INTEGRATED TQM AND LEAN MANAGEMENT MODEL FOR IMPROVING OPERATIONAL EFFICIENCY OF MODERN RETAIL IN BANDUNG CITY

Anwari Firdaus Ramadhan[1]*, Agnes Alzena Syafitri[2]
[1] Universitas Widyatama (Indonesia)
[2] Universitas Teknologi Bandung (Indonesia)
*) email: anwariramadhan@gmail.com

Abstract

Modern retail competition in Bandung demands high operational efficiency to provide fast, precise, and quality service. Integrating Total Quality Management (TQM) and lean management is believed to be an effective strategy, but its application in the retail sector has rarely been studied in depth. The purpose of this study is to determine the application of TQM and lean management in modern retail operations in Bandung City and to design an integrated TQM-Lean Management model to improve operational efficiency in modern retail. This study used a qualitative case-study approach to examine several large retail chains in Bandung. Data were obtained through in-depth interviews with operational managers, store supervisors, and logistics staff, as well as direct observation of daily work processes. Analysis was conducted using qualitative methods and interactive models to identify implementation patterns, challenges, and outcomes of integrating the two approaches. The research findings indicate that implementing TQM through employee involvement, top management commitment, and continuous improvement can strengthen a consistent quality culture. Meanwhile, lean management principles such as waste elimination, just-in-time implementation, and work standardization have been shown to increase distribution flow speed and reduce operational costs. The integration of the two resulted in a model that can reduce excess stock levels, accelerate replenishment, improve inventory recording accuracy, and enhance labor productivity in stores. Key success factors were identified as leadership that encourages employee involvement in continuous improvement and the use of performance data as a basis for decision-making. This study concludes that the integration of TQM and lean management not only improves operational efficiency but also strengthens customer satisfaction through faster and more consistent service. The resulting conceptual model can serve as a practical reference for modern retail management in Bandung in designing sustainable operational strategies.

Keywords: Total Quality Management (TQM), Lean Management, Operational Efficiency, Modern Retail.

1. INTRODUCTION

The Indonesian national economy continues to undergo significant dynamics amid rapid growth in the industrial sector and modern trade. The rising level of urbanization has driven the concentration of economic activity in major cities, while improvements in purchasing power have stimulated demand for a range of products and services, including modern retail. The expansion of modern retail networks has not only broadened consumer access to products but has also created employment opportunities and increased economic circulation in urban areas. The growth of the modern retail industry in Indonesia has continued to show a positive trend since 2018.

The retail industry has been supported by the growth in the consumption of fast-moving consumer goods, which has increased steadily from year to year. In general, the consumption of daily necessities grew by 6.6%, with minimarkets recording the highest growth at 12.1%, followed by supermarkets and hypermarkets at 6.8% (Ong et al., 2020)

At the regional level, Bandung City shows a fluctuating pattern of economic growth in line with national developments. In 2024, the economy of Bandung City grew by 4.99% compared to the previous year, a figure slightly lower than the achievement in 2023, which reached 5.07% (BPS Kota Bandung, 2025) . This slowdown in growth reflects structural challenges across sectors, including trade and modern retail, which are among the main drivers of the city's economy. The growth of modern retail in Bandung City has become increasingly rapid, as indicated by the proliferation of minimarket, supermarket, and hypermarket chains that compete by offering competitive prices, diverse product assortments, and high-quality services. This competition demands that each retail company rely not only on marketing strategies but also on operational efficiency to deliver services that are fast, consistent, and cost-effective. Inefficiencies in work processes, distribution delays, and resource waste have become major challenges that require serious attention from operational management.

