

Knowledge Sharing and Business Model Innovation

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In the era of knowledge economy and open innovation, it is especially important for organizations to learn how to store and utilize internal and external knowledge for the sustainability of business models. The ability to innovate is a necessity for sustainable development. In the practice of enterprise business model innovation, leaders need to establish a system that can promote the willingness of employees to share knowledge. Organizations need to pay attention to the effectiveness of explorative learning, consider the actual demand of employees as much as possible, and mobilize the initiative of employees in the learning process. Organizations also are required to pay attention to the balance between explorative learning and exploitative learning.

knowledge sharing

ambidextrous organizational learning

novel business model innovation

1. Introduction

Environmental pressures and regulations make corporate leaders expect to achieve sustainable development of enterprises through business model innovation ^{[1][2]}. Business models of sustainability (BMfS) are defined as business model innovation (BMI) incorporating concepts, principles, or goals that aim at sustainability, or integrating sustainability into their value proposition, value creation and delivery activities, and value capture mechanisms ^[3]. Under the concept of sustainable competition, business model innovation provides impetus for the sustainable development of enterprises ^[4]. Hence, it is especially crucial to explore how enterprises can improve their business model innovation capabilities before achieving sustainability. In addition, the current global pandemic of COVID-19 has brought many threats to the sustainable development of enterprises in many countries. Such an unexpected pandemic reality in the external environment has prompted enterprises to innovate their business models. More and more research has proved that business model innovation is conducive to enterprises to obtain and sustain competitiveness ^{[2][3][4][5][6][7][8]}. Novel business model innovation (Closed-loop business models, Product Service Systems, etc.) and efficient business model innovation (Lean manufacturing, Energy Saving Companies, etc.) ^[2] are two important directions of business model innovation ^[9], and how to use internal and external resources and capabilities of an organization to promote novel business model innovation (NBMI) or efficient business model innovation (EBMI) is critical to enterprises. In the era of knowledge economy, organizations are regarded as a collection of diverse knowledge ^[10]. Knowledge integration and utilization are the basis of business model innovation ^{[11][12]}. How to effectively manage knowledge resources and conduct organizational learning (OL) activities is related to the successful implementation of business model innovation ^{[13][14][15]}. Knowledge sharing (KS) is the key to organizational management of knowledge resources, and this fact has

been recognized by many researchers [16][17][18][19]. The purpose of knowledge sharing is to expand the utilization scope of knowledge and improve the utilization value of knowledge, to provide sufficient knowledge capital for organizations to realize business model innovation [20]. In the context of open innovation, knowledge becomes an important strategic resource for enterprises to realize business model innovation, and knowledge sharing becomes more initiative-taking and open [21]. Organizations should not only acquire more external knowledge, but also make full use of internal knowledge. Organizational learning is characterized by ambidexterity [22]. Therefore, it is of great theoretical and practical significance to focus on the question: From the perspective of ambidextrous organizational learning process, what is the mechanism by which knowledge sharing affects novel and efficient business model innovation?

Business model is the core logic for an organization to create and obtain the value [23]. It describes the position of an enterprise in the whole value chain and explains how the enterprise obtains profits through business operation [24]. The application of big data, cloud computing, block chain and other advanced information technologies urges enterprises to combine market demand with internal resources and capabilities to form new transaction methods, and to capture value in new ways, as well as business model innovation [25]. From a value perspective, business model innovation consists of value proposition (customer segments /relationships, customer value, etc.), value creation (innovative business activities, design cost structure, etc.), value delivery (distribution channel innovation, etc.), and value network (stakeholder management, network capability, etc.) [26][27]. After understanding the building blocks of business model innovation, leaders can assemble a BMI by adjusting the innovation variables. But it is important to note that BMI does not always have a positive impact. Especially for small and medium-sized enterprises (SMEs), its business model innovation is top-down. BMI adopted by business owners or top management that, in the implementation process, may disrupt the work patterns that employees have long been accustomed to or reshape the pattern of benefit distribution among departments, resulting in negative response of employees, and finally ended in failure. And BMI can bring performance improvement to the enterprise only when it is successfully implemented. Therefore, it is necessary to study human behavior in the process of BMI. Novelty-based model innovation and efficiency-based model innovation both belong to business model innovation, but there are differences between them. The former refers to the continuous introduction of new ideas into the business model, the combination of products, information and services in a new way, and the adoption of new ways to realize the transaction; The latter aims to reduce transaction costs, reduce information asymmetry, and improve enterprise operation efficiency by adjusting business model [9]. Current research mainly focuses on the internal factors and mechanisms driving business model innovation [28]. This is because the external factors involved such as technological progress and environmental dynamics are often difficult for enterprises to control. In the existing studies, the internal factors driving business model innovation include resources and capabilities, organizational activities, and leaders' characteristics. In the era of knowledge economy, how an organization stores and utilizes the knowledge is related to the survival and development of the organization [29].

