

Service Science: Past, Present, and Future

Hyunsoo Kim

Received: 17 July 2019 / Accepted: 31 October 2019 / Published: 31 December 2019

© The Society of Service Science and Springer 2019

ABSTRACT

Research in Service Science has evolved significantly for the past decade, and the current research reviews research in this area. Specifically, I investigated research from the past, present, which focused on the definition of topics of Service Science research, and discuss future research directions for the topic. In earlier years, research in Service Science was defined as a convergence discipline for service innovation, and the research was based on service-dominant logic against goods-dominant logic. These narrow definitions and studies are not consistent with the essence of the service, and are not enough to lead the tremendous changes in the current economy where service is dominant. Therefore, I have incorporated the essence of service to redefine Service Science as a new discipline. Service studies that renew the paradigm of existing disciplines, including profound research on the nature of human life, are defined in the new Service Science discipline. Topics such as service theory/philosophy, service economy/society, service management, service engineering, service technology, and service design are defined as specific topics for research in Service Science. In the near future, I expect more active research in service theory/philosophy, and therefore, I provide results from primary research in this area. We expect this to be a foundation for future research in this area. Taken together, we believe Service Science would be one of the new disciplines that would lead the future.

KEYWORDS

Service, Service Science, Service Economy, Service Industry, Service Philosophy

Hyunsoo Kim (✉)
College of Business Administration, Kookmin University
e-mail: hskim@kookmin.ac.kr

1. INTRODUCTION

This article reviews the academic progress of Service Science over the past decade and looks at the future direction of Service Science. It is a record of the most recent ten years of struggle for service, the oldest topic of mankind, and a record of hope to establish service as a necessary and sufficient condition to sustain and prosper mankind forever.

Human daily life is a process of exchanging services. It has been since the middle of the 20th century that the service has begun to be recognized as a value of goods, and it is in the 21st century that humans began to consider services as an independent discipline. As an area of original discipline, service began in 2004 in the United States through the name, *Service Science*, considering services as a subject of science (Kim 2009).

Since then, active research on services have been conducted in the US, Europe and Asia. In particular, in 2007, the Service Science National Forum (SSNF) was formed in Korea to develop service science and develop service science into major academic disciplines. The Society of Service Science (SOSS) was also launched in 2008 as a specialized academic organization, and *Journal of Service Science Research* was published in June 2009 (Vol.1, No.1) in collaboration with The Springer. Since then, it has published biannually for 11 years, and the current publication is Vol.11, No.2.

Establishing and developing service as an independent discipline was not easy. First of all, the biggest obstacle was the perceived perception of service. Service was recognized as an incidental activity and as a trivial topic that was difficult to deal with as an independent academic topic. Also, in large scale, service industries such as financial services, education services, and medical services did not particularly acknowledge themselves as service industries, and therefore, there was limited interest in investigating services as a discipline.

In the case of research and development activities, the development of products related to products that show visible results was generally supported and encouraged as national research and development. Service research activities involving invisible results were rarely recognized as national research and development, and therefore, it was difficult to conduct research in services.

Therefore, SSNF and SOSS actively developed activities to improve service science related research environment in order to develop services into an academic discipline. The

Korea Research Institute for Service Industry (KRISI) was launched in 2010 to enable service research. In 2015, the vision of developing Korea through focusing on development of service industry was declared and Service Korea Initiative was launched in 2016 as an organization to carry out its activities. In order to promote service research in Korea, Journal of Service Research and Studies was also launched in Korean in 2011 and published four times a year as of 2019.

As a result, Korea has begun to encourage service research and development activities in the government, and awareness of service industry innovation activities has greatly increased. The definition of service science has also expanded and deepened, and it has been steadily establishing itself as an independent academic discipline. Below, I summarize the past, present and future direction of Service Science which has been changed as a result of efforts in the last decade.

2. SERVICE SCIENCE: PAST AND PRESENT

Early Service Science was defined as a convergence discipline to innovate services. Service science was coined by U.S. Council on Competitiveness in 2004 as a service innovation methodology. By U.S. National Innovation Investment Act, service science is defined as “curricula, training, and research programs that are designed to teach individuals to apply scientific, engineering, and management disciplines that integrate elements of computer science, operations research, industrial engineering, business strategy, management sciences, and social and legal sciences, in order to encourage innovation in how organizations create value for customers and shareholders that could not be achieved through such disciplines working in isolation”. In short, service science is a new discipline to innovate services and service systems with scientific methodology (Kim 2009).

