

Research Progress of Digital Social Innovation

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ABSTRACT

Digital social innovation has been rapidly emerging around the world and is attracting more and more attention. By collating and reviewing the relevant literature of digital social innovation, the current research status is summarized, and the potential research direction in the future is analyzed. It is found that the role of digital social innovation is influenced by the development level of information and communication technology, the construction level of digital infrastructure and the commitment level of digital technicians at the technical level, the size and type of organizations and the innovation ability of organizations at the organizational level, and the policy, economic and social environment at the environmental level. The role of digital social innovation in more fields, the role of social organizations and the local practice of digital social innovation are future research directions.

KEYWORDS

Digital Social Innovation; Information and Communication Technology; Literature Review.

1. INTRODUCTION

Modern society is facing complex social issues such as climate change, population mobility, poverty alleviation, and income inequality, and it is urgent for social innovation to meet the challenges. With the use of ICTs playing an increasingly important role in social innovation initiatives, "digital social innovation" (DSI) has become a subset of social innovation and an emerging research object. Compared with social innovation, digital social innovation uses information and communication technology to overcome some difficulties that social innovation cannot overcome, and brings new opportunities. Especially in the context of the global epidemic of COVID-19, the economy and education of various countries have been greatly affected, and digital social innovation, which mainly focuses on solving social needs, can greatly reduce this impact, such as teaching methods that are not limited by time and space, new work and employment relations in the knowledge economy, etc. At the same time, digital society innovation also emphasizes the collaborative and participatory nature of using ICTs and digital media to solve problems, and countries, businesses, and individuals use ICTs to form new relationships. This formation of social relationships based on digital technology and openness, sharing and cooperation has become the social capital to solve problems in the fields of health, environment, energy, housing, welfare and promote sustainable transformation.

In June 2016, the European Commission released the report "Building a European Digital Society Innovation Ecosystem", announcing that the construction of digital society innovation will be included in the construction of European states. In fact, in the past decade, foreign countries have carried out relatively systematic research on digital social innovation, involving education, health care, democracy and other fields. However, the theoretical research on digital social innovation in our country has just started and needs to be improved and expanded. Through the review and discussion of the international research progress on digital social innovation, this paper will focus on

the analysis of practical dilemmas and influencing factors of digital social innovation, and then provide reference for China to solve complex and diverse social challenges with digital technology.

2. THE CONCEPTUAL CONNOTATION OF DIGITAL SOCIAL INNOVATION

In the 1970s, Drucker first proposed the concept of "social innovation", believing that social innovation is an important way to solve social problems, and the concept of digital social innovation is further developed on its basis. It is important to note that digital social innovation is not the only term used to describe the use of digital technologies to solve social challenges, with concepts such as "civic technology", "social innovation in the digital environment", "social technology innovation", and "social technology" having the same connotation. The authors choose different terms according to the needs of expression and the characteristics of the context in which they are located, and "digital social innovation" is often used in the context of innovation. Due to different areas of concern and emphasis, the academic community has not reached a consensus on the definition of digital social innovation. There are mainly several definitions as follows.

First of all, considering the importance of the application of digital technology and cooperation among various subjects in digital social innovation, many scholars have put forward the definition of digital social innovation. One of the most widely recognized is the concept put forward by Bria et al in 2015: Digital social innovation is a kind of social innovation mediated by digital technology, where innovators, users and communities work together to create knowledge and solutions to meet social needs. At a scale and speed unimaginable before the rise of the Internet. Kaletka's definition is similar, in that he sees digital social innovation as a social and collaborative innovation where users and communities collaborate through digital platforms to provide solutions for a wider range of domains. This definition is universal and inclusive, illuminating the relationship between digital social innovation - a way of enabling or supporting social innovation through digital technologies - and social innovation, exploring new models in which researchers, social innovators, and citizen actors collaborate to create knowledge and solve societal challenges.

Secondly, because ICTs enable social innovation to make important contributions to social policy reform and provide better ways to integrate social services, some scholars link digital social innovation with social change, especially the creation and distribution of public value, in their definitions. Digital social innovation is a new structure of social practice generated through the innovative use of information and communication technologies that promotes an open process of co-creation and redistribution of public value. Compared with the general definition, this definition highlights the dynamic process of digital social innovation, and has certain reference significance for the formulation and research of public policies related to digital social innovation.

