lean design management has been shown to enhance communication and coordination among project participants, leading to increased customer value (Tarek et al., 2022). This trend highlights how lean management principles foster cost reductions and promote a cultural shift towards continual improvement and innovation within organisations.

A significant aspect of lean management's versatility is its alignment with modern technological advances, such as Industry 4.0. The integration of technologies with lean principles has been shown to enhance production systems and drive efficiencies across sectors. For instance, when lean practices are integrated with advanced technologies, they can lead to better healthcare outcomes by facilitating accurate waste identification and continuous improvement practices (Aij & Teunissen, 2017; Rosin et al., 2019). Moreover, the convergence of lean methodologies with sustainability goals has emerged, as organizations increasingly seek to mitigate environmental impacts while maintaining operational efficiencies (Minh et al., 2018).

Furthermore, the application of pull-based production, a cornerstone of lean management, emphasizes understanding customer requirements to fulfil demand without overproducing. This approach enhances flexibility and reduces costs associated with excess inventory (ARAUJO et al., 2023). This finding, however, may have limited applicability within lean service literature, as pull-based production was originally developed for manufacturing environments where inventory and production flows are more measurable and standardized. In service contexts, the implementation of pull systems can be more complex due to variability in customer demand, intangible outputs, and difficulties in workflow standardization. So, it is essential to note the challenges that organizations face in adopting these principles because misapplication can lead to inefficiencies and reduced employee morale, as noted in various studies (Ofori-Okoyere,

2016). Therefore, companies must navigate the complexities of implementation carefully to realize the full potential of lean management.

In summary, lean management continues to evolve as organizations recognize its applicability across diverse industries. Its principles, focused on value creation and waste elimination, enhance operational outcomes and foster a culture of continuous improvement and customer-centred services. The incorporation of lean practices with modern technologies and sustainability efforts presents opportunities for significant advancements in various sectors.

Lean in Public Services

Adopting Lean principles in public sector organizations presents unique challenges compared to their private sector counterparts. As noted by Psomas et al. (2023), the misapplication of Lean in public services primarily arises from a lack of contextual alignment with the unique operational frameworks within these organizations. Unlike private enterprises that focus predominantly on profitability, public sector institutions must balance efficiency with accountability, equity, and citizen satisfaction. This multifaceted nature of public services necessitates a tailored approach to Lean that can respect the bureaucratic structures while simultaneously fostering innovation and responsiveness to citizen needs (Keramida et al., 2023).

The public sector often experiences complex interactions between various service delivery components, where internal customers rely on different departments to deliver a coherent service (Andersson et al., 2020). This complexity can dilute the effectiveness of Lean practices, as the decentralized nature of public services can hinder coordination, leading to fragmented implementations. Decentralized strategies can create challenges of coordination rather than resolving them, resulting in silos that obstruct the efficiency Lean aims to introduce (Elliott, 2023). As such, implementing Lean requires more than just following established methodologies; it demands a contextual understanding that aligns with the public ethos of service delivery, acknowledging both the benefits and challenges of decentralization (Hegele et al., 2024).

As Lean practices continue to permeate the public sector globally, it becomes apparent that successful implementation relies on active engagement with end-users, citizens in this context. Research indicates a need for collaborative working practices that actively involve public service users in the design and improvement processes (Rodgers et al., 2019). Such collaborative efforts are viewed as essential for fostering transparency and accountability while ensuring that services align with community needs and preferences (Almeida et al., 2017). Additionally, a focus on customer engagement is critical for public institutions to derive genuine value from Lean applications (Aljuwaied et al., 2023).

The integration of Lean methodologies with digital technologies and sustainability efforts presents significant opportunities for public sectors to enhance service quality and ensure responsiveness to community needs. Research indicates that digital transformation can significantly improve Lean practices, thereby enabling public sector organizations to address inefficiencies and service quality issues more effectively (Haartman et al., 2021).

A further contradiction in the literature concerns the role of standardization in public service delivery. While Lean encourages rigorous process standardization to eliminate variability and improve efficiency, public services frequently require operational flexibility to address diverse,

unpredictable citizen needs. As Osborne et al. (2013) argued in their treatise on Public Service-Dominant (PSD) logic, importing manufacturing-based standardization into public services often fails because it treats citizens as passive consumers of a uniform product, rather than active co-producers of a service. Consequently, excessive standardization may reduce organizational responsiveness and undermine service personalization, creating a persistent tension between internal efficiency objectives and external public value creation (Alford and O'Flynn, 2009).

