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Research on the Training System for Chinese Civil Aviation Flight Dispatchers under the CBTA Concept: Current Challenges and Transformation Pathways

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Abstract

The paper examines the current state of flight dispatcher training in China's civil aviation industry, analyzing existing issues based on the International Civil Aviation Organization's (ICAO) Competency-Based Training and Assessment (CBTA) framework. The key problems identified include: the lack of systematic adoption and promotion of CBTA-based training concepts, insufficient and uneven distribution of qualified instructors, monotonous training content and methods, scarce and unevenly allocated training resources, and an inadequate training effectiveness evaluation mechanism.By drawing on successful domestic and international flight dispatcher training models, the study proposes optimization strategies for China's civil aviation flight dispatcher training system. These include:Establishing a CBTA-guided flight dispatcher training framework;Implementing comprehensive training programs covering the entire flight operation process;Conducting integrated air-ground joint training for flight dispatchers and pilots;Developing flight dispatcher training from an international perspective.

Keywords

Flight Dispatcher, CBTA, Virtual Simulation, Optimization Path, Training System.

1. Introduction

With the rapid development of China's civil aviation sector, flight dispatchers, as key players in ensuring flight safety and operational efficiency, have seen their training system gain increasing attention within the industry. Flight dispatchers must not only possess extensive professional knowledge but also demonstrate a strong sense of responsibility and adaptability to handle complex aviation environments.China's civil aviation flight dispatcher training system is a comprehensive, multi-tiered framework designed to cultivate professionals with interdisciplinary expertise, data analysis and mining capabilities, smart technology application skills, innovative thinking, learning agility, and a global perspective. The system aims to ensure that every dispatcher meets established occupational standards, enabling them to perform their duties safely, efficiently, and systematically. This ensures their adaptability to the evolving demands of smart aviation, safeguarding flight safety and enhancing operational efficiency.In recent years, the International Civil Aviation Organization (ICAO) has actively promoted the Competency-Based Training and Assessment (CBTA) approach, emphasizing job competency as the core for building a scientific and systematic training and evaluation framework. The CBTA philosophy focuses on real-world operational needs, breaking down competencies into measurable and trainable components, thereby offering new insights and methodologies for optimizing flight dispatcher training systems.Against this backdrop, China's civil aviation flight dispatcher training system faces an urgent need for transformation and upgrading. It is imperative to integrate the CBTA framework to thoroughly review and enhance existing training models, ensuring alignment with the development trends of smart aviation.

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2. CBTA-Based Training Approaches for Flight Dispatchers and Their Effects

CBTA is a new training program proposed by the International Civil Aviation Organization (ICAO) for civil aviation professionals and technical personnel The concept emphasizes the core of job competency, establishing a competency framework and evaluation system from knowledge, skills, attitudes, and other aspects. For flight dispatchers, CBTA not only focuses on their mastery of professional knowledge, but also values their decision-making ability, communication and coordination ability, and emergency response ability in complex situations. Through CBTA, it is possible to more accurately identify the shortcomings of flight dispatchers' abilities, develop personalized training plans, and improve the pertinence and effectiveness of training. The CBTA training method focuses on job competency, and through targeted course design, scenario simulation training, and other means, it can comprehensively enhance the professional knowledge and skill level of flight dispatchers, strengthen their sense of responsibility, adaptability, and decision-making ability. Enable dispatchers to better adapt to the complex and ever-changing air transportation environment, accurately grasp various risk factors in flight operations, make scientific and reasonable dispatch decisions, and effectively enhance job competence. The flight dispatcher training method based on CBTA is scientific and progressiveness. Through the comprehensive application of various training methods, it can comprehensively improve the dispatcher's job competency, enhance the pertinence and effectiveness of training, promote the professional development of dispatchers, and thus ensure flight safety and improve operational efficiency. It is of great significance to the optimization and improvement of China's civil aviation flight dispatcher training system[1].

