Scientific and Social Research, 2024, Volume 6, Issue 12
https://ojs.bbwpublisher.com/index.php/SSR
Online ISSN: 2981-9946
Print ISSN: 2661-4332

Analyzing the Diffusion of Innovations Theory

Qin Guo*, Wei Huang

School of Business Administration, Guizhou University of Finance and Economics, Guiyang 550025, Guizhou Province, China

Corresponding author: Qin Guo, guoqin1117@126.com

Abstract: The diffusion of innovations theory proposed by Everett M. Rogers is a theoretical framework used to explain and predict the process and influencing factors of the dissemination and acceptance of new innovations in society. This theory is the foundation theory of the research of innovation diffusion. This paper comprehensively analyzes the theory, including its proposed background, theoretical content, application field, theoretical development, and contribution. In addition, the "S" type curve of the innovation adoption process, theory including innovation, communication channel, time, social system, innovation, and five stages of the decision process (knowledge, persuasion, decision, implementation, and confirmation) are introduced in detail. The study tries to deepen the understanding of the innovation diffusion theory and clarify the theoretical ideas for the subsequent research on innovation diffusion.

Keywords: Innovation diffusion; Diffusion of innovations theory; Theoretical development

Online publication: December 31, 2024

1. Introduction

The diffusion of innovations theory (IDT) refers to a theoretical framework used to explain and predict the process and influencing factors of a series of "innovations", such as new technologies, new ideas, or new products in society.

The study of innovative diffusion theory originated from the American sociologist Everett M. Rogers's observation on the diffusion of certain innovations in agriculture. He observed that in his hometown of Carroll, Iowa, USA, some new methods and technologies that were very beneficial to local farmers were gradually accepted and adopted many years after their emergence. Rogers joined in a diffusion study on hybrid maize and interviewed 148 farmers about the use of innovative products such as herbicides. After compiling studies on innovation diffusion in different fields such as kindergartens, driving schools, and medical circles, it is found that although there is heterogeneity in industries and fields, there are similarities in the conclusions of innovation diffusion in different fields. For example, there are different differences in information sources and channels in different stages of innovation adoption decision-making, the innovation adoption process shows an "S" curve,

and the pioneers of innovation adoption (the first person to accept innovation) are mostly experienced and knowledgeable people, and so on.

Based on long-term observation and investigation research on new technologies (especially agricultural field) and thought communication in society, collation and analysis of related diffusion research in different fields, and reference from multidisciplinary research results from sociology, communication, economics, and pedagogy, Rogers proposed for innovation in the early 1950s, attempting to explain how innovation spreads across time and social systems, For the first time, in his classic book The Diffusion of Innovation (1962). Meanwhile, a universal innovation diffusion model is constructed.

2. Literature review

IDT believes that the diffusion of innovation should include four core elements: innovation, communication channel, time, and social system.

The first is innovation. IDT defines innovation as "anything that is considered 'novel', whether it is technology, product, idea, or practice." Specifically, innovation refers to what is regarded as new by individuals or other adoption units (such as organizations, communities, etc.). Importantly, the "novelty" here does not necessarily mean something new globally, but it is new relative to the recipient, meaning that the same innovation can be seen as novel in different ways at different times and places. At the same time, the theory holds that innovation usually has the following characteristics.

Relative advantage: The acceptance and use of an innovation over an existing concept or technology replaced by it. This includes economic factors (such as higher economic benefits, lower adoption costs, etc.), social factors (to obtain higher social status and reputation), and so on.

Compatibility: This refers to the degree of consistency and match of innovation with the value system, existing experience, existing resources, and other elements of the potential adopter (including existing and potential adopters). Higher compatibility creates a lower risk of uncertainty for adopters.

Complexity: How easy it is to understand and use an innovation.

Trialability: The extent to which innovation can be tested on a limited basis.

Observability: The results of innovation and the extent to which effectiveness can be observed and evaluated.

Rogers believed that innovation diffusion is a process in time and social systems through specific channels, and the above characteristics of innovation will have different degrees of impact on the diffusion speed and scope of innovation. In addition, IDT can target any innovation in various areas, from agricultural technology to healthcare and information technology, aiming to understand how innovation spreads across the social system from initial adopters.

The second is the communication channel, which refers to the innovation from one person or unit to another person or unit channel. Communication channels include mass communication channels (radio, television, newspaper, etc.) and interpersonal communication channels (interpersonal communication channels are the most effective ways to persuade users to accept innovation, especially when the communication parties have similar social status, economic status, and other background attributes).

The third is time, which is used to measure the effect of innovation diffusion. In the diffusion process, time factors involve the innovation-decision process, differences in innovator adoption time, and the period over which innovation is widely adopted. Among them, the innovation-decision process refers to the process in which

individuals or units develop from cognitive innovation to forming attitude (such as adopting, and opposing the innovation), including five stages: cognition, persuasion, decision-making, implementation, and confirmation [1].

