

Innovative Entrepreneurship and Development of Service Industry: A Macroeconomic Perspective

Yenilikçi Giriřimcilik ve Hizmet Endüstrisinin Geliřimi: Makro İktisadî Bir Perspektif

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Abstract

This article examines the link between innovative entrepreneurship and increasing trend on development of service industry. Market failure theories justify the existence of different forms of organization of services especially in digital exchange networks. Alternative approaches to service innovation allow us to further our research to analyze theoretical aspects of innovations in the development of services. The contemporary classification of service innovation concepts supplies us sufficient tools to construct the service development model. For this end, in our study we define service innovation function which is a special version of entrepreneurship augmented production function. Together with service development system, parametrization of factors of change rather than factors of production gives clearer understanding of the dynamics of service industry. The service development model founded on the axioms of organizational economics paradigm indicated the integration methods of new service innovations to the markets.

Keywords: Service innovation, innovative entrepreneurship, service development model, dynamics of service industry, service innovation function.

Özet

Bu makale yenilikçi girişimcilik ile hizmet endüstrisinin gelişimindeki artış trendi arasındaki bağlantıyı incelemektedir. Piyasa başarısızlığı teorileri hizmetlerin farklı örgütlenme şekillerinin varlığını özellikle dijital mübadele networklerinde doğrulamaktadır. Hizmet inovasyonuna alternatif yaklaşımlar arařtırmamızı hizmetlerin geliştirilmelerindeki inovasyonları analiz etmek üzere daha ileriye taşımamıza yol açmaktadır. Hizmet inovasyon kavramlarının çağdaş sınıflandırmaları hizmet gelişim modeli kurmak için gerekli araçları sağlamaktadır. Bu amaçla, çalışmamızda hizmet inovasyon fonksiyonunu, girişimcilikle genişletilmiş üretim fonksiyonunun özel bir versiyonu olarak tanımlıyoruz. Hizmet gelişim sistemi ile birlikte üretim faktörleri yerine deęişim faktörlerinin parametrelendirilmesi hizmet endüstrisinin dinamiklerine dair daha net bir anlayış ortaya koymaktadır. Örgütsel iktisat paradigmasının aksiyomlarının üzerine temellendirilen hizmet gelişim modeli yeni hizmet inovasyonlarının piyasalara entegre olma yöntemlerini göstermektedir.

Anahtar kelimeler: Hizmet inovasyonu, yenilikçi girişimcilik, hizmet gelişim modeli, hizmet endüstrisinin dinamikleri, hizmet inovasyon fonksiyonu

1. Introduction

In an era of digital economies new concepts and trends arise in today's world of business ever faster than before. Sometimes economists themselves feel the need to broaden their scope beyond traditional assumptions of neoclassical analysis. However, the introduction of Rational Expectations as a rigorous theoretical tool into economic reasoning indicated the importance and value of information. Information flow through institutions and organizations forms

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economic structure where market mechanism becomes intricate. Together with information systems, technological change also determines the direction of new trends in production patterns as well as consumption manners.

Endowments of economic agents are no more constrained by traditional factors of production with their relevant remunerations; *i.e.*, rent for land, wage for labor and interest for capital. We also consider entrepreneur as a factor of production. Under contemporary economic conditions, proper possession of information adds value not only on physical products but also on services and other intangible assets in the economy. On the other hand, the process of production and consumption of services has been a focus of attention especially after digitalization of business environment. The engine of economic growth reconstructed with state-of-the-art techniques and their relevant concepts such as innovative entrepreneurship, internet of things, new technology, and big data. These trends cannot be understood unless concrete theoretical framework for *service innovation* is constructed.

The plan of the article is as follows. Part two compares digital exchange networks with traditional market mechanism. The organization of financial services incorporates market failures to achieve a more robust system as digital exchange network. The organizational economics paradigm is modified under new literature review. Part three examines alternative approaches to services innovation. These are namely assimilation approach, demarcation approach and synthesis approach which uses a combination of opposite two approaches. Part four gives a detailed account on the classification of service innovation concepts. Service development system described in the fifth part gives a detailed account for the construction of dynamic interactive environment in the economy. Social, Technological, Economic, Environmental, Political, and Values-ethical variables enter into the framework as drivers of service development. The final part concludes with pointing out the important link between innovative entrepreneurship and service innovation.