Operational efficiency is one of the greatest challenges faced by the modern retail industry. Retail operational activities, ranging from supply chain and distribution to store management, often require substantial resources and can generate waste in terms of energy, time, and materials. In addressing these challenges, lean management is viewed as an effective approach because it can simplify work processes, accelerate the flow of goods, and eliminate activities that do not add value. By focusing on eliminating waste, lean management helps modern retail achieve higher efficiency, improve service quality, and deliver greater value to customers amid increasingly intense competition (Syahuri et al., 2024)

Lean principles in modern retail, such as just-in-time, work standardization, and the elimination of non-value-added activities, are considered relevant for accelerating product replenishment, reducing excess inventory, and improving the smoothness of distribution to stores. Nevertheless, implementing lean in the retail sector still faces challenges due to service characteristics that differ from those of manufacturing, and therefore needs to be integrated with Total Quality Management (TQM). TQM is a management approach that emphasizes the integrated implementation of all organizational functions to continuously improve quality (Ralahallo et al., 2024) ; for this reason, TQM serves as the foundation for effective quality management practices (Yuana et al., 2024)

The implementation of TQM has several key characteristics that are interrelated to ensure service quality and operational efficiency. First, customer focus becomes the top priority because the success of retail operations is largely determined by customer

satisfaction and loyalty. Second, the involvement of all members of the organization requires active participation from top management to frontline employees to ensure a quality culture is implemented consistently. Third, continuous process improvement is applied across all operational aspects, from supply chain and inventory management to cashier services, to ensure continuous improvement in efficiency. Fourth, data-based decision-making enables management to formulate more accurate operational strategies by analyzing sales trends and consumer behavior. Fifth, top management commitment serves as the foundation of success, because without strong leadership, the implementation of TQM would remain only a formality. Sixth, employee training and empowerment are essential so that staff not only carry out routine procedures, but also contribute to the creation of value-added services (Safuan et al., 2024)

Previous literature has found that the implementation of Lean Management in the manufacturing industry has the potential to improve operational efficiency, reduce waste, and increase value for customers (Ayunita et al., 2024) , as well as in digital business operations (Sutopo & Sudianto, 2025). Furthermore, empirical studies have reinforced the finding that implementing Lean Management not only supports operational efficiency but also improves service quality (Safitri et al., 2025) . In addition, TQM has been proven to enhance various aspects of competitiveness, such as operational efficiency, innovation, customer satisfaction, productivity, and product quality (Maknun et al., 2024) . Studies that specifically highlight the integration of both approaches in the context of modern retail remain very limited, even though it has distinct characteristics and challenges, such as high consumer demand variability, direct customer involvement in the service process, and the need for operational flexibility to respond effectively to market dynamics.

Based on the above discussion, a similar condition is also found in Bandung City, where modern retail is growing rapidly while facing increasingly intense competition, and to address the existing research gap, it is therefore important to conduct an in-depth study on the integration of TQM and lean management in the context of modern retail. On this basis, this study formulates two main research problems: the implementation of TQM and lean management in modern retail operations in Bandung City, and the development of an integration model between TQM and lean management to enhance operational efficiency in modern retail. The TQM and lean management integration model developed in this study not only contributes theoretically by enriching the literature on integrating quality management and lean approaches in the retail sector, but also provides practical guidance for retail practitioners in formulating efficient, high-quality, and customer- satisfaction-oriented operational strategies.

2. METHODOLOGY

This study used a qualitative case study design to explore in depth the implementation of Total Quality Management (TQM) and Lean Management in modern retail operations in Bandung City and to develop an integrated model to improve operational efficiency. The research was conducted in several large and small modern retail outlets in Bandung. Data were collected through in-depth interviews with key informants, including operational managers, store supervisors, warehouse heads, distribution supervisors, and cashier staff, to obtain comprehensive insights into quality management practices, process efficiency, workflow standardization, and daily operational challenges. In addition, field observations were conducted to examine operational processes, particularly in inventory management, warehouse layout, distribution flow, cashier services, and customer complaint handling. Documentation, such as standard operating procedures, performance reports, and inventory records, was also reviewed to support data triangulation. The collected data were analyzed using an interactive qualitative analysis model comprising data reduction, data display, and conclusion drawing, to identify patterns, relationships, and key themes related to the integration of TQM and Lean Management to enhance the operational efficiency of modern retail in Bandung City.