Service research has also been defined as an area of disagreement with the academic discipline of the product. The service-dominant logic is built on the concepts of operant resources, resourcing, servicing and experiencing, value proposing, dialog, value-creation networks, collaborative marketing, etc. (Kim 2009).

These early definitions and concepts of service science were deepened and developed as a service science related research group was established in Korea, and started its activities in

earnest. Key issues raised by core experts in Korea in relation to early service science research and positioning are as follows.

First, existing service science definitions and concepts underestimated the nature and importance of services in a changing economic society in the 21st century. They are simply dealing with services in industrial issues and ignoring the vast changes in human society. Therefore, the service and service science were not properly defined, and the purpose and scope of related research was reduced or distorted. Second, there was virtually no work to establish service science as an independent academic discipline. Service science was only studied from the point of view from the practitioners and the service-related discipline. Third, there was no full-scale research on service science as an independent discipline. There was no service science research as a new discipline that would lead to the development of a new economic society in the 21st century.

To solve these problems, researchers in Korea conducted the following research.

First, after analyzing the economic society in the 21st century, the researchers suggested that the current economic society is not tangible goods-oriented, reality-oriented economic societies but intangible-goods-oriented economic societies. Therefore, it was analyzed that the concept of tangible goods and reality, which became the center of existing society and existing studies, was changed into the concept of intangible goods and relationship, and a new system of learning was needed.

As shown in Figure 1 below, unlike the past, the present age is an era where relationships, intangibles, strong connectivity, quantum mechanics, dynamic changes, and service values are central. Therefore, the new academic system is characterized by ‘service,’ which is characterized by intangibility and relationship, and that the study of service becomes a science that can develop economic society in the 21st century.

In addition, the 21st century is a time when the high growth rate of the past few centuries has slowed down since the Industrial Revolution. The rapid growth of productivity in the era of the Fourth Industrial Revolution has slowed the growth of industry and the economy as supply has exceeded demand. Growth rates are declining, job creation is slowing, and unemployment is growing. Failure to provide a new breakthrough at this point will likely lead to a long-term, low-growth phase of human society, a number of socio-economic problems, and a possible decline.