2. Market failure approach for the organization of financial services in digital exchange networks as opposed to traditional market mechanism: a modification of the organizational economics paradigm with updated literature review

There are different approaches to theorize service innovation [3]. First of these approaches relates service economy to the competitive market mechanism. This line of reasoning brings organization theory in the center of service economy. Thereby the organizational economics paradigm together with their relevant axioms characterizes service ecosystems. A brief account of these axioms is necessary for theory as well as model building of organizational economics in which exchange of services implemented. [16] (p. 403) state that “the organizational economics is an *analytical paradigm*, a framework that addresses the key determinants of the shape and function of organizations. Three fundamental axioms characterize this paradigm.” Accordingly, we will apply the organizational economics paradigm [16] to the organization of financial services particularly for the exchange of digital currencies with an up-to-date literature review.

Axiom 1.—Organizations are management mechanisms for the implementation of exchange of services.

As far as market failure theories are concerned, the organizational economics provide optimum solution with complementary function for the exchange of services. The management mechanism requires institutional restructuring to ease exchange process of services. One of the most important examples is the organization of financial services. The rise of blockchain technology renders digital networks more important than traditional markets. The digital networks allow exchange take place rapidly between scattered interactive users of blockchain technology and thereby form a kind of collaborative organizations [27].

Axiom 2.—The manners of organizational restructuring required to facilitate exchange and innovation of services are embedded in the nature of services themselves.

The exchange of financial services does not happen in traditional markets particularly for those services produced by the use of information and communications technologies (ICTs). For example, the financial service for the trade of digital currencies as intangible assets conducted by transactions within vast range of networks beyond markets require sufficient amount of infrastructure investments. The innovation in financial service for the exchange of digital currencies also complies with the relevant literature that highlights the inherent characteristics of exchange.

These characteristics are (i.) number of trading parties [34], [31] that is almost innumerable for digital currencies; (ii.) specification of assets subject to exchange [19], [23] which is accounted for an intangible asset in the form of digital currencies [30] quality of the services that is observable and measurable [24], [1] the behavioral pattern of the trading parties that most of the time obeys the rules of the game theory [17], [6] the frequency and time interval of exchanges [4]

Axiom 3.—The organizational restructuring for the exchange of services is subject to cost and benefit analysis with respect to alternative systems.

The nature of organizations resembles to the nature of firm first developed by [7]. The organization of financial services exchange is superior compared to the system of sluggish price mechanism of market failure. The cost of transactions particularly important for the efficiency of competitive markets is minimized within digital networks. The value of information determines equilibrium price of services as part of innovation process. Hence informational content of prices assure efficiency in the system of digital networks for the exchange of financial services.

3. Alternative approaches to service innovation

Besides market failure theories which emphasize the organizational economics paradigm as an analytical framework to study innovation in services, there are other approaches to understand the nature of production and consumption of services in an age of digitalized economic environments. According to [12] the definition and identification of innovation patterns and manners are difficult to disentangle from those of physical goods. Most of the time, production process involves innovations that are also embedded in commodities. This aspect of juxtaposition is also relevant for the consumption of services which also require special attention to investigate. Although in practice, the consumption of financial services does not require physical existence of any product in digital economy, in theory there are some peculiarities to conceptualize different types of service innovations.

In the relevant literature, three theoretical approaches are developed to examine innovation process in service production. The first of these theories of service innovation is assimilation theory which defines innovation in services in the same manner with the innovation in the production of physical goods. As it is given in its name, manufacturing process of innovation systems assimilate services innovation systems. In this sense, the utility for the consumption of physical good is mingled together with the utility of the consumption of intangible goods such as services. The second theory to explain the innovation phenomena in service business employs demarcation approach. As the name indicates, this theoretical perspective demarcates the innovation systems between goods and services. It tries to disentangle the embedded tangible and intangible aspects of utility in commodities and assigns singular characteristics to services.

The third and final theory comes from the synthesis ground of research. It asserts that in between the two opposite sides of assimilation and demarcation approach there are other possibilities for innovation to form and classify. This kind of synthetic consideration is more realistic especially when opportunities to create new services are always ready in the future course of events. The supporters of assimilation theory rely of the influence of technological change and social structure of the economy. On the other hand, demarcation theory attracts attention to non-technological aspects of innovation.

