The Factors of Success in Air Traffic Control Career: A Case Study of a Private School

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Abstract

This qualitative research aimed to analyze and present the factors of success in air traffic control career a case study of a private school. The research was conducted with in-depth interviews with 7 respondents, namely 1 respondent with at least 20 years and 3 respondents with at least 15 years of air traffic control experience, 2 airport managers, and 1 human resources personnel.

The findings revealed that the success in air traffic control career consists of 3 main factors, 1 secondary factor, and 15 sub-factors: 1) Physical factors which include physical conditions, knowledge, and skills. 2) Psychological factors which include motivations, attitudes, and personal characteristics. 3) Organizational factors which include work systems, workplace environment, training, and resource management. 4) Factors related to work performance (the secondary factor) which include co-workers, social skills, emotional intelligence, work-life balance, and English language skills.

The presentation of guidelines for developing the factors of success in air traffic control career are divided into 2 levels: 1) Personnel development guidelines include training process creation, curriculum determination, and evaluation. They need regular updates to ensure relevance to current events, providing equal opportunities for self-development and fostering effective collaboration. 2) The organizational development guidelines encompass several key aspects. These include developing specific and clear guidelines for personnel recruitment, creating operations training courses, setting up remunerations for employees, and establishing a platform that not only facilitates the acceptance of personnel into the organization but also ensures they are fully prepared to perform their duties effectively for the long term.

Keywords: The factors of success in a career, Air Traffic Control, A private school

1. Introduction

The Air Navigation Service is one of the components of air transport activities. It encompasses various services such as air traffic management, communication systems, navigation aids, aircraft tracking systems, meteorological services, and aviation news services.

Additionally, it includes search and rescue operations for distressed aircraft. To ensure continuous operation, providing air navigation services requires either an authority or a team of personnel on duty 24 hours a day. Air navigation services consist of 1) Air Traffic Management (ATM), the dynamic and integrated management of air traffic and airspace, 2) Air navigation technology service management (Communication, Navigation, and Surveillance, CNS Technologies); and 3) Aviation news services, procedures, and flight charts (Aeronautical Information Services, AIS/Charts, and Flight Procedures), a service providing necessary aviation information and news for safety, orderliness, and efficiency of air navigation within the designated areas.

According to the air navigation services mentioned above, it is the direct responsibility of air traffic controllers. Some educators have defined them as "Air traffic controllers above the crowd," "Air traffic controllers can get them down safely," or "Air traffic controllers are the heroes on the ground" (Wrightusa, 2020). Air Traffic Controllers (ATC) are the people who provide air traffic control services. Their functions are to prevent aircraft collisions. They are responsible for the safety of the aircraft during flight, and for maintaining the overall safety and efficiency of aviation and air traffic. (ICAO, 2011, cited in Intasorn et al., 2021, pp. 303–309).

The job of air traffic control service is regarded as the paramount responsibility in ensuring the safe management of aircraft from departure to destination airports. It ensures safety and prevents aircraft collisions. This also extends to preventing aircraft collisions, including with obstacles such as balloons and mountains in the flight operating area, as well as ground obstacles like moving vehicles on parking lots or runways, etc. Additionally, air traffic controllers maintain flexibility while adhering to global standards, promoting orderliness and efficiency in air traffic operations worldwide.

The functions of air traffic controllers are divided according to the control area: 1. Aerodrome Control Service 2. Approach Control Service and 3. Area Control Service (Aero Thai, 2019). Therefore, air traffic controllers must have sufficient knowledge to execute tasks within tight time frames while adhering to basic safety principles and according to international standards. This necessitates the development of skills to gain expertise and enabling them to work quickly and accurately. The focus is on preventing aircraft accidents during flights and collisions with obstacles on the ground, while managing air traffic conditions within designated areas to maintain flexibility (demand-capacity balancing) and ensure the appropriate levels of safety and efficiency (Aero Thai, 2024). Furthermore, air traffic controllers must possess the skills to swiftly resolve immediate issues, make command decisions, or provide accurate information to flight operators. Errors in their actions could lead to potential damage to aircraft or endanger the lives and property of passengers.

