Service-Dominant Logic and Service Management 4.0

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1 Introduction

The Agenda 21 of the World Economic Forum was set up around the themes: healthy futures, ways forward toward fairer economies and better business, global cooperation for social justice, strategies to save the planet and technological breakthroughs of the Fourth Industrial Revolution that merge the physical, digital and biological worlds (World Economic Forum, 2021a). These themes are similarly represented on the top of many agendas of leading service organizations. PayPal Chief Risk Officer, Aaron Karczmer, for example, refers to the need for rethinking the way how organizations work together. He points to the unprecedented challenges of COVID-19 that require innovative solutions ranging from promoting physical health and mental well-being, to catalyzing economic recovery and empowerment, and even refortifying cyber safety and security in the accelerating digital world. Carolina Klint, Managing Director at Marsh, calls for partnerships between public and private sectors to upskill workers for an exploding digital economy and collaboration across society that incentivizes sustainable recovery efforts, green

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infrastructure and clean energy projects (World Economic Forum, 2021b). These themes pose significant changes to the way service professionals operate and may require service leaders to work more closely together for a more inclusive, cohesive and sustainable future (World Economic Forum, 2021a).

Service-dominant (S-D) logic offers a holistic framework of value cocreation and guidance to navigate change in complex service ecosystems (Vargo & Lusch, 2008, 2016) and is therefore particularly useful to support service leaders in their strategic decision making in today's versatile, uncertain, complex and ambiguous environments. The seminal S-D logic article 'Evolving to a New Dominant Logic for Marketing' (Vargo & Lusch, 2004) is one of the most-cited service-based articles in the last 30+ years. Several citation analyses show how its influence spread from the field of marketing and service research to computer sciences, social sciences, economics, engineering, environmental science, the arts and humanities (Pohlmann & Kaartemo, 2017; Tregua et al., 2021; Wilden et al., 2017). This indicates that a logic of value cocreation not only resonates with service and marketing scholars but also attracts an ever-growing array of other disciplines (Benoit et al., 2017). Service management in practice similarly increasingly acknowledges the importance of cocreating, co-executing and co-operating dynamically among business partners, customers and other actors to move forward in today's challenging times (BCG, 2019; IBM, 2020).

The purpose of this chapter is to explicate how S-D logic applies to the new era of service management defined by the pressures of COVID-19, advanced technologies and the wicked challenges and opportunities of environmental, social and economic sustainability. We further point toward S-D logic informed strategies and methodologies that promote value cocreation processes, the engagement of broad sets of actors and recent work related to designing service ecosystems (Vink et al., 2021). These strategies can support service leaders in their efforts to shape the increasingly complex service ecosystems of which they are part (Vink et al., 2021; Nenonen & Storbacka, 2020). We provide further a set of methods as a tool kit for service managers and designers to visualize the complexity of service ecosystems and to engage various actors in cocreative processes to nudge them.

Arguably, S-D logic allows for responding more systemically to intertwined economic, environmental, social and technological challenges of our complex, interdependent world. By synthesizing the Agenda 21 of the World Economic Forum (World Economic Forum, 2021a) with recent calls for service research (e.g., Bolton, 2020; Furrer et al., 2020), we arrive at four overarching themes that we consider as important for the next era of service management—an era that we call Service Management 4.0. These four themes

include (1) advancing human-centered technologies in service, (2) navigating smart (cyber-physical) service ecosystems, (3) fostering inclusive service for inclusive growth and (4) nurturing nature-positive service. We present nascent contributions of S-D logic informed research related to these themes and close the chapter with reflections on applications for service management and future S-D logic informed research.

2 S-D Logic—An Evolving Perspective for Service Management

The Customer Is Always a Cocreator of Value

One of Vargo and Lusch's motivations for developing S-D logic was to provide an integrative perspective on divergent strands of thought that had been occurring in the marketing discipline since the 1980s, including market orientation (Kohli & Jaworski, 1990; Narver & Slater, 1990), services and relationship marketing (Grönroos, 1994; Gummesson, 1994) and quality management (Parasuraman et al., 1988). The seminal publication 'Evolving to a New Dominant Logic for Marketing' (Vargo & Lusch, 2004) reconceptualized service with important implications for service research and service management. Instead of viewing service as an additional output or special type of a product (i.e., intangible product), Vargo and Lusch (2004) define service as a *process of using one's resources (such as, knowledge and skills) for the benefit of another entity*. This brings service to the core of any economic and social exchange. It also means that both parties, the service provider and the customer, are active participants (i.e., actors) in the service process, and hence, the customer is always a cocreator of value.

