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PROHIBITED ITEMS DIGITAL INFORMATION TO SUPPORT ACTIVITIES IN THE AIRPORT PASSENGER SECURITY CHECK POINT

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Abstract

This research analyzes the effectiveness of information media related to prohibited items in enhancing the operational efficiency of the Passenger Security Check Point (PSCP) at Terminal 2, Juanda International Airport. The frequent confiscation of items such as liquids, lighters, and scissors, along with the occurrence of long queues, reflects passengers' limited awareness of carry-on baggage restrictions. The study aims to analyze the strategic placement and effectiveness of information media in improving passenger awareness of security procedures. Using a qualitative method through observations, interviews with Aviation Security personnel and passengers, and field documentation, the study found that the current information media such as posters and digital boards, are placed in non-strategic locations and are therefore ineffective in delivering key messages to passengers. The novelty of this research lies in its focus on evaluating information media placement and its direct impact on the efficiency of PSCP operations. The findings are expected to contribute to improving airport security communication strategies using strategically placed and multilingual digital media, thereby reducing prohibited items and streamlining the security screening process.

Keywords: *airport, information media, prohibited items, passenger security checkpoint*

Introduction

Aviation Security remains a critical global concern, as inadequate passenger awareness and non-compliance with safety regulations can disrupt airport operations and threaten flight safety (Eid et al., 2022). According to the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA), effective communication and information dissemination are essential to ensure smooth and secure airport processes (Pramudya & Ginusti, 2024). In Indonesia, as an archipelagic nation with more than 17,000 island, air transportation plays a vital role in connecting regions and supporting national economic growth.

However, maintaining aviation security across this vast network remains a major challenge, particularly in ensuring that passengers understand and comply with security screening procedures. One critical area in maintaining aviation security is the Passenger Security Checkpoint (PSCP), which functions to inspect passengers and their belongings to prevent dangerous or prohibited items from being brought into the aircraft cabin (Suroso & Azhar, 2023). Prohibited items include sharp objects, flammable materials, and other hazardous substances that could endanger flight safety (Anjelintina & Yudianto, 2024). At Juanda International Airport, particularly in Terminal 2, which serves both domestic and international routes, there are still frequent cases of confiscated prohibited items such as scissors, lighters, and liquids exceeding 100 milliliters. Table 1 below shows the number of confiscated prohibited items throughout 2024, indicating a consistent pattern of violations that remain high across the months.

Table 1. List of Prohibited Items in 2024 at Juanda International Airport

Month	Scissors	Lighters	Liquids
January	680	1162	2891
February	745	1180	3147
March	690	1382	3501
April	608	1455	2886
May	454	1635	4162
June	248	1308	3774
July	400	1768	4771
August	765	2202	4948
September	824	2150	4821
October	620	1963	4790
November	760	2141	4258
December	747	2097	3796

These figures demonstrate that passengers still have a low level of awareness and understanding of carry-on baggage regulations, leading to long queues and reduced operational efficiency in the security screening process.

Figure 1. Passenger Queue in the PSCP Area

To develop effective aviation security communication, we must first understand what already exists before identifying what is still missing (Pinem et al., 2024). Previous studies have developed digital signage and barcode-based information media to educate passengers about prohibited items at major airports, proving effective in increasing passenger awareness and compliance (Kusumawati & Albanna, 2024; Septiawan et al., 2025).

Globally, (Pramudya & Ginusti, 2024) recommend adopting interactive, multilingual, and strategically visible information media as part of airport safety communication best practices. In Indonesia, (Sitanggang, 2024) found that passengers understanding of prohibited items has a significant correlation with compliance during the security screening process, while (Kusumawati & Albanna, 2024) demonstrated that the use of digital media can improve compliance by up to 40%. These studies provide a solid foundation for understanding how communication tools affect passenger behaviour in airport security environments.

However, despite these advancements, previous studies have mainly focused on the design and content of information media, without considering the strategic placement and visibility within the passenger flow a crucial factor determining whether passengers

actually engage with the information before inspection (Pratiwi et al., 2025; Sitanggang, 2024). Few studies have specifically examined how spatial positioning, eye level accessibility, and media layout influence passengers comprehension and compliance at the PSCP. This gap is critical because ineffective media placement may lead to miscommunication, increased item confiscations, and longer queues, ultimately reducing airport operational efficiency.