After the cessation of the Coronavirus disease (Covid-19) pandemic, the aviation industry is gradually recovering to its normalcy. There is a heightened interest of students to enroll in pilot courses in private aviation schools worldwide to meet the demand of the global job market, leading to more flight training activities at airports. However, some of the private aviation schools are having a shortage of air traffic control service instructors to meet this demand. This shortage may be attributed to various factors affecting the success in this career. Therefore, this research aims to study the success factors of air traffic control career and to

present guidelines for addressing personnel development issues and shortages of air traffic controllers.

2. Research Objective

To analyze and present the factors of success in air traffic control career through a case study of a private school.

3. Research Methodology

3.1 Research methods: This research has three steps as follows:

Step 1: Prepare to conduct the research by thoroughly examining the background, origin, and significance of the problem. This involves analyzing and synthesizing various concepts, theories, regulations, manuals, and related research documents from both domestic and international sources.

Step 2: Conducting the research by analyzing factors of success in air traffic control career through a case study of a private school and set up the research guideline in 2 parts: 1) document review (Documentary Research). This process required the studying of related concepts, theories, and existing research. The data obtained from the document review was analyzed for content to develop tools for data collection. As a result, a semi-structured interview draft was created. The semi-structured interview draft was then submitted to the experts for review and suggestions for revision 2) Analyzing data from in-depth interviews with 7 key informants, grouping information to ensure accuracy, completeness, and consistency with relevant theories and research to ensure correctness, suitability, feasibility, and usefulness. The aim was to obtain findings on success factors in an air traffic control career.

Step 3: Report findings: A draft report of the findings was drafted and submitted to the experts and the university's academic head of the Air Traffic Control department for review and feedback. Following refinement, the finalized report was then included into the research paper for publication.

3.2 Respondents

This research was conducted with 7 respondents whose qualifications as follows:

1) An air traffic control manager at a private aviation school airport with at least 20 years of work experience. The number of respondents in this category totaled 1 person.

2) A temporary air traffic control manager at a private aviation school airport with at least 15 years of work experience. The number of respondents in this category totaled 3 persons

3) An airport manager at a private aviation school with at least 10 years of management experience. The number of respondents in this category totaled 2 persons.

4) A human resources personnel at a private aviation school currently with at least 10 years of experience. The number of respondents in this category totaled 1 person.

3.3 Reliability and validity of the research instrument

The research instrument used in this research for collecting information from the 7 respondents was a self-developed semi-structured interview questionnaire. The questionnaire was reviewed and checked for completeness, accuracy, and appropriate use of language by

experts at least 3 times. The refined and finalized version of the questionnaire was then utilized as the research instrument for data collection.

3.4 Data collection

The data collection process involved conducting interviews with the 7 respondents, which proceeded as follows:

1) The Graduate School of St. Teresa International University issued official interview request letters to the selected respondents.

2) The researcher followed up on the letter and confirmed interview sessions with the respondents. The venue of the in-depth interviews was a private aviation school.

3) The in-depth interviews were conducted over a period of one month.

3.5 Data analysis

The obtained data underwent content analysis, which involved several steps. Firstly, the data was checked and confirmed for conformability. Next, it was grouped and checked for accuracy and completeness. Subsequently, the data was evaluated to determine whether it adequately addressed the research questions. Finally, descriptive analysis was conducted to identify any issues regarding correctness, suitability, feasibility, and usefulness, ensuring alignment with the research objectives.

4. Research Findings

The findings from the research on the factors of success in an air traffic control career through a case study of a private school as follows:

1. The factors of success in an air traffic control career through a case study of a private school. The findings from document analysis and in-depth interviews with the selected respondents revealed the following 4 factors of success in air traffic control career:

Factor 1: Physical condition. An air traffic controller must have these characteristics to effectively fulfill their roles and responsibilities: 1) Physical conditions. An air traffic controller must maintain overall good health to meet the ICAO standards and must pass the annual health examination at the Institute of Aviation Medicine, Royal Thai Air Force every year.