4. Classification of Service Innovation Concepts

[12] applied Schumpeter's view on organization innovation to classify service innovation concepts. We review this classification to make clear the dynamics of service development in terms of financial organization through innovative entrepreneurship. Each service innovation concept can be defined with respect to the nature of service innovation. These service innovation concepts are (i.) *ad-hoc* innovation, (ii.) formalization innovation, (iii.) radical, improvement and incremental innovation, (iv.) recombinative innovation/ new combination of services, (v.) expertise-field innovation, (vi.) customer as co-producer, (vii.) multi-unit organization, (viii.) external relationship innovation, (ix.) conceptual innovation, (x.) delivery innovation, (xi.) client-interface innovation, (xii.) technological options, (xiii.) transaction innovation.

- (i.) *Ad-hoc innovation.* This innovation concept happens haphazardly. The status of the service determined by particular purpose often generated by immediate demand. The nature of ad hoc networks considered with a high degree of adaptive pattern. For instance, [13] focuses on distributed decision-making process in *ad hoc* networks.
- (ii.) *Formalization innovation:* formalization is an activity that might lead to innovation. The relationship between formalization and innovation is still under discussion in the relevant literature [14]. [26] studies the impact of formalization on financial policy of innovation development.
- (iii.) *Radical, improvement and incremental innovation.* This concept of innovation is a refinement of the Schumpeterian innovation forms. According to this refinement, service innovation is divided into two component parts. The first part is product innovation. The intangible element of service is embedded in physical product itself. The second part consists of process innovation. In this notion the quantity and quality of service extended in the production process. Today in a dynamic business world, radical innovation is a part of corporate culture [32]. Improvement and incremental innovation often considered and compared with radical innovation. [8] tackles to solve the problem pertinent to sustainability of competitive advantage through radical and incremental innovations.
- (iv.) *Recombinative innovation/ new combination of services.* Innovation through new combination of services is also comes from the tradition of Schumpeterian school of thought. Recombination occurs in both product and process innovation modes. Especially digital economies supply sufficient resource for research and development of recombinant services. [20] analyze the digital transformation of markets towards networks with recombination in innovation function under an integrative framework.

- (v.) *Expertise-field innovation.* Particular markets require service development which depends upon a special type of innovation. The concept of expertise-field innovation is also driven from Schumpeterian perspective. However, unlike the foregoing four concepts, innovation in the field of expertise is not related with product or process modes but it is market oriented. [9] identifies the concept of expertise-field innovation in surveys of services.
- (vi.) *Customer as co-producer.* The classical theory of consumer behavior pivots on a point of dichotomy in production and consumption patterns. The production function shifts upward by the improvement of technologies and the formation of consumption function depends upon and shifts in response to tastes and preferences. This line of thought started to change after the trend turned into something called revolution in service industry. Since then, the consumer is seen as co-producer of services [18]. The consumer gets into action to create value for service development. [11] explore expectation of customer participation in service production and provision process.
- (vii.) *Multi-unit organization.* The concept service innovation in multiunit organizations stems from the refinement of the original Schumpeterian innovation forms. This innovation mode focuses on market and organization as important institutional sources of change. The structure of markets and organizations are similar to each other so sometimes it is hard to clear demarcation between them. The information flow through markets and organizations can be used to attain and maintain competitive advantage in the economy. [29] studies multi-unit organization performance and knowledge transfer.
- (viii.) *External relationship innovation.* This innovation concept relates with the relationship of organization to the outside business world. Unlike innovation multi-unit organization, the improvement of external relationships open up profit and thereby success opportunities to organizations. The way an organization innovate its external relationship as opposed to internal communication innovation also determines its potential growth. In particular, [21] searches for the effect of external relationship to enhance innovation in small and medium sized enterprises (SMEs).
- (ix.) *Conceptual innovation.* The importance of conceptual innovation has historical roots [15]. Especially in product and process innovation, conceptualization attracts attention of target customers. Innovation about how to conceptualize a service is similar to understand the needs of potential buyer in the market. [10] depicts a conceptual innovation system framework in an attempt to explain the components of innovation system.
- (x.) *Delivery innovation.* The distribution of goods and services comes under scrutiny as far as cost of transactions is considered. Innovation in delivery systems increases the attainability of a service. Furthermore, customers generally regard the efficient delivery as an important part of service quality. [5] examine the strategic link between innovation and service delivery.
- (xi.) *Client-interface innovation.* Renewal of client interface provides several benefits for service innovation. Practical solutions with user friendly automation systems make customers save time and energy. The introduction of new client interface is considered to have positive effects on the development of service innovation [33].
- (xii.) *Technological options.* The improvement of technological options allows producers and consumers to use variety of solutions. The value technology options increase the speed of service innovations [22]. Transferability of technology options from research and development centers to market environments support development patterns in service industry.
- (xiii.) *Transaction innovation.* Innovations in traditional methods of transactions reduce costs and increase efficiency. This kind of innovation reflects itself over the vertical structure of service industry [35]. The relationship between transaction cost and service innovation is studied by [28] at a time where internet is set to come into global prominence.

