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IMPLEMENTATION OF AVIATION SAFETY CULTURE TO PREVENT FLIGHT ACCIDENTS AT HALIM PERDANAKUSUMA AIR FORCE BASE JAKARTA

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ABSTRACT

This study aims to identify and analyze of safety culture in organizations of aviation sector through risk management analysis, the role of leadership in building a safety culture, self-assessment and implementation of aviation safety culture. This research was conducted at Halim Perdanakusuma Air Force Base Jakarta. Data collection was conducted using interviews, observation, questionnaires, and documentation study methods. The analysis technique used the Hazard Identification, Risk Assessment and Risk Control method scheme to identify Software, Hardware, Environment, Liveware and Liveware element based on AS/NZS 4360:2004, safety leadership dimensions, and safety culture dimensions by ECAST. The results of risk management analysis indicate that flight activities at Halim Perdanakusuma Air Force Base Jakarta show moderate and low risk values. The risk values of the environment and lifeware elements are yellow zone (moderate), the hardware and software element are green zone (low). The leadership role in safety culture has been implemented based on an analysis of 17 dimensions of safety leadership which is 13 dimensions (76.5%) have been running "Well", namely belief, awareness, commitment, attitude and behavior, priority, decision, agenda, resources, spirit of the movement, active involvement, tradition, appreciation, and performance. While 4 dimensions (35% to 70%) have been running "Quite Well" are monitoring and follow-up, values, and policy socialization. Self-assessment of safety culture implementation using 6 dimensions, that is commitment, behavior, awareness, adaptability, information, and justness, have a Level-4 Cooperating, shows that all staffs are engaged to develop cooperation and commitment to improving safety. Overall shows that Halim Perdanakusuma Air Force Base Jakarta has implemented a safety culture to reduce flight accidents and supports national priority programs in flight safety.

Keywords: Aviation safety, accident, safety culture, risk assessment.

INTRODUCTION

Aviation safety is a condition where safety requirements are met in the use of airspace, aircraft, airports, air transportation, flight navigation, and supporting facilities and other public facilities. This requires effective and efficient potential development and role, it can help aviation safety to prevent flight and work accidents (The Law Number 1 of 2009). Aviation accidents can result material damage, property losses, environmental damage, human casualties and psychological impacts on people's affected (Xirui et al., 2023).

Aviation accidents can be prevented by building a safety culture. Realizing a safety culture in an organization cannot be separated from six characteristics that must be applied that is commitment to having a positive attitude and awareness of the importance of safety; behavior to maintain and improve the level of safety in the organizational environment; awareness of the risks of the work being carried out and continuous vigilance is needed; adaptability to take action increasing safety levels; good communication to provide information that achieves the level of safety organization; and the existence of truth or justice in safe behavior organization (Balk et al., 2009).

The International Civil Aviation Organization (ICAO) states that the cause of aviation accidents is multi-factorial, which is called the SHELL theory, namely Software, Hardware, Environment, Liveware and Liveware (Amalia et al., 2020). The SHELL model is a conceptual model that explains based on aspects within the scope of aviation factors. The SHELL model is used as a framework for collecting data on human performance and components in aviation incidents or accidents (Miller & Holley, 2018). Based on research by Metso et al. (2016), the SHELL method can be used to investigate high-risk work processes, resulting in reduced work accidents and improved safety culture, such as in the aviation sector.

Organizations with high risk levels, including aviation organizations, really need to build and develop a safety culture. The Indonesian government through the Ministry of Transportation has issued aviation regulations derived from ICAO, namely Law No. 1 of 2009 concerning Aviation. In addition, the law is also further explained in Government Regulation Number 3 of 2001 concerning Aviation Security and Safety. Based on research by Umar & Diah (2020), the purpose of implementing an aviation safety culture is to meet aviation requirements in aviation organizations. This shows that the implementation of a safety culture in an organization is a must and is a set of eternal attitudes regarding safety by personnel in the organization.