3. FINDINGS AND DISCUSSION

3.1 System Analysis

System analysis aims to understand the existing conditions of modern retail operations in Bandung City and to identify problems that hinder efficiency. Operational managers and supervisors in modern retail in Bandung City explained in interviews that implementing TQM principles begins with management commitment to building a quality culture and employee involvement in service evaluation. The informants stated that regular training programs serve as the primary strategy for maintaining service standards, while data-based monitoring systems are increasingly used to assess performance. These findings are in line with TQM theory, which emphasizes the involvement of all members of the organization, top management commitment, and continuous improvement as the foundation for achieving consistent quality (Safuan et al., 2024) . Thus, the implementation of TQM in modern retail in Bandung is not only oriented toward customer satisfaction but also serves as a mechanism for strengthening a quality-based organizational culture.

Modern retail in Bandung City has also implemented Lean Management principles, particularly in logistics and distribution activities, which serve as the backbone of operational efficiency. The informants, namely operational managers, warehouse heads, cashier staff, and distribution supervisors, emphasized the importance of eliminating non-value-added activities, such as repetitive manual stock recording, which previously consumed a great deal of time and were prone to errors,

and which have now been replaced by integrated digital systems that accelerate workflow and improve the accuracy of inventory data. In addition, the application of the 5S method in warehouse management and the standardization of operational procedures for cashiers and operational staff have helped minimize time and labor waste, while ensuring consistent service quality across all branches. This reflects Lean principles that emphasize waste elimination, just-in-time practices, and workflow optimization to achieve greater cost efficiency and higher productivity. Through these measures, modern retail in Bandung has not only responded more quickly to customer needs but also become more adaptable to market dynamics, demand shifts, and evolving consumer trends, thereby balancing operational efficiency with customer satisfaction (Adam, 2024)

Field observations in several modern retail outlets in Bandung indicate that TQM principles have begun to be internalized in daily operational activities. For example, in large-scale retail, supervisors conduct regular evaluations of customer complaints, which are then followed up with direct feedback to cashier staff and sales assistants to improve service quality. This practice aligns with the concept of continuous improvement in TQM, in which quality is continually enhanced. In addition, employee involvement in daily evaluation meetings in both large-scale and small-scale retail strengthens a quality culture oriented toward customer satisfaction and proves management's commitment to comprehensive participation as the foundation of TQM. Meanwhile, lean management is clearly reflected in the management of space and workflow in both small-scale and large-scale retail. In storage warehouses, the layout follows the 5S method, enabling staff to locate products for replenishment more easily without wasting excessive time. Standardized procedures for cashier activities reflect the principle of standardized work, ensuring that services are delivered uniformly, with minimal errors, and more efficiently. In addition, the use of digital systems for inventory recording across several small-scale retail outlets has helped reduce non-value-added activities, such as repetitive manual recording, thereby enabling faster product distribution to shelves. These practices show that lean management directly improves service speed and resource efficiency in modern retail in Bandung.

For greater clarity, the implementation of TQM and lean management in modern retail in Bandung City, based on interviews, observations, and documentation, can be summarized in the following table.

Table 1. Implementation of TQM and Lean Management in modern retail in Bandung City

Aspect	Total Quality Management (TQM)	Lean Management
Evaluation and Improvement	Routine evaluation of customer complaints with direct feedback to staff, reflecting the principle of continuous improvement.	Reduction of non-value-added activities through digital inventory recording systems, improving the