The idea of *value cocreation* challenges many of the traditional strategy frameworks (e.g., Porter's value chain; Porter, 1985), because it does not assume that one actor (i.e., the firm) creates value in order to deliver this value—usually embedded in tangible goods—to another actor (i.e., the customer). Instead, it promotes a view of all actors involved in service-for-service exchange creating value collectively for mutual benefit. Take the example of the food delivery service, UberEats: a customer orders food from the UberEats app, the restaurant prepares and packages the meal, a driver picks it up and delivers it to the customer, however without the customer actively integrating the delivered food into their own lives through, for example, setting the table, eating the food, having conversations with family members, no value would

be created and, arguably, no service would be provided. This example shows that no one single actor can create value, *value is always cocreated* (Vargo & Lusch, 2004).

This fundamental shift in thinking about service and value cocreation resonated particularly well with the Zeitgeist of digital economies and the Web 2.0 as they were on the rise in the early 2000s. It provides a way for service management to redefine the role of customers and their actions on social media and other digital platforms of the sharing economy and more generally lays the foundation for strategies that acknowledge the 'active customer' in the service process.

Value Is Always Experiential

Since its introduction, the development of S-D logic has continued first by extending value cocreation processes from those centered on service-for-service exchange to broader resource integration processes acknowledging that all actors (customers, firms, suppliers, the government, etc.) are resource integrators (Vargo & Lusch, 2008). Second, Vargo and Lusch (2008) suggest that value should be viewed as *experiential*, always determined by the beneficiary. The food delivery example from above shows that the perception of value can vary depending on the time, space and actors involved in the value cocreation process (Chandler & Lusch, 2015). A pizza delivered may create a different value for a family depending on them eating it together at the kitchen table or in front of the TV. Further, value may be perceived differently by different family members depending on their degree of hunger, their diet, their available time and so on. This is what S-D logic describes as value-in-context (Chandler & Vargo, 2011). In other words, value is not only always cocreated, but also always determined by the situation and actors' experiences attached to this situation (Vargo & Lusch, 2008). This is an important extension to understand value cocreation, because it means that for any value proposition of an actor, there may be varying views of its phenomenological value (Vargo & Lusch, 2016).

For service management that means that value cocreation with customers and other actors requires knowledge of the situational (e.g., space and time), social (e.g., social networks) and broader socio-cultural (e.g., social norms) context of service encounters (Chandler & Vargo, 2011). It points toward understanding customers' and other actors' experiences and experience journeys instead of single service interactions (Becker & Jaakkola, 2020).

Institutions and Institutional Arrangements Coordinate Value Cocreation

The most recent extension to the S-D logic narrative is the inclusion of *institutions and institutional arrangements* (such as rules, structures, norms, meanings, values, symbols and similar heuristics) as coordination mechanism for value cocreation (Vargo & Lusch, 2016). Let's go back to the food delivery example. It demonstrates that value cocreation processes expand beyond the immediate customer-firm relationship. The food needs to be delivered by a driver; thus mobility systems are required, including vehicles, streets, traffic lights and many more institutions. The customer needs to pay for the food, usually using a credit card service and the Internet is required to connect all actors in this service process. Going beyond the immediate food delivery service process, broader peripheral structures, such as tax laws, food quality regulations and social security systems, enable and constrain resource integration processes among actors. That is, value cocreation depends on and is coordinated through institutions and institutional arrangements (i.e., assemblages of interrelated institutions). These institutional arrangements, however, are not given, they are shaped collectively by actors (Vargo & Lusch, 2016). For example, the tax laws, food quality regulations and other more informal conventions (e.g., social norms) that guide food delivery services are developed and adopted by the society using these food delivery services.

