HIERARCHICAL CAPACITY-BUILDING STRATEGY THROUGH RECURRENT TRAINING FOR ROTARY WING (HELICOPTER) PILOTS IN INDONESIAN NATIONAL POLICE AIR POLICE DIRECTORATE

Dira Fitria Setyoningrum
Sekolah Tinggi Ilmu Administrasi Lembaga Administrasi Negara,
dirafs82@gmail.com;

Mala Sondang Silitonga
Sekolah Tinggi Ilmu Administrasi Lembaga Administrasi Negara,
malasondangs@gmail.com;

ABSTRACT

This study aims to describe the hierarchical capacity-building strategy for helicopter (rotary wing) pilots in the Air Police Directorate through recurrent training. Human capital theory and capacity development theory used as analytical tools to examine the data collected. This research employs a descriptive qualitative approach. Informants include individuals involved in policy formulation, implementation, and evaluation of recurrent training for INP Air Police Directorate's first-line officers. The study finds that recurrent training for Air Police Directorate's rotary wing pilots faces several significant challenges, including infrastructure limitations, training cooperation issues, and high pilot mobility. The strategy employed to optimize this training involves using helicopter simulators, which are currently under development. With the availability of such facilities, the management of pilot resources can be tailored to specific training needs according to the applicable functional positions.

Keywords: *Capacity-building, Recurrent Training, Rotary Wing Pilot, Air Police*

A. INTRODUCTION

The success of the Directorate Air Police (*Ditpoludara*) in fulfilling its duties and responsibilities is closely linked to the support of its human resources. Continuous human resource development becomes a crucial asset, referred to as human capital (Nurkholis, 2018). Human capital is considered an essential asset across various fields of knowledge, defined as a resource with inherent abilities in individuals, such as knowledge, skills, educational qualifications, and experience (Çakar et al., 2021). High-skilled and difficult-to-replicate human resources are strategic assets that enable organizations to achieve optimal performance (Valenti & Horner, 2020). An organization's capabilities are built from the abilities of the individuals within it. Therefore, human resource development is critical for organizational success.

In executing its organizational functions, the Indonesian National Police (*Polri*) pilots play a primary role as frontline human resources. These pilots possess specialized qualifications in aviation, as outlined by the Director of the Indonesian National Police's Air Police in the relevant regulations. Moreover, the

scope of *Polri*'s aviation activities is governed by the Air Police's Standardization Regulations, as detailed in the *Peraturan Direktur Kepolisian Udara Baharkam Polri Nomor 94 Tahun 2012*, Article 2. This standardization includes: (1) the standardization of *Polri* flight crew; (2) aircraft standardization; (3) Ground Support Equipment (GSE) standardization; (4) maintenance standardization; (5) operational standardization; (6) flight crew allowance standardization; (7) aircraft registration; and (8) administration.

Article 3 of the *Peraturan Direktur Kepolisian Udara Baharkam Polri Nomor 94 Tahun 2012* details the composition of *Polri* flight crews, including Co-Pilots, Captain Pilots, Instructors, Check Pilots, and Senior Check Pilots. Co-Pilots are officers (*IPDA/IPTU*) with a Commercial Pilot License (CPL), aircraft ratings, and completed Crew Resource Management (CRM) training. They assist the Captain Pilot and take over if necessary. Captain Pilots are officers (*AKP*/KBP) with at least 60 hours of flight experience as a Co-Pilot and advanced training, serving as the Pilot in Command. Instructors, typically senior officers (*KOMPOL*/KBP), must have an Airline Transport Pilot License (ATPL) and at least 300 flight hours. They are responsible for training new pilots. Check Pilots and Senior Check Pilots have progressively more experience and are tasked with evaluating the skills of *Polri* pilots. The composition of a helicopter flight crew includes a Captain Pilot, Co-Pilot, Mechanic, and Helper, while a fixed-wing crew also includes a Flight Operations Officer (FOO).

The Air Police operates a fleet consisting of 57 helicopters and 11 fixed-wing aircraft. Monthly operational support missions (*Bantuan Kendali Operasi / BKO*) are conducted across various provinces in Indonesia, with approximately 78 such missions recorded from January to August. The high intensity of these activities demands pilots to remain available and adaptable to different situations. This adaptability can be cultivated through capacity-building efforts for the pilots. Competence development is driven by the understanding that it is impractical to train pilots for every possible scenario they might encounter during flights. However, mastering key competencies can enhance flight safety across various conditions, including accidents, incidents, operations, and training (Mansikka et al., 2019).

To support this competency development, the Air Police actively conducts a series of Specialist Development Education (*Dikbangspes*) programs. However, data from the 2015-2024 *Dikbangspes* programs indicate that both the quantity and quality of these training sessions remain limited. The training data for 2015-2023 also show fluctuations in educational activities, with the majority of participants being middle-ranking and enlisted officers. A notable gap in training is found among junior officers (First Officers and Young *Polri* Pilots), where there is a lack of regular training, particularly in emergency response scenarios. The absence of continuous and recurrent training has resulted in limited knowledge, which impacts the pilots' competence, professionalism, and overall flight safety. This situation also reflects the suboptimal implementation of international training regulations set by the International Civil Aviation Organization (ICAO).

The shortcomings in pilot training within the Indonesian National Police (*Polri*) environment include a low level of knowledge mastery due to limited information technology facilities, suboptimal use of simulators, and a curriculum that needs to be updated in line with the latest aviation technology developments. Additionally, instructor-related issues include low academic qualifications, the absence of instructor training, and a lack of certification for instructors. In terms of infrastructure, there is a shortage of teaching aids, simulators that do not match operational aircraft, the absence of Computer- Based Training (CBT) and language laboratories, as well as a lack of quality assurance institutions. Another key issue is the limited education budget, allowing only 10-15 pilots of the Indonesian National Police to participate in training annually (Timonora & Ariyanto, 2022).

The International Civil Aviation Organization (ICAO) has updated its Standards and Recommended Practices (SARPs) along with related guidance materials. These updates include live aircraft training for commercial and multi-crew pilots, as well as simulator training for transport category aircraft and type ratings, regulated under Annex 1 and Annex 6, Part 1, and PANS-TRG Doc 9868. Under these revised standards, ICAO provides procedural recommendations to civil aviation authorities, aircraft operators, and Approved Training Organizations (ATO) to meet the Upset Prevention and Recovery Training (UPRT) requirements for the Multi-Crew Pilot License (MPL) as outlined in Annex 1, UPRT recommendations for Commercial Pilot License (CPL) holders as also listed in Annex 1, type rating requirements in Annex 1, and recurrent training requirements for pilots as specified in Annex 6, Part 1, Paragraph 9.3 on flight crew training programs (Widadi et al., 2021).

Recurrent training is considered a crucial aspect of maintaining and enhancing the competencies of pilots within an organization. Even for pilots with thousands of flight hours, recurrent training is essential as it directly impacts flight management (Gunardi, 2022). Every flight crew member must undergo recurrent training according to their roles and responsibilities. To ensure effectiveness, the training is conducted regularly and in phases. Evaluations at this stage involve comprehensive exams to assess participants' understanding of the material and determine whether they pass or fail (Agung et al., 2020).

Recurrent training has become a capacity-building effort for police pilots in the Air Police, particularly for rotary (helicopter) pilots. However, this program still faces various challenges, particularly the disparities in training conditions between fixed-wing and rotary pilots. Ideally, both initial and recurrent flight training for pilots should include standard operating procedures for normal, abnormal, and emergency operations of aircraft systems and components corresponding to their roles. Recurrent training should be conducted every 12 months, covering sufficient depth to provide a comprehensive review of all subjects in accordance with CASR (Kementerian Perhubungan, 2016). Several components of civil pilot training, such as Company Indoctrination Training, Differences Training, Upgrade Training, Line Indoctrination Training for Flight Crew Members, Flight Attendant Ground Training, and Flight Attendant Operational Training, are intended to be recurrent but are not implemented for the Indonesian National Police Air Police pilots.

