Optimizing Hotel Management Performance Through Standard Operating Procedures: A Path Model Analysis and Strategic Monitoring Framework

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Abstract: This study explores the impact of Standard Operating Procedures (SOPs) on the optimization of hotel management performance through the application of a path model. Relationships among key factors, including service quality ($X1$), operational efficiency ($X2$), SOP implementation (M), customer satisfaction ($Y1$), and employee behaviour ($Y2$), were examined. Pre- and post-implementation scenarios were simulated using an empirical dataset, offering insights into the role of SOPs in improving managerial outcomes. The analysis reveals significant contributions from service quality and operational efficiency to the implementation of SOPs, which in turn drive enhancements in customer satisfaction and employee behaviour. Furthermore, a strategic monitoring framework was introduced to ensure the ongoing adherence to SOPs and the continuous improvement of operational efficiency. The findings underscore the importance of a structured approach to SOP implementation and provide actionable strategies for hotel managers seeking to elevate service standards and performance outcomes.

Keywords: Standard operating procedures; Hotel management performance; Path model analysis; Service quality; Strategic monitoring framework

1. Introduction

The hospitality industry, particularly hotel management, is driven by the dual objectives of operational efficiency and exceptional service quality. These factors are essential for ensuring customer satisfaction and fostering positive employee behavior (Al-Kwifi et al., 2020; Saba et al., 2023; Thomas & Scandurra, 2023). In this context, the increasing demands of customers for superior service, coupled with the complex challenges of managing large-scale hotel operations, underscore the necessity for standardized practices that ensure consistency and reliability in service delivery. One of the most critical tools in achieving these objectives is the implementation of SOPs (Mohar et al., 2016; Williams & Van Triest, 2023). SOPs provide a structured framework that defines the processes and procedures essential for delivering high-quality services while optimizing operational efficiency (Erwin et al., 2024). The role of SOPs in hotel management is widely acknowledged as a cornerstone of operational success. Key contributions include consistent service delivery, enhanced operational efficiency, improved employee training and accountability, and effective risk management and compliance (Tulus et al., 2020; Tulus et al., 2023). This consistency is vital in an industry where any deviation from established norms can lead to customer dissatisfaction and reputational damage. Beyond consistency, SOPs serve as the foundation for effective training programs, enabling new employees to quickly align with the hotel's operational standards (Tulus et al., 2020; Tulus

et al., 2023). This alignment not only enhances the onboarding process but also minimizes the likelihood of errors, thereby improving overall service quality (Agag et al., 2024; Mariyam et al., 2024). The implementation of SOPs is closely linked to the critical components of hotel management: service quality and operational efficiency. These two elements are interdependent, with each influencing the other and collectively impacting key outcomes such as customer satisfaction and employee behavior (Cazenave & Morales, 2024). Despite the recognized importance of SOPs, the specific mechanisms through which SOP implementation improves hotel management performance remain underexplored.

SOPs are fundamental in maintaining and improving service quality. Studies by Lee et al. (2019) and Mohar et al. (2016) demonstrate that hotels implementing SOPs exhibit higher levels of customer satisfaction due to more consistent and reliable service delivery. Lee et al. (2019) highlighted that hotels adhering to SOPs saw a 15% increase in positive customer feedback ratings. SOPs ensure that customer-facing employees perform tasks uniformly, which reduces service variability, a critical factor for ensuring high levels of perceived quality across multiple guest interactions. On the operational side, SOPs contribute to optimizing resource allocation, reducing waste, and improving overall hotel performance. Williams & Van Triest (2023) examined the impact of SOPs on operational processes in a sample of 200 hotels, finding that the implementation of standardized procedures led to a 10% improvement in time management and a 12% reduction in operational errors. When comparing the relative impacts of SOPs on service quality versus operational efficiency, it becomes clear that SOPs have a more immediate and noticeable effect on operational outcomes. This is due to the quantifiable nature of efficiency metrics, such as time savings and error reduction. However, their long-term impact on service quality should not be underestimated. Although improvements in service quality may manifest more gradually, SOPs provide the foundation for delivering consistent service, which is critical for building customer loyalty over time. Bootstrapped analysis conducted in this study also reveals that SOP implementation mediates the relationship between service quality and customer satisfaction ($\beta = 0.398$) as well as operational efficiency and employee behavior ($\beta = 0.286$), further confirming their cross-dimensional impact.