S-D logic emphasizes that value cocreation can only be truly understood when contexts and 'external' environments are internalized and institutional arrangements are considered. It promotes a *service ecosystems perspective* that explains how shared and enduring institutional arrangements—interrelated rules, roles, norms and beliefs—guide resource integration and service exchange (Vargo & Lusch, 2016). As Vink et al. (2021) point out, the service ecosystem perspective not only provides a more systemic and holistic understanding of value cocreation, but also offers important insights into how actors are able to influence value cocreation through designing the service ecosystems of which they are part. Like biological ecosystems, service ecosystems exhibit the quality of *emergence* (Polese et al., 2021) and are therefore beyond the control of any individual actor (Chandler et al., 2019). However, actors are able to intentionally influence (i.e., design), at least partially, how service ecosystems evolve (Mele et al., 2018). This is usually done through reconfiguring the institutional arrangements that are guiding value cocreation within service ecosystems (Koskela-Huotari & Vargo, 2016; Vargo et al., 2015).

Service ecosystems, by their nature, evolve over time through complex processes of individuals, organizations and societies continually adapting to changing contextual requirements, while simultaneously creating this change (Levin, 1998). S-D logic therefore explains innovation in service ecosystems as a *combinatorial evolution* process (Akaka & Vargo, 2014; Vargo et al., 2020). Arthur (2009, p. 167) describes combinatorial evolution as the process in which "new elements are constructed from ones that already exist, and these offer themselves as possible building-block elements for the construction of still further elements". He further explains that any technological advancement is embedded in dynamic social systems and thus institutions and technologies cannot be viewed in isolation from each other. In fact, technology needs to be viewed as "an assemblage of practices and components" and "a means to fulfil a human purpose" (2009, p. 28).

This holistic perspective of service ecosystems broadens the scope of service management from designing and innovating service offerings, managing service processes and running service organizations to orchestrating, navigating and shaping service ecosystems. It means that not only the value cocreation processes between customers and firms, but also those of broad sets of actors, such as customers' social networks, business networks, investors and even policy makers need to be on service leaders' radars. It also means that broader sociotechnical structures (i.e., institutional arrangements) need to be taken into consideration for service management and service innovation. Contemporary service environments make this complex entanglement of technology and institutions salient. For example, service exchange on UberEats only works because of its technical infrastructure (i.e., digital platform) that connects actors (restaurants, drivers and customers) and the social structure that allows service providers and customers rating and reviewing one another.

In sum, S-D logic provides service managers with an alternative lens to think about and make sense of contemporary service environments. In the next section, we will comment on S-D logic informed midrange theories that have been developed alongside with S-D logic's conception. Put simply, midrange theories connect ways of thinking about the world (e.g., a new S-D logic) with the empirical world (e.g., new service management practice) (see, Brodie et al., 2011). It is important to acknowledge that there is a growing body of S-D logic informed midrange theory and by no means is our overview in the next section complete. We focus on midrange theories that promote value cocreation processes, the engagement of broad sets of actors and collective service ecosystem design to foreground how systemic, as opposed to firm-centric, strategies can address some of the challenges of volatile, uncertain, complex and ambiguous environments.

3 S-D Logic Informed Strategies and Methods for Contemporary Service Management

Cocreation and Engagement Strategies

The fundamental shift in thinking about value creation as a cocreative and collaborative process between firms, customers and other actors inspired many service scholars to develop new strategic frameworks for service management. For example, Karpen et al. (2012), in an effort to bridge S-D logic and strategy research, propose a framework of S-D orientation comprising a portfolio of six strategic cocreation capabilities that organizations can develop to create value together with rather than for their customers. McColl-Kennedy et al. (2012) propose a typology of five cocreation practice styles that healthcare service managers can draw from to increase their customer's quality of life. Frow and Payne (2011) explicate how service managers can create and negotiate value propositions in reciprocal ways to facilitate the alignment of cocreation practices among multiple actors.