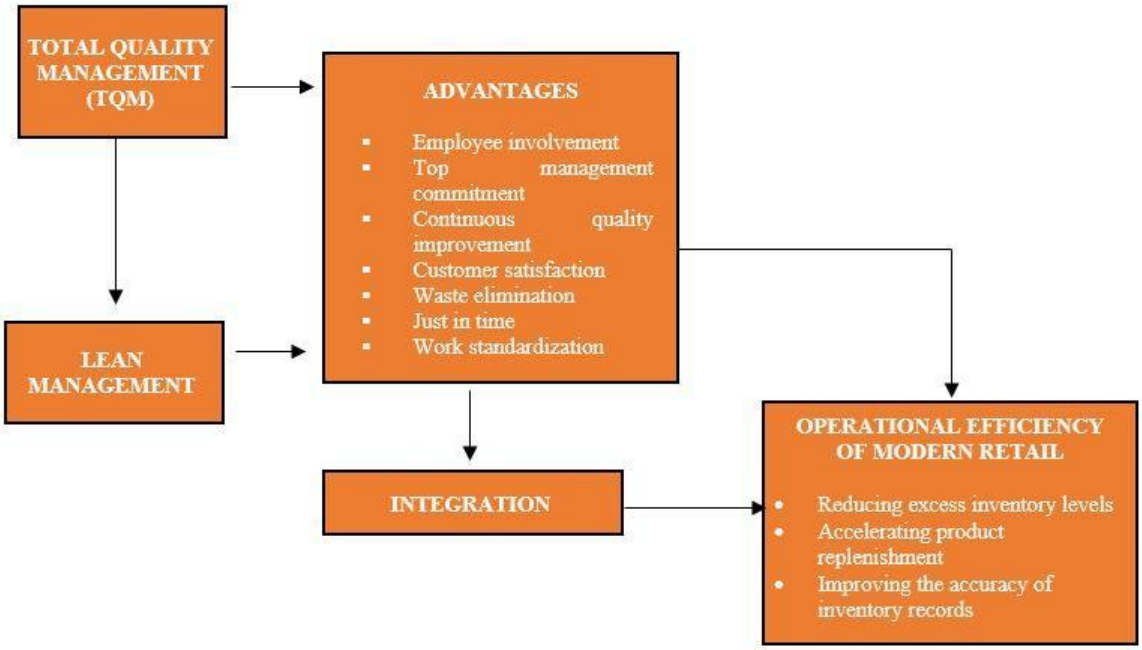
		speed and accuracy of distribution.
Employee Involvement	Employee participation in daily evaluation meetings strengthens a culture of quality and customer satisfaction.	Not explicitly stated, but employee involvement is essential in the implementation of 5S and standardized work procedures.
Procedure Standardization	Operational activities of cashiers and sales staff follow standardized procedures to ensure service consistency.	Uniform work procedures for cashiers and operational staff, reducing variation and increasing productivity through standardized work.
Space and Workflow Management	Not a primary focus of TQM.	The warehouse layout applies the 5S method (Sort, Set in Order, Shine, Standardize, Sustain), facilitating product retrieval and reducing time and labor waste
Process Efficiency	Focus on service quality and customer satisfaction through continuous improvement.	Optimization of operational processes to eliminate non-value- adding activities and enhance distribution efficiency.

Source: Compiled by the author (2025)

Based on Table II above, it can be seen that the implementation of TQM and Lean Management in modern retail in Bandung complements each other. The combination of the two can create an effective retail system in which high-quality services operate in parallel with efficient operations. This is because, although TQM excels at building a culture of quality, it pays relatively little attention to operational efficiency and the management of the work environment. Activities in warehouses or storage areas are not always optimized; as a result, time and effort may be wasted on processes that should be relatively simple. On the other hand, lean management, while efficient in terms of workflow and procedures, tends to place less emphasis on comprehensive employee involvement and customer satisfaction. Without a strong quality culture, the lean focus on processes may lead to insufficient attention to customer service.

To provide a clearer overview, the integration of TQM and Lean Management and its implications for operational efficiency in modern retail are summarized in the conceptual framework presented in Figure X:

Figure 1. Conceptual Integration Model of TQM and Lean Management



Source: Compiled by the author (2025)

Figure 1 above illustrates the integration of the two approaches (TQM and Lean Management), which is expected to generate stronger synergy, with TQM emphasizing employee involvement, top management commitment, and continuous quality improvement, with a primary orientation toward customer satisfaction. Meanwhile, lean management focuses on eliminating waste, applying just-in-time principles, and standardizing work to accelerate processes and optimize resource use. These two approaches complement each other: TQM strengthens the quality culture, while lean streamlines and improves operational efficiency. Therefore, by integrating both approaches, a model can be developed that addresses the challenges of modern retail, particularly in Bandung City, which faces intense competition. The operational efficiency achieved can be reflected in reduced excess inventory levels, accelerated product replenishment, and improved inventory record accuracy.