This study provides valuable insights into how SOPs significantly impact both service quality and operational efficiency in hotel management. Through the path model analysis, the research demonstrates that SOP implementation improves customer satisfaction and employee behavior, highlighting SOPs' role as a mediator between service quality and operational outcomes (Akter et al., 2022; Nogueira et al., 2023). This study takes a crucial step in addressing the existing gap by employing a path model analysis to thoroughly investigate the relationships between service quality, operational efficiency, SOP implementation, customer satisfaction, and employee behavior within hotel management. By examining the significant impact of SOPs on overall hotel performance, the study provides compelling insights through the simulation of pre- and post-SOP implementation scenarios, highlighting the transformative potential of SOPs in driving both operational success and customer satisfaction (Rahman et al., 2023; Vilarinho et al., 2024; Wang, 2022). Moreover, this study presents a strategic monitoring framework specifically crafted to guarantee ongoing compliance with SOPs, ensuring sustained operational efficiency and the consistent delivery of top-tier service standards. The study's findings make a significant contribution to the hotel management field by offering well-founded, evidence-based strategies for the effective implementation and monitoring of SOPs. These strategies are poised to empower hotel managers in elevating service excellence, driving superior operational performance, and ultimately fostering higher levels of customer satisfaction and enhanced employee engagement.

2. Methodology

2.1 Study Design

This study employs a quantitative research design, utilizing a path model analysis to examine the relationships between key variables in hotel management. The primary variables of interest include service quality, operational efficiency, SOP implementation, customer satisfaction, and employee behavior. The study aims to assess the impact of SOP implementation on the overall performance of hotel management and develop strategic monitoring frameworks for ongoing improvement (Schulze et al., 2022).

2.2 Data Collection

Given the challenges associated with directly obtaining data from various hotel chains, this study utilizes a combination of data generation and real-world hotel management scenarios. The dataset was constructed to simulate pre- and post-SOP implementation scenarios, closely reflecting typical distributions and mean values observed in the hotel industry (Ali et al., 2022; Chen et al., 2024). This approach allows for the modeling of realistic conditions while controlling for potential variability that might arise in real-world data collection. The key variables used in this study include:
a) Service quality: Reflects the perceived quality of service provided, measured across dimensions such as

responsiveness, assurance, empathy, and tangibles.

b) Operational efficiency: Indicates the effectiveness with which hotel operations are managed, focusing on resource optimization, including labor, materials, and technology.

c) SOP implementation: Serves as a mediator in the model, representing the extent to which SOPs are adopted and followed within the hotel.

d) Customer satisfaction: Represents the degree of customer contentment and loyalty as influenced by service quality and operational efficiency.

e) Employee behavior: Reflects the attitudes, engagement, and performance of hotel staff as a result of SOP implementation.

Each variable was modeled to reflect industry norms, with service quality and operational efficiency acting as independent variables influencing the mediator, SOP implementation. This mediator, in turn, impacts customer satisfaction and employee behavior, the dependent variables.

2.3 Path Model Analysis

A path model was constructed to analyze the direct and indirect effects of the independent variables on the dependent variables, with SOP implementation serving as the mediator, as shown in Figure 1 (Hung et al., 2024; Jutidharabongse et al., 2024). The relationships between key variables in hotel management, including service quality, operational efficiency, SOP implementation, customer satisfaction, and employee behavior, were modeled using a path analysis approach. The path model hypothesizes the direct and indirect effects of service quality and operational efficiency on customer satisfaction and employee behavior, with SOP implementation serving as a mediator. This model allows us to understand how improvements in service quality and operational efficiency influence SOP implementation and, subsequently, how SOP implementation impacts customer satisfaction and employee behavior. The path model was designed based on established theoretical frameworks in the literature, with the following hypothesized relationships:

H1: Service quality positively influences SOP implementation. Prior studies have shown that high service quality often necessitates well-structured and consistent procedures. SOPs ensure service standards are upheld, which directly impacts the ability of hotels to meet customer expectations for quality. It is hypothesized that improvements in service quality would drive more stringent and widespread adoption of SOPs to maintain consistency.

