Influencing Factors of Enterprise Digital Quality Management

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Abstract: In the current environment of fierce competition in the global economy, the digital transformation of enterprises has become an important strategy to enhance competitiveness and achieve sustainable development. Digital transformation not only involves production, operation, management and other levels, but also puts forward new requirements and challenges for product quality management. This study aims to effectively implement digital quality management in enterprises, which is essential to ensure product quality, improve customer satisfaction, and maintain corporate reputation. Enterprise digital quality management is an important means for enterprises to improve their management level, optimize production efficiency and service quality, and its successful implementation is affected by many factors. Based on this, this paper uses the literature review method to understand the results and development trends of existing research in the field of enterprise digital quality management, and draws the conclusions of the key factors affecting digital quality management and the relationship between them, which is helpful to reveal how enterprises can effectively manage and improve the core points of product quality in the process of digital transformation. This paper focuses on enterprise digital quality management, analyzes the problems faced by enterprises, and puts forward the path and strategy of enterprise implementation of digital quality management.

Keywords: Digital quality management; Technical support; Influencing factors; Information technology; Importance

1. Introduction

With the rapid development of information technology, enterprise digital quality management has become an important means for enterprises to improve their management level and optimize production efficiency and service quality. However, how to effectively implement digital quality management is a big problem[1]. This paper will analyze the aspects of technical support, organizational culture, talent team, data quality, system construction and external environment, in order to provide some reference and guidance for enterprise digital quality management[2].

As an important part of digital transformation, enterprise digital quality management is essential for enterprises to improve product quality, achieve efficiency and innovation. In the current information age, the challenges and opportunities faced by enterprise digital quality management are becoming increasingly apparent, so it is of great significance to conduct in-depth research on its influencing factors.

The purpose of this study is to explore the key factors influencing the digital quality management of enterprises, and to analyze the influencing mechanism from the perspectives of theory and practice. Through systematic research, we aim to reveal the impact of factors such as organizational structure, cultural atmosphere, technology application, leadership, and supply chain collaboration on digital quality management in the process of digital transformation, in order to provide enterprises with feasible management strategies and decision-making suggestions.

This paper will combine a variety of research methods such as literature review, field research, questionnaire survey and case study to comprehensively analyze the influencing factors of enterprise digital quality management. Through the study of different levels and types of enterprises, we strive to deeply understand the essence of digital quality management, and provide practical guidance and academic support for

enterprises.

After a comprehensive understanding of the influencing factors of enterprise digital quality management, we believe that this study will help promote the further improvement of digital quality management theory, and provide useful inspiration and suggestions for enterprises to effectively cope with challenges and achieve continuous improvement of quality management in digital transformation.

2. The Concept of Digital Quality Management

Digital quality management is the change of digital quality management mode triggered by digital transformation, focusing on the change of the scope, mode and goal of quality management, and the core content is to improve the digital ability of enterprise quality management in the digital environment, including the construction of digital thinking, the application of digital technology and the adjustment of management mechanism, as well as the application of data development and utilization[3].

3. Challenges Faced by Enterprises in Digital Quality Management

In terms of the concept of quality management, it has gone through a series of iterations and improvements from traditional quality inspection, statistical quality management, TQM to Six Sigma, and operational excellence to deal with various quality problems and assist enterprises in manufacturing products that meet their needs[4]. With the advent of the era of industry 4.0 and big data, people's demand for products is becoming more and more personalized and diversified, and there are more and more multi-variety and small-batch production methods in the manufacturing industry.

3.1 Technical Challenges

Enterprise digital quality management relies on complex information technology systems, including data collection, storage, analysis, and feedback. However, the rapid development and upgrading of technology may lead to the aging and mismatch of technology, increasing the difficulty of system integration and data sharing[4].

3.2 Personnel Training and Adaptation Challenges

The requirements of digital quality management for employees are: both technical knowledge and quality management knowledge. However, training employees and upgrading their digital skills can require a significant investment of time and resources. In addition, it takes time and process for employees to adapt to new technologies[5].

3.3 Organizational Culture and Change Challenges

Digital quality management has high requirements for organizational culture, and it is necessary to establish a culture that actively supports quality management. However, organizational culture change is a complex process that requires leadership buy-in and active employee involvement[6]. In addition, the implementation of digital quality management may also cause some internal resistance and resistance.

3.4 Data Security and Privacy Challenges

Digital quality management requires a large amount of data acquisition and processing, and its data security and privacy are greatly challenged. Enterprises need to establish a sound data security management mechanism to prevent data leakage and abuse, while complying with relevant laws and regulations[7].

3.5 Challenges of External Environmental Changes

The uncertainty and changes in the external environment will also bring challenges to digital quality management. Changes in market demand, intensified competition in the industry, and adjustments in policies and regulations may affect the implementation and effectiveness of digital quality management[8].

4. Influencing Factors of Enterprise Digital Quality Management

4.1 Technical Factors

Technical factors are the foundation and key to digital quality management. Including the following aspects: Information technology infrastructure: Enterprises need to establish a

sound information technology infrastructure, including network, hardware and software, to support the operation and development of digital quality management systems[4].

Data management and analysis: Digital quality management requires a large amount of data collection and analysis, and enterprises need to establish efficient data management and analysis capabilities to obtain valuable quality information and make decisions.

Cloud computing and big data: Cloud computing and big data technology provide more powerful data storage and processing capabilities for digital quality management, which can effectively support the quality management activities of enterprises.

