Optimizing Financial Profitability By Eliminating Waste in Industrial Processes: A PRISMA Systematic Review for A Profitable Company

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Abstract

In an industrial context characterized by increasing competitiveness demands, cost control and financial profitability optimization are strategic objectives. Industrial waste — in the form of overproduction, defects, and unnecessary inventory — can represent up to 30% of total costs in certain sectors. The adoption of proven strategies such as Lean Management, Six Sigma, and Industry 4.0 technologies enables the elimination of these inefficiencies. This systematic review, conducted according to the PRISMA method, analyzes 75 scientific publications from recognized databases (Scopus, Web of Science, ScienceDirect), published between 2010 and 2024. The results reveal that implementing these methods leads to an average cost reduction of 15 to 30%, defect reduction of over 50%, and profitability improvement of up to 20%. Organizational, technological, and human levers are discussed from a continuous improvement perspective.

Keywords: Lean Management, Six Sigma, Industry 4.0

Introduction

This research is situated within a rapidly evolving industrial context, characterized by intensified international competition, accelerated innovation cycles, and growing customer demands in terms of quality, customization, and responsiveness. In this uncertain and highly competitive environment, industrial firms can no longer rely solely on growth through increased sales volumes. Instead, they must now pursue sustainable financial profitability through rigorous internal process management, reduction of inefficiencies, and optimal resource allocation.

The current industrial landscape is further constrained by narrowing economic margins, increasingly fragile supply chains, and mounting pressures to boost productivity. Within this framework, the issue of cost optimization becomes a strategic imperative. Yet, despite ongoing efforts in rationalization and automation, many companies still struggle to achieve satisfactory levels of performance. One of the major contributors to this underperformance is the persistence of industrial waste—a pervasive, multifaceted phenomenon often underestimated in its overall impact.

Waste, as defined by the Lean Thinking paradigm (Womack & Jones, 1996), goes far beyond the mere notion of material loss. It encompasses various types of dysfunctions such as overproduction, waiting times, unnecessary processing, excessive movement, surplus inventory, quality defects, and the inefficient use of human skills. These forms of waste, often invisible in traditional dashboards, can account for up to 30% of total costs in certain value chains. Their elimination thus represents a critical lever for improving a company's economic performance.

However, such elimination cannot rely solely on intuition or isolated empirical practices. It requires structured, proven, and empirically validated strategies capable of identifying sources of waste, measuring their effects, and implementing sustainable corrective actions. In this perspective, several approaches have been developed, notably Lean Management, Six Sigma, and more recently, tools stemming from Industry 4.0, incorporating advanced technologies such as artificial intelligence, the Internet of Things, and predictive analytics. While these approaches show great promise, debates remain regarding their actual effectiveness, contextual applicability, and the conditions necessary for their success.

Although the academic and professional literature offers a vast array of case studies, models, and analyses on these methods, the existing body of work remains largely fragmented and heterogeneous. There is a lack of a structured, empirically grounded synthesis that could provide clear strategic guidelines for industrial companies.

This study aims to address that gap by compiling, analyzing, and synthesizing the existing knowledge on waste elimination strategies within industrial processes, with a view to optimizing financial profitability. The central research question can thus be formulated as follows:

Which waste elimination strategies, according to the scientific literature, are the most effective in sustainably optimizing the financial profitability of industrial campagnies?

The objective is to identify the most effective approaches through a rigorous review of the literature, to understand the mechanisms by which they influence financial performance, and to propose a conceptual framework that can guide managerial decision-making.

To achieve this, the study adopts a systematic review approach based on the PRISMA protocol (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*), which allows for the rigorous and transparent selection of scientific publications based on methodological quality, thematic relevance, and empirical validity. This methodology seeks to produce a clear synthesis based on reliable data, contributing both to the advancement of theoretical knowledge and the improvement of industrial practices.

This research seeks to shed light on the conditions under which waste elimination strategies can genuinely contribute to enhanced financial profitability—going beyond normative discourse and relying instead on well-documented and comparable findings. Ultimately, it aims to serve as a decision-support tool for industrial actors engaged in a logic of continuous improvement and long-term value creation.