Recurrent training has been limited to a few courses, with minimal or no training focused on competencies directly related to rotary operations, such as bumpy bucket, doorgunner, sling operations, city and regional patrols, and vertical rescue. The recurrent training conducted in 2023 includes five types of courses. First, the Aviation Knowledge Course on Windshear was held on February 22 with 37 participants, aiming to provide a thorough understanding of windshear phenomena that affect flight safety. The second, an Aviation Knowledge Course on Alar and Controlled Flight Into Terrain (CFIT), took place on March 2, also with 37 participants, focusing on handling Alar and CFIT situations. The third course, held on March 9, focused on Crew Resource Management (CRM) with 37 participants, emphasizing cooperation among crew members and decision-making in critical situations. Additionally, an Air Mobility Flying Exercise was conducted on March 9-10 with 29 participants to enhance practical skills in air mobility. Finally, a Night Flying Exercise was held on July 25-26 with 26 participants, focusing on improving night flight capabilities, which present different challenges compared to daytime flying.

Despite the successful execution of various safety training programs, the Air Police still faces delays in the implementation of other essential training activities. Although exercises such as target shooting, helicopter sling operations, swimming skills enhancement, and *Polri* self-defense training have been completed, important training sessions such as the Bell 412 helicopter crew operations scheduled for July 8-10, Dauphin AS 365 N3 helicopter crew operations on July 15-17, and air ambulance mobilization operations planned for July 23-25 were postponed. Additionally, helicopter crew operations for the AW 169, search and rescue operations, and cross-country flying operations for the Diamond aircraft scheduled for August and September were also delayed.

The training that must be conducted for civil pilots during initial and recurrent training is intended to maintain competency standardization. However, no existing policies govern such competency training within the Air Police of the Indonesian National Police (INP Air Police), leading to insufficient competency development. This situation is exacerbated by frequent interruptions in training programs due to equipment limitations and budget constraints. For instance, the Bumpy Bucket training, crucial for handling forest and land fires, was discontinued in 2020.

In addition to the suboptimal management of capacity-building through recurrent training, INP Air Police also experiences an imbalance in the allocation of training at the officer pilot level. High- intensity training is primarily focused on rotary-wing pilots at the mid-ranking officer level. This imbalance in training distribution leads to a gap in capacity-building for pilots at other ranks or stages of their careers.

Another issue pertains to the training requirements. Medical check-ups are conducted at the Aviation Health Public Service Agency (*BLU Kesehatan Penerbang*) or based on periodic health examinations typically performed by the police. However, rotary-wing pilots in *Ditpoludara* tend to rely solely on health checks within the police environment, making this requirement less universal. Furthermore, INP Air Police lacks sufficient simulators, with only one simulator

available for fixed- wing aircraft training and none for helicopters.

The urgency of this research stems from the identified inconsistencies in recurrent training implementation, suboptimal training distribution across job levels, and gaps in understanding training requirements. The rapid advancement of technology also places increasing pressure on INP Air Police to produce pilots who are well-equipped with the latest tools and knowledge. Competency development needs to be both distributed and diversified across all functional positions within the Indonesian National Police's aviation resources. Therefore, this study will explore hierarchical capacity-building strategies through recurrent training for rotary-wing pilots within INP Air Police. Therefore, the objectives of this research are as follows: (1) To identify the factors contributing to the suboptimal implementation of hierarchical capacity-building through recurrent training for helicopter (rotary-wing) pilots in Indonesian National Police Air Police Directorate; and (2) To develop a strategy for hierarchical capacity-building for helicopter (rotary- wing) pilots in Indonesian National Police Air Police Directorate through recurrent training.

B. LITERATURE REVIEW

The theoretical review serves as the theoretical framework employed by researchers to elucidate the research problem. To analyze hierarchical capacity-building strategies through recurrent training for rotary-wing (helicopter) pilots in the Indonesian National Police's Air Police (INP Air Police), several theories are utilized, including Public Administration Theory, Human Resource Development Theory, and Capacity-building Theory.

Public Administration Theory

Public administration, in essence, is the study of all forms of activities or processes of cooperation among individuals to achieve predetermined objectives. This cooperation is universal, meaning it has existed from ancient times to the present. Such cooperation can be directed towards achieving individual (private) goals as well as societal (public) objectives. Consequently, in practice, the field of administration focusing on achieving private goals is known as "Private/Business Administration," while the field focused on public objectives is termed "Public Administration/State Administration." In this research, the focus will be on administration as government or state administration, with an emphasis on comprehensive institutional development through human resource development. This is reinforced by D. Waldo's perspective on state administration, which states that: (1) public administration is the organization and management of human and material resources to achieve government goals; and (2) public administration is an art and science of management used to organize state affairs.

In the context of the development of state administration theory, K. Bailey (Sawir, 2021) posits that state administration should encompass four types of theories as follows:

a. Descriptive-explanatory theory, which elucidates the hierarchical structure and various relationships of state administration with its environment. This theory provides an abstract explanation of the reality of state administration in the form of concepts, propositions, or laws.

b. Normative theory, which encompasses the values that serve as objectives in the field of state administration, as well as alternative decisions that should be made by the organizers of state administration.
c. Assumptive theory, which emphasizes an accurate understanding of an administrator's reality without employing the assumptions of a bureaucratic devil or angel model.
d. Instrumental theory, which relates to the enhancement of managerial techniques to achieve efficiency and effectiveness in realizing state objectives.

This research employs instrumental theory concerning the managerial techniques for hierarchical capacity-building of rotary pilots in INP Air Police through recurrent training, thereby creating superior human resources. This condition also has the potential to strengthen support for achieving national objectives, such as the establishment of national security stability.

Human Resource Development Theory

Investment in human resources involves the sacrifice of a certain amount of resources, which can be assessed in monetary terms, with the expectation of enhancing future income. The anticipated income is a higher earnings level, enabling improved consumption levels. This investment is related to the concept of human capital previously discussed, where the goal is to enhance the quality of that human capital. Hanapiah asserts that investment in people aims to improve the competencies mentioned earlier. The results of this investment remain influenced by the individual's personal qualities and their efforts to enhance them. Furthermore, investing in people requires measurement to assess the efficiency of the investment made. One method that can be utilized is the Internal Rate of Return (IRR), which fundamentally measures the direct and indirect costs of the investment (Nurkholis, 2018).

Human development is a process aimed at expanding the choices available to individuals. This theory was developed by the UNDP as an effort to improve the analysis of human resources, which had previously relied on gross domestic product or average per capita income. The UNDP posits that average income does not adequately reflect human resource conditions in a region, as the gap between the rich and poor is often significant, leading to the misrepresentation of impoverished populations as having higher welfare levels. Human development measurement is conducted using the Human Development Index (HDI), which comprises three main components: first, the Life Expectancy Index, which measures the expected number of years of life, reflecting the average healthy lifespan based on birth and death rates; second, the Standard of Living Index, which is measured through GDP per capita, reflecting economic welfare; and third, the Education Index, which includes literacy rates and average years of schooling for the population aged 15 and over, aiming to reflect the knowledge level of society (Nurkholis, 2018)

People-centered development is a concept introduced at the International Conference on Population and Development (ICPD), organized by the United Nations Population Fund (UNFPA) and considered a pivotal moment in population and global development issues. The main objectives of the ICPD include: (1) providing open access to family planning, reproductive rights, and sexual and reproductive health; (2) creating gender equality, empowering women, and

ensuring equal access to education for women; (3) addressing the individual, social, and economic impacts of migration; and (4) supporting sustainable development that encompasses environmental issues related to population changes (Nurkholis, 2018).