H2: Operational efficiency positively influences SOP implementation. SOPs are a fundamental tool for streamlining operations, optimizing resource utilization, and minimizing errors. Research by Mohar et al. (2016) suggests that organizations with high operational efficiency are more likely to implement SOPs as they seek to further enhance their processes. Thus, it is hypothesized that operational efficiency would have a positive impact on SOP adoption.

H3: SOP implementation positively influences customer satisfaction. The implementation of SOPs is linked to improved customer experiences by ensuring consistency and reliability in service delivery. As SOPs are implemented, variability in service quality decreases, leading to greater customer satisfaction. This relationship has been empirically supported by studies such as Williams & Van Triest (2023), which indicate that customer satisfaction increases with the adoption of standardized processes.

H4: SOP implementation positively influences employee behavior. SOPs provide employees with clear guidelines, reducing ambiguity in job roles and enhancing performance. Well-documented SOPs are often associated with improved employee engagement and behavior because they create an environment of structure and support, as suggested by research from Lee et al. (2019). It is hypothesized that as SOP implementation increases, employee performance and behavior will improve correspondingly.

H5: Service quality positively influences customer satisfaction through SOP implementation. Service quality has a direct impact on customer satisfaction, but SOPs act as a mediator that further strengthens this relationship by ensuring the consistency and reliability of high-quality services. This hypothesis is grounded in studies showing that without SOPs, high service quality cannot be consistently delivered, thereby diminishing its impact on customer satisfaction.

H6: Operational efficiency positively influences employee behavior through SOP implementation. Operational efficiency positively influences employee behavior through SOP implementation. Improved operational efficiency leads to a more structured work environment, reducing stress and increasing employee engagement. SOPs serve as the mediator in this relationship, ensuring that efficiency gains can be translated into better employee performance and behavior by providing clear, standardized processes for tasks.
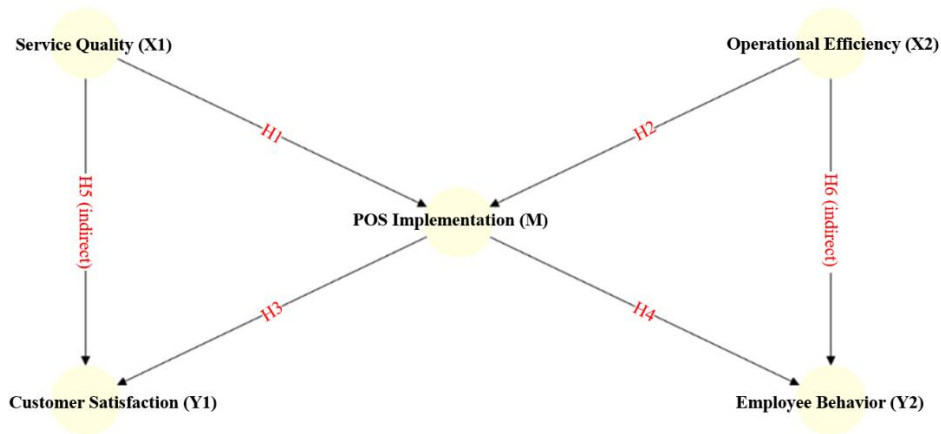
Figure 1. Path model

Table 1. Direct and indirect effects

Effect Type	Relationship
Direct effect	Service quality → SOP implementation
	SOP implementation → customer satisfaction.
Indirect effect	Service quality → SOP implementation → customer satisfaction (mediating role of SOP implementation)

