



Analysis of the Development Status of Modern Security Management Models

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Abstract Starting from the development process of modern security management models, this article expounds on the characteristics and applications of different security management models. The risk-oriented management model emphasizes that enterprises should adopt forward-looking and flexible management strategies when facing unknown risks and uncertainties, control and reduce the impact and losses caused by risks through scientific risk assessment and control. The safety objective management model emphasizes that safety should be the primary goal of the enterprise, and safety awareness and culture should be implemented and practiced in all aspects of enterprise management, establish a sound and standardized safety management[3] system, and motivate employees to consciously comply with safety regulations and operating standards. By mastering the concepts and methods of these different management models, enterprises can better respond to various security risks, improve their safety production management level, and create a good safety environment for sustained development.

Keywords Safety science; Accident model; Management mode.

1. Introduction

Since the beginning of the 21st century, with the continuous expansion of China's industrial production scale, the accident rate has also increased. In the past, safety management work mostly adopted the traditional safety management model, which is the after-the-fact processing model, where accidents are investigated after they occur, and the management system is revised based on the investigation results. However, this model has many drawbacks, which lead to ongoing accidents. To achieve long-term safety, an enterprise must focus on the goal of "zero accidents, zero injuries" and promote modern safety management models and methods combined with actual production situation, constantly developing and innovating management models, to minimize personnel casualties and achieve the development goal of enterprise safety production.

Modern safety management is based on theories such as system, information, control, and behavioral science. People-oriented is the management philosophy of modern safety management. By using modern scientific methods such as safety system engineering reasonably, comprehensive and all-process safety management is implemented. In recent years, the safety supervision departments and enterprise managers have responded to the national requirements for enterprise production safety by innovating modern safety management models. For example, Ma Chenyang [7] et al. analyzed the effectiveness and problems of the safety risk pre-control management model in Linxi mine and put forward corresponding improvement measures. Hou Jingwei [8] monitored potential hazards of major safety accidents through building safety management information and monitoring system, greatly reducing personal injuries and improving enterprise economic benefits. This article will illustrate the development status of China's modern safety management model based on the analysis of the historical development of different safety management models.



2 The development and types of safety management models

2.1 The development of safety management models

In different historical periods in China, safety management modes have shown different characteristics [5] due to limitations in production capacity at the time. In the 1950s and 1960s, a labor protection management system was established. In the 1970s, an accident management system was emphasized under the labor protection management system. In the 1980s, occupational safety and health management as well as safety production management modes emerged. In the 1990s, the theoretical and methodological system of modern safety scientific management gradually developed and improved. From the late 1990s to the early 21st century, China began to learn from advanced international experience and gradually established a safety management system framework that is in line with local characteristics, through the establishment of management standards, strengthening supervision, and improving publicity and education. A complete safety management system has been formed, led by the government and implemented independently by enterprises, and significant achievements in safety management and accident prevention have been obtained.

In recent years, China's development in information technology, big data analysis, and artificial intelligence has provided the necessary technical foundation for intelligent safety management. The country has increased investment efforts to promote intelligent construction in areas such as safety supervision, risk assessment, and warning prediction, committed to curbing safety accidents from the source and improving safety management efficiency.

Overall, China's safety management mode is constantly innovating and developing, from simple regulatory norms to the establishment of a complete safety management system, to today's intelligent safety management. It has undergone a gradually improving and iterative process, achieving significant safety management results.

2.2 Types of Safety Management Models

There are four common safety management modes classified by the management objects in modern safety management, including accident-based, defect-based, risk-based, and safety objective-based modes. These modes have their own advantages and disadvantages in practice and are widely used in various fields. Accident-based and defect-based management mainly focus on dealing with accidents or defects after they occur, while risk-based and safety objective-based management focuses more on improving the level of safety management of enterprises in prevention, control, and risk management. However, regardless of which safety management mode is used, it needs to be based on the actual situation and needs of the enterprise and reasonably allocate resources to comprehensively improve the level of safe production of the enterprise and ensure the life safety and physical health of employees.

2.2.1 Accident-based management model

The accident-based management model is a management model centered around accidents. Its characteristic is to adopt remedial measures after the accident, emphasizing accountability and improving management level to reduce the frequency of accidents.

The essence of the accident-based management model is a "firefighting" management style, where emergency measures are taken immediately when an accident occurs. The purpose of this management style is to solve the accident problem, summarize experience and lessons learned, and improve safety management systems and processes to improve the level of enterprise safety management.

However, the accident-based management model [9,10] has some defects. Firstly, it emphasizes the solving of problems in the accident handling process while ignoring the importance of accident prevention. Secondly, this model requires a lot of manpower, material, and financial resources to handle accidents, and it cannot achieve the effect of preventive measures and long-term management in a short time. Finally, the accident-based management model relies heavily on the personal experience and ability of safety management personnel, lacking continued safety awareness training and management capability improvement for ordinary employees.