This and related work on value cocreation uses the guiding principles of S-D logic to further explore how, often complex, value cocreation processes involving broad sets of actors can be influenced, aligned and navigated. Similarly, work on customer engagement, highlighting the blurring boundaries of firms and customers, provides guidance for service managers to stimulate and coordinate customer's resource investments in the service process, especially those that go beyond pure purchase transactions (e.g., Brodie et al., 2011; Hollebeek et al., 2019; Jaakkola & Alexander, 2014).

Going one step further, more recent work on actor engagement—informed by S-D logic—offers strategies to encourage and coordinate resource investments of broad sets of actors to collectively cocreate value (Brodie et al., 2019). Such midrange theories provide pathways forward to facilitate (not manage!) value cocreation. The idea of facilitating, navigating and orchestrating service processes rather than managing them is important for service managers to consider, because it highlights that service processes are out of the control of one single actor. Many business models in the sharing economy, for example, are built on the idea of facilitating the engagement of actors. They provide platforms for users to connect and exchange service; however, they neither manage nor control the service provisions of their users, instead they trust self-governance through, as previously mentioned, rating and review mechanisms.

Service Ecosystem Design and Innovation Strategies

S-D logic's systemic perspective led further to the development of midrange theories related to service design and service innovation. Vink et al. (2021), for example, reconceptualize service design to embrace the complexity of service ecosystems and their emergent nature. Their work paves the way for service designers to rethink their 'unit of design' from developing service offerings to facilitating the emergence of desired forms of value cocreation and change in service ecosystems. It promotes collective design processes involving broad sets of actors, and, instead of touchpoints and interfaces, it focuses on institutional arrangements as the 'design material'. Similarly, Wieland et al. (2017) question traditional strategic thinking by reconceptualizing business model design from a firm-centric activity that promotes owning key resources and altering sets of decision variables to one that highlights the facilitation of broad institutional change processes. The authors develop a new systemic business model framework.

To reiterate, S-D logic states that service processes and value cocreation are coordinated by institutional arrangements (Vargo & Lusch, 2016). That is, service innovation can only be truly understood, when institutions and institutional change are considered. To advance the study of innovation in complex adaptive service ecosystems, Chandler et al. (2019) develop midrange theory to nurture systemic innovation. They suggest, rather than focusing too narrowly on the innovation process, service and innovation managers should also revise norms, rules and beliefs that support new ideas. Furthermore, these efforts should not only be directed toward potential customers but also toward other private, public and market-facing actors. Similarly, Jonas et al. (2018) suggest that in order to cover the complexity of inter-organizational innovation in service ecosystems, it is important to understand stakeholders' engagement in innovation processes on the individual as well as on the organizational level.

Methods for Service Design

S-D logic informed frameworks and strategies require methods and tools that facilitate systemic design and innovation processes. Recently introduced methods from design science research (Hevner, 2007) and action design research (Sein et al., 2011) to the field of service research can support service

managers to fuel, catalyze and navigate service innovation (Grenha Teixeira et al., 2017; Sudbury-Riley et al., 2020). Sudbury-Riley et al. (2020), for example, use design science research to develop a new method, the Trajectory Touchpoint Technique that aids understanding customer experiences throughout the service process, while also taking multiple (micro-, meso- and macro-) service ecosystem levels into account to fuel service innovation.

Further, as Fehrer and Wieland (2021) point out, ecosystem design methods need to reflect complexity and ongoing, iterative processes of learning and change on various system levels. The authors reviewed a set of methods, initially developed in the field of sustainability research, that address systemic complexity. These methods include, for example, Backcasting and Eco-design (e.g., Heyes et al., 2018) as ways of incorporating environmental considerations into product and service design. Furthermore, the Systems of Practices approach with tools, such as Business Origami (Hobson et al., 2018), allows for collectively mapping and modeling complex systems by explicitly emphasizing the interplay between elements that occur over time and the context they occur in. Similarly, Giga-Mapping facilitates the creation of system maps across multiple layers and scales, supported through various visual artifacts (Sevaldson, 2017). These and other systems design methods support service managers and service designers with a tool kit not only to visualize the complexity of service ecosystems, but also to engage various sets of actors in the design process.