5. Service development model and service innovation function

Service development model is a dynamic process that can be traced into intricate parts. The nature of service requires special attention to create and promote from the economic perspective of supply side considerations. Innovation in financial services can only be possible under sufficient infrastructure investment. Innovative entrepreneur as an agent of change plays an important role in understanding customer needs both within a particular period of time and through a future horizon.

Sometimes a service is defined as something that is to be invented from the outset. It means that even no one is aware of the need for a certain type of service, the utility of it first comes into foresight with a proper entrepreneurial attitude towards risk. This part of the system reflects the investigation activity of customer needs not in static conditions but in dynamic setting. The upward shift of demand curve prompted by an unexpected exogenous economic shock is absorbed with innovative movements towards a new equilibrium level of the economy. As an intangible good, service is classified under different utility function. Since it is not possible to stock and store services, the consumption occurs at an instantaneous pattern. For this reason, frequency of customer feedback is to be high.

Whilst the quantity of services can be measured by its frequency, the service quality is always assessed in relation to customer interaction. Customer opinions as well as consumption behaviors must be included in service development process. [2] phrased this interaction as learning by doing. Following figure delineates service development framework with six variables. The social change is an endogenous variable that determines the socioeconomic dynamics with new trends over decades. The technological change is associated with new production techniques introduced in lieu of previous one which has been rendered obsolete. When the status of limitations is disturbed by an innovation, economic change takes place as a structural break in the service development system.

Environmental change corresponds to innovation ecosystems and intellectual atmosphere. Positive and negative externalities affect economic environment in two opposite direction. Political change enters into the function of service development system through global perspectives. The liberalization of financial capital markets integrated with digital economies implies the dramatic reduction on the cost of transactions. Values-ethical change takes sustainability problem into consideration. The exhaustion of natural resources at an unprecedented rate attracts immediate attention from both policy makers to academic and business researchers.

