SMR JOURNAL OF SERVICE MANAGEMENT RESEARCH

Volume 8

2/2024

NOMOS · Vahlen

www.smr.nomos.de

SMR JOURNAL OF SERVICE MANAGEMENT RESEARCH

Volume 8
2/2024

CONTENT

Novel Perspectives on Transformative Service Research

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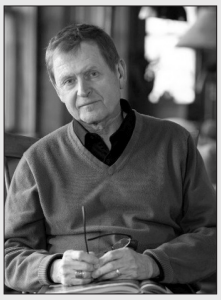

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The field of Transformative Service Research (TSR) has emerged over a decade ago with a range of seminal and call-to-action papers which have subsequently sparked and stimulated scholars' interest in academic work at the intersection of Transformative Consumer Research and Service Research. This special research paper is a perspective piece that sketches trajectories for Transformative Service Researchers drawing on the combined knowledge and work of established scholars in the field who take a future perspective by highlighting the prospective development of the domain. Introducing the 10-Collaborators (10C) Framework, the article outlines a roadmap by relating to the different actors at the micro, meso, macro, and meta levels of the service ecosystem. These collaborators can be affected by contexts that create perceived vulnerability but are also required to collaborate to ensure the wellbeing of the system itself and its actors. The paper delineates novel TSR approaches for each of the levels and its actors as well as for the conceptual, methodological, practice and policy domains, and outlines novel initiatives. It deducts future research paths and actions points for TSR scholars and practitioners.

1. Introduction

Over a decade has passed since several seminal papers at the intersection of Transformative Consumer Research and Service Research have been published (e.g., Anderson et al. 2011; 2013; Rosenbaum, Corus et al. 2011) and this has led to the inception of a new research domain. This new field of scholarly enquiry labelled Transformative Service Research (TSR) has since gained traction and established itself as an area of inquest into improving individuals', communities', nations' and the planet's wellbeing through service (Anderson et al. 2013).

TSR scholars have drawn on a range of concepts, constructs, and method(ologie)s from several service and non-service-related fields (e.g., Gioia et al. 2013; Meshram and Venkatraman 2022; Ng et al. 2022; Pratto et al. 1994), started collaborations across disciplines and commenced some global initiatives with the objective of bettering people and planet (e.g., Boenigk, Fisk et al. 2021; Fisk et al. 2020). While the present paper provides a short retrospective of extant TSR work, it aims to showcase novel perspectives for the expansion of the field by focusing on the ten collaborators at the different levels of the service ecosystem as well as by including novel theories, methodologies, policy and practice approaches, and initiatives. This is achieved by providing a special research paper that draws on the viewpoints and work of established TSR scholars from around the world who in mini teams have co-authored sections of this article.

The paper is structured as follows. It first provides an overview of the field of TSR by highlighting TSR characteristics and TSR challenges before explicating the conceptual 10-Collaborators (10C) Framework. The section also highlights the contribution of TSR to service-related wellbeing research and its connection to Transformative Consumer Research (TCR). The framework is discussed in the following sections by outlining characteristics and challenges of, and novel considerations for, the micro, meso, macro, and meta levels of the service ecosystem. The subsequent sections then elaborate on novel TSR approaches and implications across the conceptual, methodological, practical and policy domains, and outline novel initiatives, before future research endeavours and actions are sketched. The article finishes with a short conclusion.

2. Transformative Service Research (TSR)

By Jörg Finsterwalder

2.1. TSR Characteristics

Transformative Service Research (TSR) has emerged as a novel concept which focuses on the intersection of Transformative Consumer Research (TCR) and Service Research and the specific role that services can play in enhancing wellbeing (Anderson et al. 2013). At the Association for Consumer Research conference in 2005, in his presidential address David Glen Mick outlined the need for research to be more relevant and "solve real problems" (Mick 2006, p. 1) and thus stimulated the formation of the TCR movement (see Textbox 1 for a commentary).