This ensures that air traffic controllers are physically capable of performing their duties due to the demanding shift work, including both day and night, which can adversely affect their health. The adverse effects mentioned can stem from irregular sleeping patterns, insufficient sleep, or insomnia. Given the nature of their work, which involves rapid decision-making, maintaining good physical and mental health is crucial for their operational capability. 2) Knowledge factor. This factor refers to a person's knowledge and understanding of specific principles and concepts. It is the core characteristic of people who can apply their knowledge effectively in their work to exceed the organization's set expectations and objectives including the capability to solve on the job problems with concrete solutions. This research has found that the knowledge concerning air traffic controllers can be classified in to 3 factors: Firstly, Students level of acquired basic knowledge before entering the Air Traffic Control training program. This varies among individuals and may affect their learning outcome and success in their career. Secondly, the knowledge gained from the Air Traffic Control training program.

Students must acquire knowledge from the Air Traffic Control training program, encompassing both theoretical understanding and practical experience through simulations, aligning with the standards set by the International Civil Aviation Organization (ICAO) for the air traffic control profession. Thirdly, Skills. Skills refer to the abilities that individuals can develop through practice to become proficient in performing specific tasks. Skills are fundamental attributes of individuals that help drive their ability to perform responsibilities effectively under various circumstances. This research has found that air traffic controllers need the essential technical skills, experience, and expertise because controlling air traffic involves decision making and safety. Therefore, training in the simulator room should aim to simulate various situations as realistically as possible to develop expertise and skills for a career as an air traffic controller.

    Factor 2: psychological Factor. Psychological factors refer to the specific qualities individuals possess that enable effective performance in air traffic control operations. This includes 1) Motivation. Motivation refers to the driving force that arises from within a person's mind which will cause behavior or action. It is the central aspect of the personality that is the most difficult to develop. This research has found that motivation stems from satisfaction in various matters of the individual. There are 2 factors of motivation that influence people to choose an air traffic controller career. Firstly, the factor of concrete motivation, such as salary, wages, job benefits, and job positions, as well as abstract motivation, such as the challenge and pride derived from ideological passion for the profession. Secondly, the factor of attitude which encompasses an individual's standpoint or perception of something or someone, including their feelings of preference or aversion. It involves the evaluation of objects, individuals, or events, incorporating thoughts, beliefs, feelings, and actions. Attitude is a flexible competency that can be cultivated over time through psychological principles or experiential learning. This research has found that possessing a positive attitude enhances efficiency, particularly in collaborative settings with shared objectives, such as ensuring safety in air traffic control operations. Furthermore, attitude encompasses the thoughts and feelings individuals hold toward various aspects of life. Thus, air traffic controllers must have a positive attitude towards their profession, colleagues, and the organization. This research also highlights the shift in attitudes towards work between generations. The Baby Boom/Gen X generation viewed work as something to do for the organization, for income. They saw work as an institution that shaped them, dedicating themselves to it. But nowadays, Gen Y works based on satisfaction. If they feel dissatisfied, they will not want to work. They see the workplace as a place to earn money to take home. Where they work is where they earn a living. There is not much attachment to the organization. There is not much passion invested in the work. Therefore, it can be summarized that the attitude of air traffic controllers in the past generation of Baby Boom/Gen X was "living to work," but nowadays, the generation of Gen Y is "working to live." Thirdly, the factor of personal characteristics or personality traits. Personal characteristics or personality traits refer to the qualities and traits that describe an individual's temperament and inherent characteristics, which manifest as enduring behaviors. They are aspects that can be understood and used to identify fundamental attributes that lead to human behavior, including components of behavior that demonstrate resilience, psychological foundations, and responses to information or situations encountered. This research has found that the personal characteristics of air traffic controllers must include a service-oriented mindset and a sense of responsibility

towards their work, which encompasses diligence, dedication, and a clear understanding of their duties.