Moreover, existing studies tend to focus heavily on hard operational outcomes while giving limited attention to employee experiences and organizational resistance. Several researchers, such as Carter et al. (2013), report that employees in public institutions frequently perceive Lean initiatives as top-down, exploitative cost-cutting mechanisms, often dubbed "management by stress" rather than genuine process improvement strategies. This perception inevitably leads to active staff resistance, burnout, and reduced organizational commitment (Carter et al., 2013). Conversely, other prominent studies, such as those by Radnor and Boaden (2012), claim that frontline employee participation and empowerment are absolute prerequisites for a successful Lean transformation. These highly inconsistent findings indicate that employee perceptions, psychological safety, and the human dynamics of change remain insufficiently explored and inadequately reconciled within Lean public sector research.

Another notable limitation in the current literature is the overwhelming dominance of studies conducted in Western countries. The majority of empirical evidence originates from Europe and North America, as highlighted in systematic reviews by researchers like Brandao de Souza (2009). Consequently, developing countries and Southeast Asian public institutions remain severely underrepresented. This geographical bias leaves a significant gap in the literature; there is currently a very limited understanding of how distinct cultural dimensions (such as high power distance), rigid administrative hierarchies, and institutional resource constraints influence Lean implementation outcomes in developing public sector environments (Tortorella et al., 2017).

In conclusion, while Lean management holds promise for improving public sector operations through efficiency and service quality enhancements, it is imperative that organizations tailor these principles to their specific contexts. By doing so, they can mitigate the potential dissonance between Lean practices and public values, ultimately leading to more effective and citizen-centred service delivery.

Lean in Postal Services

In the context of postal services, implementing Lean methodologies promises significant improvements in operational efficiency, service quality, and customer satisfaction. With high-volume operations characterized by fixed delivery schedules and increasing digital interactions, postal organizations like USPS and SingPost are exploring Lean as an avenue to streamline processes, reduce turnaround times, and enhance frontline services (Dorval et al., 2019). Notably, the successful implementation of Lean in these organizations requires a profound transformation that extends beyond mere tool adoption; it necessitates a cultural shift and sustained leadership support (Dorval et al., 2019).

Lean practices in the postal sector are particularly critical given the industry's ongoing transition to digital platforms. The integration of Lean principles helps reduce wasteful activities in mail processing and promotes quicker turnaround times for delivery, which is paramount as

customer expectations continue to rise in an increasingly competitive digital landscape (Vadivel et al., 2021). Initiatives aimed at optimizing postal sorting processes through Lean have shown promise in effectively managing high volumes while promoting a culture that focuses on continuous improvement (Mostarac et al., 2021).

Nevertheless, the implementation of Lean in public services like postal operations introduces distinctive challenges due to the inherent structure and goals of these organizations. The culture of an organization plays a significant role in the success of Lean initiatives, with leadership emerging as a crucial factor in embedding a Lean mindset within the organization (Dorval et al., 2019). This leadership engagement is particularly vital for cultivating a shared vision for change and supporting frontline employees during the transition.

Case studies reveal that successful Lean initiatives in postal services often demonstrate the importance of a supportive culture. For instance, USPS's Lean initiatives have been linked to leadership strategies that promote collaboration and accountability among staff (Khotsa & Mabitsela, 2023). Additionally, effective implementation entails nurturing an organization-wide commitment to Lean principles that aligns with public service values and promotes innovation (Vadivel et al., 2021).

Moreover, the dynamic nature of customer interactions within postal services means that organizations must be agile, responding not only to traditional postal needs but also adapting to evolving customer preferences (Mostarac et al., 2022). As postal services incorporate digital solutions, Lean implementation must extend into improving digital service delivery, ensuring that the integration of technology complements Lean processes in a manner that enhances overall service efficiency and customer satisfaction (Khotsa & Mabitsela, 2023).

A prominent contradiction in contemporary operations management concerns the relationship between digitalization and Lean practices. While some researchers argue that digital technologies and Industry 4.0 tools complement Lean by improving process integration and customer responsiveness, others suggest that rapid digital transformation may create severe implementation challenges. This is particularly evident among traditional postal organizations burdened with rigid structures and legacy systems. As Tortorella et al. (2018) observed, technology integration alone does not guarantee Lean success; without a mature, foundational Lean practice, layering advanced digital technologies onto unstable processes merely automates existing inefficiencies. In the postal sector specifically, Khotsa and Mabitsela (2023) highlighted that when public legacy operators attempt to digitize without addressing systemic process bottlenecks, they face severe operational resistance and service delivery disruptions rather than the intended efficiency gains.

