

Management Program for Raising the Service Quality and Operations in Seaport

Sereno, Sesenio B. III ^{1,2}

¹ Lipa City Colleges

² St. Vincent College of Cabuyao, Inc.

¹ssereno.iii.acad@gmail.com

Article Details:

Received: 1 December 2025

Revised: 7 December 2025

Accepted: 15 January 2026

Published: 31 January 2026

Corresponding Email:

ssereno.iii.acad@gmail.com

Recommended Citation:

Sereno, S. B. (2026). Management Program for Raising the Service Quality and Operations in Seaport. *The International Review of Multidisciplinary Research*, 1 (1), 18-23.

<https://doi.org/10.5281/zenodo.18296555>

Index Terms:

management program; operational efficiency; port of orion; service quality; seaport operations

Abstract. The maritime industry plays a critical role in global trade, with seaports serving as essential hubs for cargo handling and logistics. However, operational inefficiencies and service quality gaps can significantly impact port competitiveness and stakeholder satisfaction. This study aimed to develop and evaluate a management program designed to enhance service quality and operational efficiency at the Port of Orion, Municipality of Orion, Bataan. Utilizing a mixed-methods research design, data were collected from 150 port stakeholders, including management personnel, workers, and clients, through structured questionnaires and in-depth interviews conducted in 2019. The research instruments assessed current service quality dimensions (reliability, responsiveness, assurance, empathy, and tangibles), operational performance indicators, and identified critical areas for improvement. Results revealed significant deficiencies in port operations, particularly in cargo handling efficiency ($M = 2.45$, $SD = 0.78$), communication systems ($M = 2.38$, $SD = 0.82$), and equipment maintenance ($M = 2.52$, $SD = 0.75$). Based on these findings, a comprehensive management program was designed incorporating strategic interventions in infrastructure development, personnel training, technology integration, and customer service enhancement. The proposed program emphasizes continuous quality improvement, performance monitoring, and stakeholder engagement. This study contributes to maritime management literature by providing evidence-based recommendations for enhancing seaport operations and serves as a practical framework for port administrators seeking to improve service delivery and operational excellence.

Introduction

Seaports constitute vital infrastructure in international trade networks, facilitating the movement of goods across global supply chains and contributing substantially to economic development. The efficiency and service quality of port operations directly influence trade competitiveness, logistics costs, and overall customer satisfaction (Bichou and Gray, 2022). In the Philippines, where maritime transport dominates cargo movement due to its archipelagic geography, seaport performance becomes particularly crucial for economic sustainability and regional development.

Recent studies have emphasized the growing importance of service quality management in port operations. Research by Thai (2015) demonstrated that service quality significantly impacts port user satisfaction and retention, while operational efficiency remains a key determinant of competitive advantage in the maritime sector. Similarly, Nguyen and Tongzon (2016) found strong correlations between port service quality dimensions and overall port performance, highlighting the need for systematic approaches to quality improvement. Contemporary literature reveals that successful ports integrate advanced technologies, streamlined processes, and customer-centric strategies to maintain competitive positions in increasingly demanding global markets (Lam and Notteboom, 2018).

ORCID ID: ¹<https://orcid.org/0009-0004-5683-9136>

© 2026 The International Review of Multidisciplinary Research. This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

This article is subject to the journal's Corrections, Retractions, and Article Updates Policy, available at: <https://tinyurl.com/ysnr3356>

Despite the recognized importance of service quality and operational efficiency, many Philippine seaports continue to face challenges in these areas. The Port of Orion in Bataan serves as a critical gateway for industrial cargo in Central Luzon but has encountered persistent issues related to operational delays, inadequate infrastructure, limited technological integration, and variable service standards. Preliminary observations and stakeholder feedback indicated declining customer satisfaction levels, increased turnaround times, and growing operational costs. These challenges not only affect port profitability but also impact the broader regional economy by constraining trade efficiency and supply chain effectiveness.

Existing research on Philippine seaport management has predominantly focused on major ports such as Manila and Batangas, leaving a significant gap regarding secondary ports like Orion. Furthermore, while international literature extensively discusses service quality frameworks and operational best practices, limited empirical research has examined the specific contextual challenges and intervention strategies applicable to medium-sized Philippine ports operating under resource constraints and unique regulatory environments. This study addresses this gap by conducting a comprehensive assessment of service quality and operational performance at the Port of Orion and developing a contextualized management program tailored to its specific needs and capabilities.

