ANALYSIS OF APRON MOVEMENT CONTROL (AMC) OFFICER PERFORMANCE IN SUPERVISING THE OPERATIONAL USE OF GROUND SUPPORT EQUIPMENT (GSE) AT KALIMARAU AIRPORT, BERAU

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ABSTRACT

This page contains the abstract of a Final Project report discussing the performance analysis of Apron Movement Control (AMC) officers in supervising the operational use of Ground Support Equipment (GSE) at Kalimarau Airport, Berau. The background of this research highlights the importance of effective supervision on the airside to ensure safety and orderly airport operations. The objective of this study is to evaluate the role and effectiveness of AMC officers' supervision and to identify the factors that hinder its implementation.

This research employs a qualitative descriptive method with data collection techniques including direct observation, interviews with AMC officers and GSE operators, as well as documentation of field conditions. The results indicate that the current supervision is still conducted manually and has not been fully effective due to limited facilities, suboptimal shift distribution during peak hours, the absence of monitoring technologies such as CCTV, and the lack of discipline among ground handling personnel.

This study concludes that improvements in technology, shift management evaluation, and educational approaches are necessary to enhance the performance and effectiveness of apron operational supervision.

Keywords: Apron Movement Control, Ground Support Equipment, Operational Supervision, Performance, Kalimarau Airport, Work Shifts, Aviation Safety

1. INTRODUCTION

In the modern era marked by high mobility and the rapid growth of the air transportation sector, airport management has become a critical component in ensuring safety, order, and operational efficiency. An airport is not merely a transit point between passengers and aircraft, but a vital hub involving complex coordination among various operational units, including ground handling services, security, and apron movement control [1]. In this context, synergy between competent human resources, adequate infrastructure, and effective systems is essential to address the increasing operational challenges.

One of the key units responsible for maintaining order and safety on the airside is the Apron Movement Control (AMC) unit. This unit is tasked with overseeing the movement of vehicles and Ground Support Equipment (GSE), maintaining apron cleanliness to prevent Foreign Object Debris (FOD), and ensuring all activities are carried out in accordance with established procedures and regulations [2]. The strategic role of AMC personnel demands not only a strong understanding of Standard Operating Procedures (SOP) but also operational awareness to respond to real-time dynamics such as weather conditions, flight schedules, and ground handling workload.

Ground Support Equipment (GSE) plays a vital role in supporting aircraft operations on the ground, including equipment such as Ground Power Units (GPU), Baggage Towing Tractors (BTT), Aircraft Towing Tractors (ATT), Aircraft Starter Units (ASU), Belt

Conveyor Loaders (BCL), and Passenger Boarding Stairs (PBS) [3]. These tools must be used in an orderly and safe manner, properly placed, and operated according to procedures to prevent interference with aircraft movements or the creation of safety hazards. The discipline in GSE usage is highly influenced by the effectiveness of AMC supervision in the field.

However, initial field observations at Kalimarau Airport in Berau indicate that several procedural violations still occur among ground handling operators. These include careless placement of GSE, operation of vehicles above the speed limit, and the use of technically unfit equipment. These findings suggest weak supervisory enforcement by AMC personnel and a lack of discipline among operators[4]. Such issues highlight the urgent need to assess and improve AMC performance in monitoring GSE operations.

In addition, based on discussions and interviews with field supervisors, it was discovered that many GSE units are still being used despite exceeding their technical operational lifespan. Furthermore, limitations in surveillance technology—such as the absence of CCTV coverage on the apron, minimal use of digital reporting tools, and suboptimal shift scheduling—present significant obstacles for AMC personnel in conducting thorough and continuous supervision [5].

Another contributing factor is related to human resources. High workloads, limited training opportunities, and a shortage of personnel during peak hours diminish the effectiveness of supervision. In this situation, reactive and manual supervisory approaches are no longer adequate to ensure order and safety in an increasingly busy apron environment. Therefore, a comprehensive evaluation of AMC operational systems is needed, including structural organization, technological support, and enforcement of supervisory procedures [6].

This research is highly relevant as it aims to systematically examine the performance of AMC officers in supervising the use of GSE at Kalimarau Airport, Berau. Through a qualitative descriptive approach using observation, interviews, and documentation, the study evaluates current supervisory practices, identifies existing challenges, and analyzes the technical and procedural conditions of GSE operations. The findings are expected to offer practical insights into how supervision is currently implemented and propose recommendations to enhance its effectiveness.

