GFER Publishers

International Journal of Applied Service Marketing Perspectives

ISSN (Print) 2279-0977
ISSN (Online) 2279-0985
Volume 12 Issue 1, 2023
Pages 11-24

Open Access

Revisiting the Strategies in Service in a Digitally Transformed World

Publication Details

Paper Received:
January 9, 2023

Paper Accepted:
May 20, 2023

Paper Published:
June 30, 2023

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Abstract

Emerging "cyber-physical systems" were dubbed the Fourth Industrial Revolution by the World Economic Forum. Since then, DT has been swiftly adopted by a wide variety of businesses, governmental agencies, and philanthropic organisations. In particular, the use of cutting-edge technologies like AI, IoT, VR/AR, cloud computing, big data analytics, and the like has improved the customer experience for digitally transformed services. For instance, with the help of the Internet of Things and blockchain technology, service providers have increased customer satisfaction and made their business operations very transparent. As a result of DT, not only has the service sector been revolutionised, but so too have customers. First, it may serve as a foundation of facts from which to draw conclusions about how DT might improve competitiveness in various service industries. It may be utilised as a foundation for future research into enhancing user engagement through digital platforms and app services, and for

broadening the range of DT-based services. Second, this research may serve as a significant resource for addressing the challenge of bolstering organisational competitiveness by integrating DT in service sectors where legal assessments are necessary, such as healthcare and legal services. Third, the results of this research might be a helpful source of information managers considers DT that is consistent with the features of the company, since DT is a key strategic aim of practically every organisation.

Keywords: strategies; service; digital transformation; innovation; technology; internet of things

1. Introduction

Emerging "cyber-physical systems" were dubbed the Fourth Industrial Revolution by the World Economic Forum (Schwab, 2016). Since then, DT has been swiftly adopted by a wide variety of businesses, governmental agencies, and philanthropic organisations (Parviainen et al. 2017; Kapadia and Madhav 2020; Gebauer et al. 2021). In particular, the use of cutting-edge technologies like AI, IoT, VR/AR, cloud computing, big data analytics, and the like has improved the customer experience for digitally transformed services (Tabrizi et al. 2019; Vial 2019; Lee and Lee 2020a). For instance, with the help of the Internet of Things and blockchain technology, service providers have increased customer satisfaction and made their business operations very transparent (Chehri and Jeon 2019, Li et al. 2020a, Rosete et al. 2020). As a result of DT, not only has the service sector been revolutionised, but so too have customers.

Customers now have the ability to efficiently search for information using digital devices; this has several advantages, including ease, variety, and efficacy. As a result, businesses are increasingly providing digital services that encourage value co-creation with their clients (Lee and Lee 2020c). With the help of DT, service providers have been able to develop innovative business models, which have altered the workings of the value chain (Lee and Lim, 2018). Rapid expansion of DT in the service sector has been significantly accelerated by the ongoing COVID-19 pandemic (Priyono et al., 2020).

It is crucial to use cutting-edge digital technology in order to provide new services and value to clients (Lee and Lee 2020c; Li et al. 2020b; Rosete et al. For the purpose of quantifying consumer behaviour or value contributed, DT entails converting subjective information into objective data (Chin and Lee 2022). Businesses may benefit from the introduction of innovations that uncover unmet consumer demands with the use of this kind of digitalized objective data (Parviainen et al., 2017). Therefore, DT has become a strategic need for enhancing the firm's performance by fostering its dynamic capabilities via the cultivation of agility, flexibility, and resilience (Kretschmer and Khashabi, 2020).

Despite claims by Martin-Pena et al. (2018) and Tronvoll et al. (2020) that DT is disrupting traditional business models, the latter group argues that corporate DT must be grounded in operational strategy. In order to effectively apply digital technology to new business processes, DT is essential, as stated by Gobble (2018).

Rha and Lee's (2022) keyword network research shown that DT has a beneficial effect on industrial and service sector value creation operational processes. Changes in organisational structure and culture are essential to successfully implementing DT (Pelletier and Cloutier 2019, Sklyar et al. 2019, Liu and Guo 2021, Endres et al. 2022). Rha and Lee (2022) examined a service sector network map via the lens of keyword link relations. According to their findings, the various DT research fields can be broken down into the following six categories: "digitalisation of services and new collaborative mechanisms," "digital transformation of services," "the acceleration of digital transformation," "the development and application of new business models," and "the digitalisation of financial business." To the best of our knowledge, there has not been a comprehensive study on the development of DT in the service sector, so although these findings are promising, more work has to be done to understand the underlying patterns and change processes of DT. Since DT has merged and revolutionised the service business, it is crucial to comprehend the flow and investigate trends about this subject. Research is also required to determine the driving and enabling forces of DT in the service sector.