To summarize, we have shown that S-D logic provides an alternative lens to think about service and value cocreation and have pointed toward some selected S-D logic informed strategies, methodologies and conceptual frameworks to transfer this service logic into service management practice. Table 1 provides an overview of S-D logic informed strategies and related service design methods that can support service leaders in their efforts to respond to increasingly complex service environments and shape the service ecosystems of which they are part (Vink et al., 2021; Nenonen & Storbacka, 2020).

In the next section, we will provide an outlook for the service management—what we refer to as 'Service Management 4.0'. We will show how nascent S-D logic informed work is starting to provide a more systemic foundation to make sense of technological breakthroughs, social issues and environmental challenges of complex contemporary service environments. We will also outline where we see potential for future service research and service management applications.

Table 1 S-D logic informed strategies and methods for contemporary service management

S-D logic informed strategies		Related service design methods	
Cocreation and engagement strategies	• Create value together with rather than for customers and other actors (e.g., Karpen et al., 2012) • Understand customers' and other actors' experiences and experience journeys (Becker & Jaakkola, 2020) • Negotiate value propositions in reciprocal ways with other actors (Frow & Payne, 2011) • Motivate, empower and measure customers' and other actors' voluntary resource investments that go beyond the core, economic transaction (e.g., influencing, co-developing, augmenting, referring, etc.) (Brodie et al., 2019; Hollebeek et al., 2019; Jaakkola & Alexander, 2014)	*Value Mapping* (Bocken et al., 2013; Breuer & Lüdeke-Freud, 2017)	Process of developing shared value propositions for diverse stakeholders, such as customers, suppliers and governments. By taking a network rather than a company-centric perspective, the value-mapping tool offers a way to integrate the perceptions of multiple stakeholders
		Value Shaping (Oskam et al., 2018)	A mutually constitutive engagement process between stakeholders in which networking helps to refine and improve the business model and vice versa the business model spurs the expansion of the network
		Stakeholder Preference Mapping Technique (Lou et al., 2021)	Method to identify stakeholders' preferences and the influence of these preferences on their decisions so that organizations can facilitate stakeholder engagement in ways that meet their strategic goals
		Trajectory Touchpoint Technique (Sudbury-Riley et al., 2020)	Service design methodology that harnesses customer experiences for enriched understanding of value throughout multilevel service components to ultimately increase innovativeness
		MINDS Method (Grenha Teixeira et al., 2017)	Three-level service design approach including (1) designing the service concept (e.g., value the service provides to support a given customer activity); (2) designing the service system (e.g., defines how people, frontstage and backstage processes, technology support and other elements will be orchestrated to support the service concept) and (3) designing the service encounter (e.g., frontstage and backstage processes that support specific customer actions in specific service interfaces)

Service ecosystem design and innovation strategies	• Embrace the complexity of service ecosystems and their emergent nature (Vink et al., 2021; Chandler et al., 2019) • Rethink the 'unit of service design' from developing service offerings and managing service processes to orchestrating, navigating and shaping viable service ecosystems (Nenonen & Storbacka, 2020) • Promote collective design processes involving broad sets of actors and, instead of touchpoints and interfaces, focus on institutional arrangements as the 'design material' (Vink et al., 2021)	*Systems of Practices Design/Business Origami* (Hobson et al., 2018) *Backcasting and Eco-design* (Heyes et al., 2018) *Giga-Mapping* (Sevaldson, 2017) *Business Patterns* (Beynon-Davies, 2018)	Practice of collective mapping and modeling complex systems by explicitly emphasizing the interplay between elements that occur over time and the context they occur in The practice of developing scenarios aimed at exploring the feasibility and implications of achieving a certain desired end-point in the future, while systematically incorporating environmental considerations into the business innovation process A systems-oriented design practice, mapping systems across multiple layers and scales drawing on soft systems methodology, critical systems thinking and systems architecting Drawing on design science, this design method describes ways of visualizing existing and envisaged business patterns through the visual artifact of a comic. It allows for creating discourse between multiple actors in complex supplier-buyer retail relations