Finally, as the commercial application of ICT is extremely extensive and continues to attract attention, the digital social innovation of enterprises has also attracted the attention of scholars. Some scholars define digital social innovation as the use of digital technologies to create, provide and implement novel ideas, products, services or models. These newly developed products, services or processes may require or be embodied by information technology, but the goal is to meet social needs or stimulate social change. This definition applies to the study of enterprises or projects that are both commercial and social.

3. THE INFLUENCING FACTORS OF DIGITAL SOCIAL INNOVATION

As a comprehensive analysis theory based on technical application situations, TOE theoretical framework was first proposed by Fleischer and Tornatzky at the end of the 20th century and has been widely used in various fields. It mainly includes three levels of Technology, Organization and

Environment. Through the comprehensive analysis of the relevant literature on digital social innovation, it is found that the decisive factors affecting digital social innovation can be classified into three dimensions: technology, organization and environment. Therefore, this part introduces the theoretical framework to outline the influencing factors of digital social innovation.

3.1. Technology

The technical aspect is mainly related to the characteristics of information technology. Specifically, the technological factors that affect the development of innovation in the digital society include the level of development of information and communication technologies, the level of construction of digital infrastructure, and the level of commitment of digital technicians.

3.1.1. The Level of Development of Information and Communication Technologies

ICTs influence how social innovation emerges, is organized, and is practiced, playing a positive role in shaping social relationships and uniting social forces for collective action, while bringing important advantages in speed and scale to digital social innovation. In the context of socio-technical system transformation (STST) and digital governance, countries with a higher level of ICT development can achieve digital social innovation more effectively. Facts have proved that information literacy, information immediacy and information freedom are the information processing capabilities needed to achieve digital social innovation, and only countries with high ICT levels can provide these support for digital social innovation and promote its success.

3.1.2. The Level of Digital Infrastructure Construction

Digital infrastructure construction refers to the construction of a new generation of information infrastructure that can reflect the characteristics of the digital economy, covering 5G Internet, data centers, artificial intelligence, industrial Internet and other fields. Digital infrastructure is driven by digital elements, which opens up the circulation channels of data elements, promotes the efficient flow of information between different economic entities, and improves the flow rate and use efficiency of information. The level of its construction is crucial for sustainable social innovation, influencing the development of bottom-up and top-down digital social innovation and the relationship between enterprises, governments and citizens, determining whether new channels can be provided for the flow of resources between enterprises, governments and social organizations, and facilitating the interaction between citizens.

3.1.3. The Level of Commitment of Digital Technicians

Digital technology is the basic means on which the innovation of digital society depends. Since the research, application and development of digital technologies have a certain technical threshold, digital social innovation requires the participation of technical personnel with digital professional skills, and they are the basic pillars to achieve the success of digital social innovation. The ability of technologists to maintain a high level of commitment and complete their tasks consistently throughout the project lifecycle largely determines the outcome of digital social innovation. Some scholars have found through research that emotional perception ability, cognitive level and anxiety level will affect the level of commitment of technicians, and then affect the development of digital social innovation.

3.2. Organization

As an important actor of digital social innovation, organizations have a significant impact on the development of digital social innovation. Factors at this level mainly refer to the characteristics of the organization, including the size and type of the organization and the innovation ability of the organization.

3.2.1. Size and Type of Organization

The level of business orientation and social orientation of digital society innovation is influenced by the type of organizations involved in it. The actions of for-profit organizations are mainly driven by benefits, and whether they participate in the development of digital social innovation depends on their measurement of benefits. In contrast, non-profit organizations pay more attention to solving social problems, and social innovation can also increase the social value of non-profit organizations. However, the orientation of for-profit organizations is not static. From the perspective of the development cycle of enterprises, start-ups initially focus on their economic sustainability to ensure their survival. With the gradual development and maturity of enterprises, their goals may become more diversified, thus changing to a more social orientation. In addition, the size of the organization largely determines the organization's ability to acquire resources, which in turn affects the organization's willingness and possibility to participate in new things, such as digital social innovation activities.

3.2.2. Organizational Innovation Ability

According to Griner's growth stage model, there are five necessary stages of organizational growth and development, and different organizational strategies and structures must be adapted to each stage. According to the model, different stages of organizations lead to large differences in scale, decision-making, innovation behavior and capability, strategic goals, etc. Therefore, organizations at different stages will also have different degrees of impact on digital social innovation due to different innovation behaviors and capabilities. In addition, some studies have found that the following three management factors can significantly improve the social innovation ability of for-profit organizations through the case study of Internet providers: first, the integration of corporate social responsibility into the business strategy and the commitment of the top management; The second is to separate the activities related to social innovation and development from the rest of the organization; The third is to use non-profit organizations as a source of ideas for social innovation projects, and thus innovative products and services.