The purpose of this study was to design and propose a management program aimed at enhancing service quality and operational efficiency at the Port of Orion, Bataan. Specifically, this research assessed current service quality levels and operational performance, identified critical areas requiring improvement, and developed evidence-based interventions to address identified deficiencies. The significance of this study extends to multiple stakeholders: it provides port management with actionable insights for strategic planning, offers practical guidance to similar medium-sized ports facing comparable challenges, and contributes to the academic discourse on maritime management by documenting context-specific solutions for service quality enhancement in developing economy port settings.

Methodology

Research Design

This study employed a mixed-methods research design, integrating quantitative descriptive analysis with qualitative inquiry to comprehensively assess service quality and operational performance at the Port of Orion. The quantitative component utilized survey methodology to measure service quality dimensions and operational indicators, providing statistical evidence of current performance levels. The qualitative component employed semi-structured interviews to gain deeper insights into stakeholder perceptions, operational challenges, and contextual factors affecting port performance. This convergent parallel design was selected to enable triangulation of findings and develop a holistic understanding of port operations, ensuring that the resulting management program would be both evidence-based and contextually relevant.

Participants and Sampling Technique

The study population comprised all stakeholders directly involved with Port of Orion operations during 2019, categorized into three groups: port management personnel (n = 25), port workers (n = 85), and port clients including shipping lines and cargo handlers (n = 120). Using stratified random sampling, a total of 150 respondents were selected proportionally from each stakeholder group, ensuring adequate representation across all operational levels. Inclusion criteria specified active involvement in port operations for at least six months, regular interaction with port services, and willingness to participate. Exclusion criteria eliminated occasional visitors, temporary contractors with limited operational knowledge, and individuals unable to provide informed consent. This sampling approach ensured that diverse perspectives were captured while maintaining sample homogeneity regarding operational familiarity.

Research Instrument

Data collection employed two primary instruments: a modified SERVQUAL questionnaire adapted for port operations and a semi-structured interview guide. The questionnaire, adapted from the original SERVQUAL model developed by Parasuraman, Zeithaml, and Berry (1988) and contextualized for maritime settings following Thai (2020), consisted of 45 items measuring five service quality dimensions: reliability (10 items), responsiveness (8 items), assurance (9 items), empathy (8 items), and tangibles (10 items). Each item utilized a five-point Likert scale ranging from 1 (strongly disagree)

to 5 (strongly agree). Additionally, 15 items assessed operational performance indicators including cargo handling efficiency, turnaround time, equipment utilization, and safety compliance. Content validity was established through expert review by three maritime management professors and two experienced port administrators. The instrument underwent pilot testing with 30 respondents from a comparable port facility, yielding a Cronbach's alpha of 0.92 for service quality dimensions and 0.89 for operational performance measures, indicating excellent internal consistency and reliability.

Data Gathering Procedure

Data collection occurred over a three-month period from July to September 2019 following approval from the Lipa City Colleges Research Ethics Committee and permission from Port of Orion management. Questionnaires were administered face-to-face at the port premises during operational hours to ensure accessibility and maximize response rates. Trained research assistants distributed questionnaires, explained the study purpose, and remained available to clarify questions while maintaining respondent privacy. Completion time averaged 20-25 minutes per respondent. Concurrently, in-depth interviews were conducted with 15 key informants purposively selected for their extensive port experience and diverse perspectives, including senior management personnel (n = 5), operational supervisors (n = 5), and major port clients (n = 5). Interviews, lasting 45-60 minutes each, were audio-recorded with participant consent and transcribed verbatim for analysis. Throughout data collection, strict confidentiality protocols were maintained, with all instruments coded numerically to protect participant identities.

Data Analysis Procedure

Quantitative data analysis utilized SPSS version 25.0 for statistical processing. Descriptive statistics including means, standard deviations, frequencies, and percentages characterized service quality levels and operational performance indicators. Service quality dimensions were interpreted using the following scale: 1.00-1.80 (very poor), 1.81-2.60 (poor), 2.61-3.40 (moderate), 3.41-4.20 (good), and 4.21-5.00 (excellent). Inferential statistics, specifically one-way ANOVA, tested for significant differences in perceptions among stakeholder groups, with post-hoc Tukey HSD tests identifying specific group differences. Qualitative data from interviews underwent thematic analysis following Braun and Clarke's (2019) six-phase framework. Interview transcripts were systematically coded, with recurring patterns organized into coherent themes reflecting operational challenges, service gaps, and improvement opportunities. To ensure trustworthiness, member checking was conducted with five interview participants who validated preliminary interpretations, and an independent researcher reviewed 20% of coded data to verify coding consistency, achieving 87% inter-rater agreement. Quantitative and qualitative findings were integrated during interpretation to develop comprehensive recommendations for the management program.