Leadership commitment is widely discussed as a critical success factor in navigating these transformations. Although studies consistently emphasize leadership support as essential for Lean implementation, the literature provides limited explanation regarding *how* specific leadership behaviors influence employee acceptance and organizational culture. As Dombrowski and Mielke (2013) pointed out, while the conceptual importance of "Lean Leadership" is universally acknowledged, there remains a distinct lack of empirical evidence showing how daily leadership behaviors translate into psychological safety and active problem-solving at the frontline. In the public service context, Radnor et al. (2012) stated that leadership often fails to embed a continuous improvement mindset because executives treat Lean as a

short-term, top-down cost-cutting initiative rather than a long-term cultural shift, leaving the micro-mechanisms of employee buy-in unexamined.

Additionally, most postal service studies focus predominantly on hard operational performance indicators such as efficiency, turnaround time, and cost reduction, while leaving employee well-being, organizational culture, and customer trust largely in the periphery. This creates a significant imbalance in the literature, where technical performance outcomes are prioritized over the human and social dimensions of Lean implementation. This critique aligns with the findings of Carter et al. (2013), who argued that Lean in public services frequently degenerates into a "stressed-out" regime where work is intensified under the guise of waste reduction, severely damaging employee well-being. Furthermore, as Murugesan et al. (2021) demonstrated in their postal sorting study, researchers heavily favor mathematical modeling and spatial simulation to optimize throughput, while completely omitting the human and cognitive fatigue factors of the postal workers operating those systems.

In conclusion, while Lean methodologies present a robust framework for enhancing operations in postal services, their successful implementation relies on a deliberate focus on cultural transformation, strong leadership, and a comprehensive understanding of the specific needs and challenges within the public postal context. Postal organizations that effectively embrace these strategies not only enhance their operational efficiencies but also strengthen their relationships with customers, ultimately leading to a more resilient postal service capable of thriving in a digital age.

Table 1: Comparative Lean Implementation Across Postal Services

Country / Organization	Lean Tools / Practices	Outcomes	Source
USPS (USA)	Lean Six Sigma	Reduced processing time, improved efficiency	Marsilio et al. (2022)
Royal Mail (UK)	5S, Kaizen, Value Stream Mapping	Modernized delivery, eliminated bottlenecks	Vadivel et al. (2021)
Singapore Post	Automation+ Lean integration	Higher parcel throughput, cost efficiency	Tan & Teo (2020)
Pos Malaysia	Digitalization and fragmented Lean adoption	Mixed results, limited effectiveness	Yusof et al. (2021)

Lean in the Malaysian Context

In the Malaysian context, the implementation of Lean methodologies within public sector organizations, particularly Government-Linked Companies (GLCs) such as Pos Malaysia, encounters various challenges amidst ongoing modernization efforts dictated by national policies like the Digital Economy Blueprint and Industry4WRD. While these initiatives aim to enhance efficiency and service quality, the adoption of Lean principles remains relatively nascent and inconsistent Aripin et al. (2024). Research by (Zulkeflee et al., 2022) and (Zulkeflee et al., 2023) highlights critical gaps in Lean awareness, the availability of adequate training, and opportunities for integration within Malaysian public institutions. This discrepancy emphasizes an urgent need for strategic alignment and cultural readiness to facilitate effective Lean adoption (Zulkeflee et al., 2023).

The existing literature suggests that Lean practices can significantly impact operational performance when effectively implemented. For instance, (Zulkeflee et al., 2022) argue that knowledge management is crucial for successfully implementing Lean in the Malaysian public sector, highlighting the importance of fostering an environment conducive to Lean practices alongside adequate training and resources (Zulkeflee et al., 2022). On the other hand, (Zulkeflee et al., 2023) advocate for more coherent frameworks and policies that support Lean integration, as opposed to isolated implementations that lack broader strategic vision and organizational commitment (Zulkeflee et al., 2023).

Moreover, while Lean is often associated with manufacturing, there is a pressing need to adapt its principles to the specific needs of public services in Malaysia. The unique bureaucratic structures and processes within the public sector necessitate a tailored approach to Lean that respects existing frameworks while promoting innovation and responsiveness (Keramida et al., 2023). Adaptation may involve not just procedural changes but also a fundamental cultural transformation to embed Lean thinking into everyday practices (Sharma & AL-Sinawi, 2021). This complexity of transformation is compounded by insufficient leadership support, as strong leadership is critical for fostering a culture of continuous improvement and addressing organizational resistance to change (Psomas et al., 2022).

