Received 11 March 2022
Revised 31 March 2022
24 April 2022
26 May 2022
Accepted 28 May 2022

Technologies in service communication: looking forward

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Abstract

Purpose – The aim of the paper is to bring together the state-of-the-art research and theory from the communication and service research fields to examine the implications of new technologies for the future of service communication.

Design/methodology/approach – The authors apply the media affordances perspective to develop an overarching framework that facilitates theoretical conceptualization and research question formulation on the constantly evolving technology-enabled communication formats.

Findings – Central to the forward-looking framework of service communication facilitated by new technologies, this paper identifies various affordances at the service frontline where service customers and providers interact with the technologies. Customers are empowered to expand their roles blurring the role distinction between service providers and customers. Depending on what kind of relationships service providers form with the emerging technologies, they may develop new service communication strategies and new interaction possibilities with customers. As a result, the technologies' affordances would facilitate value creation outcomes that can manifest in the external (whether it is in the physical or digital space) and/or internal (one's own mind) spaces. Applying the affordances framework, the authors map out four key areas of future research regarding new technologies in service communication: (1) social media technologies; (2) multisensory reality-enhancing technologies; (3) AI-enabled voice assistants; and (4) AI-driven service robots.

Originality/value – This paper proposes an original theoretical framework to stimulate and guide future research and theory development regarding the implications of new technologies in the constantly evolving and complex service communication landscape.

Keywords Innovation, Technology, Affordances, Services communication

Paper type Research paper

Introduction

Recent developments in customer-facing technologies, such as enhanced reality technologies, social networking technologies, smart mobile devices, virtual assistants, social robots, smart home appliances, and self-driving cars, have propelled a significant evolution in service communication. Furthermore, service customers and providers use novel technologies to store, exchange, retrieve, and analyze increasingly large quantities of information at a rapidly decreasing velocity and at lower costs, which fuels the development of ever more sophisticated machine learning and artificial intelligence (AI) technologies (Flavian *et al.*,

Journal of Service Management
Vol. 33 No. 4/5, 2022
pp. 648-656
Emerald Publishing Limited
1757-5818
DOI 10.1108/JOSM-03-2022-0075

2021). These technologies offer the potential for communications among various actors in services to become more diverse, highly efficient, and to transcend time and space (Hancock *et al.*, 2020; Huang and Rust, 2021).

The technologies' transformative nature would likely impact different stakeholders in services differently and bring various kinds of benefits and challenges to different aspects of service communication. Some emerging technologies have the potential to change the information asymmetry and power imbalance between service providers and customers (e.g. see the article by Ciuchita *et al.* (2022)). These technologies may also enhance the scope and extent of customers' ability to gain and share information and experiences by transcending the spatial and temporal boundaries of the physical world (e.g. see Hilken *et al.* (2022)).

Other technologies offer possibilities for human-like machine touchpoints and they create a shift from mainly human communication between various actors in the service domain to non-human communication between humans and machines (e.g. see Becker *et al.*, 2022 and Grewal *et al.*, 2022). In particular, the emerging AI-based service communication systems show great potential to move beyond the automation of human service and communication tasks to make autonomous decisions, recommendations, and self-generated service communications with agency. These new technologies have an increasing capability to exert agency and exhibit human-like characteristics which can redefine the roles of service customers and providers and their communication at the service frontline. This development pushes us to reevaluate our conception of what constitutes communication and challenges our longstanding assumptions and conceptions of service communication processes and outcomes.

In its discipline, communication is generally conceptualized as the production, exchange, processing, and effect of some types of symbols or signal systems used to accomplish certain goals (Berger and Chaffee, 1987). As such, we would argue that the agency of the communicator and the involvement of symbols or signal systems that are produced and received by some type of sensory system would be essential elements. Therefore, communication is no longer confined to human-to-human communication or expanded versions of such communication through the mediation of technologies. With new technologies existing at certain levels of self-agency, and autonomous communication capabilities, distinguishing between human and non-human communication, and between technology-mediated human communication and human-technology interaction might not be as critical or fruitful as it used to be for future research. Perhaps, a more fitting question for today's service communication research might be "What isn't communication?" rather than "What is communication?"

