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1.0.1 What is innovation?

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Abstract

Just what is innovation in the first place? Why is innovation so important? How is innovation characterized as a phenomenon? What must we focus on to achieve innovation? To answer these questions, this paper identifies issues we need to clarify.

Keywords

Innovation, value, reform, economic growth

1 What is innovation?

Innovation generally means “to introduce something new or to change something existing.” In Japan, innovation is still often translated as “technological innovation,” but its original meaning is much broader and not limited to technological innovation. In fact, the Economic White Paper, which marked the first use of the term “technological innovation,” explicitly declares that “although we use the term ‘technological innovation’, it is a broad process that includes changes in the consumption structure.” Nonetheless, it is undeniable that a solitary translation has trivialized the meaning of innovation. Innovation in the original sense of “introducing something new or changing something existing” can be found in all fields, including education, the arts, politics, the military, and sports. However, in this paper, I limit discussions to innovation in economic systems, including innovation in the objects of economic transactions themselves, such as products and services, as well as the methods, processes, and organizations that develop, produce, and sell them.

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People commonly quote Schumpeter when talking about the definition of innovation in economic systems. Schumpeter defined innovation as “new combinations of new or existing knowledge, resources, equipment and other factors” (Schumpeter, 1934). In other words, innovation is a “new combination” of knowledge, things, and capabilities. According to Schumpeter, there are five types of such new combinations: (1) the development of new products or new qualities of products not yet known to consumers, (2) the development of hitherto unknown production methods (not necessarily based on scientific discoveries, and including new ways of handling products), (3) expansion into markets in which a company has not previously participated, (4) the acquisition of new sources of raw materials or semi-finished products, and (5) the implementation of new organizations. This paper follows Schumpeter’s classic definition and defines innovation as “reform that brings value to society.” A distinctive feature of this definition is that it considers innovation from two aspects: “value” and “reform.”

1.1 The pursuit of value

The first aspect of innovation is “value.” Innovation is realized when innovative ideas become specific products, processes, and services, and when these are accepted by society. New does not mean innovation, nor does change. Neither mere fancy, spur-of-the-minute ideas, the discovery of a new phenomenon nor the invention of a new principle constitute innovation in and of itself. Schumpeter emphasized that innovation differs from invention. Inventions can arise in all situations, regardless of commercial intent. In contrast, innovation is a specific social activity carried out with a commercial purpose in the context of economic activity (Schumpeter, 1934). Ultimately, innovativeness is the only necessary condition for innovation. For a reform to be recognized as an innovation, the consumer must recognize it as having additional value that exceeds the value of the resources (e.g., people, goods, money, information) spent to create it. It is at this point that an innovation will be widely accepted by society and recognized as an innovation after the fact.

1.2 Reform

The second aspect of innovation is “reform.” Innovation is not limited to technological innovation in a narrow sense. It includes not only new technologies, products, and services, but the methods and mechanisms for their production, delivery to customers, maintenance, and support, as well as the organizations and corporate systems for their creation, business models for generating profits, methods for training human resources, and innovations in social systems. As discussed in this paper, these innovations are interrelated and form a large system.

The word “innovation” usually conjures up images of a giant leap forward from conventional practice. In fact, the innovation envisioned by Schumpeter was discontinuous innovation, not an extension of the past. For example, a famous Schumpeter (1934) quote reads, “No matter how many mail coaches you line up, you will never get a railroad by doing so.” Indeed, if we were to emphasize the reform aspect of innovation, it may seem appropriate to only call discontinuous reform “innovation.” However, from the perspective of the economic effects of innovation and its impact on society, the continuous-, incremental-,

and improvement-type innovations that follow from discontinuous innovations may be more important. Innovation is a combination of discontinuous, breakthrough innovation and continuous, incremental improvement that permeate our socioeconomic system.

2 Why is innovation important?

2.1 Driving economic growth

Innovation has an important role to play in driving economic growth. With economic growth failing to reach expected levels, particularly in developed countries such as Japan, governments are crying out for innovation as a solution. It is against this background that Japan's science and technology policy was reframed as science and technology innovation policy, with greater emphasis placed on economic outcomes.