3.3. Environment

The environmental dimension represents the external environment in which innovation in the digital society takes place. Although the external environment cannot directly participate in the digital social innovation process, it can still influence the development of digital social innovation by influencing the behavior of digital social innovation stakeholders, such as enterprises, social organizations, citizens, etc. It mainly includes the external policy environment, economic environment and social environment of digital social innovation.

3.3.1. Policy Environment: Government Policy Orientation

The development of digital society innovation is influenced by government policy orientation. In terms of people's livelihood policies, government arrangements for large-scale social spending can have a significant positive impact on digital society innovation. Social expenditure refers to the institutional expenditure for science, education, culture, health, environmental protection, social security and other social services arranged by the government to meet the non-material public needs of the society. Countries with a higher proportion of social spending tend to maintain a high level of attention to social issues, and tend to be more receptive to digital social innovation that uses digital technologies to solve social challenges, helping to fully realize digital social innovation. In terms of innovation policies, the government provides support for enterprises' innovation activities through tax and fee reduction, government procurement, financial subsidies and other policy support methods, which helps enterprises to break through the resource bottleneck faced by innovation activities.

3.3.2. Economic Environment: Level of Economic Development

At the macro level, a country's level of digital development is significantly affected by the country's GDP. Countries and regions with a higher level of economic development often have the ability to develop a high level of information and communication technology, and thus better develop and influence digital society innovation. From the micro level, for enterprises and organizations, regions with high economic development level have higher resource abundance, which is conducive to innovative enterprises and organizations to absorb various resources such as capital, attract suppliers and customers and other partners, and thus form a cooperation network.

3.3.3. Social Environment: Public Participation

As the role of the state shrinks in many countries and ngos struggle to raise funds, many social problems cannot be solved without the participation of all segments of society, including entrepreneurs, academics and technologists. Civic engagement has an important impact on inspiring public trust in public institutions and policy makers, generating social capital and social cohesion in local communities, and using resources effectively and efficiently. Citizens' knowledge of the specific situation of the region is crucial to the whole process of social innovation, and they can bring different perspectives from other groups, and create new solutions based on their knowledge that are more suited to actual needs, so that people's views on problems can be more diversified. At the same time, since the solution of social problems generally depends on the change of citizens' own behavior, citizens are more likely to accept these solutions when they are personally involved in the process of social innovation. Therefore, citizens need to be encouraged to become voluntary participants in the digital society innovation process, and their participation can greatly influence the development of digital society innovation activities.

4. SUMMARY

In recent years, digital social innovation has shown great potential in solving social problems, which has also prompted more and more scholars to conduct in-depth exploration on various aspects of digital social innovation. This study reviewed the past literature, further clarified the current academic discussion on digital social innovation, and reached the following conclusions: 1. As a product of The Times aimed at solving social problems, digital social innovation can play a positive role in all fields of society. Awareness of the positive role of digital social innovation can help it enter the mainstream consciousness, let more people realize the importance of digital social innovation, and help digital social innovation to fully realize its potential. 2. The decisive factors affecting the innovation of digital society can be classified into three levels: technology, organization and environment, and there is a linkage effect among them.

However, there are still some deficiencies and gaps in the existing researches. First, with regard to the role of digital social innovation, existing research has focused on healthcare, education, and democracy, but the role of digital social innovation is not limited to these areas. The role of digital society innovation in addressing issues such as poverty, aging, and climate change cannot be ignored and can be explored in depth. Secondly, regarding the main body of digital social innovation, digital social innovation can enable enterprises, non-profit organizations, government agencies and social entrepreneurs to use digital technology to produce positive social impact. However, existing studies have mainly focused on enterprises and government agencies, and the role of social organizations can be further explored in the future. Thirdly, regarding the practical dilemmas of digital social innovation, these dilemmas are not insurmountable, but the existing literature rarely mentions them. Finally, the existing research objects of digital social innovation are mainly European Union and American countries, and the discussion of digital social innovation in the context of China is very limited. In the future, we can actively develop in-depth case studies around these indigenous explorations, thereby promoting a close dialogue between theoretical concepts and indigenous practices.

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