Research on the Influencing Factors of Green Quality Management System Resilience Formation in Manufacturing Enterprises

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Abstract: The concept of sustainable development inevitably affects business operations and future development, and the green development of a company means that corporate development should be aligned with environmental development goals. In the current environment, manufacturing enterprises should be committed to developing resilience while developing green in order to facilitate coping with the complex and changing environment. In this paper, we analyze the factors affecting the formation of resilience of green quality management system in manufacturing enterprises from two aspects: internal organizational structure and external policy environment.

1. Introduction

Now China has put forward the concept of green development in the new era and insisted on promoting the comprehensive green transformation of the economy and society. The concept of sustainable development has also permeated all aspects of social life and changed consumers' consumption concepts[1]. In order to satisfy consumers and fulfill social responsibility, more and more enterprises are implementing green quality management systems and promoting the green transformation of industries. In recent years, the manufacturing industry has gradually revealed problems in the production process of products, such as the pollution of the environment in the production process and whether raw materials can be reused[2]. In order to achieve the goal of environmental sustainability, manufacturing companies change their production methods and use environmentally friendly materials for production. The green quality management system integrates the green concept into the quality management system and is committed to producing green products, providing green services and reducing the pollution in the production process.

2. The Resilience of Green Quality Management System Formation

2.1. Green Quality Management

Total quality management focuses on the quality of a company's products and the efficiency of

its production[3]. However, it fails to fully consider the impact on the environment during the production process. Green quality is based on total quality management with the concept of energy saving and environmental protection, consider the needs of consumers, society and the environment.

The growing concern for environmental issues in China and the inability of traditional total quality management to meet the norms related to environmental protection has led to green quality management. Green quality management requires business managers to consider not only the economic goals and social values of the company when facing environmental issues in decision making, but also to ensure sustainable economic success[4]. The green quality management concept takes into account the harmony between corporate production and the environment[5]. When producing products, companies reduce their environmental impact by developing appropriate environmental processes and strategies to reduce energy consumption and waste, and promote the use of recyclable resources in their production[6]. This is done by reducing their environmental impact and promoting the use of recyclable resources in production.

2.2. Toughness Theory

2.2.1. Meaning of Toughness

At the organizational level, resilience is used to describe the inherent characteristics of organizations that are able to react and recover faster than others in unexpected situations and develop new business models[7]. At the employee level, resilience means employees has ability to recover quickly and even succeed in the face of problems and adversity[8]. Resilience has the unexpected ability to cope with challenges and changes, and can help companies turn around and thrive in adversity; therefore, resilience can be regarded as an important factor for business development. Resilience is closely linked to dynamic competition, and resilient companies are able to identify possibilities for action in complex environments, remain responsive, and ultimately excel in their environment[9].

2.2.2. The Characteristic Elements of System Toughness

Resilience is a description of the state of the enterprise security management system, can be characterized by the elements can be divided into the system resilience anti-vulnerability, adaptability and synergy[10].

Anti-vulnerability reflects an enterprise's tolerance to failures and attacks, that is, its resistance to risk[11]. With the rapid development of the economic market, the market environment and policies have become complex and changeable. Anti-vulnerability can enhance the insensitivity of enterprises to various changes, enhance the stability of the system to maintain the original performance of the system in a changing environment, will keep the enterprise in a safe state in the risk to avoid irreparable losses.

Adaptability refers to the ability to maintain the original function of the system in the face of unavoidable risks. Enterprises can improve the adaptability by setting up a backup component or system for a system that can replace the original system to maintain normal production and management activities in the event of a risk. The higher the adaptive capacity, the better the backup system and measures, and the ability to quickly respond to risks or accidents, minimize losses and maintain its own safety status.

Synergy is an important attribute that enables companies to quickly restore operational order in a crisis. Companies with strong synergy have comprehensive and flexible responses to crisis impacts, and can quickly and effectively integrate damaged production departments from unexpected

situations and develop new management paths. Therefore, strong synergy makes companies less affected by crisis events.

2.3. The Significance of the Research on the Resilience of Green Quality Management System

Green management is an objective requirement for the development of enterprises in the new century, and green quality management system can help enterprises improve their competitiveness and establish a good corporate look[12]. In the complex market environment, enterprises have to attach great importance to the unexpected conditions in the production environment while focusing on product quality, thus, they focus on the resilience of the development system. Resilience theory provides a new perspective for green development, which can further improve the ability of enterprises to prevent and manage the environment, and realize dynamic control of enterprise environmental management.