Therefore, this study aims to analyse and evaluate the effectiveness of information media related to prohibited items in the PSCP area of Terminal 2 at Juanda International Airport. Specifically, it seeks to assess how media placement, visibility, and design influence passenger understanding, compliance, and the overall efficiency of the security screening process. The significance of this study lies in its dual contribution to both theory and practice. From a theoretical perspective, it extends the understanding of aviation security communication by linking information media design and spatial positioning with passenger behavioural (Broom, 2024; Kalakou & Moura, 2021) responses a relationship that has received limited attention in prior research. From a practical standpoint, the findings are expected to provide actionable insights for airport operators and aviation security authorities in optimizing media placement, integrating interactive and multilingual digital systems, and enhancing passenger flow efficiency. The novelty of this research lies in its focus on evaluating the spatial and visual effectiveness of security information media within the passenger flow context, providing a new dimension to how airports can communicate safety regulations more effectively to travellers (Walter et al., 2024; Yen & Thang, 2025).

Methods

This study uses a qualitative descriptive approach that aims to analyse the effectiveness of information media concerning prohibited items in facilitating the efficiency of inspection procedures at the PSCP of Terminal 2, Juanda International Airport. This approach was chosen because it provides an in-depth understanding of social phenomena based on field data and the direct experiences of informants (Safrudin et al., 2023). The research was conducted at Terminal 2 of Juanda International Airport, Sidoarjo, East Java, specifically in the PSCP area where security checks and information media placement are carried out. The research activities were carried out from September 2024 to February 2025, including field observations, interviews, and documentation related to the implementation of passenger security checks.

The research subjects included Aviation Security (AVSEC) officers, passengers, and airport operational officers who interacted directly in the PSCP area. There were five informants in this study, who were selected using purposive sampling techniques, considering that they had relevant experience and knowledge regarding the security screening process at the airport.

Table 2. Resource Person

No.	Name	Position
1	Sri Aji	*Chief Aviation Security*
2	Herwin	*Airport Operation & Landside Officer*
3	Muhammad Ipul	Passenger
4	Ravi Al Farkhan	Passenger
5	Azwar Anas	Passenger

The research data was sourced from two types of data, namely primary data and secondary data. Primary data was obtained through direct observation in the field and in depth interviews with informants, while secondary data was obtained from airport management documents, Ministry of Transportation regulations, and previous scientific research relevant to the topic of aviation security (Nurrisa et al., 2025).

Data collection was carried out using three main techniques, namely observation, interviews, and documentation. Observations were made to identify the form, type, and placement of information media such as posters, signboards, and digital screens in the PSCP area, as well as to assess the visibility and clarity of the information conveyed (Hasibuan et al., 2023). Interviews were conducted with AVSEC officers and passengers to explore their perceptions, level of understanding, and responses to information media related to prohibited items (Azmi &

Prayitno, 2024). Meanwhile, documentation was used to collect secondary data in the form of photographs, field notes, confiscated item data, and aviation security policy documents (Hasan, 2022). Data analysis was conducted using Miles and Huberman's interactive model, which consists of three stages: data reduction, data presentation, and conclusion drawing and verification. In the data reduction stage, researchers simplified and selected the data most relevant to the research focus. The data presentation stage was carried out by compiling the findings in the form of a descriptive narrative that described the field conditions and informants' responses.

Next, the conclusion drawing and verification stage was carried out by interpreting the findings to assess the effectiveness of the information media and formulate recommendations for improving its effectiveness (Millah et al., 2023). To ensure the validity and reliability of the data, this study applied source and method triangulation techniques. Source triangulation was carried out by comparing data results from various informants, such as AVSEC officers, passengers, and airport operational officers, while method triangulation was carried out by matching the results of observations, interviews, and documentation. This step aims to increase the credibility and reliability of the research findings. This research method was systematically designed to ensure that the research results could provide a comprehensive and valid picture of the effectiveness of information media in the PSCP area of Terminal 2 at Juanda International Airport.