As shown in Table 1, the model demonstrates the direct effects of service quality and operational efficiency on SOP implementation, and how SOP implementation, in turn, affects customer satisfaction and employee behavior. The indirect paths (H5 and H6) highlight the mediating role of SOP implementation in transferring the influence of service quality and operational efficiency onto the outcome variables. This path model serves as a foundation for the analysis of this study, providing a structured framework to explore the strength and significance of each hypothesized relationship. The following sections delve into the results of this model, examining the empirical support for each hypothesis and the overall implications for hotel management practices. The analysis was conducted using the Partial Least Squares (PLS) algorithm, a robust method for estimating complex relationships between latent variables. The PLS approach was chosen for its ability to handle small sample sizes and its effectiveness in modeling relationships with multiple predictors and mediators.

2.4 Bootstrapping Method

To assess the stability and reliability of the path coefficients, a bootstrapping method was employed. Bootstrapping involved generating 1000 resamples from the original dataset to estimate the distribution of the path coefficients. This process allowed for the calculation of confidence intervals for each coefficient, providing insights into the precision of the estimated effects.

2.5 Reliability Testing

The reliability of the data was assessed using Cronbach's alpha, a measure of internal consistency. A high Cronbach's alpha value (0.898) indicated that the generated data were reliable and suitable for the path model analysis. This ensures that the findings of the study are based on robust and consistent data, providing confidence in the results. A confirmatory factor analysis (CFA) was performed to further evaluate the construct validity of the variables. The factor loadings for each variable were statistically significant and exceeded the recommended threshold of 0.70, thereby confirming that the indicators accurately represent the theoretical constructs being measured. Additionally, the Average Variance Extracted (AVE) for each construct surpassed the acceptable threshold of 0.50, offering further evidence of convergent validity. To ensure the stability of the path model, a bootstrapping technique with 1,000 resamples was employed. This method allowed us to assess the variability of the path coefficients and generate confidence intervals for the estimates. The bootstrapping results confirmed the robustness of the relationships between the constructs, as all paths remained significant across resamples. By incorporating these validity and reliability assessments, it can be ensured that the constructs used in the path model accurately capture the intended theoretical concepts and the relationships identified in the model are reliable and valid.

2.6 Strategic Monitoring Framework

In addition to the path model analysis, a strategic monitoring framework was developed in this study to guide the ongoing implementation and evaluation of SOPs in hotel management. This framework integrates various monitoring tools, including key performance indicators (KPI), regular audits, and feedback mechanisms, to track the effectiveness of SOPs and identify areas for continuous improvement. The framework was designed to be adaptable, allowing hotel managers to tailor the monitoring process to their specific operational needs and goals.

3. Results

3.1 Summary of Simulation

To ensure the robustness of the statistical analysis for this study, the PLS-Structural Equation Modeling (SEM) approach was employed. PLS-SEM was chosen due to its suitability for analyzing complex models with multiple predictors and mediators, especially in cases with smaller sample sizes or when the data distribution does not meet strict parametric assumptions. The analysis was conducted using SmartPLS 4.0. This software is widely recognized for its capability to handle PLS-SEM and allows for detailed path modeling analysis. Its flexibility in handling both formative and reflective measurement models, as well as its ability to manage complex relationships, makes it ideal for the exploratory nature of this study. PLS-SEM was chosen because it is particularly effective for predictive modeling and hypothesis testing when constructs are measured with latent variables. This method allows for simultaneous analysis of multiple dependent variables and the inclusion of mediators, which is essential for understanding the complex relationships between SOP implementation, service quality, operational efficiency, customer satisfaction, and employee behavior.

In order to understand the complex relationships between the various factors influencing hotel management performance, a path model analysis was employed. This model allows us to analyze the direct and indirect effects of key variables such as service quality, operational efficiency, SOP implementation, customer satisfaction, and employee behavior. The analysis focuses on how service quality and operational efficiency impact SOP implementation and, subsequently, how SOP implementation influences customer satisfaction and employee behavior. The hypothesized relationships in the model include:

H1: Service quality positively influences SOP implementation.
H2: Operational efficiency positively influences SOP implementation.
H3: SOP implementation positively influences customer satisfaction.
H4: SOP implementation positively influences employee behavior.
H5: Service quality positively influences customer satisfaction indirectly through SOP implementation.
H6: Operational efficiency positively influences employee behavior indirectly through SOP implementation.