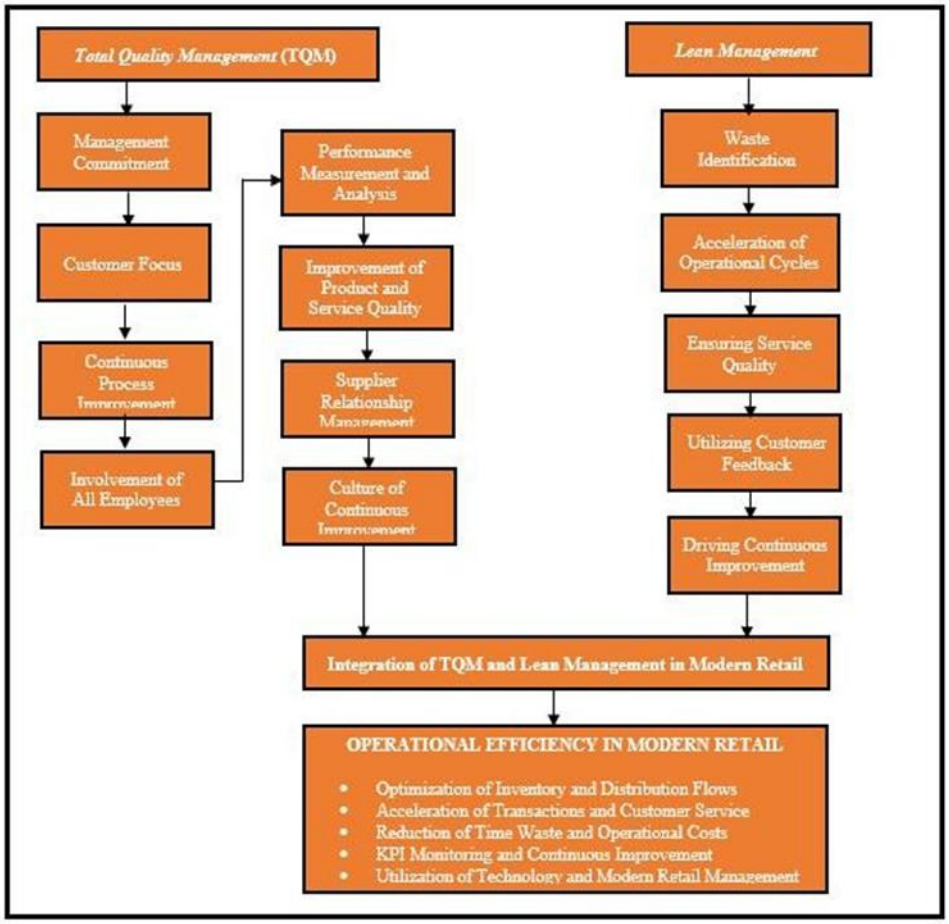
3.2 Integrated TQM and Lean Management Model to Improve Operational Efficiency in Modern Retail

The development of an integrated TQM and lean management model in modern retail in Bandung City is based on the need to combine the strengths of two complementary approaches. TQM emphasizes service quality, employee involvement, and continuous improvement, while lean management focuses on process efficiency,

not only efficient in terms of cost and time but also capable of maintaining consistent service quality, thereby supporting customer satisfaction.

The integration model for modern retail combines service quality and employee involvement (TQM) with process efficiency and waste reduction (Lean), focusing on operational efficiency and customer satisfaction while emphasizing continuous improvement as an organizational culture. The result of this integration is an operational system that is optimal for inventory flow, distribution, and transaction processes, able to adapt quickly to market changes, maintain service and product quality, and actively involve employees in process innovation. For greater clarity, the integrated TQM and Lean Management model developed in this study to enhance the operational efficiency of modern retail is presented as follows.