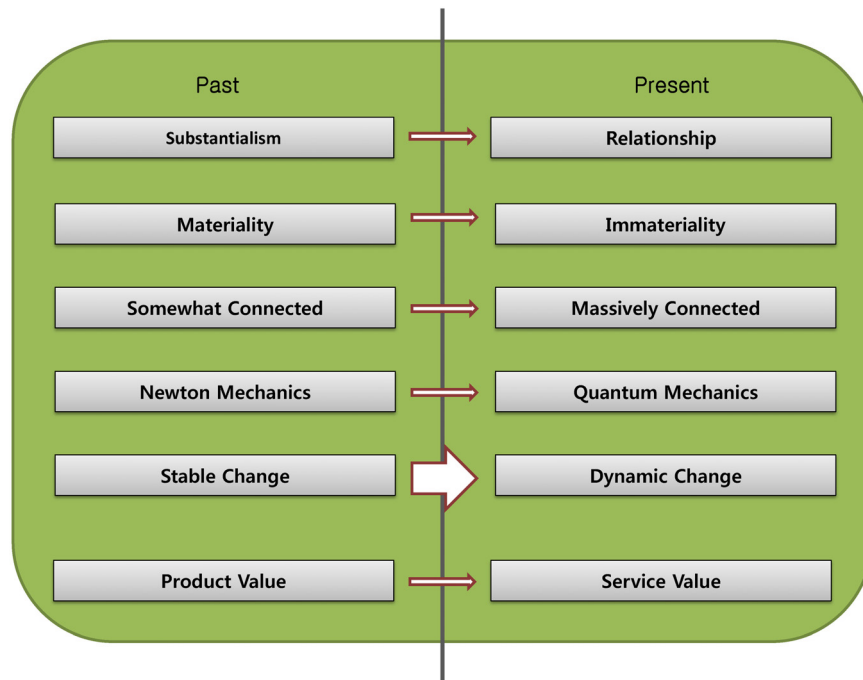


Figure 1. Major Differences of Past and 21st Century Economy and Society

In other words, as shown in Figure 2 below, a group of new academic discipline is needed as an alternative to industrial age academic discipline that has led the high growth period of mankind for the past 200 years. As the tangible-type tangible economy shows its limit, new science for long-term sustainable growth of mankind is needed, and service science that meets the trend of 21st century economic society needs to become the center of new science (Kim 2016). Note that there is a need to develop a service science that will likely lead to long-term low growth of A path, leading to long-term high growth in B path.

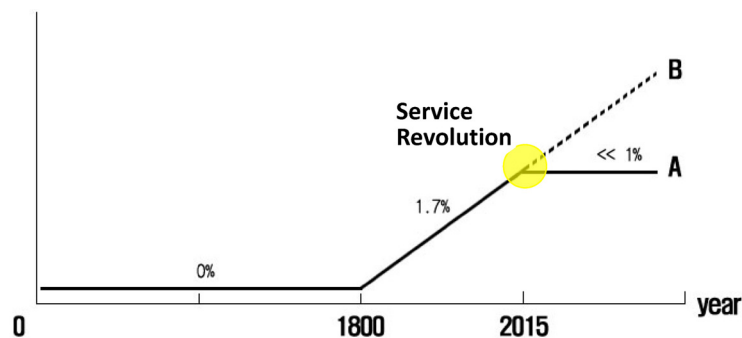


Figure 2. An Urgent Need for a New Academic Field for the New Era (Kim 2016; Piketty 2014)

In addition, it is analyzed that the job structure, which is the main variable that determines the way of human life, will be transformed into a U-shaped structure as shown in Figure 3 below (Kim 2016). Jobs in traditional industries such as manufacturing is likely to disappear, and A type jobs that require interactivity and emotionality, and B type jobs that require creativity and cooperative skills is likely to increase. Among the service jobs, the job structure is being reorganized by the U-shaped structure which is centered on the human specific area. In other words, service jobs that can be systemized can be replaced by machines even if they are specialized, and the job structure will be changed centering on the human-specific domain, which is a U-shaped bipolar.

As the role of human beings is shifted to the center of exertion of human abilities, fundamental changes are taking place in the role of human existence in the service network. In the majority of human cases, the existing passive role is changing into an active role in many ways. The active role of the individual is increasing at the level of the subject of history development, and the active role of the individual is increasing at the level of the subject of economic development.

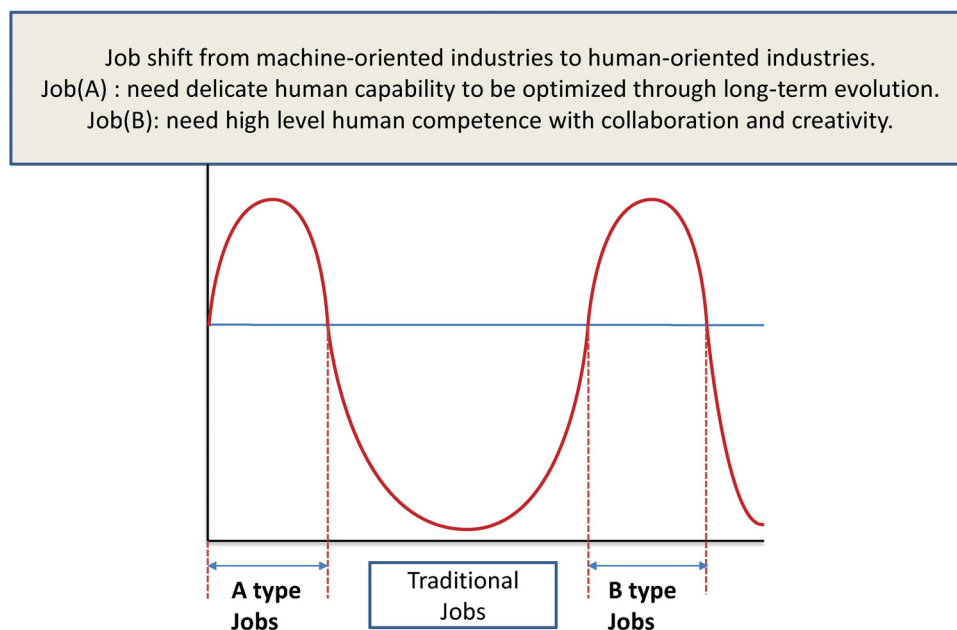


Figure 3. A Job Structure Model for the 21st Century (Kim 2016)

With the need to lead such a new economic society and the sustainable development of mankind, Service Science has been defined as a new discipline that refers to all research on services as follows.