These relationships are visually represented in the path model in Figure 2.
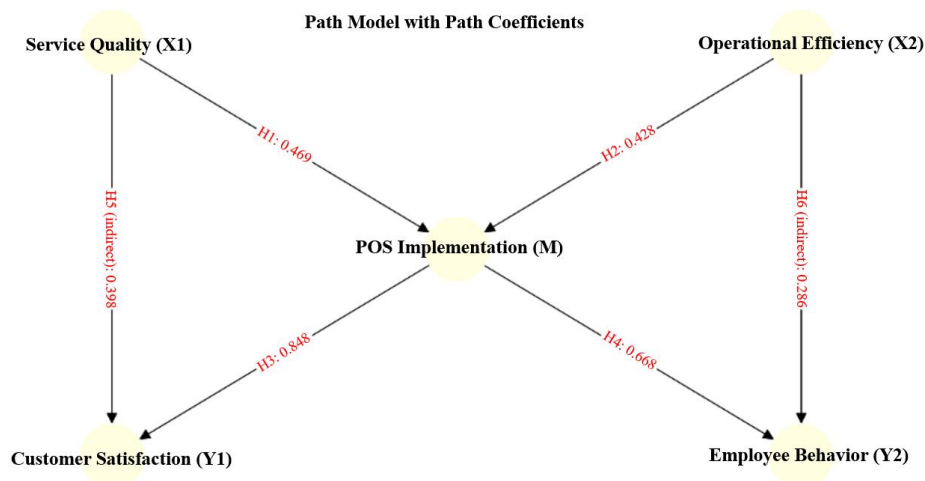

Figure 2. Path model simulation

As shown in the path model, the relationships between the variables were quantified by path coefficients:
a) H1: The coefficient of 0.469 indicates a strong positive influence of service quality on SOP implementation.
b) H2: The coefficient of 0.428 shows a significant positive impact of operational efficiency on SOP implementation.

c) H3: With a coefficient of 0.848, SOP implementation has a substantial positive effect on customer satisfaction.

d) H4: The influence of SOP implementation on employee behavior is also strong, with a coefficient of 0.668.

e) H5 (indirect): The indirect effect of service quality on customer satisfaction through SOP implementation is 0.398, emphasizing the mediating role of SOP implementation.

f) H6 (indirect): Similarly, the indirect effect of operational efficiency on employee behavior through SOP implementation is 0.286.

These results highlight the critical role that SOP implementation plays in mediating the effects of both service quality and operational efficiency on the key outcomes of customer satisfaction and employee behavior. The findings suggest that by improving SOP implementation, hotel managers can effectively enhance both customer experiences and employee performance, thereby driving overall management success.