Human Capital Theory offers a robust theoretical foundation to support socio-economic restructuring and the emergence of corporations. This theory plays a crucial role in establishing effective mechanisms for investing in and developing human capital aimed at fostering corporate growth, social evolution, and economic advancement (Dianti, 2017). As this theory evolves, the concept of human capital can be defined in three aspects. The first concept interprets human capital as individual attributes. In this perspective, human capital is understood as the inherent abilities of individuals, including knowledge and skills. The second concept posits that human capital consists of knowledge and skills acquired through various educational activities, such as formal education, courses, and training. Meanwhile, the third concept views human capital from a production-oriented perspective. In this context, human capital is considered the primary source of economic productivity and as an investment made by individuals to enhance productivity levels (Nurkholis, 2018).

Human Investment Theory applies the concept of sacrificing current resources to gain greater benefits in the future. Human Development Theory defines development as a process to expand the choices available to individuals. People-Centered Development positions humans as both subjects and objects of development. Human Capital Theory relies on the concept that the main components of human capital include education, skills, and health. The combination of human capital theory, human investment, and human development tends to consider only human aspects, which may lead to excessive exploitation. Conversely, sustainable development seeks to balance human and environmental interests to ensure the sustainability of life. On the other hand, population-centered development integrates the four aforementioned theories, with the primary aim of enhancing the welfare of the population as both subjects and objects.

Based on the concepts outlined above, the human capital theory relevant to the themes of skills and education is employed in this study. According to Andrew Mayo, human capital plays a different role in creating corporate human capital, ultimately determining a company's value (Anindya & Irhandayaningsih, 2021). The five components of human capital include:

a. Individual Capability is divided into two parts:
    1) Actual ability, referring to competencies acquired through the learning process or achievement, which can be directly displayed and measured in the current context.
    2) Potential ability, which refers to abilities that still reside within the individual and stem from genetic factors. This capability is further divided into two components: general basic capability (intelligence) and specific basic capability (talents and attitudes).
b. Individual Motivation refers to the drive formed by employees' mental attitudes in response to work conditions within the company. A positive mental

attitude towards the work environment plays a crucial role in enhancing employee motivation, ultimately leading to optimal performance.

c. Organizational Climate is a collection of values held by members of the organization, which subsequently influences their work patterns and behaviors in carrying out tasks and interacting within the organizational environment.
d. Workgroup Effectiveness is determined by two primary factors: productivity outcomes and individual satisfaction. Satisfaction refers to the team's ability to meet its members' personal needs, thereby maintaining membership and commitment to the organization. Meanwhile, productivity outcomes relate to the quality and quantity of work output, as defined by the team's objectives, which are influenced by organizational context, structure, strategy, environmental culture, and reward systems.
e. Leadership represents a form of interpersonal influence within a specific context that occurs directly through communication processes, aiming to achieve one or more established objectives. Furthermore, the factors influencing hierarchical capacity-building through recurrent training for rotary-wing pilots in INP Air Police, using Fitz-ens' human capital theory (Prayetno, 2017), can be explained as a combination of the following factors:

a. Individual Characteristics, including intelligence, energy, general positive attitude, reliability, and commitment, are traits that an individual brings into the work environment from birth.
b. Individual Learning Ability, including talent, imagination, creativity, and practical abilities often referred to as "street smart," is a crucial aspect of personal development.
c. Individual Motivation to share information and knowledge, teamwork spirit, and goal-oriented orientation are contributing factors to the success of collective work.

Capacity-building Theory

Based on Millen (Ratnasari, 2013), Capacity is defined as the ability of individuals, organizations, or systems to perform necessary functions efficiently, effectively, and sustainably. Unlike capacity, competence has a fundamental difference in focus and scope. Competence is a characteristic that reflects an individual's ability to be used consistently and appropriately to achieve the expected performance, including knowledge, skills, self-image, social motives, personal traits, mindsets, emotions, and actions or implementations. Thus, capacity-building focuses on enhancing the overall abilities of an entity, while competence development emphasizes the quality and personal characteristics of individuals in achieving optimal performance.

World Bank divided capacity into five main aspects (Haryanto, 2014), namely:

a. Human resource development, including training, recruitment, and termination of professional, managerial, and technical staff;
b. Organization, related to structuring processes, resources, and management styles;
c. Networking, which involves coordination, organizational activities, functions, and formal and informal interactions;

d. Organizational environment, encompassing regulations, legislation governing public services, responsibilities, authorities, policies, and budgetary support;
e. External environment, including political, economic, and situational factors that affect performance.

Capacity-building is a process designed to enhance the abilities of individuals, organizations, or systems in achieving predetermined objectives (Brown in Haryanto, 2014). This process focuses on efforts to improve capabilities to achieve established goals, both at the individual and organizational levels. Capacity-building encourages collaboration by developing the competencies necessary for effective cooperation (collaboration through competence) and involving diverse participant groups through collaborative activities (collaboration through activity) (Bhagavathula et al., 2021). Thus, capacity-building is closely related to enhancing the achievements of each supporting component through competence development and collaboration in both individual and organizational contexts.

The success of capacity-building programs is influenced by two main components: internal factors and external factors. Internal factors include leadership, shared commitment, recognition of strengths and weaknesses, participation, innovation, and accountability. Meanwhile, external factors encompass networking, information, and regulations. In terms of the process, capacity-building relates to strategies for managing inputs and processes to achieve optimal outputs and outcomes. This process involves improvement steps by providing feedback before proceeding to the next stage. The stages of capacity-building are divided into three dimensions: systems, entities, and individuals. This process is conducted from a large scale to a smaller scale; however, the individual dimension remains important, considering that organizations are operated by their human resources.

C. METHOD

Social phenomenon by understanding its meanings and manifestations. In practice, this qualitative approach tends to utilize data in the form of words or written descriptions rather than numerical data (Wijaya, 2019). The type of research used in this study is descriptive research. According to Rukajat (Fiantika et al., 2022), descriptive research aims to realistically, accurately, and contemporaneously depict phenomena. This research involves the systematic, factual, and accurate compilation of descriptions, images, or illustrations with the objective of revealing facts, characteristics, and relationships between the studied phenomena.

Primary data sources consist of data obtained directly by the researcher through field research or site investigations. Thus, primary data is generated by the researcher for the specific purpose of addressing the issues at hand. In brief, primary data refers to information collected directly from the first source (Arikunto, 2016). In this study, primary data is derived from interviews with police officers working in the Directorate of Air Police of the Republic of Indonesia and from direct observations of the conducted training sessions. Secondary data sources refer to data that has been previously established.

Therefore, secondary data relates to information derived from existing sources, such as books, scientific journals, websites, and other important documents (Arikunto, 2016). This data is obtained from various sources and may include documents, photographs, videos, and others. The collected data serves as supportive evidence to complement or enrich the primary data. In this study, secondary data will be obtained from various sources, including journal articles, books, and documents held by the Directorate of Air Police of the Republic of Indonesia.

The technique for selecting informants in this study employs purposive sampling. Purposive sampling is a sampling technique in which samples are chosen based on specific criteria established by the researcher. These criteria may be determined according to the research objectives, the theories employed, or the characteristics of the studied population. The criteria for this research include personnel who are knowledgeable about the strategic capacity-building policy through recurrent training for rotary-wing (helicopter) pilot resources in the Indonesian National Police's Directorate of Air Police.

Data collection techniques refer to the methods used to acquire data in a study, typically conducted systematically. Data collection techniques are a fundamental step in research, as the primary aim of research is to obtain data. Without understanding the data collection techniques, researchers will not acquire data that meets established standards. Data collection techniques in qualitative research must enable the acquisition of detailed data over a relatively extended period. According to Catherine Marshall and Gretchen B. Rosman (Sugiyono, 2018), data collection in qualitative research is conducted in natural conditions, with primary data sources, and employs techniques primarily involving participant observation, in-depth interviews, and documentation.

