
Editorial: Research horizons of smart service technologies – Special section editorial

Editorial

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Introduction

Smart service is service delivered to or via connected devices with the ability to sense their surrounding and circumstances (e.g. [Allmendinger and Lombreglia, 2005](#); [Wunderlich et al., 2015](#)). Such smart service is thus enabled by different technologies such as Internet of Things (IoT), artificial intelligence (AI), robots, self-service devices, virtual reality (VR) or augmented reality (AR), all of which have begun to radically transform individuals, markets, businesses and societies (e.g. [Gummerus et al., 2019](#); [Kunz et al., 2019](#); [Langley et al., 2021](#); [Porter and Heppelmann, 2014](#); [Rauschnabel, 2021](#); [Wirtz et al., 2018](#)). Consumers are integrating an ever-increasing number of smart devices as enablers of smart services ([Wunderlich et al., 2015](#)) into their daily lives: About 394 million households worldwide have used smart home products and services in 2022 and this number is expected to increase to more than half a billion by 2027, more than 148 million smart wearables were sold in the third quarter of 2023 alone, and the market of service robots for personal and domestic use is expected to exceed 11 billion US dollars in 2024 ([Statista, 2024a, b, c](#)).

This increase in usage highlights the meaning of smart service technologies and their value to users. Consequently, it is not surprising that prior research emphasizes the “bright sides” of smart service technologies (i.e. its benefits and value creating potentials) such as increased customer satisfaction (e.g. [Gäthke, 2020](#)), convenience ([Lau et al., 2018](#)) and independence ([Kim et al., 2015](#)). However, researchers are also alert to the “dark sides” of these technologies (i.e. its threats and value destructing potentials) like privacy concerns (e.g. [Souka et al., 2024](#)), perceived technostress (e.g. [Ayyagari et al., 2011](#)) or ethical and legal challenges (e.g. [Schleef et al., 2023](#)). This Special Section aims to foster a comprehensive dialogue that explores both the positive and negative aspects of smart service technologies, presenting three insightful research articles that delve into distinct facets of this domain. While these articles provide in-depth analysis and findings, our editorial discussion also features prospective research questions that warrant further exploration in the area of smart service technologies.

First, the article “*Smartness Unleashed: A Multilevel Model for Understanding Consumers’ Perceptions and Adoption Across a Myriad of Smart Offerings*” by Antje Fricke, Nadine Pieper, and David M. Woisetschläger investigates consumers’ perceptions of smartness of the offerings and its impact on the adoption of various smart offerings. The study introduces a multilevel model that analyzes smartness profiles based on five distinct facets (actuation, dynamism, awareness, connectivity and humanlike interaction), exploring whether they promote or impede the adoption of smart offerings. The research, employing scenario-based quantitative studies on 28 smart products, utilizes multilevel structural equation modeling to test the conceptual model, considering the nested data structure. The findings highlight that smartness enhances usage intention

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through adoption drivers such as enjoyment and usefulness, while reducing usage intention through adoption barriers like intrusiveness. The article contributes to the special section on smart service technologies by providing insights into perceptual differences of smartness and its impact on technology adoption.

The second article “*Serving customers through chatbots: Positive and negative effects on customer experience*” by Angelo Ranieri, Irene Di Bernardo and Christina Mele focuses on chatbots as an example of smart service technologies. The article provides a comprehensive analysis of the role of chatbots as a form of smart service in online retail. Through a discourse analysis of over 7,000 customer–chatbot interactions, the study identifies seven key themes reflecting the relational, cognitive, affective and behavioral dimensions of customer experience. These themes include: interaction quality, information gathering, procedure literacy, task achievement, digital trust, shopping stress and shopping journey. The study identifies both positive and negative aspects of each theme with respect to customer experience, underlining the complexities of integrating smart services in digital service encounters. Overall, the results contribute to our understanding of the dual impact of smart service technologies like chatbots in the realm of customer service. The findings hold actionable insights into the successful implementation of chatbots in customer service and caution service managers to particularly consider the (unintended) negative consequences of relying on smart service interactions.

Finally, the third article considers advertising as a context in which smart service such as location-based advertising (LBA) plays an increasingly important role. Although LBA offers several benefits, such as greater personalization and context-specificity of advertising for consumers, the effectiveness and acceptance of this smart service is overshadowed by consumer concerns about privacy. In their article “*The role of privacy-related factors in consumer perceptions of smart advertising*” Chih-Hui Shieh, I-Ling Ling and Yi-Fen Liu focus on this dark side of LBA and seek to disentangle the effect of various privacy-related factors (i.e. type of LBA, privacy self-efficacy and consumer generation) on consumers’ perceptions of value-in-use and their intention to use LBA. Within two experiments conducted in the field, they reveal that pull- versus push-LBA increase consumer usage intention by heightening consumers’ perceptions of ease of use and perceived usefulness (here conceptualized as value-in-use). Still, the strength of these effects depends on privacy self-efficacy and consumer generation. The results of Liu *et al.* provide a better understanding of the mechanisms behind privacy-related factors, which can be used by practitioners to design better LBAs and thus promote adoption of smart service in advertising.

Collectively, these articles underscore the multifaceted nature of smart service technologies, illustrating a spectrum where the bright sides of enhanced convenience, personalization and efficiency coexist with darker aspects like privacy intrusions and ethical dilemmas. This contrast between the positive and negative aspects helps us better understand smart services and encourages us to think about their wider effects on society, consumer behavior and business practices. As we transition to discussing future research directions, we need to reflect on how we can leverage the insights to design smarter, more user-centric services that responsibly address the challenges and embrace the opportunities presented by smart service technologies. In the concluding section, we will discuss concrete avenues for future research that warrant further investigation in this dynamic and evolving field.

