

# Theoretical Framework and Practical Exploration: Application and Development of QHSE Management System in Changqing Oilfield

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## Abstract

Safety production in petroleum enterprises is extremely important. Since the 18th National Congress, the construction of oil production safety has been behind the pace of economic construction, and the applicability of QHSE management system has been widely criticized. A large number of studies have shown that the current QHSE management system has problems such as large gap with actual production, difficulty in theoretical guidance and practice, and poor correlation of system components. In order to break out of this, Changqing Oilfield takes "4S" theory as the underlying logic and computer technology as the guarantee, realizing all-round data acquisition, multi-dimensional management of hidden dangers, sustainable development of resources, structured driving of functions and innovative creation of advantages, enriching the QHSE theoretical system and contributing to the global energy governance. It has enriched the theoretical system of QHSE, contributed "Chinese wisdom" to global energy governance, and provided "Changqing thinking" for the management of the petroleum industry.

## Keywords

QHSE, management system, petroleum enterprises

## 1. Introduction

Since the 18th National Congress, China's economy has been growing at a high speed, but the construction of safety, environmental protection and health work has been behind the pace of economic construction. Due to the oil extraction, processing, transportation process is dangerous, toxic and harmful, pollution and other industry characteristics, so that the oil companies in the development process of quality, environmental protection, safety, and employee health concern is much higher than other enterprises. In recent years, safety production accidents in the petroleum industry have occurred frequently. In 2019 alone, there were 203 safety production accidents in the petrochemical industry, killing 239 people and causing economic losses of tens of billions of dollars. The health of oil workers has also been widely criticized, according to the World Health Organization's 2021 survey report: people working in the oil industry have a much higher risk of developing cancer than people in other industries. For this reason, the state has introduced a series of laws and regulations, such as the Work Safety Law, the Occupational Disease Prevention and Control Law, and the Occupational Safety and Health Management System, in order to protect the safe production of the petroleum industry as well as the safety of workers' lives and properties.

HSE management system includes occupational health (Health) management system, safety (Safety) management system, environmental (Environment) management system, which consists of a variety of elements, which are organically integrated through advanced, scientific mode of operation, interrelated interactions, forming a set of structured dynamic management system [1]. The system was officially introduced to China in 1997. The system was formally in-

troduced to China in 1997. Once introduced, it has attracted great attention from the petroleum industry. After the development, on the basis of the original management system, the quality (Quality) management system was introduced, forming today's QHSE management system. However, at present, many petroleum enterprises in the application of QHSE management system has low efficiency, overlapping elements, unclear responsibilities and other problems, "documents say one thing, work one thing" phenomenon is widespread, management system landing road is long and difficult [2]. In this context, how to innovate and develop QHSE management system? In this context, how to innovate the development of QHSE management system, so that it can truly empower the risk prevention of energy enterprises has become a major practical problem that needs to be solved.

## 2. QHSE management system application of common problem analysis

Although domestic oil companies have recognized the urgency and necessity of the construction and operation of integrated management system, there are still some deficiencies in the relevant theoretical research level and theory-guided practice level. This section analyzes the problems in QHSE management system and its application from the perspective of theoretical research and industry practice.

**Theoretical perspective:** Firstly, the management integration system is only a simple merger, not the organic integration of the elements. GB/T 19001, GB/T 24001, GB/T 28001-2001 and SY/T6276-1997 are four management systems which are implemented separately, which weakens the systematic and comprehensive nature of the integration system, and at the same time, due to the intersection of each system, it leads to the waste of resources and inefficiency in the operation of each system. At the same time, due to the intersection of the systems, this leads to the waste of resources and inefficiency in the operation of the systems. In fact, there is no serious conflict and incompatibility between the four management systems, and all of them embody the basic idea of management and control, so it is feasible to organically integrate them into a comprehensive management system [3]. Secondly, the construction of QHSE theoretical system. Secondly, the construction of QHSE theoretical system is still immature, and the theory lacks universality; QHSE management system is not a theory in the strict sense, and there are imperfect and immature problems in its standardization, guidance and applicability. At this stage, the integrated management system is only applicable to the oil and gas industry, and there is a great potential for development and expansion. Thirdly, most of the research focuses only on the implementation of QHSE management system, and there is a lack of research on how to evaluate the operational effect of the system.