4 S-D Logic Informed Service Management 4.0

From Industry 4.0 to Service Management 4.0

The Fourth Industrial Revolution describes a new era that 'industrialized nations' are entering, characterized by simultaneous waves of technological breakthroughs, merging the physical (e.g., Internet of Things [IoT], autonomous driving, smart materials), digital (e.g., AI, 5G, Blockchain) and biological (biomimetic robots, bio- and nanotechnologies) worlds (Schwab, 2016; World Economic Forum, 2021a). While the Fourth Industrial Revolution is often reduced to greater automation and digitalization of industrial processes (i.e., Industry 4.0), its original vision is much broader. The World Economic Forum (the platform that initially coined the term in 2016) discusses the Fourth Industrial Revolution as part of a broader agenda that is set up around: healthy futures, ways forward toward fairer economies and better business, global cooperation for social justice, strategies to save the planet and technology for good (World Economic Forum, 2021a). The forum connects technological progress with the requirement for solving today's grand challenges of climate change and social inequalities.

This agenda aligns with recent research agendas for future service research (Bolton, 2020; Furrer et al., 2020) and agendas of leading service organizations (e.g., IBM, 2019; McKinsey & Company, 2021). Bolton (2020) encourages service scholars to shape the future of the service discipline by building knowledge that is useful to businesses, individuals, communities, policy makers, society and the bio-environment. She explicitly refers to future service challenges arising from socioeconomic, demographic, technological, environmental and social changes and advocates for more study of sustainability in service ecosystems, automation, the nature and future of service work, inclusion, equality and well-being of service workers, service in subsistence markets and the societal implications of new technologies. She points toward the great potential for the service discipline to directly influence the generation and adoption of new ideas that can create a better world. Similarly, Furrer et al. (2020) refer to the important role of service ecosystem research and the integration of multiple stakeholders in co-designing and cocreating sustainable solutions. The authors further emphasize service robots, blockchain technology, the IoT, smart and access-based service as important areas for future research.

From mapping calls for future service research (Bolton, 2020; Furrer et al., 2020) and topics on the agenda of the World Economic Forum (World Economic Forum, 2021a), we arrived at four overarching themes that, arguably, begin to form a new era of service management—one that we define (in