The challenge is further exacerbated by the disparity in service quality perceptions among public entities. Studies indicate that public dissatisfaction often stems from ineffective service delivery, largely driven by traditional operating procedures that neglect contemporary customer expectations (Ahmed et al., 2023). For instance, the findings by (Ong, 2022) regarding service quality in public transport highlight the repercussions of outdated practices that fail to meet evolving consumer needs, further demonstrating the necessity for effective Lean application in enhancing public service delivery (Ong, 2022). Furthermore, the effects of Lean adoption on public services, as indicated by the positive impacts observed in other nations, provide a potential blueprint for Malaysia to follow (Keramida et al., 2023).

Furthermore, much of the Malaysian Lean literature focuses heavily on manufacturing industries (such as automotive and electronics), while empirical studies within public services remain scarce. As Rose et al. (2011) and Nordin et al. (2010) demonstrated, Malaysian Lean research has historically prioritized industrial shop floors, leaving a significant gap in service-sector frameworks. Existing Malaysian public sector studies tend to discuss Lean conceptually or are heavily skewed toward public healthcare settings. Consequently, as Habidin et al. (2016) pointed out, there is insufficient empirical evidence regarding how Lean principles influence overall operational efficiency, employee engagement, and customer satisfaction within broader Malaysian public service organizations, particularly within administrative or logistical agencies.

Another critical limitation in the current literature is the distinct lack of sector-specific research on national logistics providers. Although Pos Malaysia represents a major public service institution undergoing massive digital transformation, there remains limited scholarly investigation into how Lean practices are integrated within its operations. While researchers such as Samsudin et al. (2021) have extensively evaluated Pos Malaysia's digital business model transformation and Courier, Express, and Parcel (CEP) performance to survive the e-commerce boom, they largely overlook the underlying Lean operational mechanics. Most existing studies examine Lean implementation broadly across public institutions without

focusing specifically on the high-volume, automated-to-manual sorting environments unique to postal service operations.

In conclusion, for Lean principles to be effectively adopted in the Malaysian public sector, there must be a concerted effort to bridge the gaps in awareness and training, achieve strategic alignment, and implement cultural readiness initiatives. By fostering an environment conducive to Lean methodologies and embracing the necessary transformations in leadership and organizational culture, Malaysia can better leverage Lean to modernize public services and improve overall operational efficiencies.

Methodology

This study employs a conceptual research design that relies on an integrative review of the literature to identify and synthesize the enablers and barriers to Lean implementation in postal services, with particular emphasis on the Malaysian context. To ensure comprehensiveness and rigor, the methodology followed three stages: literature identification, screening and selection, and thematic synthesis.

The literature search was conducted across several major academic databases including Scopus, Web of Science and ScienceDirect. A combination of keywords such as “Lean management,” “Lean implementation,” “Lean in public sector,” “Lean in postal services,” “Pos Malaysia,” “enablers of Lean,” “barriers to Lean,” and “Lean transformation” was used, with Boolean operators applied to refine results. The search was limited to peer-reviewed journal articles, conference proceedings, and authoritative reports published between 2010 and 2024 to capture both foundational studies and contemporary developments, particularly in the ASEAN region. This period reflects the rapid evolution of e-commerce, digital logistics, Industry 4.0 integration, and customer-driven delivery expectations, which significantly reshaped lean applications in the logistics sector.

To guide the selection process, inclusion and exclusion criteria were applied. Articles were included if they examined the application of Lean principles in service or public sector contexts, explored enablers or barriers of Lean adoption, reported empirical findings or conceptual discussions, and were published in English in recognized academic outlets. Studies focusing solely on manufacturing or purely technical aspects of Lean, unrelated process improvement methods, non-academic publications, or those unavailable in full text were excluded. The initial search yielded 196 records. After removing duplicates and screening titles and abstracts, 72 articles were shortlisted for full-text review. Following a more detailed evaluation, 51 high-quality publications were retained for analysis, consisting of global case studies, ASEAN postal sector research, and Malaysian public sector transformation literature.

