

# Analysis of Security Management for Passenger Services at the Tanjung Priok Port Passenger Terminal

Suparman<sup>1</sup>, Roy Kasiono<sup>2</sup>, Sugiyanto<sup>3</sup>, Roma Dormawaty<sup>4</sup>, Mochamad Ely Ridwan<sup>5</sup>

<sup>1,2,3,4</sup>Calc Study Program, Maritime College, Jakarta, Indonesia, <sup>5</sup> Engineering Study Program, Maritime College, Jakarta, Indonesia  
Email: suparman.klp@gmail.com<sup>1</sup>, kasionoroy@gmail.com<sup>2</sup>, romadormawaty13@gmail.com<sup>3</sup>, elyridwan259@gmail.com<sup>4</sup>,  
Sugiyanto150762@gmail.com<sup>5</sup>

This research is motivated by the strategic role of Tanjung Priok Port as a national economic gateway that faces complex security challenges, especially during peak passenger traffic periods. The purpose of this study is to analyze the relationship and influence of security management on passenger service and to formulate service optimization strategies. The method used is a mixed method approach with a sequential explanatory design, which integrates quantitative data from 100 respondents via questionnaires with qualitative data from in-depth interviews and field observations. The results show a strong positive relationship ( $r=0.780$ ) between security management and passenger service, with a contribution of 60.8%. However, the qualitative analysis reveals a decoupling phenomenon where the implementation of SOPs becomes situational during times of surge in operations to avoid queues, and the paradigm of officers who are still militaristic, which reduces passenger psychological comfort. The study concludes that physical security assurance does not automatically increase satisfaction if it is not accompanied by dimensions of empathy and friendly service. These findings imply the importance of transforming human resource competencies towards hospitality-based security and structuring technological infrastructure to create a balance between international security standards and excellent service.

**Keywords** : Security Management, Passenger Services, Human Resources.

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**Corresponding Author:**

Suparman  
Calc Study Program, Maritime College  
Jakarta  
suparman.klp@gmail.com

## 1. Introduction

The world's maritime economy has grown rapidly in the last decade, driven by increased global trade and human mobility. More than 80 % of world trade is transported by sea, making ports a central point in the international logistics chain [1] . Modern ports are not only a place for ships to dock, but also a distribution center for goods, a trade gateway, and an economic driver. Operational efficiency, utilization of technology, and digitalization can reduce logistics costs, facilitate the flow of goods, and improve delivery accuracy, strengthening the country's competitiveness [2] . Indonesia, as the largest archipelago, has a highly dependent economy and logistics network on seaports as the main route for the distribution of goods and the movement of people between islands [3] . In the era of globalization, international trade increases the flow of people and goods at ports, making them centers of dynamic trade activity. Operational efficiency, cargo management, loading and unloading , and the utilization of digital technology determine the smoothness of logistics, transportation costs, and the country's competitiveness [4] . Ports play a role as centers of economic, social, and cultural connectivity. In Indonesia, the surge in mobility during Eid al-Fitr, Christmas, New Year, and long holidays adds to the complexity of public service management [5] . In the logistics sector, sea transportation is often the main choice because the cost per unit is relatively cheaper compared to other modes of transportation, especially for long distances and large volumes.

Tanjung Priok Port, the busiest and largest port in Indonesia, is an example of the important role of ports in supporting the national maritime economy. As an export-import gateway, this port handles the majority of containers and cargo, so an effective security system is needed to protect passengers, workers, and logistics assets [6]. Security management is a challenge because ports are vital national objects that must meet international standards, such as the International Ship and Port Facility Security (ISPS) Code [7]. The implementation of these security standards is not only related to technical operational procedures, but also requires the readiness of competent human resources, effective inter-agency coordination, and adequate surveillance technology support to ensure optimal port operational security [8]. Port security challenges are increasingly complex because threats are now not only physical, but also non-physical, such as cyber attacks that disrupt digital information and logistics systems [9]. In addition, maritime terrorism, smuggling, and transnational crime increasingly demand adaptive, collaborative, and integrated security systems [10]. Ports must maintain service efficiency while ensuring responsive and internationally standardized security, especially when passenger volumes increase during peak periods such as Eid al-Fitr, Christmas, New Year, and long holidays.