Service Science refers to all the disciplines of Service. *Natural science* (physics, chemistry, biology, astronomy, geography, etc.) collectively encompasses all the disciplines of nature, and *social science* (political science, sociology, economics, etc.) collectively encompasses all the disciplines of society, service science collectively encompasses all the disciplines of service. As with all academic disciplines, Service Studies refers to all disciplines related to service. Service is a new academic discipline for the long-term sustainable growth of mankind as an alternative to industrial science that has led the high growth period of mankind for the past 200 years (The Service Korea Initiative 2016; Kim 2015a; The Society of Service Science 2015).

Major areas of service science are developing into ten major disciplines including service philosophy, service management, and service engineering. In particular, the era of industrial demarcation referred to as the Fourth Industrial Revolution, including manufacturing services, is actually expanding into new fields of study in all fields.

- Service Theory / Philosophy
- Service Economy / Service Industry
- Service Policy / Service Law
- Service Management / Service Society
- Service Design / Service Marketing
- Service Engineering / Service Operation
- Service Technology / Service Solution
- Service Education / HR Service
- Manufacturing Service
- Service Research in General

Service theory / philosophy explores the essence of service, exploring various philosophical issues based on the transparency of service society against the anonymity of industrial

society. It is a discipline that establishes the ideological basis of modern economic society, centered on services, including philosophical research on the nature of service, relationship, interactivity, levelness, and harmony.

Service economy / industry field is an academic field that studies the macro and micro aspects of the new economy and the new industry, and active research activities are being carried out based on the characteristics of the intangible economy(Kim H & Kim SY 2016).

The service policy / law field is a field that studies new institutional and policy paradigm for innovation and creation of new economy and new industry. It analyzes the existing system of legal system and analyzes current policy as well as the foundations of legal systems in the future.

The service management / society field is a core field of service science. With the maturation of the new economy and service economy, it has become the center of modern scholarship and research activities of many researchers are being carried out. Especially, service management is leading the 21st century as the new management, and research on service society is becoming the center of new social research(Kim 2018).

The service design / marketing research is becoming a human-centered study as the desire of people has diversified, segmented, and personalized in the new economic era and the paradigm of the new economy has been reshaped as a center of human desire.

The service technology field is a study of the technology that leads the service economy society. This field is greatly expanded and becoming more important as the Fourth Industrial Revolution era arrives. Especially, as AI has become super intelligent and IoT has become a universalized connection, the existing service technology field is expanding to research related to the entire economy and society.

Service education and human resources are very important research areas in service science which centers on humans. Research on education that cultivates human resources that will lead a new economic society and foster creative talents that create new industries through industry-wide convergence is the most important research field for the future. In addition, effective human resource management research on such talent is a very important task for corporate development and social development.

The manufacturing service field is a research field that strengthens manufacturing

competitiveness by fusing services in the era of the Fourth Industrial Revolution, in which the boundaries between industries are dismantled. It is a core research field that fosters competitiveness by fusing manufacturing and service, which are the two axes of modern economy, into one industry and pursues desirable growth of human economy.

As a new paradigm of the existing disciplines as described above, the fields of service research will study intrinsic subjects of service independently or interdisciplinary. In other words, research in service science is a typical interdisciplinary science in each field of service science, and it is performed on the basic structure of service. Service has three basic structures: supplier, consumer, and relationship between the two. The main areas of research are service theory research, service philosophy research, and service society research. Research on suppliers and consumers is related to almost all of the above areas.

The service research framework, which is currently being studied mainly in each field, consists of five main blocks as shown in Figure 4.