Innovation has a particularly important role to play in enabling Japan to achieve economic growth. Economic growth is achieved either by increasing capital and/or labor inputs or productivity. An increase in productivity will enable the production of more output with the same amount of capital and labor; it is technological progress that makes this possible. Given Japan's current situation, it is difficult to anticipate economic growth through increased labor and capital because it is clear that the country's working-age population will decline over the long term, while the capital growth rate is expected to slow as the savings rate decreases. If this is the case, the only solution is to increase productivity, which will likely depend on generating innovation.

2.2 Innovation in social life

Innovation is not only a means to achieve quantitative economic growth, it has the power to fundamentally change the quality of our lives. Indeed, innovation has solved various issues and problems facing society. This is why society constantly pursues innovation. Of course, the effects of innovation are not uniformly positive, and can result in anxiety and danger. Discussion pertaining to the social judgment of the good and the bad effects of innovation are beyond the scope of this paper, but regardless of whether we evaluate and praise innovation positively or view it negatively and with skepticism, it remains important that we understand the mechanisms that give rise to it.

2.3 The rise and fall of companies

Innovation has a huge impact on the fortunes of a company. Many companies are born and grow as a result of innovation. Large companies that have grown in this way establish a stable position in the industry by providing superior products and services on a sustained basis. However, their position is often threatened by the emergence of new startups with new innovations. Companies suffer financial crises for many reasons, but attacks from other companies through innovation is one of the most significant. Innovation frequently causes shifts in the leading roles within industries.

Innovation is the backbone of a company's long-term success, but unexpected innovation from can dismantle success overnight. This raises questions of how we can continue to create our own innovation and how we should respond to the unrelenting assault of innovation. This is the greatest strategic challenge for the managers of companies, both large and small.

3 The nature of innovation

3.1 The workings of knowledge

We see innovations around us in specific forms, such as products, services and production facilities. Such innovations embody newly created knowledge. The direct output of innovation is intangible knowledge, which is embodied and made available to us in the form of products and services. The first characteristic of innovation is that it is the result of an activity that creates an intangible good, namely, knowledge. This is what distinguishes innovation-generating activities from other economic activities.

3.2 Uncertainty

The second characteristic of innovation is that the process by which it is achieved always involves a high degree of uncertainty. The process of realizing innovation is not something that can be meticulously planned and prepared in advance. Rather, it is a process of overcoming various unexpected obstacles and hardships, sometimes guided by chance, and moving forward through ups and downs. The source of innovation, innovative ideas are fraught with uncertainty in terms of their commercial viability and economic value.

3.3 Social

As long as innovation is translated as “technological innovation,” it will have an inorganic ring to it. We tend to think of technological innovation as occurring outside of our normal lives. However, it is people and companies that create and embrace innovation. As long as people and companies—both the creators and recipients of innovations—are embedded in society, innovation will be a social act or activity that cannot be considered separately from social processes. Innovation is not limited to great inventors and unique entrepreneurs; many ordinary people are involved and play important roles in innovation.

As such, the creation of innovation is constrained by the circumstances of and limitations on capabilities faced by people and society at the time. The human capacity to process information is relatively limited, and we can only make rational decisions and take actions within a limited scope. Interpretations of the meaning and value of new technologies vary from person to person, and this variation can sometimes influence the direction of innovation.

3.4 Systematicity

Innovation only brings value to society when a variety of factors are combined. In other words, it always constitutes, and functions as, a system. Systemicity brings interdependence to innovation. Therefore, innovation is something that comes into existence while depending on, and influencing, a variety of related factors. No matter how excellent a single product or service may be, if it is not compatible with existing related systems or if new complementary systems are not constructed, it will not be accepted by society. In light of this systemic nature, it is important to view innovations in their broader contexts and in connection to related mechanisms. This paper summarizes Chapter 1 of Hitotsubashi University's Center for Innovation Research (2017); please refer to this for details.

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