Data analysis is part of the data verification process, the results of which serve as adequate evidence to draw research conclusions. Data analysis involves organizing and sorting data into patterns, categories, and basic descriptive units aimed at discovering themes (Sugiyono, 2018). This study is qualitative; therefore, the data obtained need to be articulated in a coherent, logical, and effective manner, facilitating comprehension and interpretation, thus making it easier to draw conclusions. The validity of the data plays a crucial role in research and data analysis, referring to the extent to which the collected and utilized data accurately reflects the concepts, variables, or phenomena that are the focus of the study. There are four stages of data validity testing, including Credibility Testing, Transferability Testing, Dependability Testing, and Confirmability Testing (Sugiyono, 2018).

D. EXPLANATION

Factors Affecting Hierarchical Capacity-building Through Recurrent Training for Helicopter (Rotary-Wing) Pilot Resources in the Directorate of Air Police of the Indonesian National Police

a. Individual Capability

Individual competencies, both actual and potential, play a crucial role in the success of hierarchical training. Based on interviews, it is evident that senior

pilots are quicker in handling technical situations due to their higher flight hours and experience. However, there is a skills gap between senior and junior pilots, particularly in operating more advanced helicopters. Junior pilots often require more time to adapt and build foundational competencies. Moreover, the lack of available simulators for training presents a significant barrier to sharpening these skills. Without adequate support facilities, such as simulators and more frequent recurrent training, the actual competencies of junior pilots are challenging to develop optimally. The potential competencies present in each individual, such as intelligence and talent, have also not been fully maximized due to limited opportunities to reinforce these abilities through well-structured training.

Individual characteristics such as intelligence, reliability, and commitment significantly influence the effectiveness of recurrent training. Interviews reveal a notable disparity between senior and junior pilots regarding innate abilities and professional competencies. More experienced senior pilots often possess superior technical skills, while junior pilots require additional flight hours and training to reach the same competency level. Innate factors such as intelligence and adaptability also play a role in determining how quickly a pilot can acclimate to the complexities of helicopter operations. However, commitment and reliability pose challenges, as some individuals are unable to fully focus on training due to other structural duties they must perform. These individual characteristics form a crucial foundation for development; however, without adequate workplace support, pilots' full potential cannot be maximized.

The importance of individual proficiency, particularly pilot skills, is strongly emphasized in the context of helicopter training within the Air Police. Adequate skills are deemed essential for enhancing flight safety, which is a top priority in aerial operations. Consequently, the need for routine training becomes critical to maintain and improve existing competencies. One informant shared their experience of serving four years in the Air Police, with the last three years as a co-pilot. Despite their primary role being more administrative, co-pilots are also expected to possess sufficient skills to assume the role of Captain when necessary. This underscores the necessity for co-pilots to have adequate technical competence to ensure flight control continuity, especially in emergency situations. Additionally, the importance of training programs such as proficiency checks and recurrent training for all aircrew members, including pilots and mechanics, cannot be overstated. These training sessions aim to deepen knowledge and reflect on aviation theories and helicopter maintenance practices. Continuous training not only enhances technical skills but also strengthens understanding of procedures and protocols, ultimately improving safety and professionalism in helicopter operations within the Air Police. However, in practice, there is a disparity in the implementation of training programs. Unlike middle-ranking officers (*Perwira Menengah*), who benefit from recurrent training facilities based on public-private partnerships (*Kerja Sama Operasi*), junior officers (*Perwira Pertama*) only receive recurrent training provided directly by the Air Police Directorate. This situation poses a challenge, as a larger proportion of junior officers have not undergone recurrent training compared to their middle-ranking counterparts. The following data illustrates the

distribution of pilot ratings (certifications) within the Air Police Directorate between middle-ranking and junior officers:

Table 1: INP Rotary (Helicopter) Pilot Rating

No	Rank	Qt	DAUPHIN			BELL 412			BELL 429			NBO 105			MI 2+			EN 480 B			AW 169			AW 189		
			I	C	CO	I	C	CO	I	C	CO	I	C	CO	I	C	CO	I	C	CO	I	C	CO	I	C	CO
1	*AKBP*	15																								
	Active		7	7	1	0	1	1	3	3	0	6	1	0	0	0	0	2	2	0	5	5	0	3	3	0
	No Recurrent		0	1	0	0	0	0	0	0	0	2	14	0	7	11	0	3	7	0	0	0	0	0	0	0
2	*KOMPOL*	36																								
	Active		1	5	3	3	16	3	5	11	0	0	11	0	1	1	0	5	0	0	1	13	0	1	4	0
	No Recurrent		0	0	0	0	1	0	0	0	0	0	22	4	0	8	8		31	2	0	0	0	0	0	0
3	*AKP*	20																								
	Active		1	2	5	0	2	6	0	3	1	0	13	6	0	0	0	0	2	2	0	9	5	0	0	1
	No Recurrent		0	0	0	0	0	0	0	0	0	0	0	1	0	3	7	0	3	8	0	0	0	0	0	0
4	*IPTU*	11																								
	Active		0	0	6	0	0	0	0	0	4	0	0	5	0	0	0	0	0	11	0	0	8	0	0	1
	No Recurrent		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	*IPDA*	15																								
	Active		0	0	2	0	0	2	0	0	1	0	0	10	0	0	0	0	0	15	0	0	7	0	0	2
	No Recurrent		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Keterangan:
I : Instruktur
C : Captain
Co : Co Pilot

Sources: *Analysis result, 2024.*

There are 52 middle-ranking officers (*Perwira Menengah*) and 46 junior officers (*Perwira Pertama*) serving as pilots. Among the middle-ranking officers, activity levels are relatively high, yet many have not undergone recurrent training. At the rank of *AKBP* (*Ajun Komisaris Besar Polisi* / Police Superintendent), there are 15 personnel. Of these, 7 serve actively as instructors for the DAUPHIN helicopter, with additional involvement as Captains and Co-pilots. Others are actively engaged in operations involving BELL 412, BELL 429, and NBO 105 helicopters. This indicates that *AKBP* personnel prioritize DAUPHIN and BELL 412 in their operations. However, one instructor for DAUPHIN and 14 Captains for NBO 105 fall under the "Have Not Undergone Recurrent Training" category, indicating a need for further recurrent training on specific helicopter types to optimize operational capabilities. At the rank of *KOMPOL* (*Komisaris Polisi* /

Police Assistant Superintendent), there are 36 personnel, primarily involved with the BELL 412, where 16 serve as Captains, and the NBO 105, with 11 serving as Captains. Some personnel also participate in operations with the AW 169 and AW 189 helicopters. The focus on BELL 412 and NBO 105 suggests that *KOMPOL* officers bear significant responsibility for operations involving these types. However, under the "Have Not Undergone Recurrent Training" category, there are a notable number of personnel requiring recurrent training, particularly for NBO 105 (22 Captains) and MI 2+ (8 Captains). This highlights the need to increase the frequency of recurrent training for these aircraft types.

For *AKP* (*Ajun Komisaris Polisi* / Police Chief of Inspector), with a total of 20 personnel, most are actively involved with DAUPHIN, BELL 412, and NBO 105 helicopters, particularly as Captains on the NBO 105, with 13 personnel assigned to this role. Within the "Have Not Undergone Recurrent Training" category, some personnel still lack recurrent training for NBO 105 (1 Captain) and MI 2+ (8 Captains and Co-pilots). This underscores the necessity of enhancing ongoing training for *AKP* personnel to achieve higher operational readiness for these helicopter types. At the rank of *IPTU* (*Inspektur Polisi Satu* / First Police Inspector), there are 11 personnel, with the majority focusing on BELL 412 (5 Co-pilots) and AW 169 (11 Co-pilots). None are recorded in the "Have Not Undergone Recurrent Training" category, indicating that *IPTU* personnel have yet to receive official recurrent training required for operating helicopters in accordance with established operational standards. Lastly, at the rank of *IPDA* (*Inspektur Polisi Dua* / Second Police Inspector), there are 15 personnel, primarily engaged with BELL 429, NBO 105, and AW 169 helicopters. Notably, 10 personnel serve as Co-pilots on the NBO 105 and 15 on the AW 169, reflecting the focus on these helicopters within the *IPDA* ranks. Like *IPTU*, no personnel in this rank are listed under "Have Not Undergone Recurrent Training," implying that individuals at this level lack established recurrent training standards to maintain flight performance. Only *AKP* to *AKBP* ranks are actively monitored for recurrent training to ensure the consistent maintenance of individual capacity. Recurrent training is a critical capacity development effort for police pilots in the Air Police Directorate to maintain and even enhance their skills in accordance with operational needs and field demands.