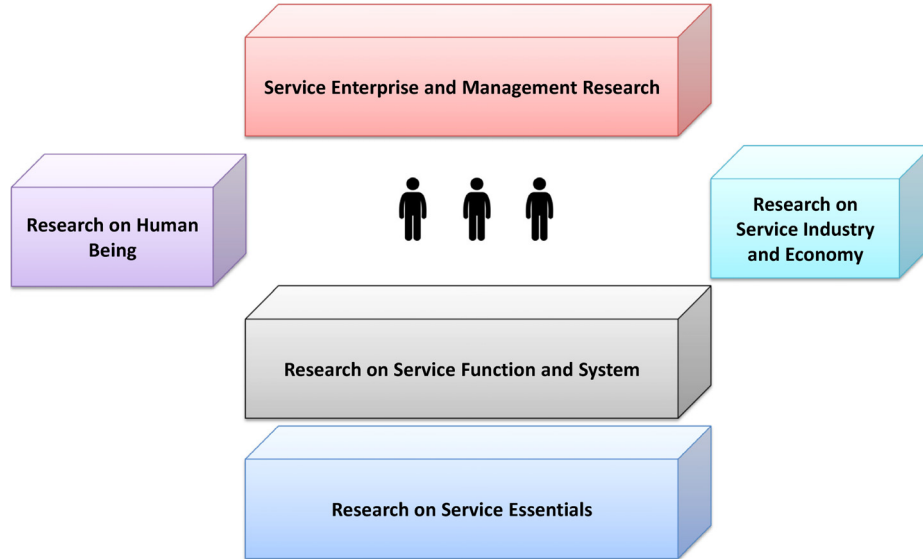


Figure 4. A Framework for Service Research (Kim 2015b)

As a mid- to long-term basic research, research on the nature of service is at the bottom of the underlying research. Then, research on service function and service system is performed thereon. On this basis, service companies and management research are carried out. The

topics that support these studies are research on human beings and research on service industry and economy. These five individual research or fusion studies are being studied in the field of study presented above.

3. SERVICE SCIENCE: FUTURE

In this section, I will introduce four conceptual models of service science that further encourages future researchers to build upon.

3.1. Service Structure Model

The service science research will proceed in the direction to complete the ideological foundation that will lead the 21st century in the future and to complete the new system of the existing scholarship. In the near future, research will be conducted to establish the philosophical foundation of the new economy and develop service management to be a topic of intrinsic business administration (Kim 2018; Kim 2017). The early stages of this process are now proceeding as follows. As a basic stage of service philosophy research, basic model of service structure and basic model of service philosophy are suggested in this paper.

Service has both tangible and intangible elements, and the interaction between them is active. However, the whole is a single circle with no distinction of individual elements, that is, in the form of Taeguk (Taichi) in Oriental philosophy as shown in Figure 5 (Kim 2019d).

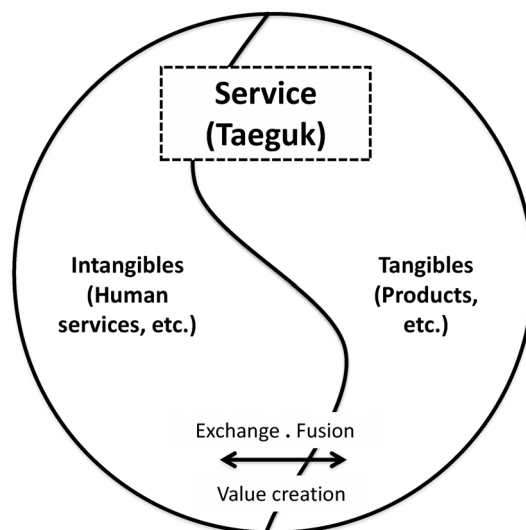


Figure 5. Structure of Service (Kim 2019d)

3.2 Service Evolution (S-E-R-I or E-R-I-S) Model

Service evolution becomes a spiral model that develops around the time axis. In other words, the products and services evolve and develop in a spiral trajectory as shown in Figure 6.