From the service perspective, in essence all physical and virtual service encounters involve multifaceted communicative actions, which affect cooperative behavior with others and the perception of the service. The contemporary service view argues that communication processes varying in frequency, actions, modality, and content enable co-creation of value involving various actors (Gustafsson *et al.*, 2012). In this logic, the value is derived from the integration of (un/intentional) messages from any sources contingent on the context, time and individual (Finne and Grönroos, 2017). Service actors deploy communication technologies that offer potential possibilities to enhance existing relationships and to develop new relationships with customers. For example, through virtual chatbots, a bank can facilitate 24/7 ongoing conversations with its customers and, therefore, enhance their service experience and relationships. Such non-human actors in services are increasingly treated as social interaction partners (Van Pinxteren *et al.*, 2020). In turn, this implies a decreasing control of traditional service providers and the evolution of non-human service relationships with and in between non-human actors.

Against this background, the aim of this special section is to bring together the state-of-the-art research and theory from the communication and service research fields to examine

the implications of new technologies for the future of service communication. The four articles included in this special section introduce cutting-edge technologies that transform communication processes and effects, and give rise to new formats of service communication. As the overarching framework for organizing and synthesizing the articles, we applied the technology affordances perspective, which can facilitate better theoretical conceptualization and research question formulation in the constantly evolving and complex communication formats emerging from technological advancements.

The affordances perspective for research on new technologies in service communication

Communication scholars have long examined humans' interactions with other humans through technology, as well as humans' interactions with technologies as a form of communication (Sundar, 2020). In the communication technology research field, traditionally the distinction between technology-mediated human communication and human-technology interaction was considered important, and such a distinction has been maintained in the evolution of research and theory. However, with new technologies becoming more active, autonomous, and able to read and respond to human actors, our research focus has gradually expanded into the affordances perspective of new technologies which enable or facilitate certain human actions and the resulting outcomes (Evans *et al.*, 2017; Sundar, 2020).

The original conceptual definition of affordances consisted of what "the environment offers the animal, what it provides or furnishes, either for good or ill" (Gibson, 2015, p. 119). This concept was initially conceptualized, examined, and theorized as representing the material features or design aspects of an object that informs its users how it should be used. Later, in the communication technology research field, however, the affordances concept evolved into a more relational and multidimensional construct that represented interactions and relationships between technologies and users that shaped and influenced users' actions with technologies and the resulting outcomes (Evans *et al.*, 2017). Despite many different conceptualization approaches and operationalization of affordances in diverse contexts, the core idea of "action possibilities" for an object or technology in the affordance conceptualization is intact. Applying this conceptual definition, we define technological affordances in the service communication context as a dynamic, multifaceted, relational construct that represents the communicative action possibilities offered by the technologies. These possibilities enable or constrain certain formats of communication between service actors, resulting in specific value creation outcomes.

The affordances perspective emphasizes the multidimensional and relational nature of the roles and impact of new technologies on the interactions and relationships between technologies and users (Beh *et al.*, 2020). Rather than focusing on specific material features of new technologies and formats of communication, this perspective helps researchers develop broader and higher-level abstract conceptualization and explication of new technologies. It would also facilitate the development of a more theoretically meaningful research agenda and more balanced perspectives regarding potential positive and negative roles and influences of new technologies.

For example, the interactivity affordance and traceability affordance offered by many new digital communication interface technologies and social media technologies would likely facilitate technology users' input, heighten personal agency and control over communication interface features, and provide enhanced opportunities to make and maintain connections and information-sharing. This can facilitate and encourage the generation of and sharing of user-created content and extensive user-to-user interactions (Evans *et al.*, 2017; Sundar *et al.*, 2017). The modality affordance and immersive affordance offered by various reality-enhancing technologies (e.g. AR, VR) facilitate increased perceptual bandwidth, expanded

sensory experiences, and a higher sense of agency, which can lead users to engage in communication on a deeper level and absorb information more effectively and efficiently (Sundar *et al.*, 2017). Service organizations, their employees, and customers might not use all the features provided by new technologies or engage in all ranges of new communication formats. However, various affordances offered by new technologies could still influence all aspects of service communication and generate communication effects by functioning as heuristic cues that trigger certain cognitive heuristics on the users' side as well as influencing their perceptions, engagement with, and evaluation of the communication and overall service experiences (Evans *et al.*, 2017; Sundar *et al.*, 2015).

