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Innovation Strategy, Service Quality, Operational Performance, and Customer Loyalty in an Indonesian Freight Forwarder Company

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Abstract

The rapid growth of Indonesia's freight forwarding industry has intensified pressure on companies to secure delivery orders and empty containers from shipping lines, particularly during peak-season periods when ship space is limited and customer demand fluctuates sharply. This study examines the direct and indirect effects of innovation strategy and service quality on customer loyalty through the mediating role of operational performance, using the case of an Indonesian freight forwarder company that has adopted a pre-booking system, an empty-container forecasting mechanism, and robotics-assisted shipment monitoring as its core innovation strategy. Data were collected from thirty respondents representing customer companies of the freight forwarder, using surveys, interviews, and focus group discussions, and analyzed through multiple linear regression and path analysis across two structural models, followed by hypothesis testing, an F-test, and Sobel bootstrapping procedures. The partial (t-test) results indicate that innovation strategy, service quality, and operational performance individually show no statistically significant effect on their respective dependent variables, whereas the simultaneous (F-test) results demonstrate that innovation strategy, service quality, and operational performance jointly exert a significant positive effect on customer loyalty, explaining 56.6 percent of its variance. These findings suggest that while none of the studied variables function as strong standalone predictors, their combined implementation—through disciplined pre-booking and forecasting practices, reliable shipment tracking technology, and consistent employee service quality—is essential for sustaining customer loyalty in the freight forwarding sector. The study offers managerial implications for logistics providers seeking to strengthen customer retention through integrated innovation and service-quality strategies, and it recommends that future research incorporate additional service-quality indicators such as assurance and empathy.

INTRODUCTION

The rapid expansion of the sales and service industry in recent years has generated a corresponding rise in demand for goods and ancillary services. This demand is no longer confined to individual consumers; it is increasingly driven by companies engaged in production and distribution, both within the domestic market and across international borders. When production and distribution activities extend beyond national boundaries, they take the form of export and import operations, and such operations depend heavily on transportation as one of their central instruments. Freight forwarder companies have emerged as intermediaries that simplify the process of exporting, importing, and generally moving goods to their destinations. Operating within the service sector, the freight forwarding industry functions as a third-party logistics provider, moving cargo from one location to another through a combination of transport modes—trucks, vessels, and aircraft.

This industry has been expanding quickly worldwide, and Indonesia is no exception. As freight forwarder companies proliferate, particularly in the country's major cities, exporters and importers gain access to a wider range of service options. Customers are, as a result, able to select providers according to the specific services on offer, the quality of performance delivered, and the competitiveness of pricing. Industry associations have projected substantial growth for this sector: the Association of Indonesian Express Delivery Service Companies anticipated that the logistics industry would expand by more than 15 percent relative to 2017, while the Indonesian Logistics Association forecast a minimum growth rate of 10 percent for 2018. A separate projection from the Ken Research report estimated that the Indonesian logistics market would reach 7.9 percent growth over the five-year period ending in 2021, with freight forwarding identified as the fastest-growing segment, carrying an estimated Compound Annual Growth Rate (CAGR) of 9.2 percent.

Within the broader shipping and packing industry, three distinct market types can be identified—general freight, specialized freight, and air freight—each serving both domestic and international markets. When segmented by customer type, the principal users of shipping services are found in the manufacturing, wholesale, and retail industries, with the largest customer base concentrated in marine export services. Among Indonesian freight forwarder companies, one prominent client category consists of large manufacturing firms, alongside other industrial customers such as garment producers and palm oil companies.

The sheer volume of monthly container requests places considerable demands on the companies that must fulfill them. Data from a Jakarta-based freight forwarder company in 2019 illustrate the scale of this variability: customer demand fluctuated significantly from month to month, ranging from approximately 1,000 to 1,500 containers, equivalent to 2,000–3,000 TEUs. This level of demand places substantial pressure on employee performance, requiring close coordination with shipping companies to secure empty containers and available ship space—a process formalized through what is known as a

delivery order. A delivery order represents a shipping company's confirmed booking, guaranteeing the provision of empty containers and vessel space for the export process. When delivery orders prove difficult to obtain, customer complaints follow, and customer loyalty suffers; dissatisfied clients frequently turn to competing freight forwarders instead.