The selected studies were analyzed using thematic synthesis. Key concepts and findings were extracted and categorized into recurring themes, which were subsequently grouped under two overarching categories: enablers and barriers. Enablers identified included top management support, employee engagement and training, digital integration, and organizational culture, while barriers comprised resistance to change, bureaucratic structures, limited Lean knowledge, and resource constraints. This thematic approach ensured consistency across sources and allowed for the integration of global experiences with context-specific insights from Malaysia and ASEAN countries, thereby highlighting both universal and local dynamics of Lean implementation.

Drawing from this analysis, a conceptual framework was developed to illustrate how organizational, technological, and cultural factors interact to influence Lean implementation outcomes in postal services. The framework serves as a foundation for understanding the dynamics of Lean adoption in Pos Malaysia and provides a basis for future empirical research. Nevertheless, this study is subject to certain limitations. As a conceptual paper, it relies solely on secondary data sources, and therefore, its findings reflect published literature up to 2024, without capturing unpublished organizational practices. While the inclusion of global and ASEAN perspectives broadens the discussion, future empirical investigations, such as surveys, interviews, and case studies are recommended to validate and refine the proposed framework.

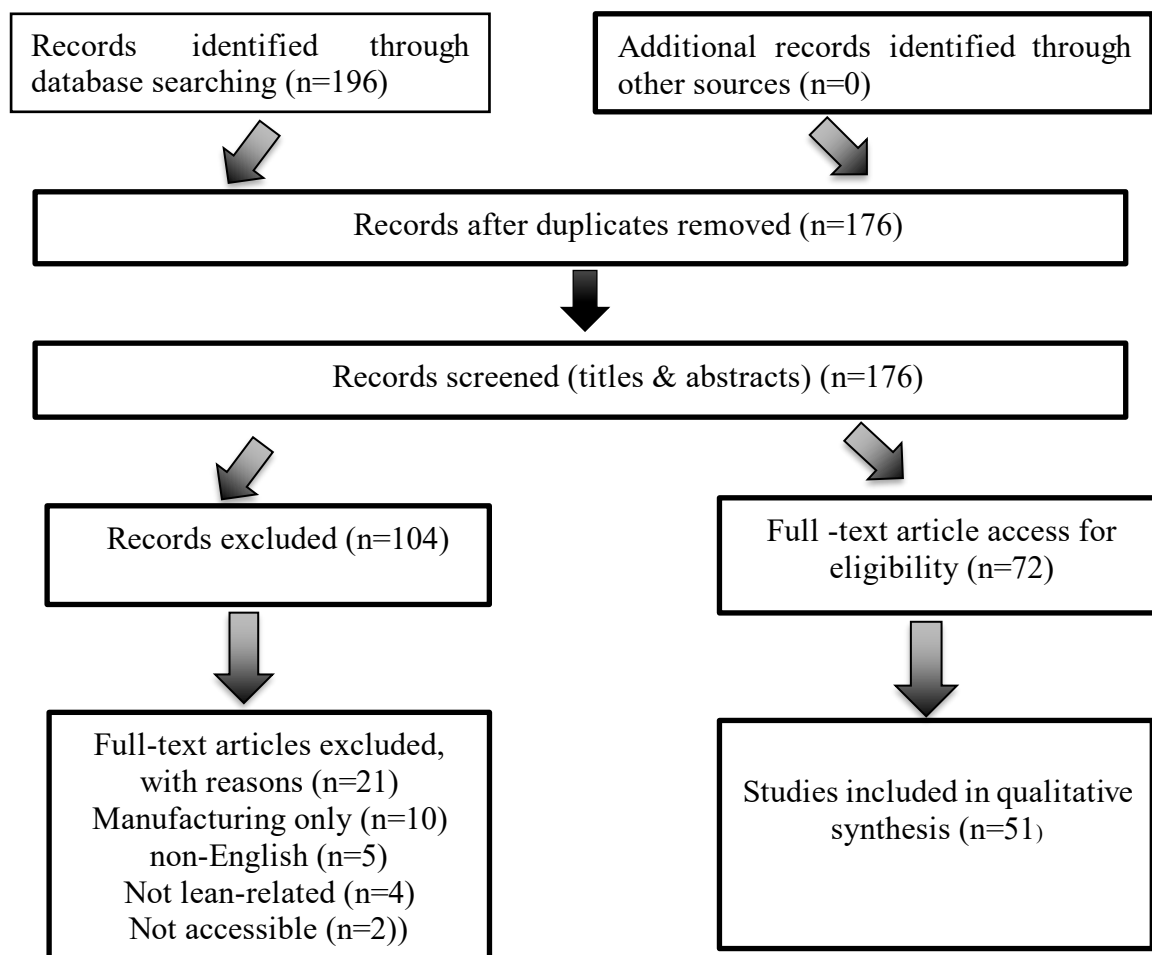


Figure 1: PRISMA Flow Diagram of Study Selection Process

Enablers of Lean Implementation

Top Management Support

Lean implementation is fundamentally dependent on several enablers that contribute significantly to its success. One of the most critical factors is top management support, which encapsulates leadership commitment essential for initiating and sustaining Lean transformation. Managers who comprehend Lean philosophy and actively demonstrate participation underscore its strategic importance, thereby motivating employees to engage in Lean initiatives (Burawat, 2019). This transformational leadership fosters an environment where employees feel valued and inspired to contribute to continuous improvement efforts.

Employee Engagement and Training

Employee engagement and training also emerge as pivotal enablers of Lean implementation. Well-trained and empowered employees form the backbone of Lean practices, as they are better equipped to identify waste and propose improvements (Januszek et al., 2022). In healthcare settings, for instance, frontline workers' involvement has been shown to catalyze significant operational enhancements as they bring firsthand insights into inefficiencies. Establishing a culture that encourages employees to propose changes not only improves operational efficiency but also cultivates a sense of ownership and accountability within the workforce (Zulkeflee et al., 2022). Zulkeflee et al. (2022) assert that improved Lean knowledge among employees enhances the efficacy of Lean techniques, rendering training a crucial element for successful implementation.