Thus, this study not only contributes to academic discourse but also offers practical value for airport operators, ground handling companies, and related authorities in improving airside safety systems. By identifying gaps and proposing strategic improvements, this research supports the development of a safer, more orderly, and more efficient apron environment that aligns with the overall goals of safe and reliable air transport operations.

2. METHOD

2.1 Research Method

This research uses a qualitative descriptive approach, which is appropriate for exploring social phenomena and understanding problems in-depth, especially those that involve human behavior, organizational routines, and non-quantifiable aspects of performance. According to Sugiyono[7], qualitative research is a method used to examine natural objects, where the researcher acts as the main instrument to collect data through observation, interviews, and documentation. The purpose is to provide a comprehensive and detailed picture of a phenomenon rather than to generalize it numerically.

2.2 Research Design

This study uses a **qualitative descriptive research design** aimed at understanding the performance of Apron Movement Control (AMC) officers in supervising Ground Support Equipment (GSE) operations at Kalimarau Airport, Berau. The design is chosen to capture and describe the actual conditions, routines, and challenges faced by AMC personnel in real-world operational settings. Unlike quantitative research, this approach emphasizes narrative depth and detailed insights into phenomena rather than measurement using statistical tools [7].

The research was conducted directly at Kalimarau Airport, where the researcher had the opportunity to observe operations during the On-the-Job Training (OJT) period from May to July 2025. The naturalistic setting of the research ensures that all data collected reflect the true conditions experienced by AMC officers and GSE operators. The focus of the research is not to manipulate variables but to interpret actions, behaviors, and events as they naturally occur within the context of apron operations.

To ensure data credibility, the research employed triangulation through multiple data collection techniques: observation, interviews, and documentation. This triangulation strategy is crucial in qualitative research as it strengthens the validity of the findings by cross-checking information from different sources Sugiyono,[7]. For example, data obtained from observations of shift performance were supported by interview narratives from AMC officers and confirmed with documentation such as SOPs and operational schedules.

The researcher acted as the key instrument in the study, as is typical in qualitative research. As suggested by Sugiyono[7], the researcher must be directly involved in the field to interpret data meaningfully, develop rapport with participants, and adjust the research path as needed based on emerging information. This role allows for a flexible and responsive research process, which is

particularly useful in examining complex, human-centered operational tasks like apron supervision.

Ultimately, the research design allows for a holistic and in-depth exploration of how AMC officers perform their duties, the factors that influence their effectiveness, and what improvements can be made to enhance the safety and efficiency of GSE operations. The results are expected to provide i[8]nsights not only for academic understanding but also for practical implementation by airport operators facing similar operational challenges.

2.3 Research Subject

2.3.1. Population

Population refers to a group consisting of individuals or objects that possess specific characteristics determined by the researcher to be studied and from which conclusions can be drawn (Sugiyono, 2022). Based on its nature, the population in this study is heterogeneous, with human individuals as the main research object. Accordingly, the population in this research consists of all ground handling personnel from PT Citra Dunia Dirgantara (28 personnel) and PT Jasa Dirgantara – Berau Branch (21 personnel), totaling 49 individuals who are actively working at Kalimarau Airport, Berau. This population was selected because all individuals are directly involved in Ground Support Equipment (GSE) operations on the airside and are closely related to the supervisory functions of the Apron Movement Control (AMC) officers

2.3.2. Sample

According to Sugiyono (2022), a sample is part of the number and characteristics possessed by the population. If the population is large and it is not feasible to study the entire group due to limitations in time, resources, and budget, a sample should be taken to represent the population. What is learned from the sample is then generalized to the larger population. In this study, the sample consists of three ground handling personnel at Kalimarau Airport, selected to obtain valid and representative data regarding the influence of AMC officers' performance in supervising the use of Ground Support Equipment (GSE). This selective sampling enables the researcher to gain accurate insights from informants who are directly involved in day-to-day apron operations.

2.3.3. Research Object

According to Sugiyono (2022), the research object is anything—whether a person, object, or phenomenon—that is determined by the researcher for investigation in order to obtain relevant information and draw conclusions. The object of research serves as the primary source of data containing variables of interest. If the research object is limited and accessible, a full investigation may be conducted; otherwise, sampling becomes necessary for practicality and efficiency.