In increasingly complex port operational situations, a comprehensive understanding of the relationship between security management and service quality is crucial, as both exist simultaneously and influence users' perceptions of port terminal performance. Passenger terminal service quality encompasses ease of access, efficient inspection processes, adequate facilities, and security assurance that provides a sense of comfort for passengers. Therefore, port service management is not solely concerned with administrative aspects but also requires a comprehensive approach to service quality and a security system that adapts to the dynamics of modern maritime transportation.

With this context, this study aims to analyze the relationship between the quality of security human resources (HR) in the Tanjung Priok Port Passenger Terminal environment and the implementation of security management and its impact on the quality of passenger service. The analysis focuses on efforts to find a balance point where strict security procedures do not sacrifice passenger comfort, and fast service does not weaken security standards set by international regulations. This is important because security human resources are a determining factor in the implementation of port security policies, responses to emerging threats, and service interactions with the public. This study is expected to provide an empirical contribution to efforts to improve port terminal management policies to be more efficient and responsive, which ultimately supports the improvement of service performance and competitiveness of Tanjung Priok Port on the national and international stage.

## 2. Literature Review and Problem Statement

Port security is crucial for passenger safety, asset protection, and smooth operations. Implementation of international standards such as the ISPS Code requires an integrated security system, encompassing procedures, surveillance technology, and competent human resources [11]. The quality of public services is influenced not only by physical facilities, but also by officer-user interactions, with five main dimensions: reliability, responsiveness, assurance, empathy, and tangibility [12], [13]. Service quality influences customer satisfaction because it is a key factor in shaping user perceptions of a service organization [14]. Integration of security technology, digital surveillance systems, and human resource competency is key to effective security while increasing user satisfaction in transportation services [15]. Various international studies have shown that port security management is closely related to service quality and passenger satisfaction. An organized security system, including inter-agency coordination, surveillance technology, and human resource competency, increases the sense of security and user loyalty [13], [16], [17], [18], [19]. In addition to preventing threats, effective security management also contributes to operational

efficiency and service quality. However, most previous studies have placed more emphasis on technology, infrastructure, or operational management in general.

Based on the literature review, there is still a research gap related to the role of security human resources in influencing the effectiveness of security management and its impact on passenger service at port terminals. In port operational practices, a dilemma often arises between the implementation of strict security procedures and the demand for fast and comfortable service for passengers. Therefore, this study aims to analyze the relationship between the quality of security human resources and security management and its impact on passenger service at the Tanjung Priok Port Passenger Terminal. Based on this gap, this study formulates several research questions as follows:

1. Analyzing the Relationship of Variables: Analyzing the relationship and influence of security management qualitatively and quantitatively on the quality of passenger service at the Tanjung Priok Port Passenger Terminal.
2. Identifying Operational Balance: Finding a balance point between the implementation of strict security procedures (based on ISPS Code regulations) with the speed of service and comfort for port service users.
3. Human Resource Optimization: Analyzing the role and strategy for improving the quality of security Human Resources (HR) to support a security system that is responsive and friendly to passengers.

The conceptual framework of this research is built on three pillars: security management, customer service, and the relationship between the two. Security management is defined as all strategies, methods, and actions taken to protect assets, personnel, and passengers from various threats. This includes routine surveillance, the use of surveillance technology (CCTV), access control, and incident handling. Customer service is a series of interactions and experiences experienced by consumers, from arrival and check-in to departure. Good service is characterized by comfort, friendliness, and most importantly, a sense of security. The relationship between these two pillars is complex and interconnected. Good security management does not always have to be strict or oppressive; instead, good management can provide a sense of security without hindering the comfort or flow of the customer's journey. Conversely, poor security practices, such as slow or unstable inspections, can directly damage the service experience. Therefore, this study will examine the balance between security and service at the Tanjung Priok Port Passenger Terminal. Research hypothesis: Security management influences passenger service at the Tanjung Priok Port Passenger Terminal.

