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Research on digital knowledge management model within enterprises

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Abstract: In the era of digital economy, the digital transformation of enterprise management mode has greatly promoted the efficiency of internal knowledge utilization and enterprise innovation process, while the construction mechanism of enterprise digital management still needs to be theoretically explored. This paper adopts literature research method to define the concept of knowledge digitization and discusses the motives and mechanisms of the operation mechanism of the internal knowledge digitization management mode of enterprises based on the perspective of the whole life cycle management of data. Digital technology is incorporated into the enterprise internal knowledge management system, and digital knowledge management organization makes the knowledge in the enterprise knowledge management system more interrelated and more intelligent and convenient in solving business. It promotes the in-depth and universal development of the theory of intra-enterprise knowledge management mode and provides practical reference for improving the level of enterprise knowledge management.

Keywords: Intra-company knowledge; Digitalization; Management model.

1. Introduction

Currently, digital technologies such as artificial intelligence, industrial Internet and Internet of Things have become an indispensable part of the production life of organizations, and digital technologies are inextricably linked to the development of enterprise efficiency and have become a new driving force for enterprise development. Moreover, in the context of both the digital economy and the epidemic, employees are working more often in locations outside the enterprise, such as home office and other forms gradually emerge, making many enterprises appear virtual organizations and employees' labor patterns are more decentralized compared to the traditional model0. Jian Chen (2020) argues that companies should consider the changes brought about by the emergence of virtual environments and that, not only do these changes in management models expand traditional management operations, but with such changes we can usher in more opportunities and create value through these opportunities [2].

Constructing a scientific and orderly enterprise information management model and designing an efficient enterprise information management process are the necessary ways to achieve systematic and efficient development of contemporary enterprise information management[3]. According to Pan, Lipeng and Chi, Renyong (2018), knowledge structure is the organizational form of enterprise knowledge, and the process of recombination and recreation of knowledge is knowledge innovation, which will be influenced by knowledge structure, and the better the knowledge structure, the higher the innovation efficiency[4]. And knowledge digital management builds a new concept of knowledge management, creates a dynamic knowledge management model, and accelerates the efficiency of enterprise innovation. At present, the research on knowledge digitization and management model mainly focuses on specific types of enterprises as the research objects to explore the impact of digitization on enterprise structure and performance, and has not yet examined the management model from the perspective of knowledge digitization.

Digital technology and newly generated knowledge resources influence the way of working of enterprises, but at present, the traditional knowledge management model of enterprises is mainly studied in China. The mechanism of constructing this new model and its elements are to be explored. This study will systematically sort out the definition of the concept of knowledge digitization and its characteristics, so as to reveal what knowledge digitization is and lay the theoretical background foundation for further research.

2. Literature review

2.1. Knowledge Digitization

Lei Hui (2021) studied the supply chain in the context of digitization and further dissected the impact caused by the post-digitization processes on business performance and their impact mechanisms[5]. It can be seen that scholars have mostly focused on government, universities [6,[7] and libraries, and there is not enough research on the digitization of knowledge. The process of digital knowledge management has accelerated with the help of technological capabilities such as big data, cloud computing, and artificial intelligence[8]. Digital knowledge management uses digitization as a way of thinking to transform traditional knowledge management, and enterprises extract knowledge from data and achieve automatic optimization of knowledge management processes through integration and analysis, etc.[9]. Chen Liugen (2020) responded to the organizational management process of "talking with data, managing with data, and making decisions with data" from the operation procedure by building a triple mechanism of information processing, feedback, and response[10]. In summary, the digital knowledge management system converges all the knowledge into a whole, in which the knowledge can be shared and circulated, and the knowledge in this system is systematized, and knowledge innovation is realized in the process of continuous knowledge sharing and feedback, and tacit knowledge is transformed into explicit knowledge, and individual knowledge is transformed into collective

knowledge, which eventually achieves continuous accumulation and iteration.

2.2. Knowledge Digitization and Enterprise Development

Studies have shown that digital transformation of enterprises can significantly improve the service level of enterprises, and by examining the quality of this transformation process, it is found that service transformation can contribute to the performance improvement and value addition of digital development and achieve high quality development of enterprises[11]. Digital systems and networks can help companies absorb external knowledge effectively, and companies should change their external knowledge acquisition strategies and invest more in digital technologies[12]. The results of a study conducted by Liu, Zheng et al. (2020) using micro-firm data showed that the process of digitization of firms will make information costs rise agency costs fall and eventually lead to decentralized changes in firms[13]. Chi I.D. (2020) pointed out that in the context of digital economy, corporate goals need to be transformed, governance structures need to be innovated, and a series of changes in the internal management model of enterprises have occurred, including organizational structure, marketing model, production model, R&D model, and employment model tend to be[14]. Ji, Renyong et al. (2022) divided digital transformation into the digitalization of manufacturing processes and business models, and accordingly examined what impact companies have in the situation of digital transformation[15]. In addition, many other scholars have analyzed the impact of digital transformation on innovation performance.

It can be seen that, on the whole, previous researches mainly focus on the impact of digital transformation on the performance and structure of enterprises, while there are fewer researches on the digital management mode of knowledge. In this paper, we will deeply study the construction and operation mechanism of the digital management mode of knowledge within enterprises, find out the key factors of the digital construction of knowledge, and provide an implementation path for the digital construction of knowledge within enterprises.