Aviation safety culture is a very important aspect of an aviation organization. Safety culture is a transformation of organizational culture that makes safety the main value of the organization to build and develop a safety culture and achieve zero accidents or no accidents that cause fatalities. Good synergy between sub-systems in organization will support the implementation of aviation safety culture (Ridwan et al., 2021). The occurrence of aviation accidents indicates that the zero accident policy has not been achieved (Rizal & Safril, 2020). Based on data from the annual report on the evaluation of work programs by the Indonesian Air Force Aviation and Work Safety Service (Dislambangjaau), shows that the aviation safety culture and zero accidents in the Indonesian Air Force's work activities has not been achieved optimally. In the direction of the Indonesian Air Force leader, the Chief of Staff

of the Air Force, always emphasizes the importance of realizing a safety culture in every work activity of the Indonesian Air Force in order to realize zero accidents (Puspen TNI, 2018).

Halim Perdanakusuma Air Base, Jakarta is an air base that has a very strategic role and position, namely supporting the activities of the Indonesian Air Force in maintaining the security and defense of the Republic of Indonesia, as well as supporting the implementation of national and international activities. Faced with the roles and positions, necessary to evaluate the implementation of safety culture in the Halim Perdanakusuma Jakarta Air Base work unit to support efforts to develop aviation safety culture and achieve zero accidents (TNI AU, 2024). Based on Wibowo's (2017) research, the results showed that there was a significant influence of safety culture on aviation safety at Halim Perdanakusuma Air Force Base. Evaluation of the implementation safety culture aviation is carried out because it is dynamic and characterized by hazards and risks potential to cause flight accidents (Command Portal, 2023).

Implementation of aviation safety culture to reduce aviation accidents can be done through analysis of risk management (Aulia & Dhiani, 2024) (Irvan & Adipura, 2023). Hazard Identification, Risk Assessment, and Risk Control (HIRARC) is a risk management analysis method to minimize aviation accidents which includes hazard identification, risk assessment, and risk control (Lubis et al., 2022). Currently, there is no research on the analysis of the implementation of aviation safety culture to prevent aviation accidents at Halim Perdanakusuma Air Force Base, Jakarta using the HIRARC method. Based on these problems, this study aims to conduct a risk management analysis of work activities at Halim Perdanakusuma Air Force Base, Jakarta using HIRARC. Risk management analysis based on the Australian/New Zealand Risk Management Standard (AS/NZS 4360: 2004), on a system of management policies, procedures and practices regarding task communication, identification, analysis, evaluation, control, monitoring and risk review.

Human Resources (HR) are the main factor that most determines of organizational success in implementing and building a safety culture (Umar & Diah, 2020). At this study, an analysis was also carried out on the role of leadership in developing a safety culture to achieve zero accidents, as well as self-evaluation of the implementation of aspects of aviation safety culture at Halim Perdanakusuma Air Force Base Jakarta. Safety leadership is able to direct all personnel to comply with and implement a safety culture to prevent aviation accidents (Ridwan et al., 2021). This is because a leader must have the ability to produce changes in personnel behavior for the better and producing long-term organizational success (Nick et al., 2023). Based on research by Hermawan & Widana (2024), it was stated that leaders are very responsible for determining policies when the organization faces unsafe condition, needed planning to reduce work risks.

Through this research, hoped can produce further improvements and developments of aviation safety culture, which is the main priority in an organization with a high level of risk to support prevention and mitigation of the risk of accidents in the field of air transportation/aviation. In addition, the expected research results are the form of an innovation in implementing the risk management aviation safety in the environment of Halim Perdanakusuma Air Force Base Jakarta, so that it can provide strategic solutions to related parties in building and developing a safety culture, and supporting national priority programs, especially realizing aviation safety.

METHODOLOGY

This study using a qualitative research method. The research design used is a qualitative descriptive analysis, that is data collection using interview, observation, questionnaire, and documentation study. The covered stage involves asking questions to participants and preparing field notes; analysing data to form themes or categories; identifying patterns, generalisations, or broad theories from these themes or categories; and conveying generalisations and theories from experiences and literature (Widana et al., 2022).

The research location is at Halim Perdanakusuma Air Force Base Jakarta. Data collection was carried out using in-depth interview methods and distributing questionnaires to selected informants through purposive sampling techniques, field observations, and documentation studies. The questionnaire used as supporting instrument for the results of interviews, documentation studies, and field observations. The results obtained from the questionnaire were the implementation of safety culture and the role of leadership in building a safety culture at Halim Perdanakusuma Air Force Base Jakarta. Documentation and observation data on the research object were in the form of a checklist.