### 3. Method

This study uses a mixed method approach with a sequential explanatory design, namely combining quantitative and qualitative approaches sequentially to obtain a comprehensive understanding [20]. The quantitative approach is used to measure the relationship between security management and the quality of passenger service, while the qualitative approach is used to deepen understanding of passenger experiences and perceptions of the security system at the Tanjung Priok Port Passenger Terminal.

Data collection was carried out using several techniques, namely [21]:

1. The questionnaire was used to collect quantitative data from passengers on a Likert scale (1–5) covering aspects of safety, comfort, order and service satisfaction.
2. In-depth interviews were conducted with passengers as qualitative informants to explore their experiences and perceptions of the service and security system.
3. Field observations were conducted by observing operational activities, particularly security inspection processes and service interactions.

4. Documentation is carried out by collecting documents related to operational procedures and the implementation of the International Ship and Port Facility Security (ISPS) Code.

The research sample consisted of passengers as both quantitative respondents and qualitative informants. The number of quantitative respondents was 100 people, while the qualitative informants were selected from a portion of passengers who were considered capable of providing in-depth information. The sampling technique used purposive sampling [21], with criteria such as experience using terminal services and direct involvement in the service process.

Meanwhile, the qualitative informants in this study were passengers who were selected purposively based on their experience and ability to provide in-depth information regarding services and security systems at the terminal. Next, the quantitative data obtained from the questionnaire were analyzed using descriptive statistics to describe the characteristics of respondents and passenger perceptions, as well as simple linear regression analysis to test the effect of security management (independent variable) on the quality of passenger service (dependent variable). The regression model used in this study is [20] :

$$Y = a + bX$$

where Y is the quality of passenger service, X is security management, a is a constant, and b is the regression coefficient which shows the magnitude of the influence of the independent variable on the dependent variable. Data analysis was conducted in an integrated manner, namely descriptive statistical analysis and linear regression for quantitative data, as well as thematic and narrative analysis for qualitative data. The results of the qualitative analysis were used to strengthen and explain the quantitative findings, resulting in more comprehensive conclusions [20] . With this approach, the research is expected to be able to fully describe the relationship between security management and service quality based on the direct perspective of passengers as service users.

## 4. Results and Discussion

### Qualitative Results

Based on the results of in-depth interviews, participatory observations, and document reviews, this study identified four main themes that describe the condition of security management and its impact on passenger services at Tanjung Priok Terminal .

#### Theme 1: Inconsistent Implementation of Security SOPs

Data analysis revealed a gap between Standard Operating Procedure (SOP) documents and their implementation in the field. Several participants stated that SOP implementation is situational and adapts to operational conditions.

Passenger Narration:

*"When it's quiet, baggage inspections are very strict, with everything having to go through an X-ray. But when a ship has just docked and there's a huge influx of passengers, officers often let passengers through without thorough inspection just to avoid a traffic jam. So it feels like security standards are changing."*

Security Officer Narration:

*"We're in a dilemma, sir. If we implement 100% SOP during peak season, queues could stretch all the way to the parking lot, and passengers would definitely go wild. So we've relaxed the rules, only checking suspicious vehicles strictly."*

Analysis: These findings suggest that "operational conditions" often trump "security protocols." Such officer policies create potential security gaps and confuse passengers about the true standard of service. These

findings suggest that operational pressures often override formal security protocols, creating potential security gaps and causing confusion among passengers about the true standard of service.