Figure 2. Integrated TQM and Lean Management Model for Improving Operational Efficiency in Modern Retail



Source: Compiled by the author (2025)

3.2.1 Implementation of Total Quality Management (TQM) in Modern Retail

As shown in Figure 2, the integration of TQM and Lean Management is built upon several core principles. To provide a more detailed understanding of this

framework, the main stages and principles of TQM implementation in modern retail are explained as follows

1.1.1.1 Management Commitment

Top management must be committed to quality in all operational aspects, ranging from product provision and customer service to internal processes. This commitment serves as the foundation of the TQM culture throughout the entire retail organization.

1.1.1.2 Customer Focus

Identify the needs and expectations of modern retail customers through surveys, applications, or direct interactions. Every operational decision is directed toward enhancing customer satisfaction and the overall shopping experience.

1.1.1.3 Continuous Process Improvement

Continuous evaluation and improvement of operational processes, such as shelf replenishment and arrangement, inventory and warehouse management, and cashier transaction processes. The objective is to reduce errors, accelerate service, and enhance efficiency.

1.1.1.4 Involvement of All Employees

Involve all employees in quality improvement efforts, including store staff, warehouse personnel, and management. Encourage them to contribute improvement ideas and to take responsibility for the work processes they carry out.

1.1.1.5 Performance Measurement and Analysis

Use Key Performance Indicators (KPIs) to monitor service quality, customer satisfaction, and operational efficiency. Examples include customer waiting time, the rate of inventory management errors, and sales performance by product category.

1.1.1.6 Improvement of Product and Service Quality

Ensure that the products sold meet established quality standards and that customer service is delivered consistently across all branches. Implement standard operating procedures (SOPs) and conduct regular quality control.

1.1.1.7 Supplier Relationship Management

Involve suppliers in quality improvement programs. Effective coordination can ensure that delivered products meet required standards and reduce the risk of delays or product defects.

1.1.1.8 Culture of Continuous Improvement

Establish a culture that encourages innovation and ongoing improvement. Utilize feedback systems from both customers and employees to identify areas for enhancement and to implement effective solutions.

3.2.2 Implementation of Total Quality Management (TQM) in Modern Retail

In modern retail, lean management principles can be applied to improve operational efficiency, enhance customer satisfaction, and increase market responsiveness. Their implementation includes the following steps:

3.2.2.1 Identification and Elimination of Waste

The initial step is to identify activities that do not add value for customers, such as repetitive shelf replenishment or inventory management processes. Value stream mapping helps to detect sources of waste and to improve operational efficiency.

3.2.2.2 Minimizing Excess Inventory

Accumulating goods in warehouses or on shelves can drain resources and slow down responses to market demand. Proper inventory management, particularly for seasonal or fast-moving products, helps reduce the risk of obsolescence and increases operational flexibility.

3.2.2.3 Accelerating the Operational Cycle

Utilize technology and modern retail management systems to speed up processes, ranging from goods receiving to cashier transactions. Small-batch approaches or periodic restocking enable faster adjustments to changes in customer demand.

3.2.2.4 Enhancing Market Responsiveness

Develop systems that are responsive to changes in trends and customer preferences. For example, promotions, product displays, or inventory adjustments can be implemented more quickly based on real-time sales data.

3.2.2.5 Ensuring Service Quality at Every Stage

Implement quality control at each process, including storage, product arrangement, and customer service. Early detection of problems ensures that service remains consistent and that the customer experience is optimal.

3.2.2.6 Granting Employee Autonomy and Involvement

Involve staff in decision-making on operational processes, such as shelf arrangement and inventory management. Teams that are given greater responsibility often generate more creative solutions while also increasing motivation and work morale.

3.2.2.7 Utilizing Customer Feedback

Listen to customer feedback through surveys, applications, or direct interactions in the store. Prompt responses to such feedback help maintain the relevance of products and services in a dynamic market.

3.2.2.8 Strengthening Relationships with Suppliers

Treat suppliers as strategic partners. Effective coordination can improve delivery efficiency, reduce costs, and ensure product availability in line with retail needs.