In this study, the object being examined is the supervision activities conducted by AMC officers over the utilization of Ground Support Equipment (GSE) in the airside area of Kalimarau Airport, Berau. The research focuses on evaluating the performance of AMC officers in executing their supervisory duties, the effectiveness of operational procedures, and the actual conditions of GSE use by ground handling personnel in the field.

According to Suharsimi Arikunto (2006), a research subject is defined as the object, entity, or person from which data related to research variables are obtained and which forms the basis of the problem being investigated. Therefore, the research subjects in this study—those who served as informants—include the AMC Supervisor, Senior AMC, and selected ground handling personnel who are directly involved in GSE operations at Kalimarau Airport. These informants are expected to provide comprehensive and field-based information regarding both the implementation of supervision and actual GSE usage practices.

2.4 Data Collection Techniques

To obtain relevant information that supports the research objectives, this study employed three qualitative data collection techniques: observation, interview, and documentation. These methods were chosen to provide a comprehensive understanding of the supervisory role of Apron Movement Control (AMC) officers in ensuring the safe and orderly use of Ground Support Equipment (GSE) at the airside of Kalimarau Airport, Berau.

2.4.1. Observation

Observation was used to directly examine the supervision performance of Apron Movement Control (AMC) officers in monitoring the use of Ground Support Equipment (GSE) at the airside of Kalimarau Airport, Berau. This method enabled the researcher to capture real-time behaviors, procedural compliance, equipment conditions, and operational challenges.

According to Safitri [8], observation is a data collection technique where researchers gather information by directly observing the research subject to gain a deeper understanding of ongoing phenomena. By being physically present in the field, the researcher was able to obtain factual evidence to support further analysis.

2.4.2. Interviews

Semi-structured interviews were carried out with key informants including AMC Supervisors, Senior AMC Officers, Junior AMC personnel, and GSE operators. Two sets of question guides were developed: the first for AMC officers (8 questions) covering topics such as SOP compliance, safety enforcement, and operational challenges; and the second for GSE operators (5 questions) exploring their experiences with supervision, use of PPE, and vehicle operation. These interviews aimed to gain in-depth insights and personal perspectives that could not be captured through observation alone[9]

2.4.3. Documentation

Documentation was used to supplement and triangulate the data from observation and interviews. It included official records such as GSE inventory lists, vehicle age and maintenance logs, and photographs of both operational equipment and field supervision activities. These documents provided visual and written evidence that helped validate findings and support analytical conclusions [9].

The combination of these three data collection techniques ensured that the information gathered was rich, accurate, and relevant to the research focus. Moreover, the triangulation approach enhanced the **credibility and validity** of the study.

2.5 Data Analysis Technique

This study applied a qualitative descriptive analysis method aimed at providing a systematic, factual, and accurate representation of field findings concerning the performance of Apron Movement Control (AMC) officers in supervising Ground Support Equipment (GSE) operations at Kalimarau Airport, Berau. The qualitative approach allowed the researcher to gather, interpret, and present data in the form of words, statements, and observations, which were then organized into structured narratives. Through active participation during fieldwork, the researcher sought to understand the actual dynamics of operational supervision and compliance with safety procedures on the apron.

In accordance with the model proposed by Miles and Huberman (as cited in Burhan Bungin, 2003), data analysis in qualitative research is conducted interactively and continuously from the beginning of data collection until the final conclusion. The process consists of three interrelated components: data reduction, data display, and conclusion drawing/verification. In the data reduction phase, the researcher selected, focused, and simplified raw data collected through observation, interviews, and documentation. Only data relevant to the research objectives—particularly those related to AMC officers' supervisory roles—were retained. Irrelevant, redundant, or insignificant information was eliminated to ensure that the final data were concise and meaningful. Important insights were summarized and grouped according to themes such as the effectiveness of supervision, operational barriers, and the impact of AMC oversight on GSE operations.

Following this, the reduced data were organized and presented in a clear and systematic manner during the data display phase. The presentation took the form of descriptive narratives, tables, and categorized matrices to highlight relationships between themes, making it easier to analyze patterns, causal links, and trends in the field. This stage helped the researcher gain a broader understanding of how AMC performance influences safety and discipline in GSE operations.

The final stage was conclusion drawing and verification, where the researcher interpreted the meaning behind the presented data to formulate valid and evidence-based conclusions. This process involved identifying consistent themes and verifying them through triangulation—comparing data from observations, interviews, and documents to ensure accuracy and reliability. The conclusions drawn from this process represent the core findings of the research and reflect the real conditions observed during the fieldwork..