2. Literature Review

2.1 Digital Transformation

Accelerated expansion of service sectors through DT has been facilitated by the advent of digital servitization, made possible by the fast evolution of diverse digital technologies (Coreynen et al. 2020; Gebauer et al. 2021). To prepare for digital servitization, service providers must create business models that can sustain the necessary operational improvements (Tronvoll et al., 2020). Business model innovation is facilitated by digitisation, according to Hokkanen et al. (2021). Fundamental technologies for digitisation including the Internet of Things (IoT), cloud computing, and big data analytics provide service businesses the ability to create customer-centric business models (Lee and Lim 2018, Frank et al. 2019, Paiola and Gebauer 2020). Even manufacturers are turning their attention away from the goods themselves and towards an ecosystem that combines products and services to provide value for customers.

Technology in DT is used to either generate value for consumers or assist customers in generating value for themselves, as opposed to just using digital technology (Seyedghorban et al., 2020). In addition, DT supports the movement to include customers more deeply in business operations so that they may work together with the company to achieve more (Lee and Lee 2020a). The current tendency is to create a global market where all businesses operate on the same platform. In an increasingly cutthroat market, both sellers and buyers are looking for ways to differentiate themselves. Hence, DT is a powerful strategic force that may facilitate innovations that increase value for the client.

Strategic renewal, as described by Kretschmer and Khashabi (2020), is a reorganisation of an organization's internal processes or fundamental competences in response to digital innovation. Due to the strategic changes in organisational structure that might result from the DT process in the age of service-oriented systems, efforts need to be divided across organisational levels. When a firm's unique core strengths are utilised to gain competitive advantage, as DT may do with comparable technology in adjacent sectors, the company can run sustainably. During the recent COVID-19 pandemic phase, DT was recognised as a crucial aspect for establishing competitive advantage from an environmental viewpoint

(Kraus et al. 2021; Chin and Lee 2022). Thus, DT aids corporations in discovering novel avenues for introducing customer-centric business models (Lee and Lim, 2018; Frank et al., 2019; Paiola and Gebauer, 2020).

2.2 Convergence Innovation

Convergence across different industries is an effective method for creating value via innovation. DT can facilitate the merging of production and service sectors. According to the work of Lee and Olson (2010), "convergence" is the process through which disparate technologies, goods, and services are brought together to produce something of greater value. Convergence innovation enabled by DT includes the sharing economy and the subscription service business model, in which key value-creating resources are licenced for use rather than owned.

Convergence across sectors includes the servitization of goods (Lee and Lim, 2016). According to Vandermerwe and Rada (1988), the word "servitization" refers to the evolution of a business model in which a product or service is bundled with another service to form a more comprehensive offering (Vandermerwe and Rada 1988; Lee and Lim 2016). Digital servitization is a recent phenomenon made possible by cutting-edge digital technology (Kohtamäki et al., 2021).

"The move towards smart solutions (product-service-software systems) that enable value creation and capture through monitoring, control, optimisation, and autonomous function" (Kohtamäki et al., 2021, p. 379) is how digital servitization is described. It has been claimed by Kohtamäki et al. (2021, p. 393) that "digital servitization emphasises value creation through the interplay between products, services, and software." Businesses whose primary emphasis is on service enhancement, as indicated by Martn-Peaa et al. (2018), should prioritise the use of convergent digital technologies like digital servitization. These analyses confirm that digital servitization benefits all parties involved, giving conventional manufacturers and service providers a competitive edge.

DT has spawned a new market scenario in which consumers' attention within the value chain is shifting from products to services (Kamalaldin et al., 2020). Digital convergence of technologies and industries has made it feasible to produce new services as a result of rapid technological advancement (Vandermerwe and Rada

1988; Lee and Lim 2016). This new era of convergence innovation, known as "Convergenomics," has progressed through six phases of convergence: components/products, functions, organisations, technologies, industries, and bio-artificial systems (Lee and Olson, 2010).

Bundling of components, goods, services, and technology is an integral aspect of the components/products convergence. The smartphone, which integrates a mobile phone, camera, and music player, is an excellent illustration of this trend. The goal of functional convergence is to improve an organization's efficiency by bringing together previously separate functions. For instance, Netflix challenged the dominant Blockbuster by streamlining the renting and return process with a vending machine.

The purpose of this organisational convergence is to build a world-class value chain by combining forces with other companies that have cutting-edge expertise. A fusion product that added value for consumers is the sports kit that pairs Nike sneakers with the iPod. This merging is emblematic of how DT changes institutional borders. Convergence in technology occurs when previously separate technologies work together to provide new benefits. For instance, Intuitive Surgical's da Vinci systems are the result of the intersection of medicine, information and communication technology (ICT), biology, and nanotechnology. Medical wearables, personal gene analysis services like 23andMe, and IBM's Watson are a few more examples.

In order to produce new value, several industries are converging. Multiple online open courses (MOOCs) in education; personal broadcasting services (like YouTube, Afreeca TV, and WhatsApp) are only a few instances of this trend. The integration of biological and artificial systems to provide novel value is the pinnacle of convergence. The brain wave-controlled wheelchair and the metaverse are only two good examples.

Digital technology have allowed for, and perhaps expedited, the growth of convergence innovation. As a result, the convergence revolution may be traced back to digital technology. Organisations, consumers, and external stakeholders may all benefit from the new value creation possibilities made possible by digital

convergence. As a result, we may learn more about DT-based service innovation by examining actual convergence innovations in the service sector.