The fourth is the social system, which refers to the groups or organizations that accept innovation. The structure, culture, and operating rules of the social system will affect the diffusion speed and mode of innovation. It is worth mentioning that the opinion leader in a social system is a microcosm of an architecture that plays an important role in the diffusion effect of innovation in that system.

As for the characteristics and classification of adopters, IDT uses the "S" curve to classify innovative adopters into innovators, early adopters, early majority, late majority, and laggards.

Since the theory of innovation diffusion proposed by Rogers, the theory has been further improved and expanded after decades of development. For example, the research results from sociology, psychology, economics, and communication science are integrated to make the model more universal and scientific [2].

In the later decades, for the research of innovation diffusion, the market adoption and its influencing factors have been continuing. Scholars provide supplement and development of innovation diffusion theory, including criticism, with different interpretations of theory and model. One of the most representative is by Davis who analyzes the user of technology usefulness and ease of use perception to study how to influence new technology market adoption technology acceptance theory, namely TAM theory, Technology-Organization-Environment theory, and a unified technical acceptance theory (UTAUT model) [3–5]. The emergence of many theories is the manifestation of the inheritance and development of the innovative diffusion theory, and it is also the symbol of its vitality in different times. The initial research focused on agricultural areas such as the proliferation of new crop varieties and agricultural techniques. The study found that farmers were often influenced by the surrounding communities when adopting new technologies [6]. With the development of the economy and the gradual improvement of innovation diffusion theory, innovation diffusion theory is widely used in many fields, including agriculture, health care, education, and information technology. For example, in health care, the spread of new drugs and treatments, as well as the spread of public health interventions (such as vaccination), is achieved through innovative diffusion processes [7]. The diffusion of these innovations depends not only on the characteristics of the technology itself but also is influenced by the structure and culture of the social system [8].

3. Influence and meaning

As the foundation theory support of innovation diffusion research, innovation diffusion theory has made great contributions in both theory and practice.

From the perspective of theoretical contribution, the innovation diffusion theory provides the system framework and analysis tools and describes the individual and organization how through five stages (knowledge, persuasion, decision, implementation, and confirmation) to adopt innovation. This process helps scholars and practitioners to understand and predict the dynamic of innovation adoption and put forward five types of adopters: innovators, early adopters, early majority, late majority, and laggards. This classification helps to identify the characteristics of different groups and their attitudes towards innovation, as well as the influence of innovation characteristics on the diffusion of innovation and provides a basis for developing targeted promotion strategies. Therefore, IDT has become one of the classic theories in the field of social science and communication. It has inspired a lot of empirical research and helped scholars to deeply understand the transmission mechanism of innovation in different social systems [9]. For example, Wolf et al. studied the application of innovative diffusion theory in public health interventions, especially the adoption of new medical technologies, and explored how

innovative diffusion theory can be used to improve adoption rates in the process of promoting maternal and infant health interventions in developing countries [10].

From the perspective of practical value, in practice, the theory of innovation diffusion has been widely applied to the promotion and management of innovation in various fields. For example, in terms of policymaking, government departments can use the innovation diffusion theory to formulate and implement effective policies to promote the popularization and application of innovative technologies in society. The government can also accelerate the spread of innovation by providing financial support, technical training, and marketing measures. In terms of enterprise management, enterprises can develop marketing strategies according to the theory of innovation diffusion to increase the market acceptance of new products. By understanding the needs and behaviors of target customers, enterprises can more effectively promote innovative products and enhance their market competitiveness.

Everett M. Rogers's innovative diffusion theory provides a powerful tool for understanding and explaining how new ideas and technologies can spread in society. It not only theoretically provides a systematic framework and model for the diffusion of innovation, but also provides effective guidance in practice in areas such as policymaking, business management, and public health. With the continuous development of society and the progress of technology, the diffusion of innovations theory will continue to play an important role in promoting the progress and development of society.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Rogers EM, 2003, Diffusion of Innovations (5th ed.). Free Press, New York.

[2] Bass FM, 1969, A New Product Growth for Model Consumer Durables. Management Science, 15(5): 215–227.

[3] Davis FD, 1989, Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13(3): 319–340.

[4] Drazin R, 1990, The Processes of Technological Innovation. The Journal of Technology Transfer, 1990(16): 45–46.

[5] Venkatesh V, Morris MG, Davis GB, et al., 2003, User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 27(3): 425–478.

[6] Ryan B, Gross NC, 1943, The Diffusion of Hybrid Seed Corn in Two Iowa Communities. Rural Sociology, 1943(8): 15–24.

[7] Valente TW, 1996, Social Network Thresholds in the Diffusion of Innovations. Social Network, 18(1): 69–89.

[8] Rogers EM, 1976, New Product Adoption and Diffusion. Journal of Consumer Research, 2(4): 290–301.

[9] Rogers EM, Kincaid DL, 1981, Communication Networks: Toward a New Paradigm for Research. Free Press, New York.

[10] Wolf S, Scott K, Murray S, et al., 2011, Diffusion of Innovations Theory Applied to the Implementation of Maternal and Child Health Interventions in Developing Countries. Journal of Public Health Management and Practice, 17(1): 46–54.