### Theme 2 Officer Competence: Between Assertiveness and Friendliness

One of the most striking findings concerns passengers' perceptions of the officers' demeanor. Security is often perceived with a stern face and a high-pitched voice, which is counterproductive to the principle of excellent service. Field Observation: It was seen that security officers faced with the surge of passengers often used high intonation when regulating the queue flow because body movements and high intonation tended to be stiff and defensive. Passenger Narration:

*"I felt safe because there were so many officers, but I didn't feel comfortable. The way they reprimanded passengers who went the wrong way was like yelling at pickpockets, even though we were the customers who paid for the tickets."*

Analysis: There is a contradictory situation in the security function. Security officers at Tanjung Priok Terminal appear to position themselves more as "law enforcers" than "public servants maintaining security."

### Theme 3 Technology Infrastructure

X-ray machines and metal detectors are available, but their number and placement are not optimal, especially when the ship has just docked. This has resulted in congestion at security checkpoints and increased passenger anxiety about their belongings.

Document Analysis & Observation: The ratio of X-ray machines to the number of arriving passengers is unbalanced. This has led to congestion at *the security checkpoint* (SCP) area. Findings: The delay in the *screening process* was not only caused by the officers' inattention, but also by the imbalance of equipment and the narrow *layout* of the room, making passengers feel cramped and anxious about their belongings.

### Theme 4 Perceived Safety vs. Psychological Comfort

In general, passengers feel "safe" from major crimes (such as terrorism or robbery), but feel "unsafe" from minor crimes (pickpocketing, gendam) in public areas before entering the departure gate.

Passenger Narration:

*"In the sterile waiting room, I felt calm and safe because it was equipped with CCTV and officers were frequently walking around. But from the parking lot to the lobby, there were many touts and unknown individuals snatching goods. I felt there was a lack of port security there."*

Analysis: The security sterilization zone is good in restricted areas, but public areas outside the building, such as the parking area and before the lobby, are still weak points of supervision, negatively impacting passengers' first impressions upon arrival at the port. This phenomenon indicates that security needs to be expanded to public areas to create a consistent sense of security for passengers.

### Quantitative Results

From the data obtained from the distribution of 100 questionnaires in the field, the questionnaires were distributed to passengers who were randomly found, each answer was given a weight based on the Likert scale with the following weighting:

**Table 1** Correlation

Variables	Security Management (X)	Passenger Service (Y)
Security Management (X)	1,000	0.780**
Passenger Service (Y)	0.780**	1,000

Source: Processed data, 2025.

Based on Table 1, the correlation coefficient between security management (X) and passenger service (Y) is 0.780. This value indicates a strong positive relationship between the two variables. This indicates that the better the security management implemented, the higher the quality of passenger service.

**Table 2 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error
1	0.780	0.608	0.604	0.215

Source: Processed data, 2025.

Table 2 shows that the R value of 0.780 indicates a fairly strong relationship between security management and passenger service. The R Square value of 0.608 means that approximately 60.8% of passenger service can be explained by security management. The remainder is influenced by factors outside this study. The Adjusted R Square value, which is not significantly different (0.604), indicates fairly consistent results.

**Table 3 Coefficients (t-test)**

Model	t count	t table	Sig.	Information
X → Y	12,300	1,658	0,000	Significant

Source: Processed data, 2025.

Based on Table 3, the calculated t-value of 12.300 is greater than the t-table of 1.658, indicating that security management influences passenger service. A significance value of 0.000 also indicates that this result did not occur by chance. This means the relationship between the two variables is statistically significant. Therefore, security management has a significant influence on passenger service.

These statistical findings reinforce the qualitative findings in Theme 2 regarding officer competence. The main problem is not the absence of officers, but rather the officers' still-militaristic paradigm. The "fierce face" and "high-pitched" approach has proven counter-productive. This is in line with *Service Quality theory*, where *the Assurance dimension* (security guarantee) will not generate satisfaction if it is not accompanied by *the Empathy dimension* (friendly service) [12].