Results And Discussions

This section presents the results of the qualitative analysis conducted to evaluate the effectiveness of information media related to prohibited items in the PSCP area of Terminal 2 at Juanda International Airport. The results are organized thematically based on the three key aspects analysed in this study: (1) placement of information media, (2) visual design and accessibility, and (3) passenger understanding and compliance. The analysis was carried out through field observations, interviews with AVSEC officers and passengers, and documentation of existing media displays. Using the Miles and Huberman interactive model, the collected data were categorized and interpreted to identify key patterns and themes. Overall, the findings indicate that although information media are available in various forms such as posters, signage, and digital screens their placement, visibility, and content design have not yet effectively supported passenger understanding and compliance with security regulations. Field observations showed that information media were installed in several parts of the PSCP area, including near the entrance gate, around the queuing zone, and beside the x-ray conveyor. However, most posters and signboards were positioned at low-visibility points and competed visually with other commercial advertisements. Some digital screens were found displaying content unrelated to prohibited items.

Table 3. Placement of Information Media

Location	Type of media	Visibility level	Description
Entrance gate	poster	low	Small and located behind passenger flow;not easily noticeable
Near x-ray conveyor	signboard	high	Easily visible but seen too late during screening process

According to Table 1, most of the information media were not placed strategically along the passenger movement flow. As a result, passengers often noticed the messages only after arriving at the final inspection point. AVSEC officers stated that this placement reduces the preventive value of the media, since passengers are already in the process of inspection when they see the message.

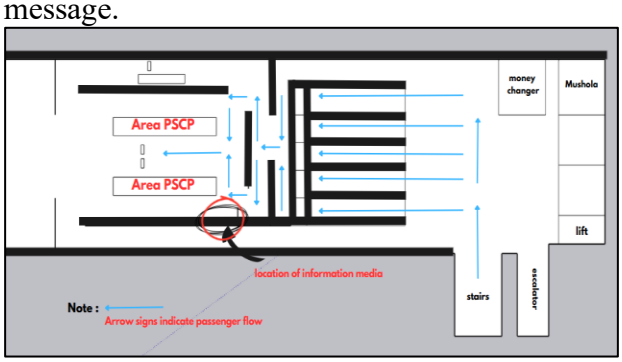

Figure 2. Passenger Flow Layout

Figure 2 shows the flow of passenger movement from the departure area to the PSCP. The positions of the information media observed are marked on the figure, and the results of the observation show that most of the media are located in areas that are not aligned with the main line of sight of passengers. This reinforces the finding that the placement of media that is not aligned with the flow of passenger movement is one of the causes of the low effectiveness of security message delivery. Observations and documentation revealed that the design of information media varied in color and layout but generally lacked visual emphasis. The font size was relatively small, text was lengthy, and some posters used technical terminology unfamiliar to general passengers.

Figure 3. Example of Existing Poster Display at PSCP

Most media used only Indonesian and English, limiting accessibility for international traveller's. During interviews, foreign passengers expressed difficulty understanding the information because of unclear symbols and limited translations. These findings indicate that the current visual and linguistic design does not fully meet ICAO Annex 9 recommendations, which emphasize multilingual and easily recognizable safety information. Interview data with passengers and AVSEC personnel showed that passenger understanding of prohibited items remained low. Four out of five passengers admitted they were unaware of detailed restrictions on liquids, sharp objects, and flammable materials until after the security screening process. AVSEC officers reported confiscating numerous items daily, with the highest frequencies involving liquids exceeding 100 ml, scissors, and lighters.

The thematic analysis of observations, interviews, and documentation produced three major findings: (1) Media placement was not aligned with passenger flow, reducing visibility and preventive effectiveness. (2) Visual and linguistic design lacked clarity, conciseness, and multilingual accessibility. (3) Passenger awareness and compliance remained low, leading to recurring confiscations and slower screening operations.

These findings collectively suggest that the information media at Juanda International Airports PSCP area are present but ineffective in achieving their intended purpose of raising awareness and preventing security violations. Previous research supports these findings. (Firdaus & Winarno, 2020) emphasized that message clarity, color contrast, and accessibility influence passengers' behavioural responses, while (Sitanggang, 2024) found that lack of understanding among passengers at Sultan Syarif Kasim II Airport increased confiscations. This study extends the literature by demonstrating that spatial positioning within passenger flow is an equally critical factor influencing compliance.