Figure 1 illustrates our overall conceptual framework for depicting the forward-looking research field of new technologies and formats in service communication based on the affordances perspective. The emerging technologies provide various affordances, or action possibilities, at the service frontline, where service customers and service providers interact with the technologies as well as with each other. This conceptualization extends the research focus from the use of technologies and its effects toward a broader value-creation logic involving multiple potential actors and their action possibilities. Our framework posits that new service communication technologies develop certain levels of agency and human-like characteristics (or anthropomorphism) (Odekerken-Schröder *et al.*, 2022). This, in turn, provides various service actors with such affordances as interactivity, human conversation, modality, immersion, traceability, and anonymity. These proposed affordances are not an exhaustive list of all possible affordances emerging in future service communication, but they represent key affordances discussed in the articles included in this special section.

These technological affordances would enhance actions by service communication actors, resulting in value-creation outcomes. As depicted in Figure 1, service customers' potential actions and relationships with the emerging technologies would empower them to expand their roles as the user, creator, sharer, or amplifier, and hence blur the role distinction between the service provider and the customer. While a typical service provider might lose some control to the empowered customers, new technologies also offer a wide range of action possibilities for the provider as well. Depending on what actions service providers might take, and what kinds of relationships they form with the emerging technologies, they could enhance or substitute their service communication strategies and practices with new formats,

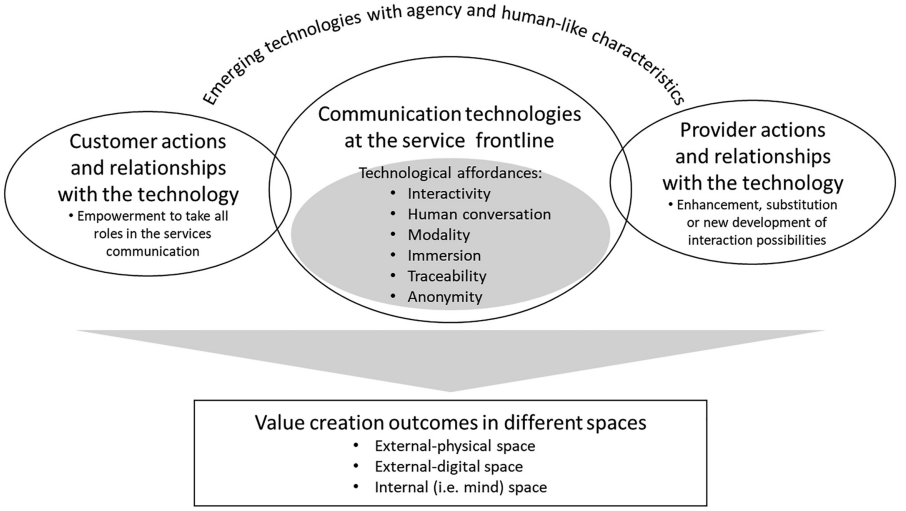

Figure 1.
Forward-looking framework of service communication facilitated by technologies

or even develop all new interaction possibilities with customers. As a result, the new technologies' affordances would facilitate various value-creation outcomes that can manifest in the external (whether it is in the physical or digital space) and/or internal (i.e. one's own mind) spaces (Figure 1).

Applying the affordances perspective across four key research areas in service communication

The types of emerging technologies that offer potential enhancement of service communication take many different forms, such as human-like service robots or chatbots, AI-based smart devices and virtual assistants, reality-enhancing technologies, and various social media technologies. Applying the affordances perspective, we mapped out four key areas of research regarding New Technologies and Formats in Service Communication according to different kinds of affordances offered by these new technologies: (1) social media technologies that afford multimodality, interactivity, visibility, and anonymity affordances, which enable and empower service customers to create, curate, and share user-created content; (2) multisensory reality-enhancing technologies that offer multimodality, interactivity, and immersion affordances, which invite and trigger new types of digital communication; (3) AI-enabled voice assistants with various AI affordances such as human conversation affordance and traceability affordance, which can enhance the trust of customers in the system and improve goal attainment; and (4) AI-driven service robots with various AI affordances, including human-like conversation affordance, which can generate anthropomorphic perceptions and invite emotional communication between machines and human actors, and can lead to positive emotional experiences or alleviate negative emotional experiences.