**Industry Practice Perspective:** Firstly, due to the cross overlapping of the components of the QHSE management system, resulting in the cross responsibilities and blurred boundaries of the production functions, which can lead to inefficiency and disorder in management and production, and often do not adopt a unified data standard between the production and operation departments, which leads to the blocking of information, redundancy of data, and the waste of resources [4]. This leads to information blockage, data redundancy and resource wastage. Secondly, the parallelism of multiple systems has artificially isolated the correlation between quality, safety, health and environmental management, and it is difficult for the supervisory department to comprehensively take into account the results of the operation of each element or focus on the results of the operation of a certain element, which is not conducive to the realization of the overall supervision and management of the enterprise. Again, due to the parallelism of multiple systems, in practice, it is easy to appear the phenomenon of multi-party certification, multiple standards and multi-party management [5]. This will lead to inefficiency in management, and the employees will be burned out, triggering formalism and shirking of responsibilities, making it difficult for production management to achieve the expected results. Finally, as modern corporate governance concepts and models supported by big data technology are increasingly integrated into the field of risk management, the lack of digital technical support for the QHSE management system will also hinder the long-term development of the enterprise's comprehensive management model.

## 3. The theoretical structure of QHSE management system construction

Fayol, the founder of the management process school, once said that "the process of management is the process of forecasting, planning, organizing, directing, coordinating and controlling." For the production safety of petroleum enterprises, how to better maximize the effectiveness of management, in consolidating basic management, improve business performance, and at the same time, realize the production concept of "people-oriented, quality first, safety first, environmental protection first" is a key link in the management of petroleum enterprises. Combined with the trend of enterprise digital transformation, digital transformation and intelligent development is the road to high-quality development of Changqing Oilfield, and it is an important way for the oilfield to promote the modernization of the governance system and governance capacity, and to take the lead in achieving high-quality development. On this basis, this paper combines the four dimensions of modern production safety principles, supported by the four major theories, to explain the theoretical experience of Changqing Oilfield in the construction of a digital platform for enterprise production safety management led by the innovative development of information technology, and to enrich the study of the

theoretical system of QHSE management.

### 3.1 SPC theory based on process control

Heinrich accident causation theory that the cause of enterprise safety accidents and accidents between, is not an isolated event, although the injury may occur suddenly at a certain moment, but is the result of a series of events occurring one after another. The theory that the occurrence of industrial accidents, the development process for a certain causal relationship between the chain process, and the accident causal chain process includes the following five factors: the social environment, human shortcomings, human unsafe behavior or unsafe state of things, accidents and injuries. 5 accident causation as dominoes are arranged in general, if a card is knocked down, then a chain reaction occurs, the rest of the dominoes will be knocked down one after another. The rest of the dominoes will be knocked down one after another. From actual production experience, cutting off only one link in the accident conduction process is based on familiarity with the entire production process.

### 3.2 System principles based on feedback control

The system principle is one of the most basic principles of modern management. It refers to the fact that when people are engaged in management, they use system theory, viewpoints and methods to carry out a full systematic analysis of management activities in order to achieve the optimization goal of management. That is to say, the viewpoints, theories and methods of system theory are used to recognize and deal with the problems arising in management. Safety production management system is a sub-system of production management, including safety management personnel at all levels, safety protection equipment and facilities, safety management rules and regulations, safety production operation norms and procedures, and safety production management information. Safety permeates all aspects of production activities, and production safety management is all-round, all-weather and involves all personnel. The system principle is based on the principle of closure, the enterprise as an organization, but also a management system, its management tools, management process must constitute a continuous closed circuit, in order to form an effective management activities. On top of this principle, the management of production and all kinds of production line behavior feedback is a key part of the control process, directly related to the effectiveness of enterprise management. Control theory, feedback control is an effective dynamic correction system of the classic method, through the feedback control so that decision makers timely understanding of the operation of the system objectives, such as deviation, you can quickly respond to amend the decision-making program, can play a role in optimizing, perfecting the role of the system objectives.