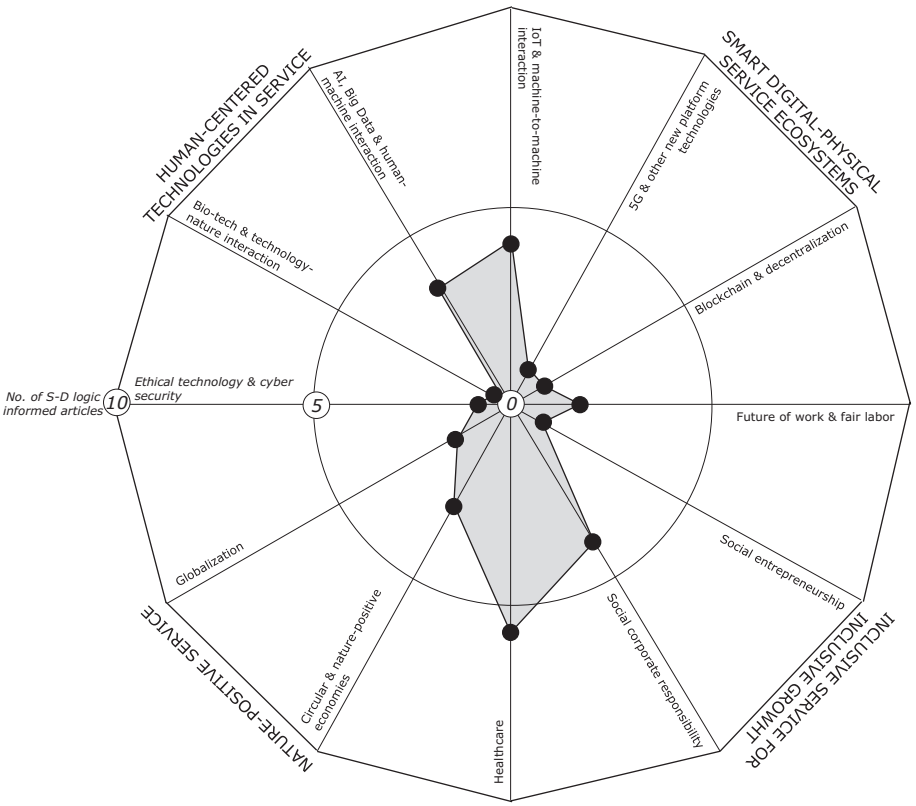

Fig. 1 Service Management 4.0 and its penetration in S-D logic research

reference to Industry 4.0) as Service Management 4.0. These four themes include (1) human-centered technologies, (2) smart (cyber-physical) service ecosystems, (3) inclusive service for inclusive growth and (4) nature-positive service. In the remainder, we will present nascent contributions of S-D logic informed research related to these themes and point toward implications for the future of service management. Figure 1 provides an overview of the themes and subthemes of Service Management 4.0 and illustrates (schematically) the penetration of emerging S-D logic informed research related to these themes.

Human-Centered Technologies in Service

Technologies, including automation, robotics and AI, are profoundly expanding the variety of service interfaces and therefore the possible ways for customers, firms and other actors to interact across their experience journeys and

create an unprecedented amount of data (Akter et al., 2020; Roy et al., 2019). Urbinati et al. (2019) point out that Big Data has recently emerged as a new digital paradigm, one that service organizations need to adopt in order to both transform existing business models and nurture their innovation activities. Understanding digital technologies and how they can enhance service experience is a budding theme in service research. However, most studies focus on the way companies can create and capture value from Big Data. There is a lack of complete understanding how companies and users can cocreate value through Big Data. We argue that a more holistic and integrated view of data providing firms, data providing customers and other actors can support service managers and scholars to develop solutions for mutual benefit.

Related to this are ethical considerations of Big Data management. Breidbach and Maglio (2020) offer new insights into how using machine learning, AI and Big Data sets can lead to unethical implications and list 13 ethical challenges related to data-driven business models. The authors call for future research to use advanced Big Data analytics more effectively and ethically. Our review shows that ethical discussions related to Big Data and cyber security are underdeveloped in service research and service management. Hence, we encourage scholars and practitioners to further drive this debate. S-D logic can provide potentially interesting frameworks to discuss ethical challenges more systemically and from an institutional perspective.

Further, Mikalef et al. (2020) suggest using complexity theory (one of S-D logic's foundational theoretical frameworks) to cover the systemic and interrelated challenges of implementing Big Data in business processes. The authors apply a fuzzy-set qualitative comparative analysis (fsQCA) to grasp the complexity of Big Data analytics. We see much potential in using this and other mix-method approaches to draw a more complete picture of the wicked issues related to fast-paced technological change. Similarly, service managers may want to consider different data sources (e.g., unstructured text and image analysis, netno- and ethnographic analysis, focus groups, etc.) that complement insights from dashboards like Google Analytics to develop a holistic picture for what customers and other actors in their network need.

Smart (Cyber-Physical) Service Ecosystems

The convergence of the physical and digital sphere has the potential to redefine a wide range of industry sectors (Langley et al., 2021) and is another important field for service research and service management to consider. Technological disruptions such as the IoT, autonomous devices and rich

media (virtual and augmented reality) are creating smart environments that are transforming industry structures, processes and service (Buhalis et al., 2019). Buhalis et al. (2019) predict that the emergence of smart environments will redefine how customers and other actors experience their environment. Fundamentally, IoT and smart technologies allow everyday things to 'think, interact and connect' through sensor-enabled materials, such as smart clothes and smart surfaces (Ng & Wakenshaw, 2017).

This has important implications for both industrial and customer-focused service management. As the complexity and intensity of connections increase through smart devices, there is a need to understand smart service ecosystems from a holistic and integrated perspective. Langley et al. (2021) develop a layered framework and show how the IoT influences organizations on micro, meso and macro levels. Gupta et al. (2020) examine how authorities on a macro level orchestrate smart city data ecosystems through openness, diffusion and a shared vision. This recent work points to the importance of understanding technological developments and connectivity embedded within broader social and institutional structures. We see great potential for future service research extending the 'social' component in cyber-physical systems. For service managers, we recommend considering the social structures within and beyond their service organizations when evaluating and implementing new technologies.