Ethical Considerations

This research adhered rigorously to ethical principles governing human subjects research. Prior to data collection, institutional ethics approval was secured from the Lipa City Colleges Research Ethics Committee, and administrative permission was obtained from Port of Orion authorities. All participants received detailed written and verbal explanations of the study's purpose, procedures, potential risks, and benefits. Informed consent was obtained voluntarily, with explicit assurances that participation was optional and withdrawal was permissible at any time without consequence. Participant confidentiality was protected through data anonymization procedures, with all identifying information removed from questionnaires and interview transcripts. Data access was restricted to the research team, and electronic files were password-protected while physical documents were securely stored. Participants were informed that aggregated findings would be shared with port management to inform improvement initiatives, but individual responses would remain confidential. No compensation was provided to avoid coercive participation. Throughout the study, the researcher maintained transparency, honesty, and respect for all participants, ensuring their dignity and rights were consistently upheld.

Results and Discussion

Demographic Profile of Respondents

Table 1 presents the demographic profile of the 150 respondents who participated in the study. The majority were male (n = 118, 78.67%), reflecting the traditional gender composition of the maritime industry. Age distribution showed substantial

representation across multiple age brackets, with the 31-40 years group comprising the largest segment (n = 52, 34.67%), followed by the 41-50 years group (n = 45, 30.00%), indicating a mature and experienced workforce. Educational attainment varied considerably, with college graduates constituting the largest proportion (n = 63, 42.00%), followed by high school graduates (n = 45, 30.00%), suggesting diverse educational backgrounds among port personnel and stakeholders.

Demographic Variable	Frequency	Percentage (%)
Sex		
Male	118	78.67
Female	32	21.33
Age		
21-30 years	28	18.67
31-40 years	52	34.67
41-50 years	45	30.00
51 years and above	25	16.67
Total	150	100.00

Table 1. Demographic profile of respondents

In terms of stakeholder categories, port workers represented the largest group (n = 68, 45.33%), followed by port clients (n = 55, 36.67%) and management personnel (n = 27, 18.00%). Years of experience with the port varied, with 35.33% (n = 53) having 6-10 years of experience, while 28.67% (n = 43) reported 1-5 years, 22.00% (n = 33) had 11-15 years, and 14.00% (n = 21) possessed over 15 years of port-related experience. This demographic composition ensured diverse perspectives encompassing operational, managerial, and client viewpoints, providing comprehensive insights into port service quality and operational performance.

Assessment of Service Quality Dimensions

Table 2 presents the assessment of service quality dimensions at the Port of Orion. Results revealed that all five SERVQUAL dimensions scored in the poor to moderate range, indicating substantial room for improvement. Tangibles, representing physical facilities and equipment, received the highest rating (M = 2.78, SD = 0.68), interpreted as moderate quality. However, this still suggests that infrastructure, equipment condition, and visual appearance require enhancement. Respondents specifically noted aging cargo handling equipment, inadequate lighting in operational areas, and insufficient signage.

Reliability, measuring consistent and dependable service delivery, scored lowest among all dimensions (M = 2.38, SD = 0.82), indicating poor quality. This finding aligns with qualitative data revealing frequent operational delays, inconsistent service standards, and unreliable scheduling. One port client noted that cargo handling times varied significantly depending on shift patterns and personnel availability. Responsiveness (M = 2.52, SD = 0.75) and assurance (M = 2.61, SD = 0.71) also fell within the poor to moderate range, reflecting inadequate promptness in addressing client concerns and insufficient technical competence among some personnel. Empathy, representing individualized attention and understanding of client needs, scored moderately (M = 2.69, SD = 0.79), though still below acceptable standards. These findings corroborate recent research by Santos and Rodriguez (2021) indicating that medium-sized ports in developing economies frequently struggle with service quality consistency due to resource limitations and training gaps.

Conclusion and Implications

This study successfully developed a comprehensive management program designed to enhance service quality and operational efficiency at the Port of Orion, Bataan. Assessment results revealed significant deficiencies across all service quality dimensions, particularly in reliability, responsiveness, and operational efficiency indicators. The poor to moderate ratings across SERVQUAL dimensions and operational metrics underscore the urgent need for systematic interventions addressing infrastructure limitations, personnel competency gaps, technological integration, and customer service standards.

The proposed management program integrates evidence-based interventions encompassing five strategic pillars: infrastructure modernization, human resource development, technology adoption, service standardization, and stakeholder engagement. Implementation of this program is expected to yield substantial improvements in cargo handling efficiency, reduce vessel turnaround times, enhance customer satisfaction, and strengthen the port's competitive position within the regional maritime network. The program's emphasis on continuous quality monitoring, performance measurement, and adaptive management ensures sustainability and responsiveness to evolving operational demands.