3. Challenges in China's Civil Aviation Flight Dispatcher Training System

3.1. Lack of Systematic Implementation and Promotion of CBTA-Based Training Concepts

Lack of conceptual awareness: Currently, some airlines and training institutions in China have insufficient understanding of the CBTA concept and its important role in flight dispatcher training. This leads to the continued use of traditional training models in the actual training process, neglecting competency based training needs analysis and the development of personalized training plans.**Limited training resources:** CBTA based flight dispatcher training requires a significant investment of resources, including instructors, textbooks, simulation equipment, etc. However, currently some airlines and training institutions in China have insufficient training resources to meet the needs of CBTA training. In addition, due to the emphasis on situational simulation and practical exercises in CBTA training, the requirements for training facilities and environment are also high, which further increases training costs.**The evaluation mechanism is not perfect:**The training of flight dispatchers based on CBTA requires the establishment of a scientific evaluation mechanism to accurately measure the improvement of trainees' abilities. However, there are still shortcomings in the evaluation of flight dispatcher training in China, such as unclear evaluation criteria, single evaluation methods, and untimely feedback of evaluation results. This makes it difficult to accurately measure the effectiveness of training, and also affects the learning enthusiasm of students and the improvement of training quality.**Weak teaching staff:** CBTA based flight dispatcher training requires a team of teachers with rich practical experience and profound theoretical literacy. However, there is currently a shortage of training instructors for flight dispatchers in China, with some teachers lacking practical experience and innovative teaching abilities, making it difficult to meet the needs of CBTA training[2].

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3.2. Shortage and Uneven Distribution of Qualified Instructors

Shortage of teachers who combine theory and practice: The shortage of teachers who combine theory and practice makes it difficult to ensure the quality of training. Some training institutions have had to lower their selection criteria in order to address the shortage of teachers, resulting in a significant reduction in training effectiveness. The shortage of teachers who combine theory with practice results in insufficient training for students in practical aspects. This may make it difficult for trainees to cope with complex situations in practical work, affecting flight safety.**The teacher training system and incentive mechanism are not perfect:**The imperfect teacher training system and incentive mechanism are mainly manifested in the following aspects: the training content is single and lacks comprehensiveness. Currently, training for flight dispatchers often focuses on imparting theoretical knowledge, while neglecting the cultivation of practical skills, psychological resilience, and emergency response abilities. The imperfect incentive mechanism is mainly manifested in the following aspects: unreasonable salary system and lack of attractiveness. The salary system for flight dispatchers often fails to fully reflect the importance and complexity of their work, resulting in a weak sense of professional identity and belonging among dispatchers.

3.3. The training content and methods are single

Excessive emphasis on imparting theoretical knowledge. Currently, the training of flight dispatchers mainly relies on classroom teaching and theoretical exams, emphasizing the mastery of theoretical content such as aviation regulations, meteorological knowledge, and flight principles. However, this training method often leads to students investing too much energy in theoretical learning and neglecting the improvement of practical skills. Although theoretical knowledge is important, simply mastering it is far from enough. The job nature of flight dispatchers requires them to have the ability to quickly and accurately handle various unexpected situations, which requires continuous accumulation of experience in practice.**Neglecting the cultivation of comprehensive abilities such as psychological resilience and decision-making skills.** The previous training for flight dispatchers often neglected the cultivation of psychological qualities, resulting in some dispatchers easily experiencing negative emotions such as anxiety and tension when facing emergency situations, which affects work efficiency and decision-making accuracy. The cultivation of psychological qualities not only includes basic abilities such as emotional management and stress coping, but also includes the improvement of teamwork, communication skills, and other aspects. These abilities are crucial for dispatchers to maintain efficient communication and collaboration in complex environments. However, the existing training system often lacks targeted psychological training, making it difficult for dispatchers to quickly adjust their mentality and maintain optimal working conditions when facing complex situations.**The training methods lack innovation and specificity.** The traditional training method for flight dispatchers mainly relies on classroom teaching and theoretical exams. Although this model can systematically impart theoretical knowledge, it is inadequate in cultivating practical skills, emergency response abilities, and psychological qualities. With the continuous development of aviation technology and the increasingly complex operating environment, traditional training methods are no longer able to meet the needs of modern flight dispatchers. The lack of innovative training methods is also reflected in the speed of updating training content. With the application of new technologies and the revision of aviation regulations, the knowledge and skills that flight dispatchers need to master are constantly being updated. However, the current training system often lags behind these changes, making it difficult for dispatchers to adapt to the new operating environment and requirements in practical work.

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3.4. Lack and uneven distribution of training resources

Lack of high-end training equipment and slow updates. The training of flight dispatchers requires the use of advanced equipment and technology to simulate real operating environments, thereby helping trainees acquire necessary skills and knowledge. However, the current number of high-end training equipment is limited, making it difficult to meet the training needs of a large number of students. Some training institutions still use outdated equipment that can no longer meet the requirements of modern aviation operations in terms of functionality and performance, resulting in a significant reduction in training effectiveness.**There are significant differences in training resources between regions.** In some economically developed areas with a relatively concentrated civil aviation industry, the training equipment and technology for flight dispatchers are relatively advanced, capable of simulating complex flight environments and emergency situations, providing high-quality training experiences for students. However, in some remote or economically underdeveloped areas, due to financial and technological limitations, training equipment and technology are relatively outdated, making it difficult to meet the requirements of modern aviation operations.