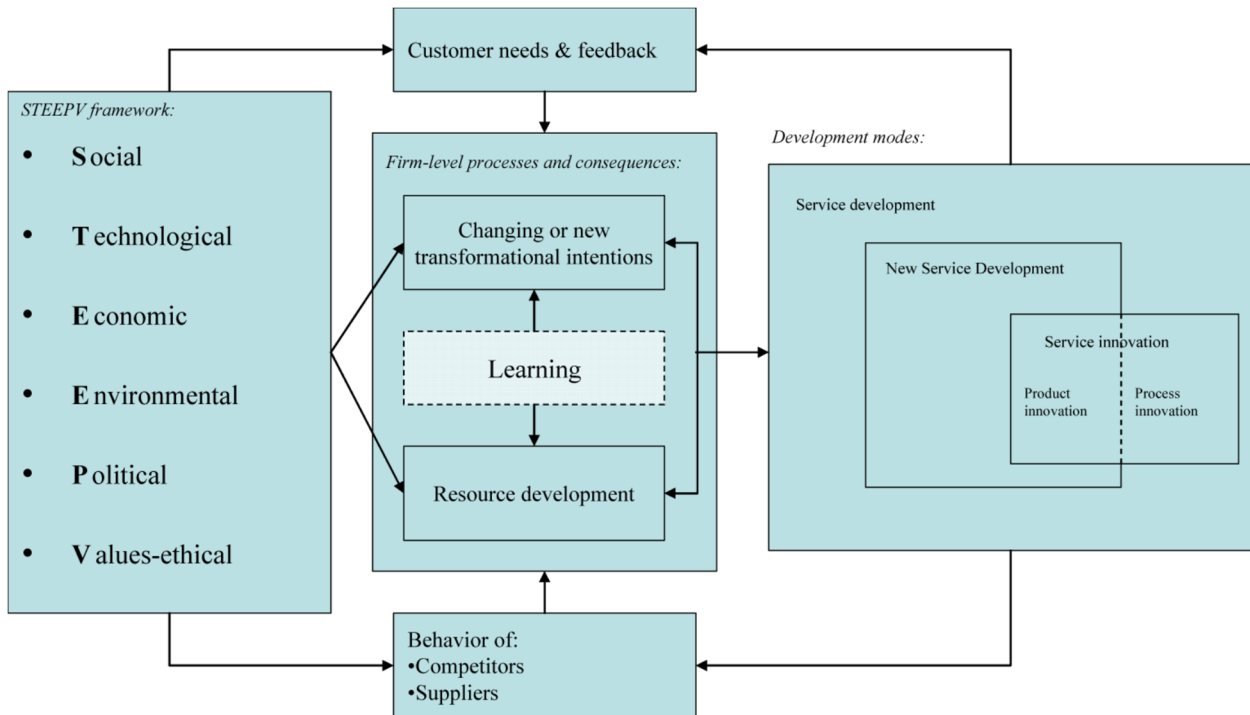


Figure 1. Service Development Framework [12]

Figure 1 depicts service development framework from the perspective of dynamic interaction. Factors of change in an innovation ecosystem such as Social, Technological, Economic, Environmental, Political, and Values-ethical variables together establish STEEPV framework. External drives of these variables are customer needs and feedback on the one hand, behavior of competitors and suppliers on the other hand. Internal drives of STEEPV service development systems can be defined as changing or new transformational intentions and resource development. The output of the system shows development modes service innovation as subset of new service development. Service innovation can also be divided into product innovation and process innovation.

From the general idea and mechanism of service development system depicted in Figure 1, we can construct Service Innovation Function. For this task, the introduction of the element time $\{t\}$ where $t = \{1, 2, 3, \dots, n\}$ represents the set-in which choice of unit of time can be made according to the frequency of service production. In an era of big data, flow of information increase both in quality and quantity day by day and the time dimension in our model signifies this dynamic nature of innovation development. The unit of time can be day, week, month or year and $\{t = 0\}$ corresponds to present time.

$$\alpha(t) = \left\{ \begin{array}{l} S1 = \text{Social change } (\Delta); \frac{\dot{S}}{S} > 0. \\ T = \text{Technological change } (\Delta); \frac{\dot{T}}{T} > 0. \\ E1 = \text{Economic change } (\Delta); \frac{\dot{E}1}{E1} > 0. \\ E2 = \text{Environmental change } (\Delta); \frac{\dot{E}2}{E2} > 0. \\ P = \text{Political change } (\Delta); \frac{\dot{P}}{P} > 0. \\ V = \text{Values – ethical change } (\Delta); \frac{\dot{V}}{V} > 0. \\ S2 = \text{Structural change } (\Delta); \frac{\dot{S}}{S} > 0. \end{array} \right. \quad (1)$$

In addition to the standard STEEPV variables in service development framework of Figure 1, service innovation function also incorporates structural change for innovation. Parametrization of variables allows us to measure total effect of service innovation on service development with respect to time. If, for example, we define the quantity of service development with Q then the general formulation of the service innovation function will be as follows.

$$Q = \alpha L^{\lambda_L} K^{\lambda_K} G^{\lambda_G}; \alpha(S1, T, E1, E2, P, V, S2). \quad (2)$$

In equation (2), L denotes quantity of labor employed per unit of production for the services, K denotes the quantity of capital employed per unit of production for the services, and G is the labor of entrepreneur that enters into the function with its appropriate share per unit of innovation. In this very original form, the service innovation function is a special version of entrepreneurship augmented production function. The vector of parameter α indicates time dimension of the model with seven factor variables each of which co-determines innovation ecosystem.

6. Concluding Remarks

The link between entrepreneurship and service innovation has been a focus attention since the ways of entrepreneurial orientation came under scrutiny of academic research agenda. Especially when successful innovation in services under tumultuous economic conditions is considered, [25] points out the importance of those studies on topics such as entrepreneurship and firm performance, service innovation as a way of value creation, entrepreneurial marketing strategies for services, etc.

Through the direction from entrepreneurial orientation to innovation process, ideas are turned into brand-new service systems. The introduction of novel services increases market performance and open up various opportunities for improvement of competitive environment. The driving forces of services development are generally assumed to be impersonal such as social change, technological change, economic change, environmental change, political change together with change in tastes and preferences.

The entrepreneur as human agent of change needs to be added to the driving forces of services innovation phenomena. We assert entrepreneurship approach to service innovation by considering the faculty of foresight in innovative entrepreneur. The innovative entrepreneur in the sense of neo-Schumpeterian agent of change has ability to deal with uncertainties to influence and change the shape of future course of events. For this we propose to search for the possibilities to form the Entrepreneurship Augmented Production Function as a comprehensive challenge to tackle into many dimensions for the future research.

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