This research focuses on the analysis of 3 research questions, that is analysis of risk management in implementing aviation safety culture, analysis of the role of leadership in building aviation safety culture, as well as self-evaluation and implementation of aviation safety culture aspects. The risk management data analysis technique was carried out using the HIRARC method scheme which includes hazard identification, risk assessment, and risk control. Using the HIRARC method, detailed results can be obtained regarding the identification and analysis of the hazard list, to recommending the necessary corrective actions. Risk management analysis is guided by the Australian/New Zealand Risk Management Standard (AS/NZS 4360: 2004). (Fauziyah et al., 2021). The analysis technique of the leadership role in building a safety culture using the dimension of safety leadership (Gunawan, 2013). The analysis technique of self-evaluation and implementation of aspects of safety culture using the dimensions of safety culture by the European Commercial Aviation Safety Team (ECAST).

RESULTS

Aviation safety culture is something that obtained through a combination process by Organizational Culture, Professional culture, and National Culture. Based on Law Number 1 of 2009 concerning Aviation, Article 318 explains that the government and other stakeholders are responsible for building and realizing an aviation safety culture. High aviation safety can be achieved if all components of the aviation industry system (airport operators, airline operators, air traffic operators, aircraft maintenance operators, and regulations by regulators) properly function. Every aviation accident must be investigated to find the root cause (Aswia et al., 2022).

This study has conducted an analysis of the implementation of flight safety culture at Halim Perdanakusuma Air Force Base. Based on the research, the results of the study are divided into three parts. The first part discusses hazard identification, risk assessment, and risk control, focusing on identifying factors that affect flight and work safety, great risk faced, and how to control these risks. This identification and analysis are based on the results of field observations, literature studies, and interviews with pilots and personnels at the Flight and Work Safety Unit (Lambangja) of Halim Perdanakusuma Air Force Base, Jakarta.

After conducting risk identification and analysis, the next step is to discuss the role of leadership in building a safety culture to see the condition of leadership in terms of flight and work safety at Halim Perdanakusuma Air Force Base Jakarta. Finally, self-evaluation and implementation of safety culture aspects at Halim Perdanakusuma Air Force Base Jakarta work environment were conducted. The role of leadership and self-evaluation were obtained from data result from distributing questionnaires to pilots and personnel at the Flight and Work Safety Unit (Lambangja) of Halim Perdanakusuma Air Force Base Jakarta.

Hazard Identification, Risk Assessment and Risk Control

Risk management analysis is carried out through hazard identification, risk assessment, and risk control using HIRARC method. The HIRARC method analysis aims to identify all hazards in flight and work operations and determine the level of risk that may exist (Lubis et al., 2022). Through this analysis, it can be seen what factors can affect flight and work safety at Halim Perdanakusuma Air Force Base Jakarta, the great risks faced, and how to control risks. Based on research by Riska and Adipura (2023), it is stated that flight hazard risk analysis carried out using the HIRA method, through risk identification and risk assessment.

Identification of potential hazards or risks carried out through field observations and literature studies on work activities at Halim Perdanakusuma Air Force Base Jakarta, and interviews with pilots and personnels at the Flight and Work Safety (Lambangja) Unit of Halim Perdanakusuma Air Force Base Jakarta. Identification of potential hazards or risks is carried out based on an analysis of the 4 elements of the SHELL Model, namely the elements of Software (procedure), Hardware (machine), Environment, Lifeware (human), and Liveware (adjacent unit) (Amalia et al., 2020). The potential incidents or hazards identified are shown in Table 1.