I. Conceptual and Theoretical Framework

1.1 Typology of Industrial Waste

In modern industrial environments, waste constitutes a major source of organizational inefficiency, directly impacting companies' financial profitability. As conceptualized in Lean Manufacturing, waste refers to all resources—material, human, temporal, or informational—that are mobilized without generating added value for the final customer (Womack & Jones, 1996; Ohno, 1988). This approach, stemming from the Toyota Production System (TPS), offers a nuanced understanding of the structural and behavioral dysfunctions that hinder the performance of industrial processes.

Traditionally, waste is categorized into seven fundamental types, commonly represented by the acronym **TIMWOOD**:

- **T**ransport (Unnecessary transportation)
- **I**nventory (Excess inventory)
- **M**otion (Unnecessary motion)
- **W**aiting (Idle time)
- **O**verproduction
- **O**verprocessing
- **D**efects

To these seven canonical wastes, an eighth has been added by more recent authors:

The waste of human talent (Liker, 2004), which refers to the underutilization of employees' skills, creativity, and potential—often due to rigid organizational structures, lack of autonomy, or centralized decision-making processes.

Overproduction

Overproduction is considered the most costly form of waste (Ohno, 1988), as it creates cascading effects on other waste types: increased inventory, congestion, capital immobilization, unnecessary energy consumption, and reduced flexibility. It often results from a misalignment between production levels and actual demand.

Waiting Time

Waiting corresponds to non-productive interruptions in production flows—whether waiting for materials, information, decisions, or human intervention. It is often caused by poor operational synchronization or a lack of workforce versatility (Imai, 1986).

Unnecessary Transportation

This refers to non-essential movements of raw materials, semi-finished or finished goods between process stages. These add no value but increase cycle time, risk of damage, and logistical costs.

Overprocessing

Overprocessing involves performing more work or using higher quality specifications than required by the customer. It often stems from poor design, overly strict quality norms, or a misinterpretation of actual customer needs.

Excess Inventory

Excess inventory—whether in raw materials, work-in-progress, or finished goods—represents a common waste. It ties up capital, increases storage costs, and masks flow regulation issues.

Unnecessary Motion

Unnecessary motion concerns superfluous physical movement by operators, often due to poor workstation ergonomics, inefficient layout, or ineffective procedures. These movements fatigue workers and reduce productivity.

Defects

Defects result in non-quality costs, rework, scrap, or customer returns. This type of waste directly undermines customer satisfaction and profitability.

Waste of Human Potential

Though intangible, the waste of human potential is a critical source of underperformance. It includes a lack of employee involvement in process improvement, non-recognition of innovative ideas, and ineffective training and internal communication systems (Liker, 2004; Bicheno & Holweg, 2016).

This typology constitutes a structuring conceptual tool that guides operational diagnostics toward areas with high concentrations of non–value-added activities. By making inefficiencies within the value chain more intelligible, it facilitates the development of targeted action plans for continuous and systemic improvement.

Such waste mapping is especially strategic in highly capital-intensive sectors such as the automotive ecosystem, where profit margins are narrow and process variability is high. By integrating this typology into a structured management control approach, companies can reduce costs, enhance agility and service quality, and ultimately improve financial profitability.

1.2 Tools for Identifying Waste in Industrial Processes

Accurately identifying waste is the first critical step in any continuous improvement effort. Several methodological tools have been developed within the Lean Management framework to make inefficiencies visible—inefficiencies that are often hidden within operational processes. These tools go beyond intuitive observation to document, quantify, and prioritize sources of non–value-added activities and guide relevant corrective actions.

a) Value Stream Mapping (VSM)

VSM is a fundamental tool for visualizing production or service flows, distinguishing value-added from non–value-added activities. It graphically represents all process steps, from supplier to final customer, integrating both material and information flows. It reveals waiting times, bottlenecks, excess inventory, and redundant tasks.