It is important to recognize that service communication research is inherently interdisciplinary. To develop a future research agenda for each area, we invited groups of prominent scholars from multiple disciplinary and theoretical backgrounds to develop original conceptual papers. The papers produced by the four teams of scholars have gone through rigorous blind review and revision processes, which resulted in the articles included in this special section.

User-created communication (UCC)

The article by Ciuchita *et al.* (2022) focuses on the dialogical communication processes initiated by service customers who share their experiences, and which is termed user-created communication (UCC). The value creation for the actors emerges from the dynamic interplay between the actors, and the place and content of communication which is enabled by social media technology affordances. Interactivity, visibility, and anonymity represent the three key UCC affordances of service communication via social media technology platforms. The article delineates the affordances and presents related opportunities and challenges for value creation, mostly in the digital space.

First, interactivity may enable proactive experience-sharing of service customers without geographical constraints. But it may also challenge the service providers, since the conversation dynamics might be beyond their control. Second, the low entry barriers facilitate visibility of a service provider's communication at low costs; at the same time, the low entry barriers might be harmful since users can reach a large audience and share experience about (perceived or actual) service failures. Third, the varying degree of users' anonymity across the digital communication platforms might support the opportunity to elicit honest and helpful feedback to overcome social desirability bias, but it may also lead to brand trolling and cyberbullying through (non-human) actors.

Neuro-enhanced reality (NeR)

The article by Hilken *et al.* (2022) introduces the concept of neuro-enhanced reality (NeR) as a novel extension of the reality-enhancing technology and provides a breakthrough research agenda for future research and theory development in the area of reality-enhanced service communication. The reality-enhancing technologies, such as Augmented Reality (AR) and Virtual Reality (VR) technologies, offer affordances of visual integration of the physical and digital aspects of services, as well as interactivity, modality richness, and immersion affordances. These technologies have the capability to blur the division between the physical and digital space and expand the sensory experiences, especially in visual communication which may transcend the spatial boundaries of the users.

Pushing these boundaries even further, the authors present a whole new level of reality-enhanced communication, which does not just advance the technology-enhanced visual communication but enables direct information exchange between digital signals and the human brain. This represents what the authors call "digital-to-neuro and neuro-to-digital communication" and fosters value creation in the mind sphere. This expands the scope of reality-enhanced service communication, not only by lifting some of the limitations of the current AR/VR technologies, but also by expanding what people can experience beyond the visual images of digitally-created or digitally-enhanced reality, including all types of sensations. While the research agenda is developed based on the existing research literature and theory regarding currently available reality-enhancing technologies, the authors' discussions of the potential of NeR technology, its unique affordances facilitating digital-to-neuro and neuro-to digital communication, and its implications for future service communication practice and research are futuristic and thought-provoking. Beyond the research problems focusing on the exciting opportunities and potential positive effects of NeR, the authors also propose critical research directions examining the potential challenges and moral, ethical, and legal issues surrounding the NeR technology and its application to service communication.

AI-enabled voice assistants

The paper by Grewal *et al.* (2022) leverages the opportunities of service customers' communication with AI-enabled voice assistants which are integrated into devices such as smartphones or smart speakers. Reviewing various communication theories, the authors developed research propositions and predicted that the relative absence of other non-verbal cues provide service customers with a unique interplay between source, message and recipient characteristics, which, in turn, determines the service experience. Central affordances include the VA's humanness (e.g. tone of voice), creating a perception of decency and the source's intelligence creating trust, which was designed to deliver the promise. The customer's positive assessment may also hinge on the fit of the messages' formulation (abstract vs. concrete) and content (informational vs. transactional). In addition, the customer experience will be contingent on the recipient's relationship with VA. More specifically, the experience will be determined by whether the customer builds a partner-to-servant relationship.

The article proposes future research directions in order to explore the distinct interplay between the source, message, and recipient, and the dynamics of the customer journey. The distinct steps and goals across the customer journey determine the interplay and their impact on the customer experience. An intriguing research direction is one which forms a double-sided learning loop where, over time, the VA communication may become habitual and automatic for the customers, while at the same time, the underlying AI is iteratively becoming more advanced and accurate.