Digital Integration

Another critical enabler of Lean practices is the standardization of processes and technological integration. The capability to standardize mail and logistics processes, while leveraging modern digital tools such as automated sorting technologies and barcode tracking systems, supports Lean objectives significantly (Hussein & Zayed, 2021). This integration of Lean with technology not only streamlines operations but also improves data accuracy and process visibility, thereby enhancing overall efficiency. (Ghobakhloo & Fathi, 2019) argue for the importance of developing lean-digitized manufacturing systems as a strategic approach for corporate survivability in the Industry 4.0 era, suggesting that such integrations can yield long-term competitive advantages (Ghobakhloo & Fathi, 2019).

Organizational Culture

Equally essential is fostering an organizational culture that embraces change and promotes continuous improvement, often captured in the concept of Kaizen. A culture that values open communication and transparency is more likely to facilitate Lean adoption (Keramida et al., 2022). Effective communication alleviates resistance to change and aligns teams towards shared goals, paving the way for smoother Lean transformations. A supportive organizational culture, characterized by shared values and mutual trust, amplifies the collective commitment to Lean initiatives (Psomas et al., 2023). In this context, Psomas et al. (2023) emphasise that effective Lean implementation depends not only on processes but also on the organisational culture's readiness to adapt and evolve, reflecting the interrelation of culture, strategy, and operational objectives in public sector environments.

In summary, the successful implementation of Lean principles is contingent upon a multi-faceted approach that encompasses strong top management support, robust employee engagement and training, process standardization and technological integration, along with a conducive organizational culture. By focusing on these enablers, organizations can effectively navigate the complexities of Lean adoption, leading to sustainable improvements in operational performance and service delivery.

Table 2: Summary of Enablers of Lean Implementation in Postal Services

Enabler	Description	Supporting Literature
Top Management Support	Leadership commitment and participation in Lean initiatives	Burawat (2019)
Employee Engagement and Training	Empowered and skilled employees identifying waste and proposing improvements	Januszek et al. (2022)
Digital Integration	Standardization of processes with automation and digital tools	Hussein & Zayed (2021)
Organizational Culture	Culture of Kaizen, openness to change, and continuous improvement	Keramida et al. (2022)

Barriers to Lean Implementation

Successful implementation of Lean methodologies in postal services is often obstructed by multifaceted barriers, notably employee resistance to change, bureaucratic structures, and legacy systems, inadequate Lean knowledge, and resource constraints. Addressing these barriers is paramount for enhancing operational efficiency and overall service delivery.