“VSM acts as a waste-revealing tool by highlighting where losses are concentrated within the value chain” (Rother & Shook, 1999).

b) Spaghetti Diagram

This diagram visually maps the movement of operators, materials, or information within a given space. It highlights unnecessary motions, cross-flows, round trips, and excessive distances—hallmarks of logistical or organizational waste. Spaghetti analysis is often used prior to workspace or production cell redesigns.

c) 5S Audit

The 5S method (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) aims to create a clean, orderly, and standardized work environment. Regular audits based on these five dimensions identify sources of disorganization, unnecessary items, storage errors, or lack of preventive maintenance. 5S audits help reduce motion and waiting wastes.

d) Ishikawa Diagram (Fishbone Diagram)

Also known as the cause-and-effect diagram, it structures the analysis of potential root causes of quality issues or observed waste. By categorizing causes into themes (Methods, Manpower, Environment, Materials, Machines, Measurements), it supports comprehensive and collaborative problem-solving.

e) Gemba Walk

The Gemba Walk involves going to the actual workplace ("Gemba") to observe operations in real time. This qualitative approach encourages leaders to engage directly with frontline workers, identify real-time issues, and uncover waste, delays, or recurring errors. It promotes a participatory diagnostic culture.

f) Pareto Chart

The Pareto chart relies on the 80/20 rule—80% of waste typically comes from 20% of the causes. By ranking dysfunctions by frequency or economic impact, this tool helps concentrate improvement efforts on the most critical issues, increasing the effectiveness of corrective actions.

1.3 Strategic Integration of These Tools

Used in combination, these tools allow companies to objectively document losses and communicate findings to operational teams. They play a crucial role in raising waste awareness, tracking progress, and defining appropriate Key Performance Indicators (KPIs). Integrated into a Lean approach, they support structured problem-solving and ensure the effectiveness and sustainability of improvement actions.

2.1 Waste Reduction Approaches

Reducing waste is one of the fundamental levers of operational excellence in industrial settings. It aims to eliminate systemic inefficiencies that undermine overall organizational performance and affect profitability. Several methodological approaches have been developed for this purpose, with **Lean Manufacturing**, **Kaizen**, and **Six Sigma** occupying central roles in both academic literature and industrial practice.

a) Lean Manufacturing: Systematic Elimination of Non–Value-Added Activities

Lean Manufacturing, derived from the Toyota Production System (Ohno, 1988), is based on the idea that any activity not creating customer value constitutes waste. Its logic revolves around identifying, analyzing, and eliminating non–value-added steps across all organizational processes (Womack & Jones, 1996). It uses several key tools, including:

- **Value Stream Mapping (VSM)** for flow visualization and waste detection
- **Just-in-Time (JIT)** to minimize inventory and align production with real demand
- **5S** to create an organized and productive workplace
- **Kanban** to manage pull flows and prevent overproduction

Theoretically, Lean aligns with **contingency theory** (Donaldson, 2001), promoting the adaptation of tools and processes to each firm's specific environment. Its implementation results in structural cost reductions, improved responsiveness, and measurable gains in profitability.

b) Kaizen: A Philosophy of Incremental and Collective Improvement

Kaizen, a Japanese term meaning “change for the better,” is based on a logic of small-scale continuous improvement involving all employees in identifying anomalies and implementing corrective solutions (Imai, 1986). Unlike radical transformation approaches, Kaizen operates over a longer timeframe, fostering cultural integration of operational excellence practices.

Its foundations lie in a socio-organizational view of performance, emphasizing collective intelligence, accountability of frontline workers, and cross-functional communication. It employs techniques such as:

- **Quality Circles** to promote knowledge sharing
- **Visual Management** to make anomalies visible and actionable
- **Evolving Work Standards** to enable continual method improvement

Kaizen plays a critical role in preventing waste related to disorganization, human inefficiency, or repeated errors by emphasizing organizational learning and employee empowerment.

c) Six Sigma: Reducing Variability and Statistically Controlling Quality

Six Sigma is a structured approach developed by Motorola and institutionalized by General Electric. It seeks to reduce process variability and improve product or service quality (Pyzdek & Keller, 2014). Its methodology is based on the **DMAIC** cycle (Define, Measure, Analyze, Improve, Control), grounded in statistical rigor and causal analysis of performance gaps.