In response to this challenge, the Indonesian freight forwarder company under study developed an innovation strategy intended to preserve customer loyalty. This strategy centers on a delivery pre-booking mechanism, also referred to as an empty container forecast or monthly container needs forecast, submitted in advance to shipping companies so that delivery orders can be issued punctually and in accordance with customer requirements. In addition, the company has introduced routine, robotics-assisted monitoring of every shipment already in progress. The pre-booking system itself involves reserving ship space and empty containers directly through each shipping company's website, with the booking subsequently confirmed by a delivery order. This system was introduced precisely because delivery orders had become difficult to secure from shipping lines such as ONE, Cosco, CMA CGM, APL, Evergreen, Sinokor, and KMTC. Two factors were identified as contributing to this difficulty: peak-season conditions occurring around the middle and end of each year, and the tendency of certain shippers to submit shipping instructions at short notice. The pre-booking system was therefore conceived as a preventive measure, allowing the company to optimize the services it delivers to customers even when orders arrive in smaller, more fragmented batches.

The dependent variable examined in this research is customer loyalty, and the study investigates whether this variable is shaped—partially or simultaneously—by innovation strategy, service quality, and operational performance. Respondents were drawn from staff working within export-import companies. Container-related data are supplied roughly one month in advance by the customers themselves, after which the freight forwarder company adds a further 20 percent to its projected container requirements when negotiating with shipping companies, as a buffer against demand that exceeds the original forecast. This forecasting arrangement is typically used by customers whose container needs exceed 100 TEUs per month, or who place large-volume orders—firms such as PT. Manufacturing A, PT. Manufacturing B, and PT. Manufacturing C fall into this category. The shipping companies most commonly engaged are SITC and Sealand Maersk, and the Empty Container Volume Forecast mechanism allows these shipping companies to prepare adequately for the container volumes required each month.

A second, distinct innovation – robotics - was introduced by the Head of the Sea Export Department as a tool to help employees monitor every ongoing sea export shipment. This technology, the most recent IT investment made by the company, was adopted to optimize sea export services by tracking the schedule of every shipment and flagging any delays, early departures or arrivals, or changes to connecting vessels. The robot operates three times daily—

between 06:00 and 09:00, 17:00 and 20:00, and 00:00 and 03:00—checking each shipment via the relevant shipping company's website and updating an Excel file whenever a change is detected, so that employees can review it.

The underlying premise of the company's approach is that well-controlled shipments, combined with proactive employee communication, will sustain customer loyalty, since not every freight forwarding competitor offers a comparable innovation strategy. Realizing this potential, however, depends on the quality of service that employees provide in support of the strategy. Within the pre-booking system, employees are responsible for managing every delivery order obtained from shipping companies so that sudden cancellations—which would otherwise draw complaints from the shipping company—do not occur when a delivery order goes unused. A similar discipline applies to the Empty Container Volume Forecast, where employees must manage the forecast carefully to avoid triggering complaints over shortfall bookings; maintaining this discipline helps preserve a healthy working relationship between the freight forwarder and its shipping company partners. With respect to the robotics tool, Sea Export Department staff have reported recurring inaccuracies and delays in the information it produces, requiring them to verify shipment details manually on the shipping company's website. This duplication of effort increases the overall workload placed on employees, underscoring the need for the robotics system to be upgraded so that it can genuinely ease, rather than add to, employees' work.

Over time, some employees have not fully adopted the innovation strategy or maintained the standard of service quality required, with the result that delivery orders are occasionally not issued in line with customer needs. When this happens, customers are forced to postpone shipment of their goods and to store them in a safekeeping warehouse, which frequently reaches capacity. Beyond the inconvenience this causes, customers are billed storage fees by the company, and in the more serious cases, they abandon the company altogether in favor of a competing freight forwarder.

Drawing on this background and on field observations, several problems specific to this Indonesian freight forwarder company can be identified in relation to its innovation strategy. Employees have not consistently applied the pre-booking and empty-container-forecast components of the strategy when dealing with shipping companies, making it difficult to secure a delivery order for each customer's export shipment given constraints on available ship space and empty containers. The robotics tool, intended to check the status of sea export shipments, has instead added to employees' workload as a result of its suboptimal performance. Regarding service quality, employees have not adequately controlled the pre-booking and forecast systems, contributing to a lack of loyalty from shipping lines, who respond with sudden cancellations and shortfall-booking penalties; employees must also duplicate the robotics system's checks manually because its data are not sufficiently accurate.