In this figure, the service operation method of each of the four sections is as follows. For product-oriented service, in the first quadrant, the tangible element (product)-based service is added with the intangible element (that is, the service is rendered) to become enhanced service. The service which is operated mainly on the tangible element recognizes the necessity of the intangible element within itself and promotes improvement by self-improvement, which operates in the first quadrant. This is called service enhancement (Servitization: S). In the second quadrant, intangible elements-enhanced service builds tangible elements (products) to solve intractable contradictions and problems. This process is called Establishing (E). In the third quadrant, enhanced services strengthen additional intangible elements to meet the customer's evolving needs. This process is called Reinforcement (R). In the fourth quadrant, enhanced service in the earlier stage reinforce tangible elements again in order to meet the needs of the improved customer. This is called Infrastructuring (I). The spiral of the S-E-R-I cycle is a service operation model. On the other hand, in the case of a service centered on intangible elements, the E-R-I-S cycle starts from the second quadrant (Kim 2019d).

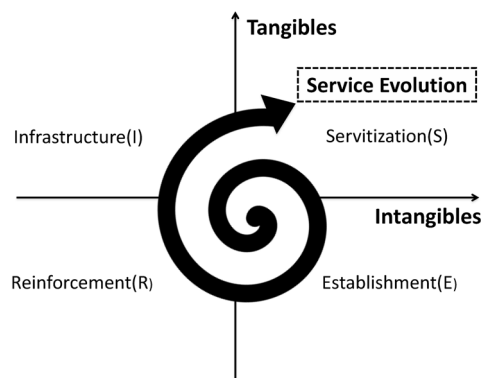


Figure 6. Service Evolution Model (Kim 2019d)

3.3 Service Philosophy Structure

The service philosophy structure has been established as the following model of Taiji

Dialectics reflecting the essence of service, service structure and evolution model. Each of the opponents is a model in which values are recognized and developed together through counterbalancing activities with its opponents.

In addition, it is the operating model of the service philosophy that develops into a spiral while discovering and resolving the contradiction between the opposing parties. This model emphasizes process centrality. Recent studies have shown that this service philosophy model is consistent with the central idea of the East and the West.

Kim (2019c) suggested compatibility of the service philosophy of Asian mainstream ideas. A major trend of mainstream ideas in China and India was found to be compatible with the service philosophy. Kim (2019b) also examined whether the spiral development model of service matches the world development model in Western representative ideology, and found that western mainstream thoughts emphasize the dialectical development of the conflicts, and the Taegeuk-type basic structure of service is consistent with the world's operating structure in Western thought. In addition, it is shown that cycle and process theory are central idea from ancient times to modern thought, and process is consistent with service operation model which creates value. Kim (2019a) analyzed the social and philosophical significance of the macroscopic cosmology and the microscopic quantum theory of modern physics. Based on these analyses, the established service philosophy structure was shown to be compatible with essential principle of universe and human.

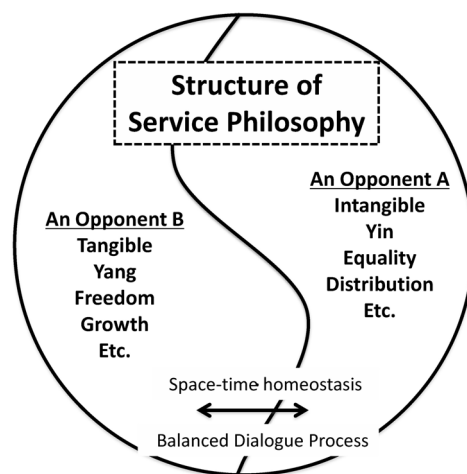


Figure 7. Structure of Service Philosophy (Kim 2019a)

3.4 Service Economy Growth Model

Kim (2019b) also derived a new economic growth model based on the above analysis. Figure 8 shows a spiral development model on time-space axis and human will axis. As the will of politicians and managers intervene along the space-time axis, the micro-economic and social development model changes. Time and space influence humans, and interactions that affect human space and time intervene. In the development of intangible and tangible elements, various systems and technologies are developed, and the will of managers and politicians is involved (Kim 2019b).