Table 1

Potential Hazard Identification Results

Category	Hazard	Probability	Severity	Risk Value
Software	Implementation of ILA/Medex is not according with the specified schedule	2	3	6
Hardware	The function of radar as a vital tool in supporting flight missions	1	5	5
	Bridges damage or public facilities	1	1	1
	Asphalt damage makes unsafe for aircraft to cross	2	3	6
	Hydraulic lost that does not function properly	1	5	5
	Aircraft and aerodrome instruments do not function to direct aircraft to the runway	1	5	5
	Inadequate radar service/monitoring equipment at the aerodrome	1	5	5
	Rusty spotlight poles	1	1	1
	The aircraft ladder not suitable	1	1	1
	Iron poles above the hangar are not used and can hit the vertical stabilizer	1	1	1

(continued)

Category	Hazard	Probability	Severity	Risk Value
	Hanger lighting not optimal	2	3	6
	Electrical short circuits and fires	2	3	6
	Hangar end mirrors are not standard	1	3	3
	Hanger roof leaks	1	2	2
	Hanger fires	1	5	5
Environment	Target of terrorist attacks	1	5	5
	The impact of extreme weather accompanied by strong winds	2	5	10
	Potential for flooding	2	3	6
	Land disputes and causing conflicts with the surrounding environment	1	3	3
	The antennas and buildings around the runway reducing the safety of the helicopter runway	1	3	3
Lifeware	Human resources involved in riots at entertainment venues	1	1	1
	Misunderstanding clearance by ATC	2	4	8
	Decreased member performance due to drugs	1	3	3
	Procedures that are not followed	2	3	6
	Radio telephony signals are disturbed	3	3	9
	Ignorance of the limitations of the iceberg phenomenon	2	3	6
	Performing worship is faced with the demands of duty	2	3	6
	Decreased flight hours	2	3	6

Source. Research data processing from field observations, literature studies, and interviews with pilots and personnels in the Flight and Work Safety Unit (Lambangja) at Halim Perdanakusuma Airport Jakarta.

After hazards potential was identified, the next steps are to determine the risk value based on the value scale in the Safety Management Manual Doc 9859 (ICAO, 2013). Table 1 shows the Probability (P) value which is the possibility of an unsafe event or condition, Severity (S) which is the possible consequences of an unsafe event or condition, and the risk value which is the result of multiplying P and S. The software category has the highest risk value of 6, which is the potential risk of ILA/Medex implementation not being following the specified schedule. The hardware category has the highest risk value of 6, which is the potential risk of asphalt damage resulting in it being unsafe for aircraft to cross, hangar lighting that is not optimal, and electrical short circuits and fires. The environment category has the highest risk value of 10, which is the potential risk of extreme weather accompanied by strong winds. The lifeware category has the highest risk value of 9, which is the potential risk of radio telephony signals being disrupted.

Based on the risk values in Table 1, the next steps are the risk assessment analysis by looking at the possibility and severity of a potential hazard, then expressed in the form of a matrix. Risk assessment analysis is performed using the Risk Assessment Code (RAC) Matrix table, a matrix contain a combination of P and S to determine the level of potential risk. The risk assessment matrix displays various risks in a color-coded chart. High risk is represented by red, medium risk is yellow, and low risk is green (AS/NZS 4360: 2004). The risk assessment matrix at Halim Perdanakusuma Air Force Base Jakarta is shown in Table 2.

Table 2

Risk Assessment Matrix at Lanud Halim Perdanakusuma Jakarta

Risk Probability	Risk Severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	25	20	15	10	5
Occasional 4	20	16	12	8	4
Remote 3	15	12	Lifeware 9	Software 6	3
Improbable 2	Environment 10	8	Hardware 6	4	2
Extremely Improbable 1	5	4	3	2	1

Source. Research data processing from field observations, literature studies, and interviews with pilots and personnels in the Flight and Work Safety Unit (Lambangja) at Halim Perdanakusuma Airport Jakarta.

The environment element has the highest risk value of 10 with the criteria of risk probability is improbable and risk severity is catastrophic. Based on the Safety Management Manual Doc 9859 (ICAO, 2013), the risk probability value has meant the potential risk possibility incident is very small. Based on the severity assessment, the environment element has a catastrophic value, meant the incident causes equipment to be destroyed or damaged, and loss of life. The risk value of the environment element in the risk assessment matrix is in the yellow zone (moderate), meant that the potential risk requires immediate corrective action.