The observational data from September 26, 2024, indicate that the recurrent training conducted by the Air Police Directorate does not fully align with the mandatory training requirements implemented in KSO-based recurrent training programs. Critical training sessions such as Emergency Equipment and Procedures Training and Helicopter Underwater Escape Training (HUET) have yet to be conducted. These types of training are essential to ensure pilots' preparedness and resilience in emergency situations, particularly high-risk scenarios such as evacuating from a helicopter submerged in water or effectively using emergency equipment. However, the implementation of these mandatory training programs is neither continuous nor conducted regularly in accordance with established requirements, including proficiency checks, which should ideally be conducted at least every six months. As a result, the recurrent training necessary to maintain pilot proficiency has been independently carried out by INP Air Police

Directorate. The specific details of mandatory recurrent training conducted by *Ditpoludara* are outlined in the following table.

Table 2: Percentage of Junior Officers (*Perwira Pertama*) Pilots Completing Recurrent Training

Percentage	*Recurrent Training Mandatory*					
	ALAR & CFIT	CRM	WIND SHEAR	DG GOODS	CET/ HUET	AVSEC
Air Police Internal Training	78%	65%	65%	43%	0%	0%
No Recurrent Training	7%	28%	28%	48%	0%	0%
Never Recurrent Training	15%	7%	7%	9%	100%	100%

Sources: *Analysis result, 2024.*

The status of mandatory recurrent training implementation for junior officer pilots in *Ditpoludara* reveals several key findings regarding compliance with various categories of required training, namely ALAR & CFIT (Approach and Landing Accident Reduction & Controlled Flight into Terrain), CRM (Crew Resource Management), WINDSHEAR, DG GOODS (Dangerous Goods), CET/HUET (Crew Escape Training/Helicopter Underwater Escape Training), and AVSEC (Aviation Security). A total of 78% of pilots have completed ALAR recurrent training. Among them, 36 pilots have participated in self-initiated training, but 3 pilots have yet to undergo this training, and 7 pilots have never participated. This indicates that while the majority of pilots have completed ALAR & CFIT training, there remain some who have not fulfilled this requirement, potentially increasing operational risks. For CRM recurrent training, 65% of pilots have completed the program. This training aims to enhance coordination among flight crew members. Thirty pilots have participated in the training, but 13 pilots have not, and 3 have never participated. The low participation rate in CRM training highlights the need for greater emphasis to ensure all pilots understand the importance of coordination in reducing human errors during flight operations. A similar situation is observed in the WINDSHEAR category, where 30 pilots have completed training, but 13 pilots have not, and 3 have never participated. The lack of training in this category may increase risks during extreme weather conditions, underscoring the need to boost pilot participation in WINDSHEAR training. For DG GOODS recurrent training, which pertains to the handling of dangerous goods during flights, 65% of pilots have completed the program. However, only 20 pilots have undergone the training, while 22 have not, and 4 have never participated. The high number of pilots who have not attended DG GOODS training indicates a gap in preparedness for situations involving dangerous goods, warranting more attention from *Ditpoludara*'s training management. In the CET/HUET category, which is critical for emergency evacuation procedures, none of the pilots have participated, with all 46 pilots recorded as having never undergone this training. Similarly, no pilots have participated in AVSEC training, which is essential for aviation security. Significant weaknesses are evident in the CET/HUET and AVSEC categories, where the complete absence of training poses potential safety and security risks in flight operations.

b. Individual Motivation

Motivation is defined as the process that influences an individual's selection among various types of desired activities. Work motivation, specifically, pertains to the drive or impetus that arises within the context of a workplace or organizational setting (Budiarti & Suswanta, 2020). Individual motivation is also a crucial factor in the capacity-building of pilots. Many pilots exhibit a strong enthusiasm to continue flying and enhance their skills. However, this motivation is often hindered by irregular training schedules. Some pilots feel frustrated due to limited opportunities for recurrent training, while operational needs frequently disrupt their training schedules. Constraints of time and resources diminish their motivation to engage in training. Conversely, pilots who also work in civil aviation demonstrate greater motivation because they can observe more structured training standards in the private sector, which can accelerate their skill development. This creates a disparity in motivation between pilots who solely serve in the Air Police and those who also operate in the civil sector.

The motivation of rotary-wing (helicopter) pilots within the Air Police Directorate for self- capacity development encompasses both internal and professional factors. Most pilots possess intrinsic motivation derived from a sense of enjoyment or satisfaction in performing flight duties. This enthusiasm serves as a primary driver for their continuous skill improvement, including aspirations to achieve the position of Captain Pilot. The inherent challenges associated with the role of Captain Pilot are also seen as motivational, reinforcing their desire for self-development, as the position requires greater responsibility and competency compared to that of a Co-Pilot. Another motivating factor is the need for more constructive feedback during operations. In this context, a Captain Pilot has greater opportunities to learn from complex operational experiences, enhance leadership skills, and deepen insights into flight management. This is further supported by the current status of pilot ratings, indicating that 50 rotary-wing pilots still have not met their required flight hours. Among them, 24 pilots require a significant increase in flight hours. Despite this, the rating requirements for rotary- wing pilots are considered satisfactory, as all pilots have completed the necessary certifications. This also demonstrates that the motivation of junior officers (*Perwira Pertama*) serving as rotary-wing pilots is relatively high, as evidenced by their participation in self-initiated training within Air Police Directorate and their fulfillment of flight hour requirements.

c. Organizational Culture

Organizational culture refers to a set of values held by the members of an organization, which subsequently influence their work patterns and behaviors in carrying out tasks and interacting within the organizational environment. The culture at *Ditpoludara* employs a structured coordination and planning pattern, based on collaboration between units within its internal environment. There is a clear division of responsibilities among various sub-units, such as the Professional Development unit, which is responsible for submitting the needs related to pilot competencies or ratings. The work culture implemented in the recurrent training for rotary-wing pilots begins with the Air Patrol unit, which is responsible for

identifying and submitting the training needs of pilots, including the specific ratings or specialized skills required. Once these needs are communicated, the Expertise and Profession unit (*Unit Keahlian dan Profesi / Katprof*) takes responsibility for preparing the annual training calendar and planning the educational programs in line with the available budget.

This training management process reflects a structured work culture focused on budget efficiency. *Katprof* ensures that training is only carried out once the budgetary requirements and training plans are approved, demonstrating a commitment to the efficient use of resources. Furthermore, the coordination between units in addressing training needs indicates that the organization strives to build synergy among sub-units to ensure the effective development of personnel competencies. The work culture prioritizes meticulous planning, cross-unit coordination, and efficiency in executing training programs. This plays a crucial role in achieving the expected quality and skill targets for pilots while ensuring that all processes align with established procedures. However, the limited variety of training programs also presents a challenge for further development.

d. Team effectiveness

In the context of recurrent training at *Ditpoludara*, the effectiveness of the work team is greatly influenced by two main factors: productivity outcomes and individual satisfaction. Team members' satisfaction refers to the extent to which recurrent training meets the personal needs of pilots and technicians, including their requirements for skill development and maintaining professional qualifications. On the other hand, productivity outcomes in recurrent training are related to the quality and quantity of training achievements, such as new skills acquired, maintenance of safety standards, and operational readiness. This productivity is influenced by various internal organizational factors, including the training context, the structure and strategy of the training, the safety culture internalized within the *Ditpoludara* work environment, and the reward system implemented.