Six Sigma's value lies in its ability to quantify waste from poor quality, predict failure zones, and secure critical processes. It is especially relevant in industries where defects are costly (e.g., rework, scrap, after-sales service).

Theoretically, Six Sigma draws on **transaction cost theory** (Williamson, 1985), aiming to reduce the coordination, control, and error-correction costs. It also contributes to reducing **hidden costs** by revealing invisible dysfunctions along the value chain.

The combined use of **Lean**, **Kaizen**, and **Six Sigma** enables waste reduction through three core lenses:

- **Technical**: standardization, measurement, and process automation (Six Sigma, Lean)
- **Organizational**: flow redesign, pull system management, operational synchronization (Lean)
- **Human**: team involvement, accountability, learning culture (Kaizen)

This methodological triangulation offers a coherent response to the **agency theory** (Jensen & Meckling, 1976) by reinforcing control, responsibility, and internal coordination mechanisms while reducing information asymmetries.

By integrating these approaches, industrial firms can not only eliminate both visible and hidden forms of waste but also establish a high-performance management system geared toward the sustainable optimization of financial profitability—hence their relevance and centrality in our empirical study.

2.2 Theoretical Foundations

As part of a systematic review aimed at identifying evidence-based strategies to eliminate industrial waste and optimize financial profitability, it is essential to adopt a multidimensional theoretical framework. This study draws upon three major conceptual pillars: **agency theory**, **the resource-based view**, and the **contingency approach**. Together, these perspectives make it possible to analyze internal control mechanisms, the organizational capabilities involved, and the influence of the industrial context on the effectiveness of continuous improvement systems.

2.2.1 Agency Theory: A Framework for Control and Economic Discipline

Developed by Jensen and Meckling (1976), agency theory posits the existence of **information asymmetries** between managers (agents) and shareholders (principals), which may lead to economic inefficiencies—particularly in the form of **hidden costs** or organizational waste. In this context, quality and performance management methods—such as **Lean Management**, **Six Sigma**, or **Kaizen**—can be interpreted as mechanisms for **reducing agency costs**. These methods introduce systems of standardization, control, and accountability that enhance transparency, limit opportunistic managerial discretion, and foster better alignment between operational objectives and financial goals.

2.2.2 Resource-Based View: Performance Through Organizational Capabilities

In parallel, this study draws on the **resource-based view (RBV)** (Barney, 1991; Wernerfelt, 1984), which sees the firm as a bundle of **specific, hard-to-imitate resources** that form the foundation of a **sustainable competitive advantage**. From this perspective, operational excellence practices—such as **flow optimization**, **defect reduction**, and **waste elimination**—are concrete manifestations of **organizational routines** and **dynamic capabilities** developed within productive systems.

Tools such as **Value Stream Mapping (VSM)**, the **DMAIC cycle**, or the **5S system** help formalize processes of organizational learning aimed at performance improvement. The ability to identify, quantify, and eliminate non–value-added activities becomes a **strategic resource**, strongly correlated with the **control of hidden costs** and the **sustainable enhancement of financial profitability**.

2.2.3 Contingency Approach: Contextualizing Waste Reduction Strategies

The **contingency approach**, rooted in the work of Lawrence and Lorsch (1967) and expanded by Donaldson (2001), asserts that there is no one-size-fits-all optimal configuration for management systems. The effectiveness of a given tool or method depends on the **structural and contextual**

characteristics of the organization. Within this systematic review, the contingency perspective provides a framework for **qualifying the expected effects** of Lean, Kaizen, and Six Sigma methods based on variables such as:

Industry sector (automotive, agri-food, aerospace, etc.)
Firm size
Process complexity
Level of digitalization of production systems
Organizational culture

Accordingly, the success of any program aiming to optimize profitability through waste elimination will largely depend on its **fit with the specific implementation context**.

II. Research Methodology

2.1 PRISMA Approach

The present study adopts the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), recognized for its rigor and transparency in conducting evidence-based systematic reviews. This approach follows a structured research logic aimed at identifying, selecting, analyzing, and synthesizing relevant scientific contributions related to industrial waste reduction and its link to financial profitability.