The lifeware element has a risk value of 9 with the criteria of risk probability is remote and risk severity is major. Based on the Safety Management Manual Doc 9859 (ICAO, 2013), the risk probability value means a possibility of a potential risk event occasionally. Based on the severity assessment, the lifeware element has a major value, meant that the incident causes disruption and material loss. The risk value of the lifeware element in the risk assessment matrix is in the yellow zone (moderate), meant that the potential risk requires immediate corrective action.

The risk assessment results of the environment and lifeware elements are in accordance with the research of Nadila (2023), and Ulandari et al., (2022). Extreme weather and noise caused by signals from smartphones can affect the flight process and the implementation of aviation safety culture. Immediate handling with appropriate steps is needed to overcome it so as not to cause material disruption or even loss of life due to flight accidents.

The hardware element has a risk value of 6 with the criteria of risk probability is improbable and risk severity is major. Based on the Safety Management Manual Doc 9859 (ICAO, 2013), the risk probability value has meant a possibility of potential risk event is very small. Based on the severity assessment, the hardware element has a major value, meant that the incident causes disruption and material loss. The risk value of the hardware element in the risk assessment matrix is in the green zone (low), meant that the handling of the potential risk is sufficient with routine procedures.

The software element has a risk value of 6 with the criteria of risk probability is remote and risk severity is minor. Based on the Safety Management Manual Doc 9859 (ICAO, 2013), the risk probability value has meant that the potential risk is rare in terms of the number of failures. Based on the severity assessment, the software element has a minor value, meant that the incident causes a slightly dangerous disturbance but does not have a major impact. The risk value of the software element in the risk

assessment matrix is in the green zone (low), meant that handling of the potential risk is sufficient with routine procedures.

The results of the risk assessment of the hardware element are in accordance with the research of Bachdar et al., (2020). The airfield condition is important in implementing an aviation culture safety. Periodic maintenance of airfield facilities is needed to reduce the impact of risks that may be present. The risk assessment of the software element is in accordance with the research of Suradi & Raden (2022), that health checks for flight personnel are an important aspect in maintaining the implementation of flight operations to produce an aviation safety culture. Examination routinely and periodically according to the specified schedule is a must.

The risk assessment results used as a basis for determining appropriate risk control to minimize the risks (AS/NZS 4360: 2004). Based on the results obtained from interviews with pilots and personnels at the Flight and Occupational Safety (Lambangja) Unit of Halim Perdanakusuma Air Force Base Jakarta, risk control has been implemented through the Flight and Occupational Safety Field work program. The Lambangja Halim Perdanakusuma Air Force Base Jakarta work program in achieving the zero accident target aims to support operational readiness by Wing 1 Halim Perdanakusuma Air Force Base Jakarta units. The risk control in work and flight safety has been implemented properly in accordance with the criteria of the environment, lifeware, software, and hardware elements.

In addition, the Flight and Occupational Safety (Lambangja) Unit of Halim Perdanakusuma Air Force Base Jakarta has addressed potential incident problems by improving personnel qualifications. This effort carried out by implementing socialization to increase awareness of the importance of prevention, creating reminders for ILA/Medex schedules to be carried out on time, increasing vigilance when passing through taxiways and alerts to aircraft movements, coordinating maintenance or refilling of damaged Alpeka, and carrying out fire extinguishing simulations.

Leadership Role in Building a Safety Culture

Communication is an important function of safety management, especially in aviation safety. Communication can be used as a medium for conveying information, building relationships, building behavior and expectations, maintaining attention, and being a management tool. The exchange of safety-related information and perceptions of the information used can affect interpersonal trust and psychological safety. Good reciprocity between leaders and staff/employees can result in higher perceptions of safety climate and awareness, improving safety culture, and reducing safety-related incidents and work injuries (DOT/FAA/AM-23/13, 2023). Good synergy between the Indonesian Air Force components can result in the implementation of a safety culture and zero accidents achievement (Ridwan et al., 2021).

In an institution or organization, leadership is very important to running the organization, all members of the organization must have a clear direction for work activities. The role of leadership in building a safety culture at Halim Perdanakusuma Air Force Base Jakarta is very necessary to improve flight safety performance. Based on research by Anggoro (2017), it states that leadership influences flight safety performance and is a factor that must be considered in the work program at Halim Perdanakusuma Air Force Base Jakarta.