Regarding operational performance, delays in delivery orders caused by limited ship space and container availability have generated customer complaints tied to delayed stuffing processes. Regarding customer loyalty, customers have sought out alternative freight forwarders when the company cannot supply a delivery order that matches their needs, and they have incurred storage charges as a direct consequence of delivery-order delays.

LITERATURE REVIEW

Prior research on innovation strategy, service quality, operational performance, and customer loyalty has produced a range of conclusions. Ouyang and Bu (2024) discuss the necessity of developing a dynamic strategy in international freight forwarding that contributes to innovation and carries practical implications for strengthening industrial competitiveness. Pervaiz and Shepherd (2010) describe innovation as the process of turning a new idea—one that departs from what existed previously—into something tangible through production or realization, encompassing the generation of new concepts, evaluation, and implementation. More broadly, the development of logistics innovation has been shown to help organizations lower operating costs while strengthening logistics capacity and competitiveness for international enterprises (Leepaitoon et al., 2020).

Rogers et al. (2014) characterize innovation as an idea, object, or practice regarded as new by a given individual or group and subsequently adopted or applied by them. Innovation strategy is considered an important factor because it typically distinguishes an organization from its competitors, and this distinctiveness is viewed by consumers as highly significant. Contemporary innovation in the transport and logistics of goods contributes substantially to achieving sustainable service delivery in the global marketplace (Khakdaman et al., 2022). Business growth, according to research by Simarmata et al. (2018), is shaped both directly and indirectly by innovative services, which in turn help logistics providers secure competitive advantages. Studies by Huang et al. (2019) and Subhashini and Preetha (2019) demonstrate that service quality makes a meaningful contribution to customer satisfaction, while Yoganandan and Vasan (2024) note that the freight forwarding industry requires greater investment in logistics infrastructure to achieve improved service quality.

Ricardianto (2018) defines performance as a reflection of how well an activity, program, or policy achieves an organization's goals, objectives, vision, and mission, as articulated through its strategic planning process. Performance, in this sense, represents the cumulative value of employee behaviors that contribute—positively or negatively—to organizational goal attainment (Colquitt et al., 2019). Noviastuti et al. (2024) found that product quality must be reinforced by innovation quality in order to yield high operational performance, while García Dastugue and Eroglu (2019) argue that service quality is closely tied to improved operational performance in the logistics industry more broadly. These theoretical and empirical strands inform the study's first two hypotheses, concerning the relationship between innovation strategy and operational

performance, and between service quality and operational performance:

H1: Innovation strategy directly influences operational performance.

H2: Service quality directly influences operational performance.

Loyalty is defined by Griffin (2021) as non-random purchasing behavior sustained over time by a given decision-making unit. Gibson et al. (2012) and Kotler and Keller (2016) describe customer loyalty as a behavioral tendency toward repeated purchasing, noting that cultivating loyalty toward a service offered by a business entity requires sustained effort over an extended period through repeated purchase behavior. Research by Olfebri (2024) in the freight forwarding sector indicates that customer loyalty can be strengthened through consistent improvements in service quality. These findings underpin the third hypothesis, addressing the relationship between operational performance and customer loyalty:

H3: Operational performance directly influences customer loyalty.

A fourth hypothesis addresses the combined relationship among innovation strategy, service quality, and customer loyalty, mediated by operational performance. Several studies confirm that service quality shapes customer loyalty (Latif et al., 2023; Singh et al., 2023), with Lermatan et al. (2023) and Chao et al. (2023) providing evidence of a significant relationship between service quality and customer loyalty specifically within freight forwarding companies. Ellitan (2022) and Olfebri (2024) similarly emphasize the importance of improving service quality for strengthening loyalty, and Pratiwi and Suwandi (2023) report a positive effect of service quality on customer loyalty. Measurements of supply chain performance among logistics providers have also been linked to loyalty outcomes and subsequent business growth (Wararatchai and Chaitorn, 2023), while Marín-García et al. (2023) find that sustainable technological innovation is closely associated with customer loyalty. These findings collectively motivate the fourth hypothesis:

H4: Innovation strategy and service quality indirectly influence customer loyalty through operational performance.