3. Knowledge digitization and in-house knowledge digitization

3.1. Definition of knowledge digitization

Internal enterprise knowledge refers to the accumulation of knowledge generated in the business work of each functional department of the enterprise, including the internal public knowledge of the enterprise that has not yet been tapped and organized, as well as the tacit knowledge of employees [16]. Xing Xiaoqiang (2004) divided the knowledge activities within the enterprise into knowledge learning, knowledge creation and knowledge integration according to the dynamic role of knowledge units on knowledge. [17] Regarding the concept of digitization, scholars have defined it from different perspectives. Digitization" refers to the integration of multiple technologies into all aspects of daily life that can be digitized (Gray J, Rumpe B. 2015). [18] Brennen J S, Kreiss D. (2016) considers digitization as a way to reorganize many areas of social life using digital infrastructure[17].Legner C (2017) argues that digitization is used to describe the phenomenon of digital technologies and the processes by which various types of subjects make use of them [20].Rachinger M (2018) argues that digitization is the use of digital opportunities [20].

3.2. Characteristics of knowledge digitization

Digital knowledge is easy to store and not easily corrupted over time. Compared with traditional knowledge storage methods, digital knowledge can undergo a series of operations such as compression, which will make data storage faster and more convenient. Data storage objects include temporary files generated by data streams during processing or information that needs to be found during processing, which also facilitates the process of invoking data knowledge.

Digital knowledge is easy to share. Here refers to the sharing of tacit knowledge and closed knowledge. Data knowledge is not restricted by space and time, and can be called and updated at any time, which accelerates the process of knowledge sharing and knowledge innovation. Moreover, the application of big data has the feature of real-time, so users can quickly dig out the information they want from the huge amount and variety of data, and thus improve the work efficiency.

Digital knowledge is easy to quantify. Among a wide variety of subjects, there are problems of how knowledge is acquired, transformed, and measured that need to be solved. Addressing such issues from a knowledge life cycle perspective, optimizing the internal knowledge structure and improving the efficiency of resource and technology utilization can quantify the knowledge stock within an enterprise[21].

3.3. The significance of digitizing knowledge

Digitization of knowledge generates synergistic effects. Digital collaborative management is divided into three parts from the realization path, namely, organizational structure, infrastructure, and business processes, and the digital management, digital transformation, and digital module design are carried out for each of the three parts [23]. Knowledge digitization accelerates the flow of enterprise knowledge and promotes the growth of total knowledge. Through the knowledge exchange among knowledge subjects, it will promote the heterogeneity of enterprise knowledge and knowledge quality, which can promote the internal knowledge innovation of enterprises. The quantity of enterprise knowledge is huge, and if it is not dealt with, then the added value of knowledge will be lost. Within and between departments, it is difficult for employees' personal knowledge to flow in large quantities, and it mostly exists in the form of personal communication, and the problem of information asymmetry comes from this. The digitization of knowledge can be used to form a complete knowledge system with enterprise characteristics, which can be easily accessed by employees.

Knowledge digitization helps enterprise risk management. Peng (2013) pointed out that applying knowledge management to enterprise crisis early warning, analyzing, communicating and managing enterprise crisis information and crisis knowledge can enhance the effectiveness of crisis early warning of an organization [23]. The digital knowledge management model is more efficient and accurate in handling crisis information and crisis knowledge, which can improve the speed of enterprise crisis warning and enable enterprises to control in advance, which is important for organizations to adapt to the unpredictable internal and external environment

and maintain a lasting competitive advantage.

3.4. Internal knowledge digitization within the enterprise

About the concept of intra-enterprise knowledge. From the perspective of management, the internal knowledge of an enterprise usually involves the knowledge of enterprise culture, the knowledge generated from the business management process of an enterprise and the technical knowledge involved in the management and business of an enterprise. Among them, the enterprise culture knowledge reflects the enterprise's system and philosophy, etc.; the enterprise management knowledge reflects the enterprise's internal management organization and practices, etc.; and the enterprise technical knowledge is the reflection of the knowledge level of internal technical and technological innovation, etc.

Internal knowledge digitization refers to the knowledge management system developed for the needs of employees to meet the internal development of the enterprise or to improve the knowledge or business ability of the employees of the enterprise. Customer-oriented knowledge digitization refers to the knowledge management system that provides the knowledge required by the other party to meet the knowledge required by customers or the market. The two knowledge management systems have intelligent attributes and can provide the required knowledge according to the needs of the objects. According to the above definition, the internal knowledge digitization of the enterprise is defined as: taking knowledge as the core production factor of the enterprise, it is required that all the business, production, marketing and technical knowledge in the enterprise are coded to form the knowledge that can be stored, calculated and analyzed through information systems, various sensors, machine vision and other information communication technologies.

4. Construction steps and operation mechanism of the internal knowledge digital management model of enterprises

From a lifecycle perspective, the digital management of intra-enterprise knowledge is a process of collecting, storing, processing, filtering, analyzing, mining, and applying the data generated by the enterprise in the process of conducting business and management activities, and the enterprise will encounter differential data challenges when the intra-enterprise knowledge is at different stages of the lifecycle (Tao et al., 2018) [24]. The core idea of this study is to divide the knowledge management modules according to the different stages of the data knowledge life cycle and the subjects (technologies) involved in that stage.

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