

Application of Digital Technology in Military Equipment Management

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Abstract: The traditional military equipment management mode is difficult to meet the needs of today's rapid development, and digital application has become a necessary trend to improve the efficiency and quality of equipment management. At present, the mainstream application direction of digital technology in military equipment management mainly includes equipment fault monitoring, equipment maintenance, and data analysis and optimization. However, although the application of digital technology brings many benefits, the development of digital technology faces a series of difficulties and key problems. For the military, accelerating digital transformation, overcoming the practical challenges of digital technology landing in the military, and improving the application level of digital technology will become an important development direction in military equipment management in the future.

Keywords: Equipment Management; Digital Technology; Difficulties; Military.

1. Introduction

The traditional military equipment management mode has the disadvantages of inconvenient data management, low fault handling efficiency, high maintenance cost, etc., the traditional military equipment management mode has been difficult to meet the needs of today's rapid development, digital application has become a necessary trend to promote the modernization of our military's weapons and equipment, improve the efficiency and quality of equipment management [1][2].

The application of digital technology in military equipment management can not only improve the efficiency and quality of equipment use, but also reduce maintenance costs and risks, and further improve the combat capability and combat effectiveness of the army. Specifically, the promotion and application of digital technology can effectively improve the efficiency and quality of equipment. With the application of digital technology, the monitoring and maintenance of equipment will become more modern and intelligent, which can monitor and diagnose equipment failures in real time, predict and avoid the occurrence of failures in advance, and improve the efficiency and quality of equipment [3]. At the same time, digital technology can also effectively realize the process optimization and data analysis of equipment, military equipment provides more accurate data analysis and judgment, helps the military better understand the use of equipment and performance indicators, so as to accurately adjust and optimize equipment use schemes. Digital technology can also provide real-time traffic control and route planning information to achieve a more efficient military traffic system, the application of digital technology can realize real-time tracking and management of equipment transportation, provide historical records of equipment transportation, and provide reference for subsequent transportation scheduling. Digital technology can also provide real-time inventory management and material tracking, thereby improving the efficiency and accuracy of warehouse management. Therefore, the application of digital technology in military equipment management can improve the combat capability and combat effectiveness of

the army, and is an indispensable part of military equipment management. This article will focus on the application and challenges of digital technology in military equipment management.

2. Application of Digital Technology in Equipment Management

The mainstream application directions of digital technology in equipment management are as follows: equipment fault monitoring, equipment maintenance, and data analysis and optimization.

2.1. Equipment Failure Monitoring Applications

In this day and age, fault monitoring has become increasingly important. In military equipment management, failures can have an unpredictable impact on mission completion, so monitoring equipment failures is crucial. Traditional monitoring methods rely on manual inspection and measurement, which is prone to missed inspection or misjudgment. The digital equipment fault monitoring adopts sensors and Internet of Things technology, which can monitor the equipment in an all-round and full-time manner, realize real-time warning and accurate diagnosis of faults, and improve the reliability and stability of the equipment.

The application of digital equipment fault monitoring can also improve equipment operation efficiency and maintenance quality, through the analysis and mining of historical data, you can find the law and trend of equipment failure, provide useful information for fault prediction and maintenance planning, accelerate the repair and maintenance process, and reduce maintenance costs. At the same time, digital applications can realize big data analysis of equipment usage, providing useful guidance for future equipment development and improvement.

In summary, the application of digital equipment fault monitoring has become a necessary technology for major military equipment management institutions, providing a reliable guarantee for the safe and stable operation of equipment, and is also one of the key factors to promote

intelligent equipment management and improve the level of combat strength.

2.2. Application in Data Analysis and Optimization

Digital technology in the military field can not only be applied to equipment maintenance, but also play an important role in data analysis and optimization. With the continuous improvement of data collection technology and the increasing maturity of data storage technology, the amount of data involved in the military field is also increasing. However, it is very difficult to really obtain effective information from this massive amount of data, so the application of digital technology is required for data analysis and optimization.

The application of digital technology mainly involves two aspects in data analysis and optimization. On the one hand, digital technology can help the military build a complete data collection and storage system. Such a system not only collects and stores data on all aspects involved, but also classifies, processes and analyzes this data [4]. In this way, the military can gain valuable information from this massive amount of data to better understand various situations and trends in the military field to guide military decision-making. On the other hand, digital technology can also help the military optimize all aspects of operational processes. Taking logistics support as an example, digital technology can inventory and manage various materials, equipment, etc., and improve the work efficiency and quality of logistics support by optimizing material distribution routes and management methods. In addition, in situations such as military exercises, digital technology can also help the military conduct real-time battlefield monitoring and data analysis to guide troops to make better decisions. In addition, digital technology has a range of other applications in the military field. For example, by analyzing data from weapon systems, the military can design more accurate and effective weapon systems that improve their operational effectiveness.

In short, digital technology is widely used in the military field, especially in data analysis and optimization. The continuous development and upgrading of digital technology will provide an important guarantee for the military to win future wars.