4.2 Organizational Factors

Organizational factors are essential for the successful implementation and operation of digital quality management. Here are a few key factors: Leadership buy-in and commitment: The buy-in and commitment of business leadership to digital quality management is a key factor driving its successful implementation. Leadership should understand and recognize the importance of digital quality management and provide the necessary resources and support[5].

Organizational culture: A good organizational culture contributes to the smooth progress of digital quality management. Enterprises should establish a culture that encourages quality awareness and continuous improvement, and actively cultivate employees' awareness and ability to participate in quality management. Organizational structure and processes: Organizations need to optimize their organizational structures and processes to meet the needs of digital quality management. For example, establish cross-departmental collaboration mechanisms and processes to facilitate information sharing and communication.

4.3 Human Resource Factors

Human resources are one of the indispensable factors of digital quality management. Here are a few important aspects: Personnel quality and competence: Enterprises need to develop and attract talents with digital quality management knowledge and skills to support the implementation and operation of the

system. Employee engagement and training: Active employee participation and training are key to the success of digital quality management. Companies should encourage employees to participate in quality management activities and provide relevant training and education opportunities. Performance appraisal and incentive mechanism: The establishment of a reasonable performance appraisal and incentive mechanism can stimulate the enthusiasm and innovation ability of employees in digital quality management[6].

5. Enterprise Digital Quality Management Path and Strategy

First of all, technical support is the foundation of digital quality management in enterprises. Enterprises need to invest in advanced information technology, such as data analysis, artificial intelligence and the Internet of Things, to support the construction and application of digital quality management systems. These technologies can help companies achieve real-time monitoring, analysis, and feedback of data, and improve the transparency and efficiency of the production process. Good technical support can not only improve the level of digital quality management, but also bring competitive advantages to enterprises[9].

Secondly, corporate culture is a key factor in driving the implementation of digital quality management. Organizations need to build an organizational culture that actively supports quality management, including leadership buy-in, employee engagement, and acceptance of change. Digital quality management can only be effectively implemented and achieve results if the organizational culture aligns with the requirements of digital quality management.

In digital quality management, the allocation of human resources plays a crucial role. In order to promote the development of digital quality management, enterprises urgently need a group of professionals who understand both digital technology and quality management[10]. These talents not only need to have technical ability, but also need to understand the theory and practice of quality management, and be able to effectively use technical means to improve the level of quality management.

Data quality is the foundation of enterprise digital quality management. Accurate and complete data is key to the effectiveness of digital quality management. In order to ensure the quality of data, enterprises must establish a sound data collection, storage and management system. With strong data support, the company's decision-making will be more scientific and continuously improved[11].

Finally, external environmental factors will also affect the implementation of digital quality management in enterprises. External environmental factors such as industry competition, market demand, policies and regulations need to be taken into account. Enterprises need to adapt their digital quality management strategies to the changing external environment to adapt to market demands and maintain competitive advantage[12].

6. Conclusion

Enterprise digital quality management is a complex and multi-dimensional system engineering, which is affected by many factors. This paper analyzes the practice and research results of enterprise digital quality management, combined with theories and cases in related fields, summarizes the key factors affecting enterprise digital quality management, and draws the following conclusions:

1. Technical factors have an important impact on the digital quality management of enterprises. Advanced information technology and digital tools provide enterprises with a wealth of means and methods to realize the digitalization of quality management. For example, a quality monitoring system based on the Internet of Things, big data analysis, and artificial intelligence technology can help enterprises monitor the production process and product performance in real time, and find and solve quality problems in a timely manner. In addition, digital technology also provides enterprises with more flexible and efficient quality management tools, such as quality information management systems (QIMS) and electronic quality manuals, which promote the standardization and automation of quality management.

2. Organizational culture and leadership are important factors affecting the digital quality management of enterprises. The culture and values within the enterprise influence the promotion and implementation of digital quality management. Without a culture that encourages innovation and continuous improvement, it is difficult for digital quality management to be effectively supported and engaged. At the same time, leadership is also crucial, and the leader's ideas and decisions will directly affect the deployment and implementation of digital quality management.

3. Talent and organizational capabilities have an important impact on enterprise digital quality management. Enterprises need to have a team of professionals who are familiar with digital technology and understand quality management theory, who can promote the implementation of digital quality management and use technical means to solve practical quality problems. In addition, companies need to build organizational capabilities, including the ability to quickly learn and adapt to new technologies, respond quickly to market changes, and collaborate across departments.

4. External environmental factors also have an impact on the digital quality management of enterprises. Factors such as industry standards, regulations and policies, and market competition will have an impact on the operation of enterprise digital quality management. For example, changes in industry standards may require companies to adjust their quality management systems; Changes in government policies may affect the investment and return of enterprise quality management; The fierce competition in the market will also prompt enterprises to pay more attention to digital quality management to improve the competitiveness of products and services.

5. The impact of process flow and organizational structure on digital quality management cannot be ignored. Enterprises need to design a reasonable quality management process, combined with digital technology, to make quality management more efficient and transparent. At the same time, the optimization and adjustment of the organizational structure is also very important, and it is necessary to reasonably distribute the responsibility and power of quality management to various departments and positions to form a clear digital quality management system.

In summary, enterprise digital quality management is affected by many factors, including technical factors, organizational culture and leadership, talent and organizational capabilities, external environmental factors, process processes and organizational structure. These factors interact with each other to shape the implementation effect and development path of enterprise digital quality management. When promoting digital quality management, enterprises need to consider these factors comprehensively and formulate corresponding strategies and measures according to their own conditions to achieve the digital transformation goal of quality management.

Acknowledgements

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