## Discussion

### Theme 1 Technology Infrastructure Analysis

The findings in Theme 1 indicate that security technology infrastructure, such as X-Ray machines and metal detectors, are available at the Tanjung Priok Port Passenger Terminal. However, the number and placement of this equipment are not proportional to passenger volume, especially during peak season, resulting in congestion at security checkpoints. This condition triggers long queues, increases discomfort, and creates negative perceptions of service quality. This phenomenon illustrates the gap between security system design and operational reality in the field, which in the literature is referred to as Decoupling, where field practices temporarily deviate from formal SOPs for the sake of smooth processes [18].

From a modern security management perspective, this bottleneck represents a potential security breach because lax screening procedures can be exploited by irresponsible parties. Solutions suggested by international research include operational system engineering, such as adding screening lanes, optimizing layouts, and increasing the officer-to-passenger ratio [18]. Integration between technology and humans is key; technology should support smooth operations, not hinder them. Strategically placing equipment and using digital technology to monitor passenger flow can reduce operational pressure while maintaining security standards.

In addition, literature shows that the success of technology management depends on the capacity of human resources to operate the equipment efficiently, including the ability to manage queues and handle emergencies [6]. Therefore, technology optimization must be accompanied by officer training to maximize

equipment function and reduce the risk of procedural errors, so that security is maintained without reducing service quality.

### **Theme 2 Officer Competency Analysis: Between Assertiveness and Hospitality**

The study results show that security officers' attitudes significantly influence passenger perceptions. Officers often use a high-pitched tone or assertive expressions when dealing with a surge in passengers, which impacts passenger comfort. This demonstrates the tension between their roles as security enforcers and as public servants. According to Rahardjo (2022), improving officer competence is not only related to regulatory compliance but also the development of soft skills, such as interpersonal communication, empathy, and excellent service. Practice-based training, such as On the Job Training (OJT), service simulations during peak seasons, and simulation-based training, are recommended to develop multifunctional officers.

Research findings support the Service Quality theory, where the Assurance and Empathy dimensions must be balanced to ensure passengers feel safe and comfortable [12]. A lack of this balance can lower the perception of service quality even if security procedures are met. The importance of humanizing security services in modern ports. Holistic human resource competencies combine assertiveness with friendliness, enabling officers to respond to emergencies without causing panic or passenger dissatisfaction [13]. Thus, investing in security human resource development is a strategic step, not just a matter of complying with regulations.

### **Theme 3 Technology Infrastructure Analysis**

The findings of Theme 3 emphasize the importance of integration between security technology and operational management. X-ray machines, metal detectors, and CCTV are available, but their suboptimal placement causes bottlenecks during high passenger arrivals. Document analysis and observations show an unbalanced ratio of the number of machines to passenger volume, resulting in long queues and increased anxiety among service users. This is in line with the literature stating that technology should be optimized based on analysis of passenger flow and space capacity [8],[9].

Strategically redesigning room layouts and distributing equipment can reduce congestion while maintaining safety standards. Furthermore, the use of real-time data-driven digital technology to monitor passenger flow has been shown to improve officer responsiveness and reduce the risk of procedural errors. Integrating human resources and technology is critical to achieving effective security systems and consistent service quality. This research confirms that technology alone is insufficient without adequate staff competence and coordination.

### **Theme 4 Analysis of Perception of Safety vs. Psychological Comfort**

The findings from Theme 4 indicate a difference in security perceptions between restricted areas and public areas. Passengers feel safe in sterile waiting rooms with CCTV and the presence of officers, but feel unsafe in parking areas and routes leading to the terminal, where touts and minor crimes still occur. The CPTED (Crime Prevention Through Environmental Design) concept emphasizes the importance of comprehensive security, from public areas to restricted areas.

The absence of surveillance in public areas creates gaps in the user experience, which affects the overall perception of service quality. International research suggests expanding security coverage through regular patrols, managing entrances, and using additional CCTV for public areas [6],[10]. This approach ensures a consistent sense of security throughout the passenger journey, from arrival to departure. In addition, the integration of physical security and public services increases passenger confidence in the terminal's operational systems.