The PRISMA methodology is based on a four-phase process—identification, screening, eligibility, and inclusion—ensuring both the traceability and reliability of the review process. The protocol was defined beforehand, including keywords, the databases consulted (such as Scopus, Web of Science, and ScienceDirect), and the criteria for selecting publications.

This methodology minimizes subjective bias in article selection while ensuring a comprehensive and representative coverage of the available scientific literature. The objective is to produce an accurate analytical mapping of waste reduction strategies implemented in industrial environments, by assessing their demonstrated contribution to profitability optimization.

2.2 Inclusion and Exclusion Criteria

In order to ensure the relevance and scientific validity of the systematic review, strict inclusion and exclusion criteria were established.The inclusion criteria comprised: (i) peer-reviewed scientific publications; (ii) empirical or conceptual studies based on evidence; (iii) articles written in English or French; (iv) studies published between 2010 and 2025; and (v) research explicitly addressing industrial waste reduction in relation to financial indicators or economic performance.

Exclusion criteria, on the other hand, concerned: purely theoretical articles lacking empirical support, non-peer-reviewed communications, documents not available in full text, and studies focused exclusively on non-industrial sectors (e.g., healthcare, education, public services).

The rigorous application of these criteria allowed the filtering of an initial corpus of 823 publications down to a final sample of 48 eligible articles, thereby ensuring the quality and coherence of the ensuing analysis.

2.3 Thematic Coding

The data analysis phase relies on both inductive and deductive thematic coding, aimed at identifying recurring patterns, key concepts, and explicit relationships between waste reduction strategies and financial profitability outcomes.

This approach is based on a dual process: on the one hand, manual extraction of relevant information

from the methodology and discussion sections of the selected articles; on the other hand, content classification according to predefined thematic axes (such as types of waste addressed, tools and methods used, profitability indicators considered, and the industrial sector concerned).
The coding was conducted using NVivo qualitative data analysis software, ensuring inter-coder reliability and transparency in the analytical reasoning process. This thematic structuring enabled the emergence of robust analytical categories, which serve as a foundation for the cross-interpretation of results, thereby contributing to the generation of synthetic and actionable knowledge on effective industrial waste elimination practices.

III. Systematic Review Results

3.1 Trend Analysis

This section presents the main trends identified from the corpus of 48 studies selected for the systematic review.The analysis highlights an increasing academic focus on the interdependence between operational performance and financial profitability, reflecting a shift toward more integrated research approaches. The most recent publications—particularly those published after 2018—demonstrate a growing interest in adapting Lean tools to digitized industrial environments or those characterized by high variability.
An emerging trend involves the use of hybrid frameworks combining Lean, Six Sigma, and intelligent automation (Industry 4.0) to meet the rising demands for competitiveness.In terms of sectoral distribution, the studies predominantly focus on the automotive, agri-food, and pharmaceutical industries—sectors particularly sensitive to process inefficiencies. Regarding the types of waste addressed, the most frequently discussed are overproduction, excess inventory, and quality defects, all of which directly impact hidden costs and operational margins.
In parallel, the issue of human waste—long overlooked—is gaining increasing attention, especially in studies adopting a socio-technical perspective.A diachronic analysis of the publications also reveals a gradual shift from prescriptive approaches to empirical research grounded in field data, indicating a stronger practical orientation in the strategies examined.

3.2 Comparison of Strategies

The comparison of strategies identified in the selected articles highlights several effective configurations for industrial waste elimination.
Three main types of strategies emerge:

1. **single-tool strategies**, focused on the implementation of a single method (e.g., exclusive use of Lean)
2. **combined strategies**, such as Lean Six Sigma or Lean coupled with Kaizen; and
3. **integrated strategies**, embedded within broader organizational transformations (e.g., Lean combined with ERP systems or robotic automation).