3. The Manufacturing Enterprise Green Quality Management System Resilience of the Formation of Influencing Factors

The variability of the environment, the intensity of market competition and various management issues within the company can bring many risks and adverse effects to the production and operation process. This environment requires enterprises to establish a management system with resilience. A resilient enterprise can effectively adjust its goals, operations, systems, structure and decision-making to identify and adapt to changing environments, withstand the disruptions of risk and other drivers[13]. With the introduction of environmental protection policies and increased government and social demands on manufacturing companies' production management, companies have incorporated the concept of resilience into their green quality management systems and are committed to developing the resilience of their green quality management systems.

In this paper, we look at both internal and external aspects to find the influencing factors that drive the formation of green quality management system resilience in manufacturing enterprises. From the internal perspective, the factors that affect the proper operation of the green quality management system in a complex environment are mainly organizational assets, organizational commitment, organizational leadership, organizational learning, organizational culture and social network[14]. From the external perspective, the important factors that influence the formation and development of the resilience of green quality management system of enterprises are policy environment.

3.1. Internal Factors

3.1.1. Organizational Assets

Masten[15] considers organizational assets in resilience as group characteristics that can be measured based on specific future output criteria that can be used to anticipate positive outcomes. Management mechanisms (e.g., structural capital, communication mechanisms, knowledge management mechanisms, development planning, etc.) in an enterprise are resilient assets, and traditional economic assets (e.g., financial, material, and technological resources) are also organizational assets that contribute to resilience. Organizational assets help enterprises to establish a sound green quality management system and improve their environmental resilience.

3.1.2. Organizational Commitment

Organizational commitment not only influences the development of corporate goals, but also

affects organizational resilience through individual behavior and performance. In times of turbulence and change in the corporate environment, employees' emotional commitment to the company is important because it reflects the ability of employees to reallocate resources and respond positively to unexpected events in a turbulent environment[16]. Individuals with high emotional commitment to the firm can generate positive communication and management, which contributes to the resilience of the firm's green quality management system.

3.1.3. Organizational Leadership

Organizational leaders are able to guide companies to develop resilience and are key players in the formation of organizations. Managers of companies should actively improve their own abilities and capabilities, and have the determination to continue to operate and seek to produce and grow in the face of a rapidly changing external environment, and take action[17]. Numerous practices have proven that the more uncertain the environment, the more companies need wise leadership, rather than the ability to manage by the book[18]. The key to developing the resilience of a green quality management system is to develop different styles of leadership, and it is more important to shape the values of leaders than to develop the resilience of individual employees[19].

3.1.4. Organizational Learning

In the context of green development, the original development model of companies can no longer meet the current production needs, and companies need to seek new skills and development through learning. Organizational learning can develop organizational resilience, which is a key factor for enterprises to adapt to the environment and influence change. Organizational learning can promote the acquisition, innovation, sharing and application of knowledge, and enterprises build their management systems through continuous knowledge accumulation, skill development and resource reorganization[20] to meet green environmental needs while accomplishing product innovation.

3.1.5. Organizational Culture

For a company, the organizational culture defines the goals pursued by the company and reflects the values of the company. A good organizational culture can guide a company to develop healthily and accomplish production goals without harming the environment. When a company stores knowledge and expands its goals to develop the resilience of a green quality management system, the organizational culture can play a guiding role in directing employees to recognize and support the company, a company that responds to problems in a positive and effective way, rather than being caught in a vicious cycle of panic and negativity[21].

3.1.6. Social Network

Social networks between companies and employees help develop resilience and can play a critical role in times of crisis[14] It has been argued that collaborative and positive team relationships are conducive to the development of resilience. Some scholars believe that collaborative and positive team relationships help different teams and departments to help each other and break down stress, which ultimately shapes the overall resilience level of the company[22].

3.2. External Policy Environment

From the development of national manufacturing enterprises, a good policy environment can effectively motivate enterprises to promote the development of green quality management system.

The policy measures of local governments add strength, which can promote the cooperation of resources between enterprises and governments and establish a network of mutually beneficial relationships between enterprises and governments. In this process, enterprises are more likely to receive support provided by the government and society, thus gaining more opportunities for development. A positive policy environment is conducive to the establishment of a broader network of relationships between enterprises and social groups, thus enhancing the resilience of enterprises' green quality management systems.

4. Conclusion

Resilience can help companies cope with unexpected situations and grow against the odds in a crisis by reorganizing corporate resources and processes, among other means. Currently, global green awareness is on the rise, and economic development is moving in the direction of more environmental protection. In the context of a changing environment, manufacturing companies are incorporating resilience theory into green quality management systems to seek environmentally friendly and robust management models. The formation of resilience is a gradual process, and in order to improve the resilience of an enterprise's green quality management system, it is necessary to clarify the factors affecting resilience. In this paper, we analyze the factors affecting the formation of resilience from both internal (organizational assets, organizational commitment, organizational leadership, organizational learning, organizational culture and social network) and external (policy environment) aspects, so as to explore the methods that can rapidly develop the resilience of green quality management system in manufacturing enterprises.

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