        Factor 3: Organizational factor. The organizational factor refers to strategies an organization employs to support employees in developing their potential and motivation in performing their duties. This includes 1) work systems which refers to the equipment and tools, which are organizational factors that must be managed to provide full support for safety resources in work operations. This research has found 2 components of air traffic controller work systems namely the equipment systems and procedures. The design of both the equipment systems and procedures must be interrelated, user-friendly, supportive, workload-reducing, problem-solving, and compliant with international standards and ICAO. 2) Work environment. This research has found that in terms of human factors, individuals expect good living and a good working environment including lighting, sound, air quality, dining areas, rest rooms, and beverage. Thus, the organization must manage these aspects while also supporting work performance because they play a significant role in enabling air traffic controllers to work efficiently, achieve productive outcomes, and meet organizational expectations. 3) Training. This refers to the process of enhancing individuals' work performance by improving their knowledge, skills, and attitudes. This aims to elevate work standards, enabling individuals to progress in their roles and helping organizations achieve their predetermined goals. This research has found that training must be carried out continuously in a systematic and step-by-step manner according to ICAO standards. Also, according to Article 90 of the regulations of the Thai Civil Aviation Board, the required key components of training are modern, easily to understand instructors and curriculum, as well as modern and user-friendly simulator facilities. 4) Human Resource Management in air traffic control. This refers to the essential processes of selecting, training, and retaining quality people. This research has found that developing quality air traffic controllers requires a considerable budget and length of time, hence a sound candidate selection process will help the organization find the right personnel

        Factor 4: Factors related to job performance in air traffic control. They are secondary factors apart from the work environment. This includes: 1) co-workers requires teamwork to adhere to procedures and operational systems that must be double-checked for accuracy. Additionally, working as a team facilitates job training and knowledge transfer from senior members of the team. It was also found that air traffic control operations involve safety, thus an air traffic controller who works alone will always have a high likely hood of making human errors. 2) Social skills. This refers to the ability to influence the desired changes through cooperation with others. This study has found that social skills involve the ability to interact and communicate effectively with others, leading to smooth workflow. Having strong social skills and good interpersonal relationships contribute to team effectiveness, enabling good cooperation from each team member. 3) Emotional intelligence refers to the ability to understand others, which is closely related to one's ability to understand oneself. This includes being aware of one's own competencies and effectively applying them in behavior and daily life. This research has found that emotional intelligence refers to the ability to understand and control emotions. Individuals with high emotional intelligence can effectively solve immediate problems and manage their emotions well. This is part of the characteristics of air traffic control officers who must address safety-related issues in various situations effectively 4) work-life balance. This research has found that the balance between work and personal life impacts each

other. Those who pursue an air traffic controller career must be willing to accept shift work conditions. They need to choose a life partner that understands the nature of the job. Additionally, organizations should support them with days off and leave days as well as to have the flexibility and ensure that they do not interfere with employees' personal life. Moreover, they should support the allocation of time and energy between work and personal life appropriately. 5) English skills or English proficiency. According to ICAO standards, Air traffic controllers must score at least level of 4 on the Language Proficiency Rating Scale (ICAO Annex 1: Personnel Licensing). In addition, the announcement regarding the English proficiency in radio communications of licensed personnel requires air traffic controllers to maintain at least level 4 on English proficiency exam. This research has found that it is found that ICAO requires air traffic controllers (ATCs) to maintain at least level 4 of English proficiency because an air traffic controller job is international, thus English proficiency is highly essential, both currently and in the future. This proficiency includes skills in speaking, listening, reading, and writing, which must be at a very high level.

Moreover, the factors of success in air traffic controller career contribute to individual success. Air traffic controllers will be proud of themselves, feel passionate about what they do, and are motivated to continuously improve themselves, ultimately fostering organizational loyalty. Indeed, if an organization has employees with a positive attitude towards their duties within the organization, it will have a significant impact on the organization's success. This means the organization will experience continuous development, foster acceptance, and build trust with the service recipients themselves. The actors of success in air traffic controller career through a case study of private school is illustrated in diagram 1:

Diagram 1: The factors of success in air traffic control career
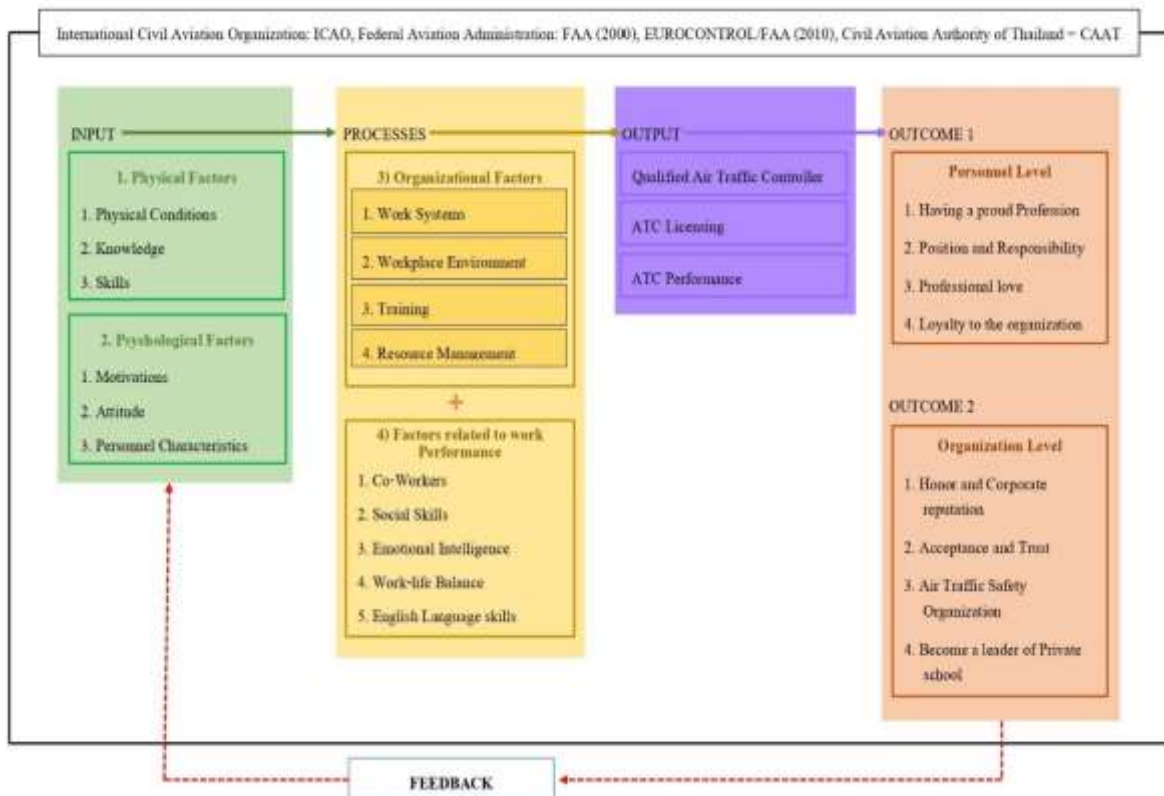
Step 2: The presentation of the factors of success in air traffic control career through a case study of a private school.

From the analysis of the factors of success in air traffic control career through a case study of a private school, the presentation of guidelines as follows:

1. Guidelines for personnel development

The research findings indicated that air traffic control officers should continuously enhance both their technical and non-technical knowledge and skills to advance to a higher professional level and meet standards. The guidelines in this regard as follows: 1) promoting English language development according to the standards set by the organization including scoring at least level 4 on English Proficiency test 2) promoting continuous development of essential knowledge and job-related skills, both technical and non-technical 3) promoting the development of experience and learning new knowledge abroad by providing opportunities for overseas job shadowing or training.