Resistance to Change

Resistance to change is a primary hurdle in Lean transformations, particularly in environments with a strong culture or where unions play a significant role. Employees may perceive Lean initiatives as threats to job security, leading to defensive responses and reluctance to embrace new methodologies. Training and effective communication can alleviate fears associated with change (Allaoui & Benmoussa, 2020; Tran et al., 2020). Educating staff on Lean principles particularly how these can lead to improved job satisfaction and secure futures is essential. Such educational efforts foster open communication about the aims of Lean, transforming perceptions from fear into acceptance (Allaoui & Benmoussa, 2020; Tran et al., 2020). Successful Lean implementation is not merely about applying tools but necessitates a cultural shift that involves employees in the change process (Koç & Alpar, 2023; Cadden et al., 2020). A focus on the socio-cultural dimensions of Lean can also mitigate resistance, as it promotes a collaborative environment in which employees feel valued and understood (Tortorella et al., 2018; Cadden et al., 2020; Gerboline-Pastor & Chavez-Ugaz, 2023).

Bureaucratic Structures

Bureaucratic structures pose another significant barrier. In many postal organizations, entrenched hierarchical bureaucracies result in slow decision-making processes and inefficiencies that contravene the agile dynamics that Lean approaches advocate. This fragmentation often leads to miscommunication among departments, further complicating Lean initiatives (Valente et al., 2019; Loyd et al., 2020). To facilitate Lean implementation, systemic reforms aimed at flattening hierarchies and enhancing interdepartmental collaboration are critical. Such changes not only improve responsiveness but also align organizational structures with Lean methodologies (Allaoui & Benmoussa, 2020; Tortorella et al., 2018; Cadden et al., 2020).

Limited Lean Knowledge

Moreover, a fundamental barrier to effective Lean implementation arises from the lack of knowledge or misinterpretation of Lean principles. When Lean is perceived only as a cost-cutting measure, rather than a holistic approach to continuous improvement, it can trigger

backlash and undermine potential benefits (Tortorella et al., 2018; Patel & Patel, 2021). It is crucial for organizations to delineate Lean not just as a tool for immediate savings but as a vehicle for long-term value creation. Providing comprehensive training and aligning Lean initiatives with organizational goals will help in reshaping this narrative and building a shared vision among employees (Tran et al., 2020; Valente et al., 2019).

Resource constraint

Inadequate resources and a prevailing short-term focus can also derail Lean initiatives. Initiating Lean processes requires investment in training, resources, and sometimes technology. However, pressures for immediate results may prompt organizations to seek quick wins, compromising the sustainable improvement efforts that Lean promotes (Bortolotti et al., 2023). To effectively counteract this, organizations must adopt a long-term view that prioritizes sustained development over immediate savings, allocating necessary resources for training and infrastructure to support Lean methodologies (Alnadi & McLaughlin, 2021; Bortolotti et al., 2023).

In conclusion, the path to overcoming barriers in Lean implementation within postal services requires addressing employee resistance through effective communication and training, reorganizing bureaucratic structures, clarifying Lean principles, and ensuring adequate resource allocation. An innate understanding and readiness for change among employees, coupled with an organizational commitment to collaborative cultural transformation, will significantly enhance the prospects of successful Lean integration, ultimately leading to improved service delivery and customer satisfaction.

Table 3: Summary of Barriers to Lean Implementation in Postal Services

Barrier	Description	Supporting Literature
Resistance to Change	Fear of job loss, union resistance, and reluctance to adopt new methods	Tran et al. (2020)
Bureaucratic Structures	Hierarchical decision-making causing delays and inefficiency	Valente et al. (2019)
Limited Lean Knowledge	Misinterpretation of Lean as cost-cutting rather than value creation	Patel & Patel (2021)
Resource Constraints	Insufficient resources for training and technology adoption	Bortolotti et al. (2023)

Implications and Recommendations

The successful implementation of Lean methodologies in postal services entails various implications for practitioners and researchers. These implications arise from the growing need to enhance operational efficiency and customer satisfaction while addressing both organizational culture and individual employee engagement. The necessary implications and corresponding recommendations are as follows:

Implications for Practitioners

Invest in change management and employee buy-in strategies: Practitioners must prioritize creating an effective change management framework that focuses on engaging employees throughout the Lean transformation process. Research underscores that employee commitment and management buy-in are crucial success factors for Lean implementation (Rahmawati et al.,

2022; Duggan et al., 2022). Creating an environment where employees feel involved and valued can significantly mitigate resistance to change, thereby facilitating a smoother transition to Lean practices. Engaging non-formal leaders within the organization, such as Lean champions, can foster a supportive atmosphere and enhance collective buy-in (Rahmawati et al., 2022).