The description and frequency distribution of the leadership role in building a safety culture at Halim Perdanakusuma Air Force Base Jakarta were obtained through questionnaires as a supporting research

instrument. A total of 59 questionnaires were distributed to Squadron 2, Squadron 45, Squadron 31, and Squadron 17 of Halim Perdanakusuma Air Force Base Jakarta. The distribution of respondent rank data is sorted by career level and length of tenure as:

a. Letda Pub/Nav (Second Lieutenant Aviation or Second Lieutenant Navigation) totaling 10 people or 16.9% with an average service period of 1 year at Halim Perdanakusuma Air Force Base Jakarta;
b. Lettu Pub/Nav (First Lieutenant Aviation or First Lieutenant Navigation) totaling 25 people or 42.4% with an average service period of 3-4 year at Halim Perdanakusuma Air Force Base Jakarta;
c. Kapten Pnb (Flight Captain) totaling 18 people or 30.5% with an average service period of 6-7 years at Halim Perdanakusuma Air Force Base Jakarta;
d. Major Pnb (Flight Major) totaling 6 people or 10.2% with an average service period of 11 years at Halim Perdanakusuma Air Force Base Jakarta.

Based on the results of the demographic analysis of respondents, it is known that most respondents have the rank of Lieutenant Pnb, which is 42.4%, with an average service period of 3-4 years, and the fewest respondents are Major Pnb with an average service period of 11 years.

Figure 1

Leadership Role in Flight and Work Safety Culture

The role of leadership regarding the importance of implementing flight safety culture during the work process is shown in Picture 1. The values obtained in Figure 1 are processed data from the distributed questionnaires. Most of the leadership components in implementing flight and work safety culture in the Halim Perdanakusuma Air Force Base Jakarta environment have been running well. The high "Good" assessment is found in the component (above 70%):

a. Leadership belief in the importance of flight and work safety (76.3%);
b. Leadership awareness of flight and work safety responsibilities (79.7%);
c. Leadership commitment to values, vision, mission, policies, decisions, meeting agendas, resources, enthusiasm, and involvement in building a flight and work safety culture (74.6%);
d. Leadership attitudes and behavior in providing exemplary behavior (role models) in flight and work safety (71.20%);
e. Leadership views flight and work safety as an important part (priority) of the unit/organization (72.9%);
f. Leadership makes important decisions by considering risk control or in this case preparing Standard Operating Procedures (84.7%);
g. Leadership makes safety as a leadership meeting agenda (78%);
h. Leadership uses resource support (power, equipment, facilities, and SM) according to risk priorities (83.1%);
i. The leadership has the spirit to mobilize (including giving awards) towards flight and work safety efforts (79.7%);
j. The leadership always plays an active role in involving themselves by conducting field visits (safety walk and safety talk), (83.1%);
k. The leadership plays a large role in the flight and work safety celebration/tradition activities (86.4%);
l. The leadership plays a large role in the flight and work safety award events (91.5%);
m. The leadership's performance in flight and work safety over the past three years (88.1%).

The “Quite Good” rating appears to be high among all components in the questionnaire (35% s.d. 70%) which are:

a. Organizations that deal with flight and work safety are integrated into the organization's operating system, procedures, training, and work contracts (52,50%);
b. Leaders always monitor and follow up on findings or matters related to flight and work safety (62,70%);
c. Leaders integrate safety into the organization's values, vision, mission, and strategy (66.10%);
d. Leaders socialize policies on flight and work safety (66,10%).

Based on the recapitulation, it can be assessed that all the leadership at Halim Perdanakusuma Air Force Base Jakarta have been running well implemented a safety culture within the organization and work environment of Halim Perdanakusuma Air Force Base. Awareness, commitment, and appreciation efforts to flight and work safety culture implement have been running well. Leaders must ensure that the organization has implemented the established safety procedures and safety culture, then ensure that its members are also able to implement a safety culture in every work process.

To improve and achieve zero accidents, the leadership at Halim Perdanakusuma Air Force Base Jakarta must create a more integrated organizational system with a safety culture. To achieve this can be done by improving the following components: Providing examples of exemplary behavior (role models);

creating an integrated system with flight and work safety organization; monitoring and following up on findings related to flight and work safety; values, vision, mission, and organizational strategies that are integrated with a safety culture; and socialization of flight and work safety policies.