### 3.3 OKR principle based on key nodes

From the perspective of the Objectives and Key Results (OKR) method, efficient modern production safety management must first follow the principle of division and integration, that is, a clear division of labor under the overall planning, and an effective synthesis on the basis of the division of labor. In enterprise management, for the workflow, each link is both independent and interconnected, and should grasp the whole QHSE informationization supervision business of the oilfield company as a whole. OKR emphasizes the use of clear goals (Objectives) and specific indicators and standards that are sufficient to measure and validate the completion of the objectives to promote the operation of the organization, and to build the business management system.<sup>[6]</sup> OKR emphasizes the use of clear Objectives and specific index standards sufficient to measure and verify the accomplishment of Objectives to promote the operation of the organization and build the business management system.

Second, the Objectives and Key Results method (Objectives and Key Results) focuses mainly on key results. By defining the desired results, the work performance indicators are finely segmented so that employees are more proactive in focusing their attention on the company's (team's) goals. This working method, which can be widely used at all levels of the organization in a system, is one of the important theoretical approaches followed in the design of the business management module of the Changqing Oilfield An Eye Platform [7].

### 3.4 Systems engineering theory based on integrated management

The theory of systems engineering that the system is a whole composed of many elements that have a specific function and are organically connected to each other. The whole is composed of components (elements, elements) that are interconnected and interact with each other and have a specific function. The theory holds that the theory and methods of operations research and electronic computer technology are used to analyze, predict, evaluate, and finally synthesize the components that make up a system in order to optimize that system. The fundamental purpose of systems engineering is that systems engineering, through the cooperation of humans and computers, can give full play to the advantages of the human ability to understand, analyze, reason, evaluate, create, etc., and can make use of the high-speed computing and tracking ability of computers to ensure that the system's goal is reached in the shortest possible time with the

least amount of manpower, material resources and financial resources. Under this framework, we have rationally developed, designed and operated the QHSE Supervisory Informationization System based on the analysis of the structure (each level), elements (business) and information of the system (at the group level) with the aim of optimal planning, design and management.

#### 4. Empowering Mechanisms of 4S Management

In order to fit the main theme of enterprise digital transformation and promote big data technology to empower QHSE management of petroleum enterprises, Changqing Oilfield has built a set of all-round, automated, informationized and intelligent QHSE supervision and management platform based on the above theories and guaranteed by computer technology. Contributes "China's Wisdom" to global energy governance and provides "Changqing Ideas" for the management of the petroleum industry. It provides "Changqing thinking" for the petroleum industry management. The analysis framework of the specific enabling mechanism is shown in Figure 4-1 below:

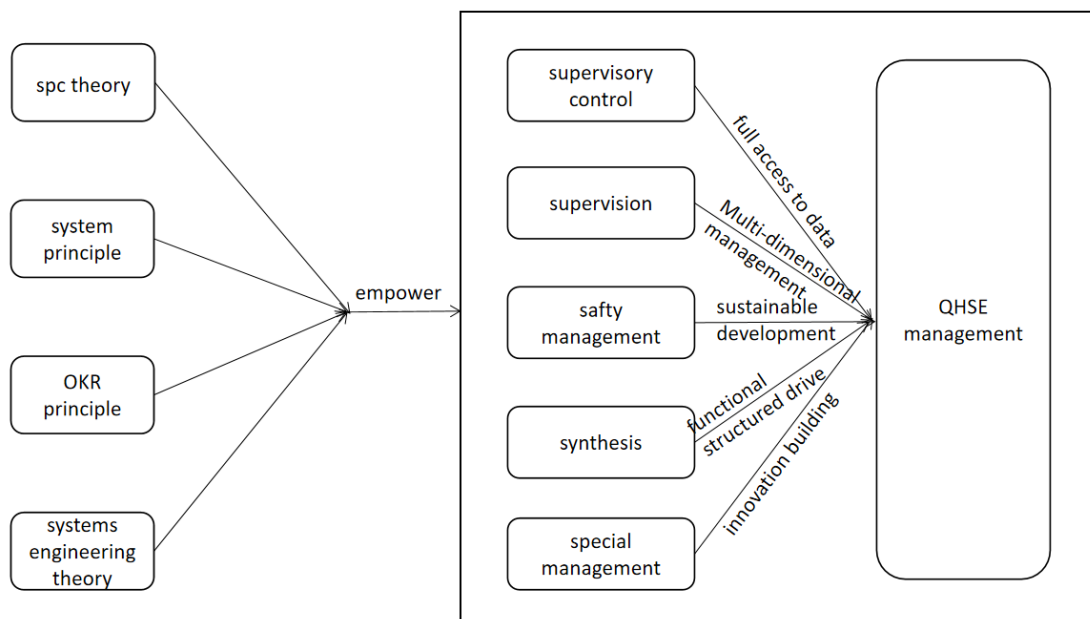


Figure 4-1. Enabling Mechanisms Framework.

##### 4.1 4S-Precision monitoring realizes all-round data acquisition

Combined with the theory of Statistical Process Control (SPC) put forward by the American mathematical statistician Hughart, the application of statistical techniques to monitor the production process not only reduces the reliance on inspection, but also improves the overall quality of the project. Statistical process control is the application of statistical techniques to assess and monitor the various stages of the process, to establish and maintain the process at an acceptable and stable level, so as to ensure that the products and services meet the specified requirements of a quality management technique. SPC emphasizes the whole process of monitoring, the whole system to participate in the whole process, and emphasizes the use of scientific methods (mainly statistical techniques) to ensure that the whole process of prevention. One of the most important of the modern safety principles for process-oriented operations is the principle of dynamic relevance. The principle of dynamic relevance tells us that the elements constituting the management system are in motion and development, and they are interconnected and constrained. Obviously, if the elements of the management system are in a state of stasis under monitoring, accidents will not occur.

QHSE supervisory information system integration platform of the underlying "Supervisory Control" monitoring technology as a system of data capture intuitive means to identify and provide the required types of monitoring and measurement resources, QHSE technical services and measurement equipment (including software) procurement, use, storage, QHSE technical services and measurement equipment (including software) procurement, use, storage, maintenance and other processes to be controlled to ensure that the results are effective and reliable. Among them, the quality, safety and environmental protection department is responsible for the supervision and management of QHSE technical services and quality, measurement, safety, environmental protection and energy monitoring equipment. The tech-

nical monitoring unit is responsible for the professional management of large-scale measuring devices, mandatory calibration measuring devices and metrological standard devices. Suitable monitoring and measuring devices are equipped and used, maintained and calibrated at specified intervals, and the inspection status of measuring devices is labeled. Precise monitoring of the entire production process not only enables the mastery of the entire LPG production process, but also realizes the timely identification of risk factors in the risky process, and when it is found that the measuring equipment does not meet the intended use, it should be determined whether the results of the previous measurements have been affected, and appropriate measures should be taken to cut off the propagation of the cause of the accident in a timely manner.

Supervisory Control" is a combination of SPC theory, which is not only applicable to the quality control of LPG production, but also can be applied to the management process of oil sales, human resource management, and market analysis, etc. It effectively embodies the idea of full participation in quality control, which can help enterprises to really make "ex-ante" prevention and control. It effectively embodies the idea of full participation in quality management, and can help enterprises to truly achieve "ex-ante" prevention and control in quality control, realizing reliable assessment of business processes, determining the statistical control boundaries of the process, and judging whether the process is out of control or not. In addition, the theoretical framework provides an early warning system for the business, which helps to monitor the business process and prevent the occurrence of risks, thus reducing the dependence on routine inspection and improving quality and safety.