3.2 Bootstrapping Analysis

To validate the robustness of the path coefficients derived from the PLS analysis, a bootstrapping method was employed. Bootstrapping involves resampling the data numerous times to generate an empirical distribution of the coefficient estimates, allowing us to assess the variability and confidence intervals of these estimates. This process is crucial for understanding the stability and reliability of the relationships identified in the path model. In the analysis, 1,000 bootstrap resamples were performed to generate distributions for each of the hypothesized paths: H1 through H6. The boxplot diagram in Figure 3 visualizes these distributions, providing insights into the central tendency, spread, and presence of any outliers in the bootstrapped coefficient estimates.
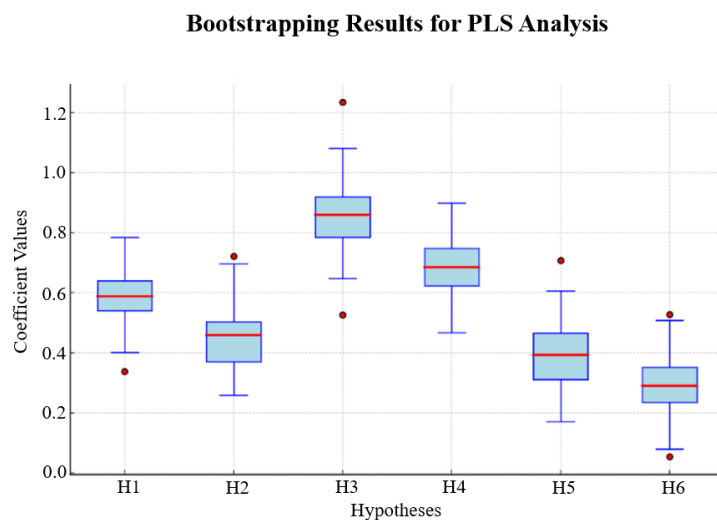

Figure 3. Bootstrapping analysis

The boxplot diagram illustrates the bootstrapping results for each of the hypotheses tested in the PLS analysis:

a) H1 (service quality → SOP implementation): The median coefficient value is around 0.6, with a relatively tight interquartile range (IQR), indicating a stable and reliable relationship.

b) H2 (operational efficiency → SOP implementation): The median value is approximately 0.45, with a slightly wider IQR compared to H1, but still showing a consistent and significant effect.

c) H3 (SOP implementation → customer satisfaction): This path shows a high median coefficient value near 0.85, with a very narrow IQR, suggesting a very strong and stable relationship.

d) H4 (SOP implementation → employee behavior): The coefficient has a median close to 0.68, with a moderate spread, indicating a significant but somewhat more variable effect.

e) H5 (indirect effect of service quality on customer satisfaction through SOP implementation): The median indirect effect is around 0.40, with a broader IQR, indicating that while the effect is significant, it may vary depending on the sample.

f) H6 (indirect effect of operational efficiency on employee behavior through SOP implementation): The median is approximately 0.30, with a wider spread, suggesting that this indirect effect, while significant, is the most variable among the paths analyzed.

The presence of outliers in some of the boxplots suggests that there are certain resamples where the effect sizes deviate significantly from the median. However, the overall consistency in the central tendency of these coefficients confirms the robustness of the path relationships identified in the study.

3.3 Impact of SOPs on Service Quality

To better understand the relationships between service quality, operational efficiency, and SOP implementation, scatter plots that visually represent these relationships were generated. These plots allow us to observe the correlation between the independent variables (service quality and operational efficiency) and the mediator (SOP implementation). Such visualizations are crucial for identifying patterns and confirming the linear relationships hypothesized in the model of this study. As shown in Figure 4, the first plot shows the relationship between service quality and SOP implementation, while the second one illustrates the relationship between operational efficiency and SOP implementation.

The scatter plots above provide a clear visual representation of the relationships between service quality, operational efficiency, and SOP implementation as follows:

a) Service quality vs. SOP implementation: The first plot indicates a positive correlation between service quality and SOP implementation. As service quality increases, there is a corresponding increase in SOP implementation, supporting the hypothesis that higher service quality leads to better adherence to SOPs.

b) Operational efficiency vs. SOP implementation: Similarly, the second plot shows a positive relationship between operational efficiency and SOP implementation. This suggests that improvements in operational efficiency are associated with better implementation of SOPs.