3. RESULT AND DISCUSSION

3.1 Observation Results – Summary

The results of direct observation show that the operational supervision of Ground Support Equipment (GSE) usage at Kalimarau Airport has not been optimal. Several violations of safety procedures were identified, such as overcapacity in GSE vehicles, improper parking of equipment, and incomplete usage of Personal Protective Equipment (PPE). The limited number of personnel and the absence of direct field supervision were the primary causes of weak operational control. Relying solely on CCTV monitoring proved insufficient, as it could not capture specific technical details of GSE operations [10]. Therefore, reinforcement in terms of personnel deployment and scheduled direct field inspections is urgently required.

3.2 Interview Results – Summary

Interviews with AMC officers and GSE operators revealed that while routine supervision is implemented, its execution lacks systemic support and sufficient manpower. The enforcement mechanism relies heavily on verbal warnings without formal sanctions, which limits deterrent effects. There are frequent cases of PPE non-compliance and improper equipment handling due to haste and low safety awareness. Supervision tends

to be corrective rather than preventive. To overcome this, technological support and a stronger safety culture are necessary[7].

3.3 Documentation Results – Summary

Documentation analysis confirmed field findings by showing that several GSE units have exceeded their operational lifespan, as outlined in PM 91 Year 2016, but are still actively used. Some units were found to be in unserviceable condition yet remained operational. With limited personnel and a lack of real-time technical inspections, monitoring becomes weak. Manual reporting and infrequent audits further highlight the need for better control systems and stricter equipment regulations [11]

4. DISCUSSION

4.2 Observation Discussion – Summary

Field observations indicate that supervision is not carried out thoroughly or in detail. Indiscipline in vehicle placement, speed limit violations, and the operation of unfit GSE units reflect the weak supervision function of AMC officers. The absence of structured inspections and inconsistent sanctions further undermines safety measures. These findings highlight the need for more effective and structured monitoring practices [10].

3.5. Interview Discussion – Summary

Interviews confirmed that although AMC officers are committed to their supervisory roles, the lack of formal policies and systemic support hinders their effectiveness. The absence of written sanctions and the minimal use of monitoring technologies cause supervision to be reactive. Meanwhile, GSE operators showed varying levels of compliance and understanding of safety procedures. Improving workforce quality and formalizing inspection protocols are essential to reinforce the supervision process[7].

3.6. Documentation Discussion – Summary

Documentation review indicated that GSE units are still being used beyond their technical limits, with some lacking proper maintenance and certification. There is no dedicated field inspector, and data collection remains largely manual. This reflects the need for a more structured GSE safety management system, including digitized reporting, operational rotation based on equipment age, and periodic inspections [11][12]

5. CONCLUSION

This study concludes that the performance of Apron Movement Control (AMC) officers significantly influences the supervision of Ground Support Equipment (GSE) operations at Kalimarau Airport, Berau. Although supervision activities are routinely conducted based on Standard Operating Procedures (SOP), their effectiveness remains suboptimal. Key limitations include unbalanced shift scheduling particularly during peak hours limited availability of surveillance technologies such as CCTV, and the lack of a structureadministrative enforcement system. AMC officers often carry out their duties reactively, focusing on immediate issues rather than addressing the root causes of operational non-compliance.

The operational condition of GSE at Kalimarau Airport also reflects ongoing challenges. Several units were found operating in technically unfit conditions, including overaged vehicles and equipment lacking safety components. Violations of operational SOP such as improper equipment placement, disregard for speed limits, and the inconsistent use of personal protective equipment were frequently observed. These findings indicate that existing supervision measures are not sufficiently effective in ensuring full compliance with safety standards in the airside area.

Furthermore, several factors hinder the effectiveness of AMC supervision. These include high work burdens, insufficient technological tools for monitoring and documentation, and the lack of digital inspection systems. Additionally, poor discipline and low safety awareness among ground handling personnel contribute to persistent violations. These structural and cultural barriers undermine the overall goal of achieving a safe, orderly, and efficient GSE operation in the apron area.

To address these issues, there is a critical need to strengthen AMC oversight by improving shift planning, integrating digital monitoring systems, and implementing structured training programs. Enhancing the enforcement of SOPs through systematic penalties and continuous education for GSE operators will foster a stronger safety culture. Ultimately, these improvements are essential for supporting the operational excellence and safety objectives of Kalimarau Airport in line with national aviation standards.

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