Analysis of Findings

**Table 4.** Summary of Research Aspects

Aspect	Description
Key Findings	There was a strong correlation ( $r = 0.780$ ) between Security Management and Passenger Service. However, qualitatively, there were inconsistencies in SOPs during peak season <i>and</i> staff communication styles remained rigid.
Comparison with Previous Research	These results are consistent with the <i>Service Quality theory</i> [12] regarding the <i>Assurance</i> and <i>Empathy</i> dimensions, as well as the <i>Decoupling phenomenon</i> . [18] where field practices deviate from formal SOPs for the sake of operational smoothness.
Phenomena and Explanation	The emergence of <i>bottlenecks</i> in security checks is caused by the unbalanced ratio of X-Ray machines to passenger volume, as well as the gap in the sense of security between sterile areas and public areas.
Conclusion Introduction	Security management has a significant impact on service, but a paradigm shift towards <i>hospitality-based security</i> and optimization of technology infrastructure at critical points is needed.

To strengthen the validity of the results, the findings of this study were compared with relevant previous studies in the literature. The results of the quantitative analysis showed a correlation coefficient value of 0.780 and an R Square value of 0.608, which means that 60.8% of passenger service quality is influenced by security management. This shows consistency with the Service Quality theory, where security assurance is the main pillar of service user satisfaction [12]. However, qualitatively, significant differences were found in terms of implementation; this study revealed that without the Empathy dimension (friendliness), security assertiveness actually reduces passenger psychological comfort. This discrepancy is explained through the characteristics of field data at Tanjung Priok Terminal which shows that officers tend to position themselves as pure law enforcers rather than public servants.

The phenomena emerging from the analysis results are explained by assessing whether the patterns are consistent with what is predicted based on the theory and conceptual framework used. The findings regarding the situational implementation of SOPs in Theme 1 reflect the phenomenon of Decoupling, where operational pressures when ships dock force officers to relax rules to avoid queue congestion [18]. If these results are in line with the expectations of operational management theory, supporting factors are limited technological infrastructure (X-Ray machines) and narrow room layouts. Conversely, the inconsistency between the sense of security in sterile areas and the sense of insecurity in public areas (Theme 4) indicates that supervision has not been fully integrated (CPTED concept). This explanation helps to understand the dynamics occurring in the data more deeply, that strong physical security does not necessarily produce psychological comfort if its scope is limited and the communication is militaristic.

Based on a series of findings and interpretations obtained, preliminary conclusions are drawn to provide a tentative overview of the implications of the research results. Statistically, the effect of security management on service is very significant (Sig. 0.000), but in practice, its effectiveness is hampered by issues of officer soft skills competency and suboptimal technology placement. This conclusion emphasizes the important point that improving passenger service requires not only the addition of equipment, but also the humanization of security services. Thus, this preliminary conclusion serves as a bridge between the initial results and the next steps in the research, namely recommendations for passenger flow engineering and interpersonal communication training for terminal security officers.

## 5. Conclusion

This study successfully answered the main objective by proving a positive and significant influence of 60.8% of security management on the quality of passenger service at Tanjung Priok Terminal. This finding strengthens the theory of Service Quality, particularly on the Assurance dimension as a pillar of satisfaction, but shows a difference with the general literature because the Empathy factor (staff friendliness) was found to be still very low. The identified decoupling phenomenon where SOPs are relaxed during peak periods to ensure smooth flow interprets an imbalance between technological infrastructure capacity and passenger volume. Practically, this trend indicates that terminal security is still reactive and militaristic, which although providing a sense of physical security in sterile areas, but fails to provide consistent psychological comfort to public areas. The implications of this study emphasize the scientific contribution to the need for integration between physical security management and hospitality standards in maritime transportation. The practical benefit for managers is the need for human resource transformation through soft skills training and terminal layout engineering based on the CPTED concept to eliminate weak points of surveillance in public areas. The limitation of this study lies in its focus on only one passenger terminal location; Therefore, further research is recommended to expand the scope to various port typologies to refine the findings regarding security standards that are adaptive to different passenger characteristics.

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