Self-Assessment and Implementation of Safety Culture Aspects in Aviation

Self-assessment needs to implement aspects of safety culture at Halim Perdanakusuma Air Force Base Jakarta. Every aviation service provider is required to create, implement, evaluate and continuously improve the safety management system based on the national safety flight program. The study of safety culture implementation aims to measure and assess the implementation of safety culture at Halim Perdanakusuma Air Force Base Jakarta based on the safety culture dimensions. The measurement results are assessed to determine the level of safety culture implementation. Based on ECAST (Prabowo in GMF AeroAsia, 2019), six dimensions of safety culture implemented as listed.:

1. Commitment,
2. Behaviour,
3. Awareness,
4. Adaptability,
5. Information,
6. Justness.

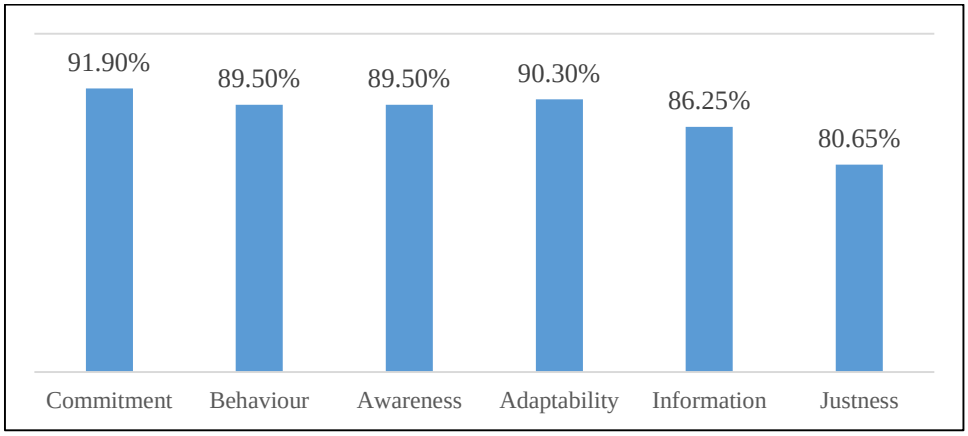
The description and frequency distribution of self-evaluation to analyze the implementation of safety culture aspects in aviation at Halim Perdanakusuma Air Force Base Jakarta were also obtained through the use of questionnaires as supporting research instruments. A total of 62 questionnaires were distributed to Squadron 2, Squadron 45, Squadron 31, and Squadron 17 of Halim Perdanakusuma Air Force Base. The distribution of respondent rank data is sorted according to career level and length of service namely:

a. Letda Pnb/Nav (Second Lieutenant Aviation or Second Lieutenant Navigation) totaling 10 people or 16.1% with an average service period of 1 year at Halim Perdanakusuma Air Force Base Jakarta;
b. Lettu Pnb/Nav (First Lieutenant Aviation or First Lieutenant Navigation) totaling 28 people or 45.2% with an average service period of 3-4 years at Halim Perdanakusuma Air Force Base Jakarta;
c. Kapten Pnb (Flight Captain) totaling 18 people or 29% with an average service periodof 6-7 years at Halim Perdanakusuma Air Force Base;
d. Major Pnb (Flight Major) totaling 6 people or 9.7% with an average service period of 11 years at Halim Perdanakusuma Air Force Base.

Based on the analysis of questionnaire data using six components of safety culture implementation (commitment, behavior, awareness, adaptability, information, and justice), which are divided into 50 questions, it provides an illustration that the implementation value of the 6 dimensions of safety culture has a value above 80% which means the safety culture at Halim Perdanakusuma Air Force Base Jakarta has been implemented well, as shown in Figure 2.