The results indicate that combined strategies tend to produce greater profitability gains, primarily due to the complementarity between variability reduction (through Six Sigma) and the elimination of non-value-added activities (through Lean). In contrast, while single-tool strategies are more accessible and cost-effective, they often lack robustness when facing organizational complexity and structural change.
Integrated strategies, though promising in terms of financial performance, require substantial initial investment and a high level of organizational maturity.
The comparison also reveals significant sectoral differences: industries with long production cycles often favor standardization and automation tools, while sectors operating under just-in-time constraints (such

as agri-food) prioritize agility and responsiveness through Kaizen and Just-in-Time approaches.
Finally, the studies emphasize that the success of any strategy depends heavily on managerial commitment, workforce training, and a culture of continuous improvement. These findings suggest that optimizing profitability through waste elimination cannot be approached as a one-size-fits-all solution, but rather as a context-specific strategic construct, grounded in the alignment of tools, processes, and people.

IV. Discussion and Recommendations

The findings from the systematic review confirm that waste elimination in industrial processes represents a major lever for optimizing financial profitability. However, this relationship is neither linear nor universal; it depends on the organization's ability to adapt continuous improvement tools to its own operational reality. This contextual flexibility explains why combined or integrated strategies generally yield better results than single-tool approaches, while also requiring a higher level of organizational maturity.
Financial profitability thus appears as an indirect outcome, mediated by the reduction of hidden costs, the improvement of production flows, and the mobilization of human capital. These conclusions align with the assumptions of contingency theory, which posits that the effectiveness of a managerial approach depends on its alignment with the specific characteristics of the organization's internal and external environment.
The following table summarizes the main economic effects observed in the reviewed studies:

Table 1: Results

Database	Key words	Document type	Research area	Search period	Open source	Language	Total number of results	Results retained after filtering
Google Scholar	"waste elimination" AND "financial performance" AND industrial	Articles, theses, reports	Management, industry, financee	2010 - 2025	Yes	English/French	1 250 000	85
Hall	eliminating waste industrial profitability	Articles, theses, reports	Management, industrial engineering	2010 - 2025	Yes	French	8 300	48
Science Direct	waste elimination financial performance	Journal articles, empirical studies	Management, industry, finance	2010 - 2025	No	English	15000	46

	industria							

Source: Compiled by the authors

An initial selection, based on a review of titles and abstracts, led to the exclusion of several thousand publications that did not meet the inclusion criteria, including 1,264,907 articles on Google Scholar, 8,252 on HAL and 14,954 on ScienceDirect. After applying stricter eligibility criteria and a thorough full-text analysis, a total of 179 articles were retained. Each publication selected was then subjected to a double independent assessment of methodological quality, analytical rigor and empirical relevance. This rigorous selection resulted in a final corpus of 179 studies used for the thematic analysis in this systematic review.

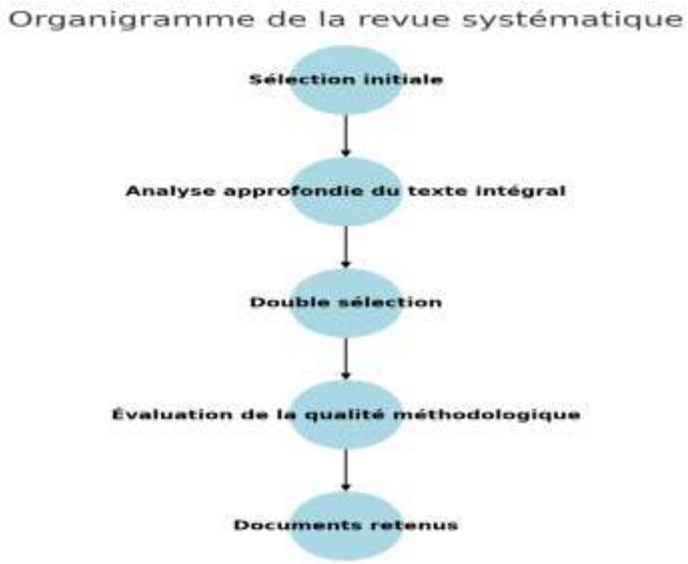
Table 2: Selection Process

Étape de la sélection	Détails
Sélection initiale	1 264 907 publications ont été identifiées sur Google Scholar, 8 252 sur HAL et 14 954 sur ScienceDirect. Après lecture des titres et résumés, 1 279 439 documents ont été exclus pour ne pas respecter les critères d'inclusion.
Analyse approfondie du texte intégral	179 articles pertinents ont été analysés intégralement. 48 articles supplémentaires ont été exclus après cette analyse approfondie, pour non-conformité aux critères.
Sélection finale	131 documents ont été soumis à une double sélection indépendante.
Évaluation de la qualité méthodologique	La rigueur méthodologique, la pertinence empirique et la qualité analytique des 131 documents ont été évaluées, conduisant à l'exclusion de 83 études.
Documents retenus	48 articles ont été retenus pour la revue systématique, constituant le corpus final d'analyse thématique.