Building on this problem background, the study identifies the following specific issues: employees' inconsistent application of the innovation strategy within the pre-booking and empty-container-forecast systems, which complicates the process of securing delivery orders given constraints on ship space and container availability; the robotics tool's tendency to add to, rather than reduce, employee workload as a result of suboptimal accuracy; employees' insufficient oversight of service quality within the pre-booking and forecast systems, leading shipping lines to respond with cancellations and shortfall-booking penalties; the necessity for employees to manually verify robotics-generated data given its limited accuracy; customer complaints arising from shipment delays tied to delivery-order timing; customers' pursuit of alternative freight forwarders when delivery orders cannot be supplied as required; and storage charges incurred by customers because of delivery-order delays. The objective of the study is to identify and

analyze the direct and indirect effects of innovation strategy and service quality on operational performance and customer loyalty, whether considered individually or jointly.

METHODS

The population for this study comprises customers of the Indonesian freight forwarder company under examination. The full population was sampled, consisting of all companies that used the freight forwarder's cargo delivery services during 2019—thirty respondents in total. Each participating company was represented by a single respondent who had worked within an export-import or logistics function for at least one year and who held a staff-level position. Primary data were gathered through surveys, interviews, and focus group discussions conducted with customers of the Indonesian freight forwarder company, while secondary data were drawn from published sources such as company financial reports, government reports, articles, theoretical texts, and trade publications. The analysis employed path analysis across two structural models, together with hypothesis testing, statistical testing, an F-test, and subsequent Sobel and bootstrapping tests.

RESULTS AND DISCUSSION

Focus Group Discussion

A focus group discussion (FGD) was conducted to help the researchers interpret their findings, with sessions held on two separate occasions—once internally and once externally—before and after the questionnaire responses were collected. Both sessions used open-ended questions, allowing participants to express their views freely. The discussions revealed that export operations performance had not reached its full potential because of delays in delivery-order shipments, which in turn delayed the stuffing process; these delays were traced to late container provision at the depot, which prevented delivery orders from being released. To mitigate this, customers can submit a forecast for the following month, enabling containers to be prepared and ready for pick-up in advance through the container repo process. Within the broader process of operational performance quality, the pre-booking and forecast control mechanisms play a central role, exerting substantial influence over how customers retrieve containers for export to their various destinations. Cargo tracking was also identified as adding value to the innovations already implemented by the company, a feature that customers appreciated. On this basis, all participants in the discussion agreed that greater attention should be devoted to, and further improvements made in, the timely submission of delivery orders in line with customer forecasts, the container repo process, and the provision of containers meeting appropriate quality standards. The subsequent analysis, based on the responses of thirty questionnaire participants, was carried out using SPSS version 22 in 2020 to characterize respondent profiles and examine the study variables.

Validity and Reliability Testing

All four validity tests applied to the observed variables produced statistically significant results,

confirming that the four research indicators used in the study are valid; correlation coefficients ranged between 0.652 and 0.952. Cronbach's alpha values exceeded 0.6 across all variables, ranging from 0.667 to 0.825, indicating that the research variables can be considered reliable.

Multiple Linear Regression Results

Effect of innovation strategy and service quality on operational performance. Using multiple linear regression, the combined regression coefficient for innovation strategy and service quality was 2.218, with innovation strategy contributing a coefficient of 0.212 and service quality contributing 1.070. These results point to a relationship between innovation strategy and service quality, on one hand, and operational performance, on the other, as the dependent variable.

Effect of innovation strategy, service quality, and operational performance on customer loyalty. Again using multiple linear regression, the combined coefficient for innovation strategy, service quality, and operational performance was -0.197, with individual coefficients of 5.703 for innovation strategy, 0.468 for service quality, and 0.741 for operational performance. These figures indicate a relationship linking innovation strategy, service quality, and operational performance to customer loyalty.

Mediating effect of operational performance, tested via the Sobel Test. Statistical calculation shows that the indirect effect of innovation strategy on customer loyalty through operational performance is 0.02964, with a significance level of 0.84, while the indirect effect of service quality on customer loyalty through operational performance is 0.148941, with a significance level of 0.54.

Path Analysis

Model I path coefficients. The significance values obtained for innovation strategy (0.212) and service quality (1.070) both exceed 0.05. The R-square value for this model is 0.566, indicating that innovation strategy and service quality together account for 56.6 percent of the variation in operational performance; the corresponding path diagram is presented in Figure 2.