2. Guidelines for organizational development

The research findings indicated that as the starting point for the professional success of air traffic control officers, organizations should follow the following developmental guidelines: 1) establishing performance metrics and benchmarking against organizations at the same or higher levels to become a recognized and trusted organization in the aviation training school, serving as a benchmark for flight training institution, and gaining acceptance and credibility at the regional level 2) establishing guidelines for recruitment by adjusting principles and methods to ensure that personnel recruited into the air traffic control profession meet the criteria for being air traffic controllers (Sure Selection) 3) establishing guidelines for compensation and creating motivation for the air traffic control profession to be prestigious, accepted, and committed to keep a long term employment with the organization 4) creating work-life balance in the workplace enabling air traffic controllers to appropriately allocate time and energy between work and personal life, and to consider the needs and goals of each individual. A good work-life balance helps individuals to be happy, healthy, and successful both in their professional and personal lives.

6. Discussion

The discussion on the findings on the success in an air traffic control career that consists of 3 main factors, 1 secondary factor, and 15 sub-factors as follows:

Factor 1: Physical factor

1.1 Physical condition. Physical condition is a factor that affects the success of being an air traffic controller. The research findings indicated that air traffic controllers must have an overall physical readiness to do their jobs, following the standards set by ICAO. The readiness of both physical and mental health is one of the factors influencing the performance of air traffic control officers (EUROCONTROL/FAA Action Plan 15 Safety, 2010). The selection process must choose individuals who are ready both physically and mentally (FAA, 2000), which aligns with the regulations regarding the privileges of holders of student air traffic control licenses issued by article 90 of the regulations of the Civil Aviation Authority (CAA). In addition, Hawkins (1984): SHELL Model identified factors that affect the limitations and abilities of operators, stating that physical factors include physical characteristics such as gender, age, height, weight, and sensory limitations like visual and hearing impairments, which

affect the operators. Physiological factors include health problems, injuries, illnesses, hypoxia, dehydration, drug use, and fatigue, all of which impact the operators. From the aforementioned concepts and theories, it can be confirmed that physical factors play a role in the professional success of air traffic control personnel.

1.2 Knowledge. Knowledge. All respondents unanimously agreed that the knowledge factor is crucial to the success of being an air traffic controller. Knowledge for air traffic controllers can be divided into 2 types: 1) Basic knowledge before being trained as an ATC, where each person will have different basic knowledge. Which affects learning to lead to success and 2) knowledge gained from training to be an ATC must study both theory and practical (Simulation), which is knowledge of the ATC profession that meets ICAO standards. These findings correspond with (Khaoluang, 2011) who indicated that knowledge refers to what a person knows and understands in a specific concept, (Boyatzis, 1982) and (Spencer and Spencer, 1993) who further explained that knowledge is a basic characteristic of a person required to use in performing a job to exceed set organizational goals, and (Anthony et al., 1996) who stated that knowledge acquired through practical experience to achieve organizational objectives can concretely address various issues that arise in job responsibilities.

1.3 Skills. Skill is a factor that affects the success of an air traffic controller.
It involves the need for experience and expertise, as research findings indicate. Air traffic control work requires the utilization of technical skills, particularly in decision-making and safety, as Air traffic control involves decision-making and safety considerations. Training in simulators is essential, as it allows controllers to simulate various scenarios encountered in their daily work, each presenting unique challenges. This coincides with (Khaoluang, 2011) whose definition of skills refer to what individuals know and can effectively perform, honed through practice until expertise is achieved, with Boyatzis (1982) and Anthony et al. (1996), who asserted that skills are fundamental traits enabling individuals to effectively perform tasks under various circumstances, and with Spencer and Spencer (1993), who describe skills as the ability to perform tasks related to physical, cognitive, and emotional aspects at a level where individuals can think, analyze, apply knowledge, reason, or plan for management.

Factor 2: Psychological factor

2.1 Motivation. Motivation refers to the driving force that arises from within a person's mind which will cause behavior or action. This research has found that motivation stems from satisfaction in various matters of the individual. There are 2 factors of motivation that influence people to choose an air traffic controller career. Firstly, the factor of concrete motivation, such as salary, wages, job benefits, and job positions, as well as abstract motivation, such as the challenge and pride derived from ideological passion for the profession. These findings coincide with (McClelland, 1973) who defined motivation as the internal driving force within an individual's psyche that leads to behaviors or actions, with (Spencer & Spencer, 1993), who described motivation as a fundamental personality trait that is challenging to develop, and with (Szilagyi & Wallace, 1980), who suggested that challenging work stimulates self-actualization potential.