Service robots

The last article by Becker *et al.* (2022), examines new types of communication problems arising from the advancements of service robots with capabilities to engage in human-like

emotional communication with service customers. The evolving robotic and AI technologies offer a variety of affordances, including interactivity, human conversation, and seamless machine-human collaboration affordances, which can facilitate value co-creation benefiting both service providers and customers in both the digital and physical space. In the communication and psychology fields, extensive research has been conducted on the role and effects of emotion in communication processes and outcomes. Recently, research development across multiple disciplines on emotion AI and affective computing technologies offer great promise for improving and innovating the way human emotions are measured, understood, and responded to, enabling more natural human-machine interactions and communication.

Against this backdrop, the research area of service robots with capabilities to detect a wide range of discrete human emotions and to engage in AI-mediated emotional communication with humans is ripe for future research. This article proposes a useful conceptual framework for systematically exploring the new research area and an interdisciplinary research agenda structured around two dimensions: four emotional communication strategies required for different types of interactions, and three steps involved in the emotional communication process. The authors emphasize the great potential and growing importance of emotional communication conducted by service robots in the future service industry. They also identify critical questions to guide future research on the processes and effects of emotional communication by service robots, value added to the service providers as well as customer experiences, and potential risks and ethical issues.

Conclusion

The service industry is experiencing technology-driven disruptions and changes in the way individuals and organizations communicate with one another, exchange information, and provide and receive services. The research makes clear that new tensions, as well as new value-creation opportunities, will arise at the intersection of various service actors and stakeholders. These pose a host of important and intriguing questions to service researchers. Some of the phenomena might challenge our existing theories and understanding of service management and outcomes. To stimulate and guide future research and theory development, this special section synthesizes state-of-the-art research and theory from the communication and service research fields to examine the implications of new technologies for the future of service communication.

The four articles included in the special section introduce cutting-edge service technologies and propose conceptual frameworks and research agendas intended to move forward systematic research and theoretical advancement in the constantly evolving and complex service communication landscape. The authors examine how the technologies they focused on challenge traditional roles and relationships among various service actors and drive the development of new roles and relationships, resulting in new value-creation paradigms. Some of the technologies and phenomena, such as social media technologies, are familiar, and already widely adopted by various actors in the service domain, while others, such as the neuro-enhanced reality (NeR) technology, are not yet solidly established reality and might appear radically futuristic. Nonetheless, there is great value in looking forward into the near and distant future, as well as examining contemporary new technologies, and envisioning what the future might hold and what might be critical and fruitful research questions we should consider for the future of the field.

Not only do the articles propose optimistic possibilities and opportunities for new technologies for enhancing service communication and outcomes, but they also shed light on challenges related to acceptance and utilization of new technologies, and potential risks linked to various ethical and legal issues. While reading this special section collection, we

would encourage the reader to contemplate various implications of new technologies for different stakeholders (e.g. customers, service organizations, frontline employees) in the broader service delivery network and ecosystem and consider the dynamic tensions that might emerge from interactions between human and machine actors, as well as between humans representing each of the stakeholder groups. Of particular importance would be research that examines the macro-level, societal, and long-term issues linked to the adoption of new technologies in service communication. This is particularly important because both practitioners and researchers might get excited about the unique affordances offered by new technologies and their potential benefits, and examining the immediate and intended outcomes of the affordances might receive greater research attention. New technologies and new communication formats could generate unintended, possibly negative, social consequences beyond the pragmatic communication effects they are designed to achieve. However, compared to short-term, intended effects, longer-term effects and macro-level consequences are often much harder to envision and observe.

In anticipation of the continuing rapid evolution of service communication driven by technological innovations and the growing importance of communication in services, more systematic research is warranted to address the critical research problems identified in this special section collection. Such future research would benefit from making interdisciplinary connections to other related disciplines. There are many scholars from different disciplines working on different aspects of technology-driven communication problems, and the research and theories developed among neighboring social science disciplines can inform and stimulate research innovation in the service research field. It is our hope that the collection of articles included in this special section will spark and advance innovative future research on new formats of service communications propelled by new technologies that are currently emerging and those yet to come.

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