Inclusive Service for Inclusive Growth

Inclusive growth means economic growth that is distributed fairly across society and creates opportunities for all. In many OECD countries, inequalities are at their highest levels in 30 years and are widening and further rising due to the COVID-19 crisis (OECD, 2021). Current challenging times require service managers to design service for inclusion that provides customers and other actors in the service ecosystem with fair access to service, fair treatment during the service process and fair opportunities to exit service (Fisk et al., 2018). Service inclusion means understanding service ecosystems and the fundamental role of service in human well-being (Bolton, 2020; Fisk et al., 2018).

While highly important, much of the discussion related to human well-being to date is related to healthcare service (e.g., Brodie et al., 2021; Peltier et al., 2020), while other social and service inclusion discussions seem to be mainly in the context of CSR (Iglesias et al., 2020; Simpson et al., 2020). In practice, social responsibility and inclusion are often reduced to

communication efforts of the social media departments (Okazaki et al., 2020). Drawing on Fisk et al. (2018), we argue that service inclusion is a systemic challenge that involves all value cocreation activities of a service organization. Hence, we promote future research related to the complex challenges of service inclusion on all levels of the service ecosystem.

Further, we see much potential in service research related to social entrepreneurship and social entrepreneurial ecosystems. While recent research on social entrepreneurship advocates for a holistic and systemic perspective (Weerawardena et al., 2019), social entrepreneurship has—with a few notable exceptions (e.g., Sigala, 2019)—not been discussed in the field of marketing and service research. The intersection between social entrepreneurship and S-D logic has the potential to produce frameworks, strategies and methods for more inclusive socially driven value cocreation and service design.

Nature-Positive Service Ecosystems

Environmental sustainability, similar to social inequality, represents a key challenge facing humanity. Issues such as climate change, pollution, destruction of biodiversity, (food) waste, water scarcity and natural resource depletion are viewed as pressing environmental issues that pose significant threats to societies around the globe (Fehrer & Wieland, 2021). This brings sustainability to the top of many strategic agendas of corporate and industry boards and to the heart of Service Management 4.0. As Gallo et al. (2018) point out, environmental challenges are so vast that a real transition toward nature-positive business demands joint efforts. The authors argue that sustainability efforts of a single organization can barely lead to success.

That is, for service organizations to succeed in their sustainability actions, they need to engage 'allies' to collectively drive change. Furthermore, as we have explicated in the previous sections, sustainable service innovation requires efforts related to revising and shaping the norms, rules, beliefs and measurement instruments that define business and economic success. We encourage service managers and service scholars to further explore design frameworks, methods and measurement tools related to service ecosystems and value cocreation in the context of sustainability and the circular economy.

Guyader et al. (2019) point to the problem that sustainable service often means reducing the negative environmental impact of existing services. However, to fully grasp the idea of nature-positive service, it is important to understand the resourceness of natural resources, that is, the active part that natural resources play in the service process (Vargo, 2018). Guyader et al.

(2019) promote a view of nature-positive (green) service that includes resource integration processes through recreation and renewing of the natural resources to increase their resourceness. Nature-positive and sustainable service research is still in its infancy and provides huge potential to apply and further develop ecosystemic frameworks for service design and service innovation.

5 Conclusion

This chapter provides a review of and outlook for S-D logic informed service research and service management. It shows how complex contemporary service environments can be better understood, when taking a systemic perspective that promotes value cocreation processes of broad sets of actors. It offers a set of strategies and methods for service managers to draw from to operate successfully in complex service ecosystems. It highlights strategies for service managers to move forward in today's challenging times. S-D logic offers an alternative lens to discuss, rethink and navigate complex and intertwined issues spanning a possible new era of Service Management 4.0. We encourage service researchers and service managers to apply and further develop S-D logic informed frameworks, strategies and methods related to this new era, including human-centered and ethical technology in service, smart (cyber-physical) service ecosystems as well as inclusive and nature-positive service.

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