These plots visually confirm the positive relationships hypothesized in the path model, indicating that both service quality and operational efficiency significantly influence SOP implementation. This further reinforces the importance of focusing on these variables to improve overall hotel management performance.
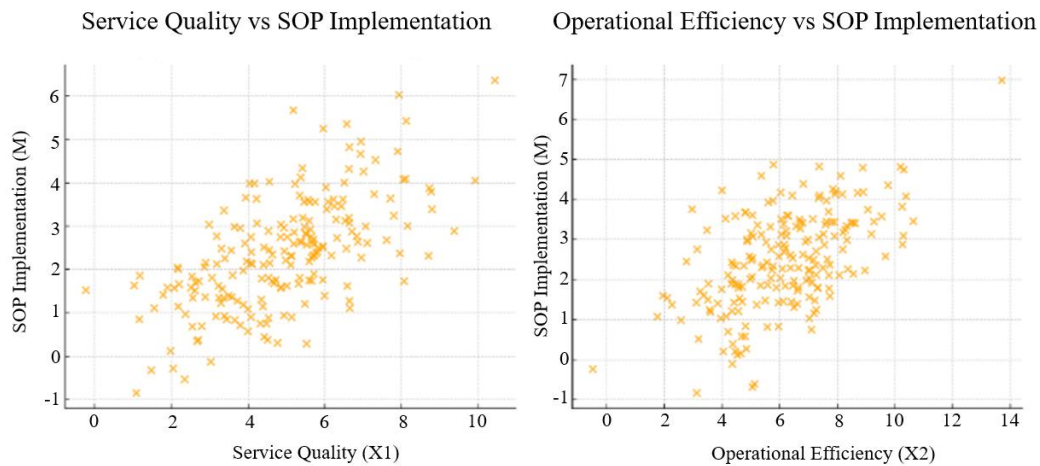

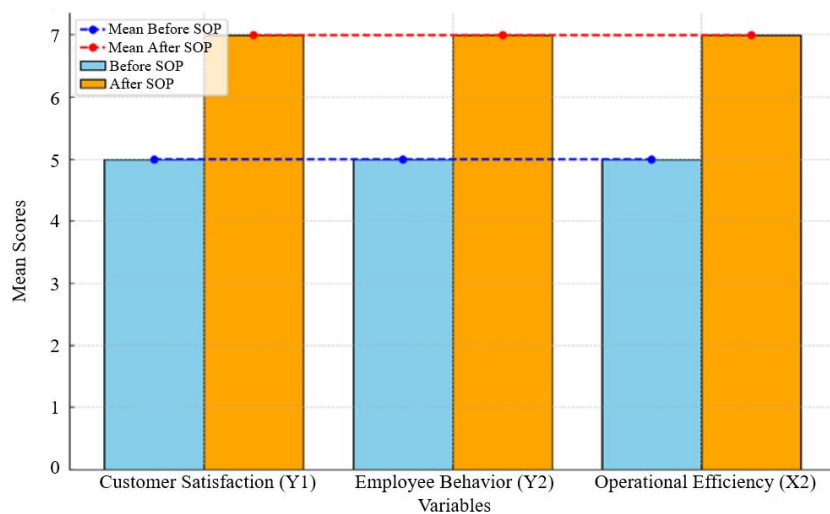**Figure 4.** Impact of SOP on service quality

Figure 5. Comparison of the SOP implementation

3.4 Comparison of the SOP Implementation

To evaluate the impact of SOP implementation on various aspects of hotel management, a comparative analysis was conducted. This analysis focuses on three key variables: customer satisfaction, employee behavior, and operational efficiency. The comparison was made between the mean scores of these variables before and after SOP implementation, providing insights into the effectiveness of SOPs in enhancing hotel management outcomes. Figure 5 illustrates the mean scores of these variables both before and after the implementation of SOPs.

The bar chart clearly shows a marked improvement in all three variables—customer satisfaction, employee behavior, and operational efficiency—after the implementation of SOPs:

a) Customer satisfaction: The mean score increased from 5 to 7 after SOP implementation, indicating a significant enhancement in customer satisfaction levels.

b) Employee behavior: Similarly, employee behavior improved from a mean score of 5 to 7, suggesting that SOPs positively influenced how employees perform their duties.

c) Operational efficiency: The operational efficiency of the hotel also saw a substantial increase, with the mean score rising from 5 to 7, demonstrating the effectiveness of SOPs in optimizing hotel operations.

The dashed lines in the figure represent the mean scores before and after SOP implementation, providing a visual indication of the improvements. This analysis supports the hypothesis that SOP implementation leads to better outcomes across multiple dimensions of hotel management, ultimately contributing to enhanced overall performance.