#### **4.2 4S-Multi-dimensional management of hidden dangers through level-by-level supervision**

Safety in oilfield enterprises is more important than Mount Tai, and the screening of potential safety hazards and the killing of risks in the cradle are in line with the overall national security concept, which is a fundamental security strategy. Traditional safety management methods are difficult to achieve the whole process of risk control, once the hidden danger into an accident, it will cause huge losses. Therefore, an active risk screening system should achieve: (1) Automatic identification of risk factors. (2) Real-time alarms for safety hazards. (3) Safety data analysis and independent learning. (4) A variety of management functions (including video source management, equipment management, the ability to show the real-time intelligent analysis of a particular operating site according to the need to analyze the video, complete the video image analysis of the supercomputer, the scene of the alarm task assignment and management).

Combined with the actual situation of Changqing Oilfield, the internal conditions and external environment of the enterprise's production are constantly changing, so it is necessary to capture and feed back all kinds of production safety information in time in order to take timely action. In the face of the diversification of regulatory objectives, the complexity of regulatory indicators and the real-time nature of regulatory needs, the QHSE regulatory information platform realizes the collection of "Supervision" at the functional layer by taking the centralization of business flow and the unification of data flow as the gripping hand. By actively pushing different types of business data to each level, and making full use of the powerful data and information integration and analysis capabilities, it realizes the supervision and management goal of "one-stick-to-the-end" at the operation area level, the plant supervision level, and the company monitoring level. It integrates the principle of supervision in the principle of coercion, implements the laws and regulations on production safety in the country and industry, is based on the hidden danger management process model, and comprehensively utilizes the closed-loop feedback control theory. In the actual production site, it integrates the feedback mechanism before, during and after the incident, ensures that the management organization reasonably applies various management systems and methods, establishes a close connection between the functional departments, and forms an efficient feedback system. Supervision at all levels is carried out throughout the entire process of hidden danger management, forming an efficient closed loop of safety feedback, so as to firmly grasp the initiative from eliminating the source of hidden dangers to identifying and discovering hidden dangers, and then managing hidden dangers. It has better promoted the transformation of QHSE supervision in the direction of digitization and intelligence.

#### **4.3 4S-Business Focused Realization Sustainable Development of Resources**

Combining the OKR work methodology and based on the intelligent cloud and data lake architecture, the QHSE Safety Production Integration Platform focuses on the main business of "Safety management", which is the management of the whole process of safety production. It is subdivided into five parts: safety management, environmental protection management, quality management, occupational health management, fire management, etc. From the business level, it structures one-stop, standardized data construction, processing and application, which can satisfy the needs of multi-source data access, centralized data management, and comprehensive data governance. The framework realizes the full life cycle management of data from collection and storage to processing and analysis, provides safe, efficient and high-quality one-stop data services for business applications, allows application data to be inherited and shared among various business departments, and provides comprehensive data support for intelligent applications such as big data analysis, cognition and computation, which can help oilfield enterprises to fully explore the value of data resources and

promote the creation of a comprehensive, benign data ecosystem.

Taking OKR as the working methodology, Changqing Oilfield has developed a business management system based on the QHSE management system with "633" as the design principle and "4+4" as the system structure, which is the business management system of Changqing Oilfield's QHSE informationization system integration platform. The system integrates six major business modules and realizes the functions of generating various reports, statistical analysis of safety data, sharing of occupational health knowledge and release of early warning information. The system can achieve significant results in standardizing enterprise business management, sharing business information, and assisting system users in making scientific decisions, which will have a positive impact on Changqing Oilfield's production, operation and safety. The so-called "633" principle, i.e., six objectives, three interfaces and three tests, runs through the whole process of Changqing Oilfield's QHSE information system integration platform business management system. The "six objectives" refers to the fact that Changqing Oilfield has categorized the objectives of business management into six items, namely, quality management, energy conservation management, safety management, fire management, occupational health management and environmental protection management. The six business management objectives are independent of each other and provide safeguards for the smooth development of oilfields and the green transformation of Changqing Oilfield from different aspects. The "Three Interfaces" includes the function clarification and design of the company-level user system operation interface, the plant and division-level user platform operation interface, and the operation area-level user platform operation interface. The purpose of this part is to divide the system user's authority and clarify the management responsibility of all parties using the system. The "three tests" include function verification test, performance test and security test, which are used to maintain the normal operation and use of the system.