Based on observational data from September 28, 2024, in the form of training documents, it was found that out of 12 planned training types, only six were successfully implemented by October 2024, while the remainder has yet to be carried out. The training that has been conducted varies in type, ranging from basic skills (such as target shooting) to operational skill enhancements (such as handling accidents and fire suppression at airports). However, more specific and technical training (for example, operational crew training for specific helicopter types) has not been realized. The Sub- directorate for Security, Personnel, and Logistics is responsible for the implementation and coordination of each training session. However, the effectiveness of the planning appears to be suboptimal, given that only around 50% of the planned training has been realized. With many training sessions delayed, there is a potential underutilization of resources that could hinder the enhancement of competencies for pilots and other personnel involved. The training that has not been carried out includes training types relevant to specialized competencies, such as operational crew training for certain helicopter types and air ambulance mobilization, which are essential competencies for *Ditpoludara* operations.

e. Leadership

Leadership, in the context of hierarchical capacity-building at *Ditpoludara*, is a crucial element that plays a key role in creating synergy among members, enhancing team effectiveness, and ensuring the achievement of training targets. Leadership is not only about giving instructions but also involves the leader's ability to influence and motivate interpersonally through direct communication. The need for leadership also aims to address both technical and non-technical challenges in training. Several values are also implemented in recurrent training at *Ditpoludara*, as part of its role within the police force. The core leadership values that underpin recurrent training in *Ditpoludara Polri* are based on comprehensive responsibility, where military pilots not only act as operators but also as commanders fully responsible for all operational aspects, including technical decisions and safety. In the context of the Indonesian National Police, the role of the captain pilot includes supervising the mechanics and controlling important decisions, such as aircraft grounding. This demonstrates a fundamental difference from the civilian aviation world, where the roles and responsibilities between pilots and other supporting staff are not as integrated.

In recurrent training, the importance of leadership that can guide and unify various operational roles becomes very clear. This approach ensures that all parties involved in aircraft operations understand their roles in the larger system and are subject to the authority of the pilot as the primary leader. However, *Ditpoludara* faces significant challenges in implementing optimal recurrent training, such as high work intensity and limited infrastructure. The high work intensity in the field reduces the frequency of training sessions, potentially hindering the ongoing development of rotary (helicopter) pilot competencies. Limited infrastructure reduces access to adequate training facilities and resources. Therefore, while there is strong support for recurrent training as a critical form of professional development, these challenges highlight the need for improvements in policies and resource allocation. This also applies to the instructors who contribute to the training. Effective instructors are essential in ensuring the quality of training. Moreover, improving infrastructure and adjusting work intensity will enable *Ditpoludara* to conduct more effective continuous training in every air police mission.

Strategies for Hierarchical Capacity-building of Helicopter (Rotary) Pilot Resources in the Directorate of Air Police through Recurrent Training

This diagram illustrates an ideal strategy for recurrent training tailored for helicopter pilots, particularly junior officers, designed to maintain their skills and operational readiness through structured and periodic training. Based on these factors, the researcher has developed a strategy to optimize recurrent training for rotary-wing (helicopter) pilots within the Indonesian National Police Air Police Directorate (*Ditpoludara Polri*). This optimization strategy is supported by several aspects, including leadership policy support, resource allocation, leadership commitment, and the integration of information technology.

In the hierarchical capacity-building for helicopter (rotary) pilots at the Indonesian National Police's Air Police Directorate through recurrent training, the following strategies are established:

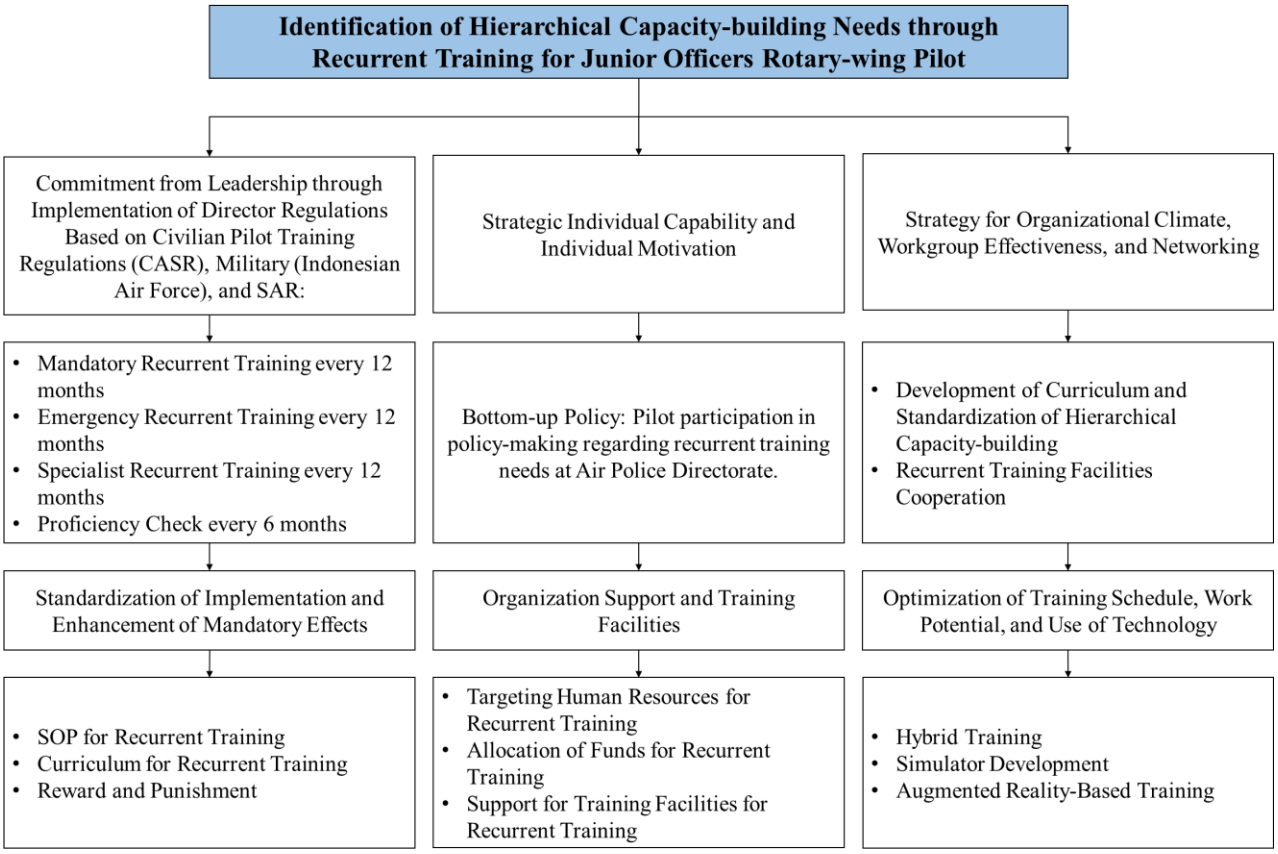

Figure 1. Hierarchical Capacity-building for through Recurrent Training for INP Air Police Junior Officer Rotary Pilot Strategy
Sources: Analysis result, 2024.

Strategi 1: Policy Support

The development of human resource capacity within Indonesian National Police Air Police Directorate (*Ditpoludara Polri*), particularly for helicopter (rotary-wing) pilots, is essential to ensure optimal performance in carrying out police missions and tasks. Recurrent training strategies require strengthening the internal organization of *Ditpoludara* through the establishment of regulations, legislation, and the enforcement of policies that support pilot training and capacity development. Strengthening organizational policy structures and formulating clear regulations provide a solid framework for implementing recurrent training. This includes defining clear responsibilities and authorities for each organizational element within *Ditpoludara*, enabling efficient and effective training implementation. With well-defined regulations, all organizational members can understand their roles and contributions toward achieving training objectives.

Pilot capacity development must be based on legislation governing public service and aviation safety (CASR). Policies supporting recurrent training must align with existing regulations (TNI AU and Civil Aviation authorities), ensuring that all training activities comply with standards set by aviation authorities.