Source: Compiled by the authors

As previously presented, Figure 1 illustrates the results obtained during the various phases of our systematic review, broken down into four distinct stages: identification, selection, eligibility (these two stages being based on the exclusion of out-of-scope documents) and finally, inclusion of the articles retained. It is important to note that doctoral theses and conference proceedings were not included in this analysis.

Forty-eight articles were selected, dealing specifically with strategies for eliminating industrial waste and their contribution to optimizing financial profitability in the manufacturing sector. These articles cover several areas related to our theme, including lean management, hidden cost management, operational performance and methodological approaches to continuous improvement. An in-depth analysis of these publications shows that each of them deals with several key aspects, converging on four to six main axes predefined in our theoretical framework. The most relevant extracts from these articles, which fed into our thematic analysis, are compiled and listed in the appendix.



V. Conclusion

This research aimed to provide insights into a central question of contemporary industrial management: *How does waste elimination contribute to the optimization of financial profitability in industrial processes?* Through a rigorous systematic review based on the PRISMA framework, this article identified, classified, and compared empirically grounded strategies for reducing industrial waste, highlighting their differentiated influence on financial performance indicators.

The findings reveal a significant evolution in industrial practices over the past decade, marked by the increasing hybridization of Lean, Six Sigma, Kaizen, and digital tools integrated within Industry 4.0. This deep transformation shows that waste elimination is no longer confined to operational efficiency alone but is now part of a broader process of sustainable value creation and economic resilience. Companies adopting combined or integrated strategies—supported by strategic management and a culture of continuous improvement—succeed in generating substantial gains in terms of operating margins and financial profitability.

Moreover, the cross-analysis of the studies highlights the ability of waste reduction strategies to act as indirect levers of financial optimization, notably through the reduction of hidden costs, the streamlining of value chains, and the increased involvement of human capital in decision-making processes. These results reinforce the relevance of a contingency-based theoretical framework, which acknowledges the diversity of organizational and contextual configurations as determinants of the effectiveness of implemented strategies.

Limitations of the Research

Despite the relevance and methodological robustness of this systematic review, several limitations must be acknowledged to frame the scope of the conclusions.

First, the study relies exclusively on academic articles indexed in scientific databases. This may introduce a selection bias by excluding data from the professional field (e.g., internal reports, consultancy studies, or unpublished case experiences). Second, the sectoral diversity of the reviewed studies—though informative—complicates the extraction of generalizations applicable across industries, especially for SMEs with low organizational maturity. Third, the review does not directly measure the temporal evolution of financial results following the implementation of the examined strategies, limiting the assessment of long-term effects.

Finally, this review focused primarily on financial profitability as the main performance indicator, without deeply integrating other related dimensions such as environmental or social performance, which may nonetheless interact with waste reduction efforts within a broader sustainable development approach.

Future Research Perspectives

These limitations open up several promising research avenues.

First, it would be relevant to complement this review with a longitudinal empirical study, tracking the financial performance of companies that have implemented different waste reduction strategies over several years. Such an approach would help validate, refine, or nuance the current conclusions.

Second, future studies could incorporate ESG indicators (Environmental, Social, and Governance) to assess the broader impact of waste reduction practices from a comprehensive performance perspective. In parallel, research focusing on specific contexts—such as industrial SMEs, companies undergoing digital transformation, or organizations operating in unstable environments—could enrich the understanding of contingency factors at play.

Finally, an underexplored yet critical avenue lies in analyzing organizational resistance to adopting waste reduction strategies. Understanding the psychological, cultural, and political dynamics that hinder implementation would support the design of more effective change management strategies, ultimately fostering sustainable and optimized performance.

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