The fact that organizational learning promotes business model innovation has been confirmed by many researchers [30][31][32], the effect of organizational learning depends on the knowledge sharing among organizational members [33]. The difference between knowledge and natural resources is that knowledge is renewable, reusable, and lossless. With the expansion of knowledge sharing within the organization, knowledge

presents the characteristics of increasing marginal benefits. Based on the characteristics of knowledge, the purpose of knowledge sharing is to improve the value of knowledge utilization [34]. The theory of organizational learning shows that when an organization is dealing with unclear external stimuli, organizational learning is stimulated by the demand of the organization's managers for organizational adjustment. Organizational learning is divided into explorative learning and exploitative learning [35]. Explorative learning and exploitative learning conform to the characteristics of ambidexterity. The former is to learn novel knowledge that different from the existing knowledge base of the enterprise; The latter is to learn and use the existing knowledge, ability, and channel of the enterprise. Ambidextrous organizational learning has a relationship of balance and cooperation in the positive influence on BMI [36]. Thus, will knowledge sharing have a positive impact on BMI through ambidextrous organizational learning? This problem needs further empirical test.

In summary, firstly, when discussing the relationship between knowledge sharing, organizational learning and business model innovation, the existing researches mostly discuss the direct relationship between knowledge sharing and business model innovation [37][38][39] or between organizational learning and business model innovation [40][41], and lack the research on the relationship between knowledge sharing and business model innovation from the perspective of organizational learning. Secondly, when discussing the relationship between organizational learning and business model innovation, most researchers do not consider the ambidexterity of organizational learning and the division of novelty-based and efficiency-based business model innovation [42][43]. Due to the differences between enterprises, different enterprises will choose to conduct explorative learning or exploitative learning activities according to their own strategies, resources, and capabilities in the process of promoting business model innovation. At the same time, enterprises will also choose to enhance their competitive advantage by means of novel business model innovation or efficient business model innovation according to their different environments and markets. Based on the above two facts, a more detailed discussion of the impact of ambidextrous organizational learning on novel and efficient business model innovation can more effectively serve the management practices of enterprises. Unfortunately, few research have considered both the ambidextrous nature of organizational learning and the distinct types of business model innovation.

2. Knowledge Sharing Effect on Business Model Innovation

The organizational knowledge innovation comes from the sharing and integration of knowledge among individuals, and knowledge innovation can enhance the innovation sustainability of enterprises [44]. Knowledge innovation theory emphasizes the significant role of individual knowledge sharing in organizational knowledge innovation and believes that knowledge sharing among organizational members makes tacit knowledge and explicit knowledge transform each other, thereby promoting organizational knowledge innovation.

Nonaka expressed the dynamic process of organizational knowledge creation of "tacit knowledge-explicit knowledge-tacit knowledge" with the framework of SECI theory. The process of socialization and externalization promotes the sharing of tacit knowledge that is rooted in employees and difficult to observe into explicit knowledge that can be transmitted and learned among organizational members. The process of combination and internalization urges explicit knowledge to complete the reprocessing and sorting of knowledge through learning or

experiment, and then internalize the new tacit knowledge, which is the basis for participating in the next knowledge spiral [45]. The key to knowledge innovation lies in the externalization of tacit knowledge, which means that individuals make other members of organizations know and learn tacit knowledge (experience, skills, perception) [46]. Knowledge innovation is the foundation of all innovation activities, including business model innovation [47]. The effect of knowledge innovation within an organization depends on the degree of knowledge sharing among members of the organization.