Consequently, pilots are equipped not only with practical skills but also with a strong understanding of legal and ethical aspects of aviation. The Director's regulation, formulated based on regulations from CASR, TNI AU, and Basarnas, underscores the importance of harmonizing civil, military, and SAR training to meet safety and operational standards. These regulations mandate the frequency of recurrent training, including emergency training, specialist training, and proficiency checks, which must be conducted every 6 to 12 months. Additionally, the Director's regulation serves as a foundation for facilitators to carry out recurrent training, encompassing the stages of socialization, implementation, and evaluation.

Strategy 2: Resource Allocation

In the context of civil aviation, recurrent training is a critical component conducted routinely to ensure that every pilot maintains the required competencies and meets established safety standards. Optimizing this process necessitates support in terms of human resources, budgets, and infrastructure. The process begins with mandatory health checks conducted every six months and compulsory training programs such as Crew Resource Management (CRM) and other operational training, held at least once a year as a prerequisite for renewing commercial pilot licenses. In Indonesian National Police Air Police Directorate (*Ditpoludara Polri*), implementing recurrent training faces several challenges. Despite the awareness of the importance of enhancing the capacity of helicopter pilots, training execution is hindered by a lack of competent instructors, inadequate training infrastructure, and budget constraints. Although some recurrent training sessions, such as CRM and windshear training, have been conducted, full participation of all pilots is not always guaranteed due to time and location constraints, particularly in regions like MAKUS and during operational deployments (*Bantuan Kendali Operasi / BKO*). Beyond human resources, capacity-building strategies through recurrent training also require adequate budget allocation and infrastructure support.

Adequate budget support is a key element in ensuring the sustainability of recurrent training. Strengthening internal organizational structures includes efforts to establish effective communication and coordination with relevant parties, such as regulatory bodies and government agencies. With appropriate budget support, *Ditpoludara* can implement regular training programs, provide the necessary facilities and resources, and ensure the availability of qualified instructors. Capacity development for helicopter pilots in *Ditpoludara* through recurrent training faces significant challenges in terms of budget and the availability of infrastructure and facilities. Based on interviews, the primary obstacles to conducting recurrent training or proficiency checks are limited budgets and the readiness of primary weapons systems and human resources. Since the budget allocation is predominantly focused on routine operational needs, the implementation of recurrent training is often delayed and less than optimal.

The absence of helicopter simulator facilities in *Ditpoludara* poses a serious barrier to developing pilot competence and preparedness. Helicopter simulators offer a safe environment for training in emergency conditions that cannot be practiced with real helicopters, such as in-flight emergency handling. However, to

date, these facilities are not available within *Ditpoludara*, despite plans for their development being considered. The presence of simulators would enhance the effectiveness of recurrent training, allowing pilots to undergo intensive and safe training while mastering critical scenarios essential for operational safety. Therefore, a hierarchical capacity- building strategy requires greater attention in terms of budget planning, simulator procurement, and the utilization of existing infrastructure to ensure that recurrent training can be implemented sustainably and effectively. This is essential to achieve the competency standards and readiness of helicopter pilots within Indonesian National Police Air Police Directorate.

Strategy 3: Leadership Commitment

To enhance competency and operational flight safety, Indonesian National Police Air Police Directorate (*Ditpoludara Polri*) has developed a hierarchical capacity-building strategy for helicopter pilots, emphasizing leadership commitment to pilot standardization in alignment with regulations and field requirements. This strategy includes the formulation of clear Standard Operating Procedures (SOPs), relevant curricula, and the implementation of a reward-and-punishment system to ensure pilot motivation and compliance with training requirements. The strategy aims to establish skill standards for each rank through the creation of tiered SOPs and recurrent training curricula tailored to rank levels, including *IPDA* (Second Police Inspector), *IPTU* (First Police Inspector), and *AKP* (Adjunct Police Commissioner). This rank-based approach is designed to enhance technical and managerial skills at each level of rotary-wing pilot (helicopter) rank in *Ditpoludara Polri*.

For *IPDA* (Second Police Inspector), as junior officers or co-pilots, the program focuses on strengthening fundamental flight skills, introducing safety standards, and mastering emergency procedures through simulator-based training. *IPDA* officers undergo basic training on helicopter systems and operations, risk management, and fundamental flight maneuvers. At the *IPTU* (First Police Inspector) level, the focus shifts to honing more specialized skills, including operational mission management and advanced emergency scenario training. *IPTU* pilots also receive field leadership training, critical decision-making exercises, and advanced flight aids utilization. Recurrent training for *IPTU* emphasizes coordination and teamwork during police missions.

At the *AKP* (Adjunct Police Commissioner) level, as senior pilots, training involves the development of strategic skills, mission supervision, and handling complex critical situations. These officers, responsible for leading significant missions, are trained in operational leadership, technological adaptation, and managerial understanding of flight safety. *AKP* officers are also tasked with mentoring and supervising junior pilots, particularly those at the *IPDA* and *IPTU* levels. SOPs are designed to provide clarity on the types of training and frequency required for each rank. Additionally, SOPs outline guidelines for training schedules, graduation criteria, and evaluations conducted by authorized personnel. These SOPs are expected to help *Ditpoludara* achieve sustainable training targets effectively and efficiently, ensuring that all pilots are technically and mentally prepared for their missions.

External factors influencing *Ditpoludara*'s performance, such as technological advancements and trends in the aviation industry, must also be considered in recurrent training planning. Pilots need to be equipped with skills relevant to the latest technologies and efficient operational procedures. Therefore, *Ditpoludara* must adapt to changes in the external environment and periodically update training curricula to meet emerging needs and challenges. Curriculum updates should involve collaborations with national and international training institutions and align with the latest developments in the aviation industry.

To maintain motivation and awareness of recurrent training, a reward-and-punishment system is employed. Rewards are given to pilots who demonstrate optimal performance, adherence to procedures, and achievement of high safety and operational standards. These rewards may include formal recognition, acknowledgment from leadership, or opportunities to participate in advanced training programs that enhance their competencies. Conversely, punishments or sanctions are imposed on those who violate procedures or fail to meet established standards. These sanctions are not intended to be excessively punitive but are designed to encourage discipline and provide a learning effect. With a fair and transparent reward-and-punishment system, pilots are motivated to continually improve their skills and adhere to operational standards. This fosters a conducive environment for continuous improvement, ensuring that safety and quality standards in *Ditpoludara*'s aviation operations are maintained in accordance with regulations and organizational expectations.

Strategy 4: Information Technology

The capacity development of human resources in Indonesian National Police Air Police Directorate (*Ditpoludara Polri*), particularly for helicopter (rotary-wing) pilots, requires consideration of external factors influencing the *Ditpoludara* environment, including advancements in technology. Amid the current progress in information technology, there is potential to address existing challenges. The utilization of online communication platforms, such as Zoom, can serve as an alternative for conducting recurrent training virtually. This approach is particularly relevant for pilots unable to attend training due to deployment in operational support (*Bantuan Kendali Operasi / BKO*). With the growing accessibility of internet connectivity, remote training can facilitate the participation of all pilots regardless of their physical location. Such an approach not only enhances pilot engagement but also ensures they remain updated on the latest procedures and knowledge pertinent to their duties.

Moreover, the use of augmented reality (AR) technology offers a simplified and innovative alternative to traditional helicopter simulators. AR technology has increasingly been employed in recurrent training for helicopter pilots across various aviation organizations and training institutions. AR enables pilots to engage in realistic yet safe simulations by integrating real-world elements with virtual components, creating an interactive and immersive training environment. Through AR, training can include emergency scenario simulations, specialized maneuver exercises, and familiarization with specific operational environments without requiring the use of actual helicopters. For instance, pilots can practice handling adverse weather conditions or system failures in a realistic manner using

AR devices that display data and visualizations to aid their understanding of complex situations. This approach significantly reduces the costs and risks associated with using real helicopters for training purposes.