Model II path coefficients. The significance values obtained for innovation strategy (5.703), service quality (0.468), and operational performance (0.741) likewise exceed 0.05. The R-square value for this model is also 0.566, indicating that innovation strategy, service quality, and operational performance together account for 56.6 percent of the variation in customer loyalty; the corresponding path diagram is presented in Figure 3.

Hypothesis Testing

T-test (partial test). With the constant held at 2.218—meaning that operational performance would remain unchanged at this value if innovation strategy and service quality were held constant—the regression coefficient for innovation strategy is 0.212, reflecting the relationship between innovation strategy and service quality on one side and operational performance on the other. Multiple linear regression was likewise used to assess the individual, or partial, contributions of innovation strategy, service quality, and operational performance to customer

loyalty. The results for each hypothesis are as follows.

H1 — Innovation strategy and operational performance. Although innovation strategy was hypothesized to affect operational performance, the calculated t-value of 0.212 falls below the t-table value of 2.05553. Innovation strategy therefore has no statistically significant effect on operational performance at the 0.05 error level, since the calculated t-statistic is smaller than the t-table value. This outcome diverges from earlier studies such as those of Berndt et al. (2024) and Sojipun et al. (2024), which identified innovation as a strong driver of operational performance and, through improved service quality, of logistics performance and competitive advantage among logistics service providers. The present finding that these variables lack a significant partial relationship therefore departs from several previous studies.

H2 — Service quality and operational performance. Service quality was likewise hypothesized to affect operational performance, but the calculated t-value of 1.070 also falls below the t-table value of 2.05553. Service quality therefore has no statistically significant effect on operational performance at the 0.05 error level. This result is inconsistent with the findings of Sojipun et al. (2024), who showed that improved service quality can enhance logistics performance and competitive advantage, and with García-Dastugue and Eroglu (2019), who found that service quality is generally closely tied to operational performance improvements in the logistics industry. As with H1, this outcome does not align with prior research.

H3 — Operational performance and customer loyalty. Operational performance was hypothesized to influence customer loyalty; however, the calculated t-value of 0.741 falls below the t-table value of 2.05553, indicating no statistically significant effect at the 0.05 error level. This result is inconsistent with Olfebri (2024), who found in the freight forwarding sector that customer loyalty can be strengthened through consistent improvement in service quality. As with the first two hypotheses, this finding departs from earlier research.

F-test (simultaneous test). The calculated F-value is 11.320, with a significance probability of 0.000. Because this calculated F-value exceeds the F-table value of 3.35, it can be concluded that innovation strategy, service quality, and operational performance jointly exert a positive effect on customer loyalty. This result aligns with Prasetyo and Wahyuningtyas (2024), who found that sustainable technological innovation contributes to increased loyalty, and with earlier freight forwarding research by Huma et al. (2020) and Balci et al. (2019), which demonstrated a significant influence of service quality on customer loyalty. It further supports the findings of Liao et al. (2024), who identified a direct positive effect of service quality on customer loyalty, as well as research indicating an indirect effect of service quality on customer loyalty (Rahmanita et al., 2023; Ricardianto et al., 2022). By contrast, Ricardianto et al. (2021) found operational performance variables to be interrelated with customer loyalty in a manner not replicated here. Overall, then, the simultaneous effect identified through the fourth hypothesis is

consistent with much of the prior literature, even where the individual partial effects are not.

CONCLUSION

This study's findings indicate that innovation strategy and service quality, mediated by operational performance, each exert a direct effect on customer loyalty. The managerial implication is that implementing the innovation strategy—through the pre-booking system, the submission of empty-container forecasts to shipping companies, and daily container tracking via robotics—alongside strong service quality in overseeing that innovation strategy, together with sound employee operational performance, can help retain customer attention and loyalty toward the marine export services offered by PT. Kintetsu World Express Indonesia. These findings can inform PT. Kintetsu World Express Indonesia's efforts to implement innovation strategy and service quality jointly through employee operational performance in pursuit of customer loyalty, thereby discouraging customers from turning to competing freight forwarder companies. Future researchers are encouraged to examine service-quality indicators not addressed in this study, such as assurance and empathy, in order to capture the full range of factors shaping service quality as assessed through both expected and perceived service.

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