2.3. Equipment Maintenance Applications

Today's equipment maintenance applications have become increasingly digital, and in the military, the use of digital technology can improve equipment maintenance efficiency and reduce maintenance costs. The application of equipment maintenance can be used to analyze the working conditions of equipment in a more detailed and comprehensive way through data visualization and simulation technology [5]. Based on these analysis results, more accurate and effective maintenance plans can be made for equipment, improving maintenance efficiency and work quality. At the same time, digital technology can also help the military establish a new maintenance training system, provide more comprehensive and realistic maintenance training to military personnel through virtual simulation, improve actual combat capabilities and maintenance skills, and benefit the completion of various tasks of the army. All in all, the digital application of equipment maintenance will bring more convenience to military maintenance work and promote the continuous development and upgrading of modern military science and technology.

3. Challenges in the Application of Digital Technology in Equipment Management

3.1. Difficulties and Key Issues in the Development of Digital Technology

Although the application of digital technology has brought many benefits, the development of digital technology faces a series of difficulties and key problems. First of all, the research and development of digital technologies requires a lot of investment of money and resources, which is a challenge for many countries. In addition, the huge and complex technical chain of digital technology and the speed of technological change also bring challenges to the development of digital technology. With the advancement and change of technology, digital technology must also be constantly updated and upgraded to maintain its application advantages in the military field.

Data security is also a very important issue in the application of digital technology. In the military field, the data involved covers a lot of classified information, and the consequences of this information once leaked would be unimaginable. Therefore, the application of digital technology must take into account the security of data, and while ensuring security, it must also be able to achieve efficient and accurate data transmission.

The application of digital technology also involves some technical issues. For example, in battlefield monitoring and operational command, the real-time problem of data collection must be addressed; In terms of logistics, the accuracy and rapidity of data must be addressed. At the same time, the application of digital technology also involves the problem of talents, and while ensuring the application of digital technology in the military, it is also necessary to improve the digital technical quality of military personnel, as well as make them familiar with and master the operation and application of digital technology.

In short, although the application of digital technology has brought great benefits, its development process also faces many difficulties and key problems. In the development of digital technology application, these difficulties and key problems must be overcome in order to give full play to the best benefits of digital technology in the military field.

3.2. The Challenges and Realities of Digital Technology in the Military

With the rapid development of modern warfare, the application of digital technology has become an important part of modern warfare. However, the military still faces many challenges and realities in order to apply digital technology in actual combat.

First of all, the application of digital technology requires perfect technical support. Including efficient communication networks, advanced computer systems and stable energy supply. The construction and maintenance of these infrastructures requires a lot of financial and technical support, and the implementation of digital technology in some regions is limited and challenged by various basic conditions, which poses a huge problem to the application of digital technology in the military.

Second, the application of digital technology in the military is also subject to many policy and management constraints. The large size of military institutions and the large number of

rules and regulations require that the application of digital technology must comply with various laws and policies, and be controllable and controllable. Managers also need to put in place policies and security measures to ensure that the use of digital technologies is not misused or military secrets are leaked.

Finally, the application of digital technology in the military also requires training the skill level of military personnel. In the application of digital technology, there must be professionals to deal with and solve various technical problems, and it is also necessary to make ordinary officers and soldiers of the army proficient in various technical equipment and application-related software tools. This requires the military to establish a supporting training mechanism to ensure the use and operation of digital technology in actual combat.

4. The Development Trend of Digital Technology in Equipment Management in the Future

In the future, the development trend of digital technology in equipment management will tend to be intelligent, automated, networked and informatized. First of all, digital technology will realize intelligent equipment management. With the rapid development of artificial intelligence technology, the military can realize intelligent diagnosis, intelligent prediction and intelligent control of equipment through artificial intelligence technology. In the actual application process, intelligent equipment can automatically scan the system, find problems in time, independently generate correct operations and deal with faults by themselves. This will reduce the running time of the mission and reduce the waste of army resources. Second, digital technology will bring about automatic equipment management. Equipment automation management will realize the automatic maintenance, overhaul, maintenance and other related work of equipment. At the same time, the military can monitor, control and manage equipment in real time through digital technology to ensure that equipment is always in the best state and reduce the army's resource costs and work pressure. Digital technologies will then enable networked management. Through the development of Internet of Things technology and cloud computing technology, remote collaboration of equipment management, sharing of data and other related work can be realized, and mutual information transmission between equipment and equipment can be realized, thereby greatly flexible and improving the effectiveness of

management. Finally, digital technology will achieve equipment information management. In the whole life cycle of equipment management, the information management of equipment is very important. The application of digital technology can realize the informatization of equipment throughout the entire equipment quality and quality management process, minimize the complexity of management, and promote the sharing and utilization of information. Through the application of digital technology, the army's equipment management will be effectively improved and improved, improve the army's combat efficiency, and ensure the country's security and stability.

5. Conclusion

The continuous development and application of today's digital technology has brought more possibilities and advantages to military equipment management. The application of digital technology can help the military achieve all-round and real-time equipment monitoring, improve the efficiency and accuracy of equipment use, improve equipment transportation and warehousing management, and further improve the combat capability and combat effectiveness of the army. With the continuous maturity and popularization of digital technology, the digital transformation of military equipment management has become an irreversible trend. For the military, accelerating digital transformation, overcoming the practical challenges of digital technology landing in the military, and improving the application level of digital technology will become an important development direction in military equipment management in the future.

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