The results of Lin [38] also show that knowledge sharing within an organization is beneficial to BMI. Bashir and Farooq explored the effect of knowledge management (acquisition, conversion, dissemination, application, and reuse) on business model innovation. They found knowledge dissemination and sharing have a positive impact on BMI [39].

3. Knowledge Sharing Effect on Ambidextrous Organizational Learning

Effective organizational learning processes are related to exploration, exploitation, and knowledge sharing [48]. Knowledge sharing enables organizational members to learn and possess the experience and knowledge of others. As knowledge is constantly circulated among members, the organization can finally realize the common ownership of individual knowledge. Knowledge sharing is not just about disseminating knowledge to colleagues, but also means helping another colleague understand and learn from the disseminated knowledge [49]. Disseminators make colleagues “know” knowledge through sharing, and with the extension of time and scope of sharing, eventually the entire organization “knows” this knowledge [50].

Organizational learning theory divides the main body of organizational learning into three dimensions: individual, group and organization. Individual learning is the basis of organizational learning, and the quality of individual learning is related to the effect of organizational learning. As a member of an organization, the individual's learning is also the most basic element of organizational learning, and the knowledge learned by the individual is retained in the organization through knowledge sharing [51]. Individual learning knowledge is transferred into organizational learning knowledge through employee sharing behavior and becomes the knowledge base for future learning activities of the organization. In the practice of business management, knowledge sharing among the members of an organization can reduce the possibility of misunderstanding, which provides conditions for the enterprise to realize organizational learning.

Among the existing-related studies, the research results of Li show that knowledge sharing has a significant positive impact on organizational learning, and tacit knowledge sharing has a stronger impact on organizational learning, which indicates that individual tacit knowledge sharing has a greater effect on improving organizational learning ability [52]. Kim and Park empirically studied the relationships between transformational leadership, knowledge sharing, organizational climate and learning. The results show that knowledge sharing has a significant positive impact on organizational learning and plays a mediating role in the impact of transformational leadership on organizational learning [33].

4. Ambidextrous Organizational Learning Effect on Business Model Innovation

The process of business model innovation is also the process of organizational open learning [53]. Organizational learning cannot only be regarded as an environmental adaptation behavior, but also can be regarded as an innovative behavior. What is particularly important for organizational innovation is the acquisition of new knowledge and the utilization of existing knowledge. Only through continuous learning can an organization maintain creativity and maintain sustainable competitiveness [46].

Explorative learning focuses on new knowledge, and corresponds to the spirit of experimentation and risk-taking, which provides necessary knowledge assets and spiritual conditions for enterprises to get rid of “path dependence” and then realize organizational innovation. New knowledge and new discoveries are the basis for organization to overcome the shortcomings of existing capabilities and improve the innovation sustainability of enterprises [54]. In the process of promoting explorative learning, the innovation awareness and risk-taking spirit required by enterprises are the preconditions for enterprises to realize business model innovation.

Exploitative learning emphasizes the optimization and utilization of existing knowledge, which is conducive to improving enterprises' ability of knowledge identification, transformation, and application [55]. The extraction and utilization of existing knowledge cannot only identify the knowledge that is beneficial to the enterprise, but also help the enterprise's existing knowledge to be effectively applied to various production practices to achieve the purpose of innovation. Compared with explorative learning, exploitative learning has fewer risks and costs, but it also affects business model innovation. From the perspective of element innovation, business model innovation is achieved by adjusting customer interfaces, core capabilities, strategic resources, network value and other elements [56]. Each of these elements contains corresponding management knowledge or technical methods, and the effective adjustments of various elements depend on the understanding of these knowledge and technologies. Exactly, the exploitative learning is to promote the enterprise's understanding of these knowledge and technologies.

In the existing research, the research results of Tian and Zhang show that both explorative learning and exploitative learning have a significant positive impact on BMI [43]. Yuan explored the relationship between ambidextrous learning balancing strategies, dynamic capabilities, and business model innovation.

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