3.2.2.9 Encouraging Continuous Improvement

Conduct regular evaluations of operational processes, identify opportunities for improvement, and implement appropriate solutions. Every team member is encouraged to contribute to process innovation.

3.2.2.10 Consistently Practicing Design Improvement

Not only planning improvements, but also implementing enhancements in store layout design, service procedures, and operational systems so that processes become more efficient and better aligned with customer needs.

Based on the steps above, the integrated TQM and Lean Management model in modern retail in Bandung City shows that combining the principles of service quality and employee involvement (TQM) with those of process efficiency and waste reduction (Lean) can create an operational system that is more effective and adaptive. The application of lean management in modern retail has shown strong effectiveness in reducing operational waste through a systematic approach (Sarah et al., 2021) . By reviewing each stage of the process, retail organizations can identify and eliminate activities that do not add value, such as repetitive processing, product rework, or excessive inventory buildup. In addition, optimizing distribution flows and reducing unnecessary material handling directly enhances labor productivity and accelerates responses to customer demand. Overall, the integration of lean principles enables modern retail not only to reduce operational costs and time but also to improve process efficiency and service consistency, thereby contributing to higher customer satisfaction and stronger market competitiveness.

The integration of TQM and Lean Management in modern retail creates a synergistic operational model that directly impacts internal efficiency. This model can reduce excess inventory levels through more careful inventory management, accelerate product replenishment, and improve the accuracy of inventory records. In addition, labor productivity in stores increases with clearer, standardized workflows, while the simultaneous focus on waste elimination and service quality improvement ensures optimal resource utilization. The success of the implementation depends heavily on leadership that encourages employee involvement in continuous improvement and the use of performance data to support decision-making. In addition, this integration not only enhances operational efficiency but also strengthens customer satisfaction. Faster and more consistent processes improve the shopping experience, while attention to service and product quality builds customer trust in modern retail. Thus, the integrated TQM and lean management model serves as a strategic mechanism for creating competitive advantage, combining high internal efficiency with superior customer service to support sustainable business growth.

4. CONCLUSION

Based on the research findings, it can be concluded that the implementation of TQM and Lean Management in modern retail in Bandung City demonstrates a complementary relationship that strengthens operational performance. TQM emphasizes developing a quality culture, employee involvement, and continuous improvement, all aimed at enhancing customer satisfaction through consistent, professional service. Lean Management focuses on process efficiency, waste reduction, workflow optimization, and space and product distribution management,

enabling operations to run more quickly and with greater resource efficiency. The integration of these two approaches allows modern retail not only to improve the speed and accuracy of processes but also to maintain consistent service quality across all outlets, respond more rapidly to market changes, and encourage active employee participation in innovation and process improvement. In addition, this integrated model supports data-driven decision-making, minimizes operational errors, and creates synergy between customer satisfaction and internal efficiency. Therefore, the integration of TQM and Lean Management has proven to be an effective strategic framework for modern retail in Bandung, capable of improving operational efficiency, strengthening customer satisfaction, and sustaining competitiveness amid increasingly complex market dynamics.

The theoretical implication of this study is that the integration of TQM and Lean Management makes a significant contribution to the development of a comprehensive operational management framework, in which the focus on service quality and process efficiency is not viewed separately, but rather as parts of a mutually reinforcing system that can enhance the overall operational performance of modern retail. Meanwhile, the practical implication of this study provides concrete guidance for managers and owners of modern retail in designing and optimizing their daily operational processes. By adopting the integrated TQM–Lean model, retail organizations can improve distribution efficiency, accelerate cashier transactions, minimize resource waste, and maintain consistent service quality across all branches. Beyond that, implementing this model also encourages employee involvement in continuous improvement, strengthens a culture of quality, and enhances responsiveness to customer needs and expectations. Overall, integrating TQM and Lean Management not only delivers operational benefits but also increases the competitiveness of modern retail by providing faster, more accurate, and more satisfying customer service.

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