Table 4. Discussion Table

No	Existing	Ideal	Recommendation
1.	Information media are located only near the final screening area	Media should be positioned in visible, unobstructed locations in accordance with Ministry of Transportation Regulation No. KM 22/2005.	Relocate media to pre-screening and check-in areas for better visibility.
2.	Information is displayed only in Indonesian and English.	Information should be multilingual, as suggested by ICAO Annex 9 Facilitation.	Add additional languages such as Arabic, Mandarin, and French.
3.	Posters contain long text with limited visuals.	Information should be concise and visually engaging.	Use pictograms, icons, and short bilingual captions.

According to Table 4, the existing condition of information media in the PSCP area shows inconsistency with effective public communication standards. The placement of media that is only concentrated in the final inspection area, limited use of language, and visual displays that are dense with text indicate the need for comprehensive improvements. The recommendations resulting from this analysis include three main strategies, namely relocating media to the pre-inspection area, adding international languages, and improving visual design through icons and symbols. These measures are expected to improve the readability and comprehensibility of messages for both domestic and international passengers.

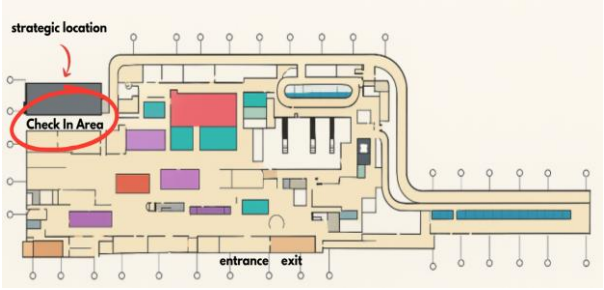

Figure 4. Strategic Media Information Position

As shown in Figure 4, the recommended information media placement design places posters, signage, and digital screens in strategic locations such as terminal entrances, check-in areas, and initial queuing lanes before the PSCP. To enhance effectiveness, airport management should reposition information media to more visible and strategic locations preferably at pre-screening points such as entrances or check-in areas.

The adoption of interactive, multilingual digital displays is also recommended to ensure accessibility for passengers from diverse linguistic backgrounds. From a theoretical perspective, this study contributes to the development of aviation security communication (Pai et al., 2021) research by linking spatial media design and placement with behavioural compliance an area that has been underexplored in previous literature. From a practical perspective, the findings provide actionable insights for airport management and aviation security authorities to implement more effective communication strategies through better media placement, multilingual content, and visual redesign (Florido-Benítez, 2024; Poulaki et al., 2021).

This study has several limitations. The qualitative data were obtained from a relatively small number of informants within a single airport context, which may limit generalizability. Future research should expand to multiple airports and include quantitative assessments to statistically validate the relationship between media effectiveness and passenger compliance. In summary, the effectiveness of information media in airport security areas is determined by three interrelated factors strategic placement, visual clarity, and multilingual accessibility. Enhancing these elements will improve passenger awareness, streamline the inspection process, and contribute to more efficient and passenger-centre airport security operations.

Conclusion

This study aimed to evaluate the effectiveness of information media related to prohibited items at the PSCP in Terminal 2 of Juanda International Airport. The findings indicate that the effectiveness of existing media is still suboptimal due to non-strategic placement, limited visual attractiveness, and the lack of multilingual and interactive features. These results suggest that the current media have not successfully influenced passengers understanding and compliance with security regulations, leading to a continued high number of confiscated items. Theoretically, this study contributes to aviation security communication research by emphasizing the importance of spatial media placement and visual linguistic accessibility as determinants of compliance behaviour areas that have received limited scholarly attention. Practically, it provides insights for airport management and aviation security authorities to improve media effectiveness through better placement strategies, the integration of interactive digital signage, and the inclusion of multiple international languages to enhance message comprehension among diverse passengers. However, the study was limited by its focus on a single airport and the qualitative nature of data, which may limit the generalizability of the results. Therefore, future research is recommended to involve multiple

airports, adopt a comparative or mixed methods approach, and quantitatively analyze the relationship between information media effectiveness and passenger compliance. In conclusion, improving the strategic placement and interactivity of information media is essential to strengthen passengers awareness, reduce prohibited item violations, and support the overall efficiency of airport security operations.

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