2.2.2 Defective Management Model

The defective management model refers to the fact that in the process of production and operation, enterprises pay insufficient attention to product quality requirements and regard them as products of "bad behavior" requiring remedy. This management model revolves around repairing defects, taking retrospective and accountability measures, emphasizing accident handling and quality inspection, and fails to solve problems from the source.

The characteristics of the defective management model are: firstly, it values inspection and testing while neglecting rigorous examination of orders, process flows and other pre-work; secondly, it emphasizes results rather than process, and only takes corresponding measures to resolve problems when quality issues arise; and



finally, the defective management model cannot escape the predicament of being an "armchair strategist" because measures are only taken after a problem occurs, which is not conducive to continuous improvement.

2.2.3 Risk Management Model

The risk management model is a risk-centered management model that reduces the risk of losses suffered by enterprises in competition by anticipating, evaluating, and controlling various possible risks. This management model emphasizes foresight and prevents and avoids future risks, ensuring the healthy development of enterprises [1].

The core of the risk management model is risk management, which requires enterprises to analyze and evaluate potential uncertainties in the internal and external environment and take appropriate measures to prevent, avoid, and mitigate risks. Specifically, enterprises need to carry out risk assessment and monitoring, establish sound risk management mechanisms and systems, implement risk control and prevention measures, and maximize the security, stability, and sustainable development of the enterprise.

Compared with the traditional management model, the risk management model is more flexible and forward-looking, with the following characteristics: firstly, it constantly pays attention to and analyzes changes in market and policy factors, promptly identifies and predicts the emergence of risks; secondly, it emphasizes the proactive nature of risk management, that is, placing risk handling at the forefront to avoid losses; and finally, it pays attention to full participation of all personnel, full-process management, fosters risk awareness and risk culture, and continuously optimizes and improves risk management systems.

In summary, the risk management model is a new type of enterprise management concept with stronger forward-looking and flexibility, capable of helping enterprises [3] to reduce various uncertain risks, improve their competitiveness and risk resistance.

2.2.4 Security objective management mode

Security objective management mode is a management mode centered on safety. Its core idea is to take safety as the primary goal of the enterprise and implement safety awareness and safety culture in every aspect of business management. The security objective management mode pays attention to guiding and supervising the safety behavior of employees, motivating them to consciously abide by safety regulations and operating standards by setting specific and quantifiable safety goals and standards.

The security objective management mode has the following characteristics: first, it emphasizes that safety is closely related to the economic benefits of the enterprise, establishing the business concept based on safety as a prerequisite; second, it adopts quantitative and manageable methods, and establishes the system of safety indicators and responsibilities to achieve standardized and scientific enterprise security management; finally, it pays attention to continuously improving and optimizing the safety management system, establishing a sound feedback mechanism to timely correct and improve deficiencies in the safety management process.

The implementation of the security objective management [6] mode requires enterprises to comprehensively strengthen the construction of safety culture, enhance employee safety awareness and responsibility, establish risk analysis and evaluation mechanisms, effectively control safety risks, and create a safe and stable production and operation environment. At the same time, enterprises also need to strengthen internal coordination and communication, promote the sharing and communication of safety information among different departments, and form a mutually maintained and harmonious corporate culture of safety.

The classification standards for modern safety management modes cover various aspects, including management responsibilities, management levels, management content, management methods, and management units. Each classification method has its specific types of management modes. When choosing a safety management mode, it is necessary to comprehensively consider the actual situation and needs and determine the most suitable management strategy. For example, an enterprise can ensure that safety management responsibility is implemented by adopting a leadership responsibility system or a dedicated safety management system. The enterprise can strengthen the monitoring and control of safety management by adopting a full-staff participation or hierarchical management type. It can also choose a dynamic or static management type to adapt to different safety risk scenarios. Meanwhile, when choosing a management mode, factors such as on-site management or remote management methods, and business autonomous management or government regulatory management should also be considered. Only by comprehensively considering various factors can the most suitable safety management mode for the actual situation of the enterprise be selected to ensure that safety management is fully implemented.



3. Conclusion

In the constantly developing and changing era, the risks and security problems that enterprises face are increasingly complex and diversified. Therefore, for enterprises, safety management and risk control have become an indispensable important work.

Through learning the risk-based management mode and security objective management mode, we can understand the concept and methods of enterprise security management. The risk-based management mode vividly reflects foresight and flexibility, which can help enterprises reduce the risks of various uncertain factors, improve their competitiveness and risk resistance. The security objective management mode emphasizes more on the construction of enterprise safety culture, the implementation of employee safety responsibilities, and the quantified management of safety indicators, thus achieving standardized and scientific enterprise safety management.

In conclusion, safety management and risk control are the core contents of enterprise management and the foundation of sustainable development. Only by continuously innovating and improving management modes, strengthening safety culture construction, and enhancing the safety awareness and responsibility of all employees [2], can we effectively respond to the changes in the external environment and the challenges of internal production and operation, and ensure the safety, stability, and sustainable development of enterprises.

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