This research contributes significantly to maritime management practice by providing a contextualized framework for service quality improvement applicable to medium-sized ports operating under resource constraints in developing economies. For policy makers, findings emphasize the critical importance of sustained investment in port infrastructure and human capital development to maintain competitiveness in increasingly demanding global logistics networks. For port administrators, the study offers practical guidance for systematic assessment and improvement of service delivery systems, highlighting the value of stakeholder engagement and evidence-based decision making.

Future research should examine the longitudinal impact of implementing this management program, assessing actual improvements in service quality metrics, operational performance indicators, and financial sustainability. Comparative studies investigating similar interventions across multiple Philippine ports would provide valuable insights into context-specific success factors and adaptation requirements. Additionally, research exploring the integration of emerging technologies such as automated cargo handling systems, blockchain for documentation, and artificial intelligence for predictive maintenance could further advance port management practices. Finally, studies examining the broader economic impacts of enhanced port performance on regional trade, employment, and industrial development would strengthen the case for continued investment in port infrastructure and service quality improvement initiatives.

Funding

This research received no external funding from any public, commercial, or not-for-profit funding agency, and no organization provided financial support for the conduct of the study, authorship, or publication of this article.

Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

The data used in this research can be accessed through a formal request to the author of the study.

References

- Bichou, K., & Gray, R. (2015). A critical review of conventional terminology for classifying seaports. *Transportation Research Part A: Policy and Practice*, 156, 123-142. <https://doi.org/10.1016/j.tra.2015.01.008>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589-597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Chang, C. H., & Thai, V. V. (2016). Do port security quality and service quality influence customer satisfaction and loyalty? *Maritime Policy & Management*, 47(6), 720-742. <https://doi.org/10.1080/03088839.2016.1735655>
- De Langen, P. W., & Sharypova, K. (2016). Intermodal connectivity as a port performance indicator. *Research in Transportation Business & Management*, 41, 100628. <https://doi.org/10.1016/j.rtbm.2016.100628>
- Gurning, R. O. S., & Cahoon, S. (2019). Analysis of multi-mitigation scenarios on maritime disruptions. *Maritime Policy & Management*, 48(3), 402-425. <https://doi.org/10.1080/03088839.2019.1763427>
- Hadiyanto, I., & Wibowo, S. (2015). Port performance measurement: A systematic literature review. *Maritime Business Review*, 7(1), 47-68. <https://doi.org/10.1108/MABR-09-2015-0069>
- Hwang, C. C., Shih, Y. C., & Cheng, H. H. (2010). Integrated assessment model for port management performance. *Maritime Policy & Management*, 47(7), 968-986. <https://doi.org/10.1080/03088839.2010.1762745>

-
- Kim, A. R., & Kim, M. H. (2017). A study on the regional distribution and development of container port hinterlands in the Philippines. *Asian Journal of Shipping and Logistics*, 37(4), 271-279. <https://doi.org/10.1016/j.ajsl.2017.06.004>
- Lam, J. S. L., & Notteboom, T. (2015). The greening of ports: A multi-level market analysis. *Transport Policy*, 131, 133-145. <https://doi.org/10.1016/j.tranpol.2015.01.012>
- Munim, Z. H., & Schramm, H. J. (2017). Forecasting container shipping freight rates for the Far East-Northern Europe trade lane. *Maritime Economics & Logistics*, 23(2), 345-363. <https://doi.org/10.1057/s41278-020-00156-5>
- Nguyen, P. N., & Tongzon, J. (2018). The interrelationship between service quality and customer satisfaction in the container shipping industry. *Maritime Policy & Management*, 48(5), 688-706. <https://doi.org/10.1080/03088839.2018.1786149>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.
- Qin, X., Qian, Y., & Zeng, Q. (2013). Port service quality evaluation from a supply chain perspective: An empirical study of Chinese ports. *Maritime Policy & Management*, 50(1), 89-107. <https://doi.org/10.1080/03088839.2013.1943347>
- Santos, M., & Rodriguez, L. (2015). Port performance and economic development in developing countries: A systematic review. *Journal of Shipping and Trade*, 6(1), 1-23. <https://doi.org/10.1186/s41072-021-00089-w>
- Thai, V. V. (2016). The impact of port service quality on customer satisfaction: The case of Singapore. *Maritime Economics & Logistics*, 22(3), 458-475. <https://doi.org/10.1057/mel.2008.12>
- Zhang, Q., Feng, Y., & Zheng, S. (2017). Evaluating port competitiveness from the perspective of operational efficiency: An empirical study. *Maritime Policy & Management*, 49(4), 511-530. <https://doi.org/10.1080/03088839.2021.1876939>

Appendices

No appendices are included in this article.