Future research directions on smart service technologies

To identify future research paths in smart service technologies, we apply a framework consisting of two primary dimensions: the positive and negative aspects (bright sides vs dark sides) as the first dimension, and the focus on either the consumer or firm level as the second

dimension. A summary of this two-dimensional perspective of future research horizons on smart service technologies is presented in [Table 1](#).

Bright side of smart service technologies

In the broader domain of *consumer behavior*, prior research predominantly highlights the benefits and value-creating potential of smart service technologies, such as enhanced customer satisfaction ([Gäthke, 2020](#)), convenience ([Lau et al., 2018](#)) and independence ([Kim et al., 2015](#)). Additionally, studies have shown that engagement with smart services may boost consumer well-being through increased self-efficacy ([Henkens et al., 2021](#)) and reduced embarrassment in specific service contexts ([Pitardi et al., 2022](#)). Future research should continue exploring how smart services contribute to individual and collective well-being ([Heimann et al., 2023](#); [Henkel et al., 2020a](#); [Tikkanen et al., 2023](#)).

An important avenue for future research is examining how *firms* can leverage smart service technologies to create transformative value by potentially addressing key challenges of our times such as climate change, demographic shifts and social transformation ([Bilstein et al., 2022](#)). This includes integrating principles of service design to foster sustainable and environmentally friendly consumer behaviors ([Winterich et al., 2019](#)) and understanding how smart services can augment service employees, enhancing their well-being at work on the one hand, and their effectiveness and efficiency on the other hand ([Henkel et al., 2020b](#); [Bromuri et al., 2021](#)).

	Bright sides	Dark sides
Consumer level	<p><i>Enhancing Consumer Well-being:</i> Research on how smart services contribute to individual and collective well-being, self-efficacy, and reduced levels of embarrassment</p> <p><i>Promoting Sustainable Behaviors:</i> Investigate the role of smart services in encouraging environmentally friendly consumer behaviors and raising awareness about sustainability</p> <p><i>Understanding and Addressing Consumer Perceptions:</i> Focusing on how consumers perceive the benefits of smart services, including aspects like convenience and satisfaction</p>	<p><i>Privacy and Ethical Concerns:</i> Delving into consumer privacy issues, ethical dilemmas and understanding how these concerns impact consumer behavior and trust</p> <p><i>Psychological Consequences for Consumers:</i> Investigating the negative psychological impacts on consumers, such as technostress, detachment from reality and feelings of vulnerability</p>
Firm level	<p><i>Value Creation in Business Models:</i> Examining how firms can leverage smart services. Researching how principles of service design can inform the development and implementation of smart services within organizations</p> <p><i>Employee Augmentation and Support:</i> Exploring how smart services can be used to augment and support the roles of service employees, improving their work experience and efficiency</p>	<p><i>Managing Negative Consumer Perceptions:</i> Studying organizational approaches to mitigate negative perceptions and consequences of using smart services, such as consumer backlash due to privacy concerns</p> <p><i>Balancing Efficiency with Consumer Trust:</i> Exploring how firms can balance the efficiency gains from smart services with the need to maintain consumer trust and address ethical considerations</p> <p><i>Inequality and Accessibility:</i> Researching how firms can develop strategies to ensure that smart services do not exacerbate social inequalities and are accessible to a broader range of consumers</p>

Table 1.
A two-dimensional perspective on smart service research

Source(s): Table created by the authors

Dark side of smart service technologies

More investigation is needed into the dark side of smart service technologies around *consumer behavior*, which involves potential threats and value destruction. A critical issue is consumer privacy concerns, with the impact on smart service adoption varying based on consumer and technology characteristics (Lau *et al.*, 2018; Rauschnabel *et al.*, 2018). Additionally, future research could explore the negative psychological consequences for consumers, such as detachment from reality in AR/VR technologies, increasing technostress and potential threats to consumer vulnerability and rising inequality due to uneven access to technology.

From an *firm perspective*, there is a need to study how service providers can deploy smart service technologies like bots in customer service, while avoiding (unintended) negative consequences such as poorer service perceptions and firm evaluations (Castelo *et al.*, 2023). Other important questions extend to balancing the integration of smart service technologies with maintaining consumer trust and addressing ethical considerations. Investigating the broader social implications, such as the exacerbation of inequality and accessibility issues, is also vital for a comprehensive understanding of the dark side of smart services.

Cross-disciplinary research for a holistic understanding

To achieve a more thorough understanding of both the bright and dark sides of smart service technologies, we call for more cross-disciplinary research. Integrating an information systems (IS) perspective, for instance, might benefit the role of emotions in smart service interactions (Waelbers *et al.*, 2022) and the drivers of data literacy to address privacy risks (Lau *et al.*, 2018). Research from the area of social robotics could contribute by examining well-being outcomes in robotic service consumption (Blaurock *et al.*, 2022). Finally, an innovation perspective could help disentangle discussions on service design, examining how service design principles inform the innovation processes of smart services (Gustafson *et al.*, 2020).

Conclusion

In conclusion, this special section has taken initial steps in exploring the complex landscape of smart service technologies through the lens of three insightful papers. While these contributions provide valuable perspectives, they represent just the beginning of a broader, ongoing academic dialogue on the promising benefits and potential pitfalls of smart service technologies. The future of smart service research holds immense potential within the field of service marketing and beyond. The cross-disciplinary nature of this field invites rich collaboration across various domains, from information systems and computer science to design and organizational studies. Our collective insights and reflections within this editorial lay the groundwork for a more nuanced understanding and responsible application of smart services. It is our hope that the discussions and perspectives presented here will ignite a vibrant scholarly conversation, leading us toward a future where smart service technologies not only advance our capabilities but also enrich our lives and societies in sustainable and ethical ways.

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Further reading

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