2.2 Attitude. Attitude is a factor that affects the success of an air traffic controller.
It includes having a positive attitude, as research suggests. A positive attitude contributes to the efficiency of work, particularly in teamwork settings where shared goals of success,

especially in air traffic control where safety is paramount, are essential. Attitude refers to the thoughts and feelings of individuals related to their mental state. Therefore, aspiring air traffic controllers must possess a positive attitude toward their work, organization, and relationships with colleagues. This entails being optimistic, willing to provide service, satisfied with the job, and ready to collaborate with others in teamwork. These findings coincide with (Rasamithamchoti, 2005) who defined attitude as an individual's standpoint or perspective whether they feel favourable or unfavourable towards something or someone, and with (Spencer & Spencer, 1993), who stated that attitude is an individual's evaluation of objects, persons, or events, indicating whether they feel positive or negative, including in terms of thoughts, beliefs, feelings, and behaviors.

2.3 Personal characteristics. Personal characteristics is a factor that affects the success of an air traffic controller. The research findings indicated that air traffic controllers should possess a service-oriented attitude and a sense of responsibility towards their work, including providing service, diligence, and understanding their own duties. This coincided with (McClelland, 1973) who statesd that personal characteristics or personality traits refer to the qualities and characteristics of individuals' enduring behaviors, and with (Campbell, 1980) who suggested that personal characteristics are attributes that help understand and identify fundamental qualities that lead to human behavior, including components such as resilience, mental fortitude, and how individuals respond to information or situations they encounter.

Factor 3: Organizational factor

3.1 Work system. Work system is a factor that affects the success of an air traffic controller. The research findings suggest that the ATC work system comprises equipment and procedures. The design of both equipment and procedures should be interrelated, user-friendly, supportive, workload-reducing, and problem-solving. This coincided with (Aero Thai, 2019), which emphasizes that management must fully support safety resources in operations. A safety culture is a fundamental factor in operations. Thinking methods and work procedures should prioritize safety in the organization's mission. Furthermore,with (Hall, 1996),
who defined an organization as the central coordinating entity among all members, having regulations, guidelines, and continuous operations to achieve set goals, and with (Kongritthisuksakar, 1986), who stated that organizing an organization involves structuring its operations effectively, efficiently, and achieving the set goals.

3.2 Work environment. Work environment is a factor that affects the success of an air traffic controller. The research findings indicated that work environment within an organization must be supportive to ensure that personnel are happy, leading to efficient work and successful outcomes as expected by the organization. This coincided with Hawkins (1984), who described in the SHELL Model that air traffic control work involves the relationship between human factors and various factors within the operation system.

3.3 Training. Training is a factor that affects the success of an air traffic controller. The research findings indicated that training programs should be conducted systematically and continuously, adhering to the standards set by ICAO. This coincided with (Rupavichet, 2003) who stated that training and development entail a process of enhancing individuals' work efficiency by enriching their knowledge, skills, and attitudes, ultimately aiming to raise the standards of job performance, and with Raymond (2010), who defined training and

development as company initiatives aimed at fostering employees' competencies, including crucial knowledge, skills, and behaviors essential for successful job performance.

3.4 Human resource management. Human resource management is a factor that affects the success of an air traffic controller. The research findings indicate that producing air traffic control (ATC) personnel involves considerable budget and length of time. Therefore, an efficient and effective selection process is crucial to ensure that the organization gets the right people it needs. It is also important to prioritize retaining good personnel. These findings coincided with Williams (2005), who defined human resource management as the process of seeking, developing, and retaining individuals with good qualities for continued work.

This is considered the most crucial aspect of management, and with (Pairoj, 2005), who emphasized that taking care of human resources involves nurturing and maintaining existing employees' physical and mental well-being to ensure they have long, healthy, and happy careers until retirement.