Tailor Lean tools to suit service-based postal operations: The applicability of traditional Lean tools, often rooted in manufacturing, should be adapted to the unique characteristics of service-based scenarios in postal operations. This customization can enhance the relevance and effectiveness of Lean practices in such contexts (Kaban, 2023). For instance, adopting tools focused on customer interactions and service delivery processes could build a more actionable framework that aligns with the realities of postal services (Kaban, 2023). Implementing Lean tools in a way that resonates with the daily experiences of employees is critical for successful adoption (Gerboline-Pastor & Chavez-Ugaz, 2023).

Promote a culture of continuous improvement across all levels: Cultivating a company-wide culture that encourages continuous improvement is vital for sustained Lean success. Research emphasizes how cultural dimensions, such as procedural focus and employee orientation, mediate the successful implementation of Lean (Cadden et al., 2020; . An organizational culture that values employee input, recognizes achievements, and encourages experimentation can lead to enhanced operational performance and employee morale (Cadden et al., 2020; (Gandhi et al., 2021). Regular training, feedback mechanisms, and empowerment initiatives should be incorporated to foster this culture effectively (Gandhi et al., 2021).

Recommendations for Researchers

To capture the lived experiences of Lean adopters, further qualitative research is necessary. Such studies could provide insights into the employee perceptions and day-to-day realities faced in Lean transformations. Understanding these dynamics contributes to a more robust framework for successful Lean implementation (Koç & Alpar, 2023; Benkarim & Imbeau, 2021). Researchers can employ case studies, interviews, and participatory observations to gain comprehensive insights into the challenges and successes of Lean in various postal contexts (Benkarim & Imbeau, 2021).

Comparative Case Studies Across Countries or Postal Systems: Comparative studies that explore different postal systems across diverse countries could uncover context-specific dynamics and best practices for Lean implementation. This approach would facilitate the identification of cultural, regulatory, and operational factors influencing Lean success rates in various settings (Knapić et al., 2022). Moreover, leveraging insights from global perspectives could lead to the formulation of adaptable strategies that resonate universally within the postal sector (Knapić et al., 2022).

Integration of Lean with digital transformation: An emerging area for research involves the integration of Lean methodologies with digital transformation in postal services. As industries increasingly adopt digital tools, understanding how Lean principles can be combined with digital technologies to enhance service efficiency warrants further investigation (Kaban, 2023). This research could explore how advancements like automation, data analytics, and real-time communication can complement Lean practices, fostering a more agile and responsive postal service paradigm (Signoretti & Sacchetti, 2020).

In summary, addressing the implications and recommendations for implementing Lean in postal services demands a comprehensive understanding of organizational change dynamics, employee-centric strategies, and the evolving technological landscape. By prioritizing employee buy-in, adapting Lean tools to contextual factors, and fostering a culture of continuous improvement, practitioners can enhance operational efficiency. Meanwhile, targeted research can illuminate pathways for future innovations by exploring qualitative insights, comparative cases, and the integration of Lean with emerging technological trends.

Conclusion

The application of Lean methodologies within postal services presents a transformative opportunity for enhancing service efficiency and responsiveness. Organizations are increasingly exploring Lean principles not just as a set of tools but as a comprehensive approach that necessitates a fundamental shift in organizational mindset, culture, and strategic direction. For entities like Pos Malaysia, understanding the intricacies of Lean implementation, including its enablers and barriers, is critical to successfully navigating the complexities of this journey toward operational excellence.

To fully harness the potential of Lean, organizations must go beyond mere tool adoption. They should focus on cultivating a culture of continuous improvement that empowers employees at all levels to engage in identifying inefficiencies and proposing enhancements. Key to this cultural shift is effective communication and training designed to foster employee buy-in, engagement, and shared commitment to Lean principles. Furthermore, organizations must develop strategic alignment across various departments, facilitating collaboration and cross-functional teamwork that Lean practices inherently encourage.

Critical to the successful implementation of Lean in the postal sector is recognizing the role of contextual factors, including organizational culture, leadership buy-in, and the adaptability of Lean tools to service environments. Organizations must be prepared to adapt their strategies to fit the unique characteristics, challenges, and opportunities of their operational landscapes. By doing so, they can mitigate typical barriers to Lean implementation such as employee resistance, bureaucratic inertia, and lack of understanding of Lean principles.

Ultimately, embracing Lean methodologies offers postal services the possibility of achieving sustainable operational excellence, significantly improving service delivery and customer satisfaction. As organizations such as Pos Malaysia aim for this transformation, a commitment to continuous learning and adaptability will be paramount in not just adopting Lean practices but in making them a core element of their everyday operations.

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