Figure 2

Implementation of Aviation and Work Safety Culture at Halim Perdanakusuma Air Force Base, Jakarta



The overall results of this component state that the aviation safety culture which includes six dimensions which are commitment, behavior, awareness, adaptability, information, and justness, is very important and has been implemented in the work environment of Halim Perdanakusuma Air Force Base Jakarta with an average value of 88.02% (good). Furthermore, an analysis was carried out to determine the level of maturity of the implementation of safety culture at Halim Perdanakusuma Air Force Base using the Safety Culture Maturity Model (Eurocontrol/FAA Action Plan 15 Safety, 2008). There are 5 levels of maturity of safety culture implementation, namely Level-1 Emerging, Level-2 Managing, Level-3 Involving, Level-4 Cooperating, and Level-5 Continually Improving. Based on the results of data collection through in-depth interviews, observations, and questionnaires that were analyzed qualitatively, it provides an overview that the implementation of safety culture at Halim Perdanakusuma Air Force Base, Jakarta is at Level-4 Cooperating. These results indicate that all staff are engaged to develop cooperation and commitment to improving safety.

The most prominent things that need to be improved are the view on the importance of safety, especially safety as the most valuable thing in carrying out tasks or work; safety priorities, especially safety as safety first; adequate equipment in carrying out tasks; and easy access to information for personnel about incidents or accidents that occur in the work environment of Halim Perdanakusuma Air Force Base Jakarta.

Other important things to pay attention to are the need to improve safe behavior for each personnel in the safe work unit in carrying out tasks; mutual support between personnel in the unit in order to create optimal flight and work safety conditions; the open attitude of personnel in receiving input from fellow employees; the exchange of safety information, especially easy to find slogans, mottos, posters, technical manuals, SOPs, leaflets, or appeals or announcements regarding attention and efforts for flight and work safety; and safety evaluations related to behavior, especially always having evaluations of behavior related to flight and work safety.

The points of safety culture implementation that have been assessed as very well are that personnel will not do work that is not yet known to be dangerous; if there is work or tasks that are not yet clear about the dangers, personnel will always ask and request an explanation from the relevant parties about the dangers and how to prevent them; investigations are carried out to find out the cause of the accident and

socialization is carried out so that similar incidents do not happen again; the results of the evaluation of incidents and accidents are immediately followed up with improvement efforts; each personnel in the unit has their respective roles and responsibilities in creating optimal flight and work safety conditions; and the flight and work safety program is one form of organizational or unit responsibility to fulfill one personnel needs aspect of Human Rights.

CONCLUSION AND RECOMMENDATIONS

Based on the data analysis stage of the interview results, literature studies, field observations, and questionnaire data processing conducted, the conclusion that can be drawn that the risk management analysis results of flight activities at Halim Perdanakusuma Air Force Base Jakarta show moderate and low risk values. The risk values of the environment and lifeware elements are yellow zone (moderate), which means that the potential risk requires immediate corrective action. The risk values of the hardware and software elements are green zone (low), which means that handling of potential risks can be handled with routine procedures.

The safety leadership in building a safety culture within the organization and work environment of Halim Perdanakusuma Air Force Base has been well implemented. based on an analysis of 17 dimensions of safety leadership consisting of: 13 dimensions (76.5%) have been running "Good", namely belief, awareness, commitment, attitude and behavior, priority, decision, agenda, resources, enthusiasm for moving, actively involving oneself, tradition, appreciation, and performance. While 4 dimensions have been running "Quite Well" with a value of 35% to 70% (monitoring and follow-up, values, and policy socialization).

The self-assessment and implementation of safety culture within the organization and work environment of Halim Perdanakusuma Air Force Base Jakarta are assessed using six assessment components referred as commitment, behavior, awareness, adaptability, information, and justice. Based on these six components, all the level of safety culture implementation at Halim Perdanakusuma Air Force Base Jakarta has been running well and is at Level-4 Cooperating, which indicates that all staff are engaged to develop cooperation and commitment to improving safety.

Finally as recommendation, it is necessary to increase the role of leadership regarding the importance of flight safety culture implement through efforts to improve a more integrated organizational system with a safety culture, monitoring, and following up on findings related to flight and work safety, integrating safety with values, vision, mission, and organizational strategies that are integrated with a safety culture, and continuous socialization of flight and work safety policies to personnel down to the lowest levels. Enhancing understanding and awareness of the importance of a safety culture is crucial to achieving the highest level based on the safety culture maturity model in the work environment of Halim Perdanakusuma Air Force Base, Jakarta.

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