Factor 4: Factors related to work performance (secondary factors)

4.1 Co-workers. Co-workers is a factor that affects the success of an air traffic controller. The research findings indicated that co-workers in the workplace refers to individuals, including senior colleagues who work together. Air traffic control work requires teamwork to adhere to procedures and systems effectively. This coincided with (Sathe, 1985) who suggested that genuine cooperation within an organization cannot be imposed by rules and regulations alone. True cooperation stems from shared attitudes among organizational members, and with (Noe, 2005) who emphasized that development through interpersonal relationships, particularly by leveraging the experience of senior organizational members, helps employees enhance their knowledge, skills, and understanding of work systems more effectively.

4.2 Social skills. Social skills is a factor that affects the success of an air traffic controller. The research findings indicated that social skills involve the ability to interact and communicate effectively with others, leading to smooth workflow. Having strong social skills and good interpersonal relationships contribute to team effectiveness. This coincided with (Goleman, 1998) who stated that social skills refer to the flexibility to bring about desired changes through effective collaboration with others.

4.3 Emotional intelligence. Emotional intelligence is a factor that affects success as an air traffic controller. The research findings indicated that emotional intelligence refers to the ability to understand and control emotions. Individuals with high emotional intelligence can effectively solve immediate problems and manage their emotions well. This is part of the characteristics of air traffic control officers who must address safety-related issues in various situations effectively. This coincided with (Gardner, 1983) who stated that emotional intelligence refers to the ability to understand others, which is closely related to the ability to understand oneself. This includes being able to perceive one's own competencies effectively and apply them efficiently in one's actions and daily life.

4.4 Work-life balance. Work-life balance is a factor that affects the success of being an air traffic controller. The study findings indicated that the balance between work and personal life impacts each other. Those who pursue an air traffic controller career must be

willing to accept shift work conditions. Their families need that understands the nature of the job. This coincided with (Hawkins, 1984) who explained in the SHELL Model that psychosocial factors, such as family problems, financial issues, personal life challenges, and conflicts with coworkers, affect the limitations and capabilities of workers.

4.5 English skills. The research findings indicated that English language proficiency is a factor that significantly influences the success of the air traffic controller profession. Air traffic controllers must be proficient in English, at least at Level 4 according to ICAO standards, because an air traffic controller job is international, thus English proficiency is highly essential, both currently and in the future. This coincided with (Aero Thai, 2021) which set Language Proficiency Rating Scale for air traffic controllers, specifying that they must pass an English language test at least at Level 4 before becoming air traffic control officers. This is also consistent with (CAAT ,2017) regulations regarding language proficiency for radio communication among licensed personnel, stating that they must pass an English language test at Operational Level 4 or higher.

From the above discussion, it can be summarized that all factors align with the factors specified for job performance of air traffic control officers, as stated in the (EUROCONTROL/FAA Action Plan 15 Safety, 2010). According to this plan, the effectiveness of air traffic control officers' job performance depends on individual capabilities, motivation, and attitude, as well as the collective operation of other factors. These factors include 1) capability, the ability of air traffic control officers to perform their duties effectively 2) motivation and attitude, personal factors that influence job performance, with varying levels of motivation among individuals. Therefore, fostering motivation and cultivating a positive attitude through appropriate methods are crucial for efficient job performance 3) system, organization, and environment, the effectiveness of the system, organization, and environment supporting air traffic control services.

In conclusion, organizations must support their workforce to ensure that employees are happy, willing to work, and capable of achieving successful outcomes as expected by the organization. The system, organization, and environment that effectively support air traffic control services not only align with (Hawkins, 1984: SHELL MODEL), which describes air traffic control as a relationship between human factors and various factors within the system that operators must interact with, where operators (people) serve as the central Live-ware (L) component and are thus the most valuable and flexible resource in the SHELL Model, ICAO Doc 9859, Safety Management Manual. Therefore, the relationships among people (Live-ware), equipment (Hardware), procedures (Software), and environment (Environment) must be appropriate, consistent, and convenient in every dimension to prevent human error.

To achieve this, organizations must support their workforce to ensure that employees are happy, willing to work, and capable of achieving successful outcomes as expected by the organization.

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