Changqing Oilfield utilizes OKRs to clarify objectives, assist leadership in making important decisions, help departments, teams and individuals communicate accurately and solidify overall business management objectives from practical actions, focus work efforts on key success factors to promote goal achievement, and then realize integrated production and safety supervision. It closely links employees' personal goals with the company's plans, deepens their sense of ownership, and promotes their participation and innovation.

#### 4.4 4S-System Synergy Realization Functional Structured Drivers

Changqing Oilfield QHSE management system is based on risk thinking and PDCA cycle, and adopts the operation mode of "Plan - Do - Check - Act" (PDCA cycle), which is applied to all the elements of the company's operation, management process, control process and the whole process of QHSE management system. Based on this logical orientation, the platform adopts a systematic approach to integrate system elements with relevant QHSE management norms and technical standards of the Group and oilfield companies as the basic framework, and utilizes a process approach, compatible with the requirements of QHSE risk management and control measures for all aspects of production and operation activities, and integrates them into the business control process and system rules to form the company's QHSE supervision information system.

"Synthesis management", as a bearing in the overall work cycle, emphasizes the balance between social and ecological services, between economic and natural production, and the coordination of time and space in the process of enterprise safety [8]. The Combined with the ecological perspective of conjugate ecological theory, the optimal standard of enterprise safety production should be "according to the ecological principles of holistic, synergistic, cyclic, and autopoietic" to the system specification. For LPG companies, whose ecological environment has changed, on the one hand, their comprehensive management cannot be separated from the coordinated development of "data management, personnel management, assessment management, audit management, training management" and other aspects, and comprehensive guarantee can make the enterprise safe production. On the other hand, from the point of view of responding to the strategy of ecological civilization, it should be more from the time, space, quantity, structure, sequence of five aspects to regulate the development of the enterprise on the ecological support system it depends on a variety of development, utilization, protection and restoration activities, so that the composite ecological system's structure, pattern, process and function can be highly efficient, harmonious and sustainable operation. Safe production of enterprises is not only the enhancement of market competitiveness of enterprises, but also the dynamic and dialectical symbiotic relationship between enterprise development and social responsibility for ecological protection, as well as the evolutionary process of spiral upward from the philosophical level.

#### 4.5 4S-Specialized management to realize the advantages of innovative building

The core competence of an enterprise is "the cumulative learning in the organization, especially the learning of how to make coordination of different production skills and organic integration of multiple technology schools." In other words, the formation of core competence requires the organic coordination and integration of skills and technologies within an organization, rather than a simple accumulation of them. At the same time, "core competencies are knowledge and skills that have been integrated within an organization, especially knowledge and skills about how to coordinate

multiple production skills and integrate different technologies." Core competencies themselves do not automatically translate into competitive advantage, but they are a source of sustained competitive advantage for the organization.<sup>[9]</sup>

In view of the reality of Changqing Oilfield's vast area, scattered production nodes, and many types of operations, combined with the analysis of the three types of core competitiveness listed by the famous management expert Hamel in his article "The Concept of Core Competitiveness", the QHSE supervisory informatization system integration platform is able to help Changqing Oilfield to achieve the following aspects. The first type of core competitiveness is the informationization system integration platform for QHSE supervision. The first type of core competence is "the ability to compete in the market, such as product development, product sales and marketing, product technology development and innovation, which will help the enterprise to better approach customers." Under the QHSE management system oilfield companies QHSE management system can focus on the customer, each department and unit to establish a harmonious sharing with customers, mutual benefit and win-win, customer satisfaction and long-term mechanism. Quality standards are clearly defined in contracts or agreements, and qualified products and services are provided as agreed to ensure customer satisfaction. In addition the integration of skills and technology related competitiveness is the second type of core competitiveness, the organic integration of product-related technology and skills in order to facilitate the improvement of enterprise operational efficiency, product quality cycle and inventory management. Based on the intelligent cloud and data lake system architecture, the QHSE supervisory informatization system integration platform is able to realize online process, data visualization and intelligent analysis, which greatly improves enterprise management efficiency. The last type of core competitiveness is the competitiveness related to product or service functions. In order to enable customers to obtain a higher use value of the product, the enterprise must have a unique service or product rather than simply upgrading and optimizing the skills. the QHSE supervisory informatization system integration platform makes use of the data visualization technology, and on the basis of fully integrating and exploring the data and assets of the safety production, it can provide the management units at all levels with intuitive, visual, accurate and intelligent collaborative environment, leaving ample space for enterprise process innovation and product upgrading.