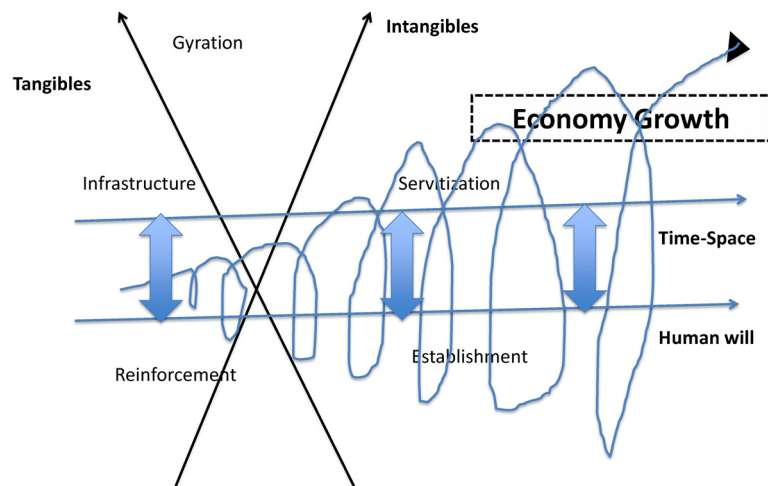


Figure 8. A Service Economy Growth Model (Kim 2019b)

As such, the recent service science research has begun to study the essence of service and research on service philosophy, and it is expected that these studies will be further examined in the future. In addition, based on deepened service theory and service philosophy research, it is expected that application studies in service science sub-discipline will also receive attention from researchers. In other words, research and understanding on service management, service economy, service design, service education, service engineering, and service technology is expected to deepen. For example, in case of business administration, although the management system of the past industrial society is still the center, research on convergent economics management centered on intangible goods is being revitalized by service management researchers. Service management is becoming the new business administration

(Kim 2018). Future studies are expected to appear as papers develop new ideas on a completely different framework. According to the development and maturity of the new economy of service economy, the service science research will evolve further, and it is expected that human society and economy will be developed at a higher level with the revitalization of service science research around the world.

REFERENCES

- Kim H (2019a) A study on service philosophy for new economy and society. *Journal of Service Research and Studies* 9(4): forthcoming.
- Kim H (2019b) A study on the service philosophy of major western ideology. *Journal of Service Research and Studies* 9(3): 1-16.
- Kim H (2019c) A study on the service philosophy of mainstream oriental ideology. *Journal of Service Research and Studies* 9(2): 1-15.
- Kim H (2019d) A study on the service philosophy of major Korean ideology. *Journal of Service Research and Studies* 9(1): 1-16.
- Kim H (2018) *New Management of Management*, Kookmin University Press.
- Kim H (2017) A study on Korean traditional philosophy as the service economy philosophy. *Journal of Service Research and Studies* 7(3): 105-118.
- Kim H (2016) A study on accelerating service economy by the 4th industrial revolution. *Journal of Service Research and Studies* 6(3): 15-28.
- Kim H (2015a) A roadmap for service economy. *Proceedings of Service Korea Initiative Conference*. The Society of Service Science.
- Kim H (2015b) A suggestion on the new service research framework. *Journal of Service Research and Studies* 5(2): 199-216.
- Kim H & Kim SY (2016) Introduction of the ‘service industry development index’: Initial thoughts on the new paradigm shift. *Journal of Service Science Research* 8(1): 85-94.
- Kim H (2009) Service science for service innovation. *Journal of Service Science Research* 1(1): 1-7.
- Piketty T (2014) *Capital in the Twenty-First Century*. Harvard University Press.
- The Service Korea Initiative (2016) A vision statement for global service Korea initiative. In

Proceedings of Service Korea Initiative 2016 Conference. The Service Korea Initiative: 18-23.

The Society of Service Science (2015) A vision statement for service Korea initiative. In Proceedings of Service Korea Initiative 2015 Conference. The Society of Service Science: 42-47.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

AUTHOR BIOGRAPHIES



Hyunsoo Kim is a Professor of Service Management at Kookmin University in Seoul, Korea. He majored in nuclear engineering at Seoul National University and acquired Master's degree in management science from the Korea Advanced Institute of Science and Technology, and received his Ph.D. degree at the University of Florida with business administration major. Currently he serves as the chairman of the Society of Service Science, and the chairman of the Korea Research Institute of Service Industry as well as the chairperson of the Service Korea Initiative. Based on those experiences and knowledge on Service industry and academia, he devotes himself to the researches on Service Science and Service innovation.