3.5. The training effectiveness evaluation mechanism is not sound

The training evaluation standards and methods are not unified. Due to differences in training content and methods among different regions and training institutions, the evaluation criteria for training also exhibit diverse characteristics. Some institutions focus on the assessment of theoretical knowledge, while others place more emphasis on the evaluation of practical skills and emergency response capabilities. This diverse evaluation criteria makes it difficult to compare and evaluate the effectiveness of training.**Neglecting the evaluation of practical operational ability and comprehensive quality.** In the current training system, there is often too much emphasis on imparting theoretical knowledge, while neglecting the cultivation and evaluation of practical operational abilities. Although students have acquired a wealth of theoretical knowledge, they often lack sufficient practical experience and coping skills when facing complex flight environments and unexpected situations.

4. Transformation Path of Flight Dispatcher Training for Chinese Civil Aviation

Carry out the construction of a flight dispatch training system guided by the CBTA concept. Flight dispatch work is a crucial link in the operational safety of airlines, which directly affects the safety, efficiency, and comfort of flights. Based on the above analysis, both the basic training of flight dispatchers at the institutional level and the in-depth training of flight dispatchers by air transport enterprises are based on traditional training models. This training model is difficult to meet the increasingly complex and changing operating environment, especially the fundamental changes brought by the development of smart airlines to the operation and control mode of air transport enterprises. The requirements for the professional skills and comprehensive quality of flight dispatchers are increasing day by day. Therefore, introducing the concept of competency based training and building a new flight dispatch training system has become an effective way to enhance the capabilities of flight dispatchers and ensure flight safety[3].

Carry out training for flight dispatchers based on the entire process of flight operation support. As a key role in flight operation support, flight dispatchers are responsible for multiple aspects including flight planning, safety risk assessment, flight monitoring, and emergency response. With the rapid development of the aviation industry and the increasingly complex flight operating environment, higher requirements have been put forward for the professional skills and comprehensive quality of flight dispatchers. Therefore, conducting training for flight

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dispatchers based on the entire process of flight operation support not only helps to enhance their comprehensive abilities, but also is an important guarantee for ensuring the safe and efficient operation of flights.

Carry out integrated air ground joint training for flight dispatchers and pilots. In the aviation industry, flight dispatchers and pilots are two core roles in ensuring flight safety and efficient operation. Flight dispatchers are responsible for developing flight plans, conducting risk assessments, and monitoring flights, while pilots directly carry out flight tasks. With the continuous advancement of aviation technology and the increasing complexity of flight operating environments, the collaboration between the two has become increasingly close. Therefore, conducting integrated air ground joint training for flight dispatchers and pilots is of great significance for improving flight operation efficiency and ensuring flight safety.

Carry out flight dispatch training based on an international perspective. The responsibilities of flight dispatchers are not limited to the operational support of domestic flights, but also involve multiple aspects such as international flight planning, cross-border safety risk assessment, international flight monitoring, and international emergency response. With the increasing integration and internationalization of the global aviation industry, higher requirements have been put forward for the international vision and professional competence of flight dispatchers. Therefore, conducting flight dispatch training based on an international perspective not only helps to enhance the international communication and cross-cultural work abilities of dispatchers, but also ensures the safe and smooth operation of international flights, and promotes the cooperation and development of the global aviation industry[4].

5. Conclusion

This study focuses on the training system of Chinese civil aviation flight dispatchers under the CBTA concept, deeply analyzes the problems existing in the current training system, and proposes a targeted transformation path, providing comprehensive and operable ideas for optimizing the training system of Chinese civil aviation flight dispatchers. Looking ahead to the future, the optimization and improvement of China's civil aviation flight dispatcher training system is a long-term and systematic project that requires joint efforts from airlines, training institutions, universities, and relevant regulatory departments. In the process of implementing the transformation path, attention should be paid to the combination of theory and practice, constantly exploring and innovating training methods and means, fully utilizing modern information technology such as VR virtual simulation, etc., to improve the pertinence and effectiveness of training. At the same time, it is necessary to establish and improve a training effectiveness evaluation mechanism, provide timely feedback on the evaluation results, and provide a basis for the continuous improvement of the training system. Only in this way can we cultivate more highly competent flight dispatchers, provide solid talent support for the safe, efficient, and sustainable development of China's civil aviation, and promote China's civil aviation to occupy a more advantageous position in the global aviation industry.

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