"Special service management", which includes contractor management, three simultaneous management, system audit, hidden danger management, accident incident, hazardous chemical management, risk prevention and control, green mine management, hazardous work management, etc., is a specialized business process that is crucial to the development of an enterprise's core products and core technologies and has been gradually clarified over a long period of time through learning and accumulation. "Special service management" is the process of developing core products and core technologies of an enterprise, and it is only through a long period of learning and accumulation that various kinds of specialized business processes that are crucial to the development of an enterprise are gradually clarified. Integrate different technologies in the enterprise and convey values in the organization. Through long-term accumulation of core competencies of the enterprise through technology empowerment, the enterprise can discover products and seek market opportunities as much as possible. For enterprises to grow and remain competitive in the long term, it is necessary to accumulate knowledge and capabilities, cultivate core competencies and make them continuously improve.

After integration and coordination, the uniquely possessed capability resources that enable an enterprise to have a long-term competitive advantage in a certain market are the competitiveness that is difficult to be surpassed by competitors over a period of time, and they can enable an enterprise to maintain a longer-term competitive advantage. The self-organizing ability of an enterprise that organically integrates skills, assets and operating mechanisms is the basis for an enterprise to obtain a long-term stable competitive advantage [10]. It is the basis for enterprises to obtain long-term and stable competitive advantages.

## 5. Conclusions and outlook

The safety production of petroleum enterprises is more important than Mount Tai, and it is the right time to promote the QHSE management system. It is found that the current QHSE management system has a big gap with the actual production, it is difficult for the theory to guide the practice, and the correlation of the system components is poor. Summarizing years of management experience, Changqing Oilfield has created an all-round, automated, informatized and intelligent QHSE supervision and management platform based on SPC theory, system principle, OKR theory and system engineering theory, and supported by computer technology, which realizes all-round access to data, multi-dimensional management of hidden dangers, sustainable development of resources, and structured driving of functions. The platform can realize all-round data acquisition, multi-dimensional management of hidden dangers, and sustainable development of resources and structural driving of functions. It contributes "Chinese wisdom" to the global energy governance and provides "Changqing thinking" for the management of the petroleum industry.

Theoretical research outlook: In the rapid development of digital technologies such as "Big Objects, Mobile, Cloud and Intelligent Zone", the QHSE management system should integrate digital technologies and give full play to the empowering effect of digital technologies. Future research can be based on the following aspects: firstly, the realization path and optimization improvement of QHSE management empowered by digital technologies such as "Big Matter Migration Cloud Intelligence Zone". With the creation and explosion of blockchain technology and ChatGPT technology,

modern corporate governance concepts and models supported by big data technology are increasingly integrated into the field of risk management and control, and in the face of severe and complex risk management challenges, it is of great significance to clarify the intrinsic relationship between big data and risk prevention and control, and to analyze the various potential risks, in order to improve the risk prevention and control system of Changqing Oilfield, and to promote the modernization of the risk management capability. This is a long-term exploration process, which requires all functional departments of the company to cooperate and explore innovation; secondly, the theoretical expansion of QHSE management system. QHSE management system is for the service of the enterprise, which inevitably requires that the theory and the practice of the enterprise keep abreast of the times. With the innovation of enterprise practice and the improvement of laws and regulations, QHSE management system should be expanded accordingly.

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