2.3 Development of DT-Based Services

The service industry is a major user of digital technologies since innovation in technology has always driven digital industrialisation. Online bookshops and electronic subscription service models have emerged, for instance, as a result of the rise of digital media such as audiobooks, electronic documents, and e-books (e.g., Kindle) (Kulesz, 2011). Since its inception as a videotape vending machine business, Netflix has expanded into the streaming market. The use of smartphones, the Internet, and mobile apps have completely altered the traditional hotel booking process (António and Rita 2021). Banks have expanded their payment options to include anything from telephone transfer services to PayPal and mobile banking (Flood et al., 2013). Regarding academic resources, video lectures and massive open online courses (MOOCs) are now easily accessible through television programmes. Video and remote treatment services (like teladoc health) have become more commonplace in the healthcare sector in recent years (Lee and Lee 2021).

When it comes to driving customer engagement, digital business models are always innovating (Lee and Lee 2021). Customers' involvement in value creation, whether direct or indirect, enriches the breadth of service contents and paves the way for novel business models. Customer (user) experience monitoring, which gathers real-time data on customer behaviour, is only one example of the many modern practises that enable the proliferation of individualised digital services for consumers. These examples suggest a three-stage process for developing digital service delivery models.

In the first phase, technology-based services (digital trials) are used to test the viability of a product or service. Web-based services (digital convergence), the second stage, emerged as a result of the combination of digital and network technologies. In response to the growing popularity of app-based services, businesses have built a new distribution channel (DT) focused on mobile apps. The following are some of the distinguishing features of each stage:

2.3.1 Technology Based Services

At the outset, new digital technologies are used to revamp the distribution of existing goods and services. It's the initial step in converting physical objects into digital signals that a computer can analyse. Examples of efforts to integrate new technologies into service delivery include digital music CDs and MiniDisks, digital audio players, digital video cassette recorders, automated teller machine account transfers, and automatic response system (ARS) services. DT may hasten the process by which this novel way of service delivery generates more value for customers.

2.3.2 Web-Based Services

The second phase involves the creation and distribution of web-based services through the combination of digital technology and online offerings. Now that data can be gathered and transmitted in near-real time, businesses may provide instantaneous service delivery. At this point, the content and sector specifics are integrated into a service model. At this juncture, we see the rise of online reservation and ordering platforms like Expedia and Hotels.com in the travel industry and iTunes in the music business. YouTube facilitated the widespread dissemination of video material, making possible the phenomenon of personal internet broadcasting. Mr. Pizza, a company in the food and drink business, improved service quality and efficiency by moving the meal ordering process online instead of only over the phone. Within the realm of web-based services, DT enabled web-centric business models.

2.3.3 App-Based Services

The third phase saw the introduction of app-based services. The hospitality, financial technology, video streaming, gaming, and entertainment industries have all seen significant adoption of new app-based services. There has been a dramatic increase in the frequency of DT in the service sector since the onset of the COVID-19 pandemic crisis (Priyono et al., 2020; Lee and Lee, 2021). In reality, the whole service delivery sector has seen a radical transformation in recent years (Priyono et al., 2020; Liu and Guo, 2021). Customers are increasingly uncomfortable with

direct contact with service providers. To avoid infecting their clients, service providers likewise favoured contactless service delivery (Lee and Lee 2020c).

At this point, a new kind of business model arose, one that brings together services and applications like Airbnb. Innovations and quick advancements in digital technology have allowed for the creation of DT-enabled services in three phases. Customers from all over the world may now have a voice in the service operation process because to the proliferation of different service platforms. Similar to the progression of convergence innovation from technological convergence to product/service convergence, business convergence, and industry convergence (Sims Bainbridge and Roco, 2016), a similar pattern can be seen in the development of DT-based services over their three phases.

According to the findings presented by Rha and Lee (2022), "fintech and healthcare services" have been the primary focus of scholarly investigation of DT-based services. The data confirms what many have suspected all along: the fast spread of DT has been directly correlated with developments in digital technology. It's possible that this is the result of unique aspects of each sector preventing the widespread adoption of cutting-edge technology. In addition, the restrictions or regulations set by the respective professional groups might make DT adoption more difficult in knowledge-intensive professional service sectors including healthcare, education, transportation, legal, and consulting. Moreover, owing to variations in economic, social, and regulatory settings, academic studies and practical instances (e.g., actual application situations) seem to follow diverging trends (e.g., study scope and countries/cultures where the research was done) (Brunetti et al., 2020).

3. Conclusion

First, it may serve as a foundation of facts from which to draw conclusions about how DT might improve competitiveness in various service industries. It may be utilised as a foundation for future research into enhancing user engagement through digital platforms and app services, and for broadening the range of DT-based services. Second, this research may serve as a significant resource for addressing the challenge of bolstering organisational competitiveness by integrating DT in service sectors where legal assessments are necessary, such as

healthcare and legal services. Third, the results of this research might be a helpful source of information managers considers DT that is consistent with the features of the company, since DT is a key strategic aim of practically every organisation.

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