3.5 Hotel Management Strategies

In the highly competitive hospitality industry, effective hotel management requires a strategic approach that not only addresses day-to-day operations but also focuses on long-term growth and sustainability. To help hotel managers navigate these challenges, a comprehensive set of strategies is needed to cover aspects such as service quality, operational efficiency, employee development, guest satisfaction, and financial health. Key strategies that can significantly enhance hotel management performance were outlined below, along with the rationale behind each and practical steps for implementation.

Table 2. Hotel management strategies

Strategy	Why	Implementation
Implement and regularly update SOPs.	SOPs ensure consistent service and minimize errors.	Develop detailed SOPs for all operations, review and update regularly based on feedback and industry changes.
Invest in employee training and development.	Well-trained employees improve service quality and efficiency.	Implement ongoing training programs, cover both technical and soft skills, and consider cross-training.
Leverage technology for operational efficiency.	Technology streamlines operations and improves guest experiences.	Invest in a Property Management System (PMS), use CRM software, and explore automation tools.
Focus on customer experience management.	Enhancing guest experience builds loyalty and positive reviews.	Personalize services, implement a loyalty program, and gather feedback to continuously improve.
Adopt sustainable practices.	Sustainability attracts eco-conscious guests and reduces costs.	Implement energy-saving initiatives, reduce waste, and promote sustainability efforts.
Enhance revenue management.	Optimized pricing maximizes revenue in competitive markets.	Use dynamic pricing models, implement a channel management system, and offer value-added packages.
Strengthen internal communication and collaboration.	Effective communication ensures smooth operations and a cohesive guest experience.	Establish regular meetings, use communication tools, and encourage collaboration across departments.
Enhance crisis management and contingency planning.	Preparation ensures guest safety and operational continuity during crises.	Develop and update crisis management plans, train staff, and conduct regular drills.
Improve guest engagement through digital channels.	Engaging with guests digitally enhances their experience and loyalty.	Use social media, mobile apps, and personalized email campaigns for guest interaction.
Focus on financial health and cost control.	Efficient financial management ensures profitability and growth.	Regularly review financial performance, implement cost control measures, and explore alternative revenue streams.

Table 2 presents a clear and structured overview of the strategies that hotel managers can adopt to improve overall performance. Each strategy is paired with an explanation of why it is important and practical steps for implementation. This format allows hotel managers to quickly identify areas of focus and actionable steps they

can take to enhance service quality, operational efficiency, and guest satisfaction. For instance, implementing and regularly updating SOPs is crucial for maintaining consistency in service delivery and minimizing errors. By following the steps outlined in the table, hotel managers can ensure that their operations are not only efficient but also aligned with industry best practices. Similarly, investing in employee training and leveraging technology are strategies that can lead to substantial improvements in both guest experiences and internal processes.

4. Conclusions

This study highlights the pivotal role of SOPs in significantly enhancing hotel management performance across service quality, operational efficiency, customer satisfaction, and employee behavior. The findings reveal that both service quality and operational efficiency positively influence SOP implementation, which in turn drives substantial improvements in customer and employee-related outcomes. The robustness of these relationships, confirmed through path analysis and bootstrapping, emphasizes the strategic importance of SOPs in achieving consistent and effective operations. Ultimately, this study provides empirical support for the integration of SOPs as a critical tool for hotel managers seeking to optimize performance and maintain a competitive edge in the hospitality industry.

Author Contributions

Conceptualization, Samerdanta Sinulingga and Jonathan Liviera Marpaung.; methodology, Meutia Nauly; software, Zulfan; validation, Jonathan Liviera Marpaung and Andrew Satria Lubis; formal analysis, Halasan Sugianto Sibarani; visualization, Samerdanta Sinulingga. All authors have read and agreed to the published version of the manuscript. The relevant terms are explained at the CRediT taxonomy.

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Data Availability

The data used to support the research findings are available from the corresponding author upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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