AR-based recurrent training also allows for customization to meet individual training needs, making it more effective in sharpening pilot skills. Furthermore, AR technology facilitates detailed performance assessments, as every pilot action can be recorded and analyzed in real-time, providing valuable insights for skill enhancement. Several advanced military and civil aviation institutions have begun exploring and integrating AR into their training programs, although widespread adoption is still in the developmental stages. The application of AR in aviation training offers numerous benefits. The training environment is not only safer compared to real-world scenarios but also more accessible. Establishing virtual training programs is more cost-efficient and requires fewer resources than procuring aviation equipment for practice purposes. Trainees can complete programs more quickly while demonstrating improvements in skill retention and mastery. By enabling frequent practice in highly realistic environments, AR reduces training costs, time, and logistical complexities while increasing the frequency of training sessions. This innovative approach represents a significant advancement in ensuring the effectiveness and efficiency of pilot capacity development.

E. CONCLUSION

The factors contributing to the suboptimal implementation of hierarchical capacity-building through recurrent training for helicopter pilots in Indonesian National Police Air Police Directorate stem from weaknesses in leadership and networking aspects. Leadership has not yet fully succeeded in ensuring the equitable distribution of recurrent training across all officer levels, particularly for junior officers. This has resulted in a backlog of pilots with the ranks of *AKP* and *KOMPOL* who have not been afforded regular training opportunities. The disparity in training distribution highlights the need for more proactive and structured leadership in managing training needs, including addressing specific requirements at each rank level. Additionally, networking has not been effectively utilized to support the implementation of standardized training. Networks, which should serve as a key facilitator in providing competent instructors, appropriate curricula, and adequate training infrastructure, remain underdeveloped. These limitations hinder the institution’s ability to deliver training that meets the expected quality standards.

A comprehensive approach encompassing four key elements, structured policies, resource optimization, leadership commitment, and technology utilization can enhance the effectiveness of hierarchical capacity-building strategies for helicopter pilots in Indonesian National Police Air Police Directorate through recurrent training. Clear policies aligned with national standards, coupled with optimized budgets and facilities such as simulators, ensure training is conducted consistently and safely. Leadership commitment through hierarchical competency standards and a reward-and- punishment system fosters pilot motivation and discipline. Meanwhile, technology, such as online platforms and

augmented reality (AR), supports training flexibility and enables real-time performance monitoring. This combination allows the Air Police Directorate to implement more efficient and effective recurrent training programs, improving pilot competency and operational readiness.

REFERENCES

Agung, I. G., Mas, A., Yuniar, D. C., & Munir, M. S. (2020). Pengabdian Masyarakat Melalui Recurrent Basic Aviation Security. *Jurnal Pengabdian Kepada Masyarakat Langi Biru*, *1*(Maret 2020), 32–40.

Anindya, L., & Irhandayaningsih, A. (2021). Penerapan Komponen Human Capital dalam Teori Andrew Mayo (Studi Kasus: Perpustakaan Daerah Kabupaten Purbalingga). *Anuva: Jurnal Kajian Budaya, Perpustakaan, Dan Informasi*, *5*(2), 237–250. https://doi.org/10.14710/anuva.5.2.237-250

Arikunto, S. (2016). *Prosedur Penelitian Suatu Pendekatan Praktik*. Rineka Cipta.

Bhagavathula, S., Brundiers, K., Stauffacher, M., & Kay, B. (2021). Fostering collaboration in city governments' sustainability, emergency management and resilience work through competency- based capacity-building. *International Journal of Disaster Risk Reduction*, *63*, 102408. https://doi.org/10.1016/j.ijdrr.2021.102408

Budiarti, N., & Suswanta, S. (2020). Strategy To Improve The Quality Of Human Resources To Achieve Good Governance (Case study at the Department of Small and Medium Enterprises cooperative Bantul Regency). *DIA Jurnal Ilmiah Administrasi Publik*, *18*(2), 15–28. https://doi.org/10.30996/dia.v18i2.4009

Çakar, N. D., Gedıklı, A., & Erdoğan, S. (2021). The global economic hibernation: Macroeconomic indicators and health management policies. *Duzce Medical Journal*, *23*(Special Issue 1), 48–60. https://doi.org/10.18678/dtfd.902124

Dianti, Y. (2017). Human Capital Theorysebagai Landasan Teoritis Dalamhuman Resource Development. *Angewandte Chemie International Edition*, *6(11)*, *951–952.*, *13*(1), 5–24. http://repo.iain-tulungagung.ac.id/5510/5/BAB 2.pdf

Fiantika, F. R., Wasil, M., Jumiyati, S., Honesti, L., Wahyuni, S., Jonata, E. M., Hasanah, N., Mashudi, I., Maharani, A., Ambarwati, K., Noflidaputri, R., Nuryami, & Waris, L. (2022). *Metodologi Penelitian Kualitatif*. Global Eksekutif Teknologi. https://scholar.google.com/citations?user=O-B3eJYAAAAJ&hl=en

Gunardi, S. (2022). Sikap Terhadap Manajemen Kokpit dan Karakteristik Demografis Pilot. *Jurnal Cahaya Mandalika*, *3*(3), 238–250.

Haryanto. (2014). *Pengembangan Kapasitas Kelembagaan (Institutional Capacity Development) (Teori dan Aplikasi)*. Jakarta: AP21 Nasional.

Kementerian Perhubungan. (2016). *Civil Aviation Safety Regulation (CASR)* (PM 41 Tahun 2016).

Mansikka, H., Harris, D., & Virtanen, K. (2019). Pilot competencies as

components of a dynamic human-machine system. *Human Factors and Ergonomics In Manufacturing*, *29*(6), 466–477. https://doi.org/10.1002/hfm.20809

Nurkholis, A. (2018). Teori Pembangunan Sumberdaya Manusia: Human Capital Theory, Human Investment Theory, Human Development Theory, Sustainable Development Theory, People Centered Development Theory. *INA-Rxiv 8trv7, Center for Open Science*, 3–5.

Prayetno, S. (2017). Strategi Human Capital: Sebuah Paradigma Baru Bagi Para Eksekutif? *Majalah Manajemen & Bisnis Ganesha*, *01*(02), 1–7.

Ratnasari, J. (2013). Pengembangan Kapasitas (Capacity-building) Kelembagaan Pada Badan Kepegawaian Daerah Kabupaten Malang. *Jurnal Administrasi Publik Mahasiswa Universitas Brawijaya*, *1*(3), 103–110.

Sawir, M. (2021). Ilmu Administrasi Dan Analisis Kebijakan Publik. Konseptual dan Praktik. In *Ilmu Administrasi Dan Analisis Kebijakan Publik Konseptual Dan Praktik*.

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (23rd ed.). CV. Alfabeta. Timonora, S., & Ariyanto, W. (2022). Training of Indonesian National Police Pilots to Improve

Competence, Professionalism and Aviation Safety. *KnE Social Sciences*, *20 Mei*. https://doi.org/10.18502/kss.v7i9.10950

Valenti, A., & Horner, S. (2020). The Human Capital of Boards of Directors and Innovation: An Empirical Examination of the Pharmaceutical Industry. *International Journal of Innovation Management*, *24*(6), 1–32. https://doi.org/10.1142/S1363919620500565

Widadi, N., Mora, M., Yarlina, L., Bashory, H., Yusmar, T., Agro Nugroho, D., & Rafiqi Sitompul,

M. (2021). Kesiapan Indonesia Dalam Implementasi Pelatihan Berbasis UPRT. *Warta Ardhia: Jurnal Perhubungan Udara*, *47*(2), 143–150.

Wijaya, H. (2019). Metode-Metode Penelitian Dalam Penulisan Jurnal Ilmiah Elektronik. *OSF Preprints*, *March*, 21–22. https://doi.org/10.31219/osf.io/dw7fq