Motivated by the TCR movement, a group of service researchers engaged in how services could contribute to solving challenges and improving wellbeing, and this led to the inception of the domain of TSR. While Rosenbaum et al. (2007, p. 45) already used the term "Transformative Service Research" in 2007, it was not until some work was published a few years later, including a call to action to conduct research on "improving well-being through

transformative service" (Ostrom et al. 2010, p. 5), two positioning papers (Anderson et al. 2011; Rosenbaum, Corus et al. 2011) as well as three research papers (Rosenbaum and Smallwood 2011; Rosenbaum, Sweeney et al. 2011; Rosenbaum and Wong 2012) that the field gained traction. With these and a further prominent publication in 2013 (Anderson et al. 2013), TSR started to attract the wider community of service scholars' attention. It has now been over a decade since the 2013 publication and the TSR domain can be considered a growing field of research with around 500 active scholars (SciVal, 2023). Conducting a brief analysis in Scopus from 2010 until the end of 2023, 315 peer reviewed TSR articles have been published or are available online in English speaking journals with a combined total of 200 publications alone for the years 2020 to 2023 (Scopus, 2024; search string "Transformative Service*" in title, abstract, keywords), indicating the proliferation and increasing significance of the field.

TSR is defined as "the integration of consumer and service research that centres on creating uplifting changes and improvements in the well-being of consumer actors: individuals (consumers and employees), communities and the ecosystem" (Anderson et al. 2011, p. 3). This definition implies that an individual's, a community's, a nation's, and the wider ecosystem's wellbeing are interconnected. While – as visible in the definition – TSR's delineation has originally focused on improving wellbeing, later re-conceptualisations acknowledge that suffering might have to be removed first before wellbeing can be bettered (Fisk et al. 2018). Such notion is also in line with more recent TSR thinking which comprehends wellbeing as co-created and depending on the balance between the challenges faced and the resources available (Chen et al. 2021). In summary, TSR's focus is on elevating life on the planet through service (Fisk et al. 2020). TSR literature has also begun to consider unintended consequences, spill-over effects, and trade-offs of transformative services (Blocker et al. 2021; Finsterwalder and Kuppelwieser 2020a; Rosenbaum, Walters et al. 2022; Russell-Bennett et al. 2020; Sandberg et al. 2021).

TSR can be considered an open playing field for revisiting extant concepts and theories in service research and applying these to improve lives (Rosenbaum, Edwards, Ramírez et al. 2020). Additionally, integrating approaches and collaborating with researchers from other disciplines to enrich TSR's scholarly inquiry and practice has also been accentuated in the TSR movement (Boenigk, Fisk et al. 2021; Fisk et al. 2020).

TCR, TSR and Wellbeing Research

By David G. Mick

Mick's (2006) argument was that the consumer research field had for too long systematically underprioritised the realisation that people, societies, and the earth were facing complex crises of wellbeing (e.g., poverty, ecology degradations, addictions, obesity) as well as bona fide opportunities of wellbeing (e.g., exercise, healthy nutrition, hobbies, arts) via consumption behaviours and related trends that could be more pro-actively addressed by new consumer research. These opportunities to relieve suffering or promote flourishing were then, and still are now, highly evident and enormously varied across the world. Thus, Mick's (2006) address set the immediate future for TCR's principles and maturation. The first decade of TCR (see Davis et al. 2016) witnessed a multitude of activities, such as the establishment of a diverse TCR Advisory Committee, the launching of TCR conferences, or a TCR monograph (Mick et al. 2012). More recently, the organisation and activities have been refined, and new assessments and projections of TCR have been published (Davis and Pechmann 2020; Ozanne et al. 2017).

One of the most promising off-shoots of the TCR movement has been the related yet distinctly valuable evolution of other specific developments in marketing and consumer research within which there is a central focus on wellbeing. The most noteworthy of these is Transformative Service Research. Services are crucial to producers, providers, societies, and environments across the world. However, there is more to consider. This is because all services in one manner or another can maintain or improve wellbeing or fail to do so. Hence, it is not surprising but laudable, that more researchers are conceptualising services for the role and responsibilities they can play in addressing some of the most wicked problems and the most inspiring opportunities of wellbeing (e.g., Anderson et al. 2013; Ostrom et al. 2010; 2021).

Textbox 1: TCR and TSR

2.2. TSR Challenges

TSR can be applied to a broad range of service contexts where transformative services can make a difference and improve the planet's or people's wellbeing by addressing service-related challenges. These contexts range from service industries, such as the healthcare sector (Dodds et al. 2018), social services (Hepi et al. 2017), and financial services (Mende and Van Dorn 2015), to tourism services (Mulcahy et al. 2023), or gamification services (Tanouri et al. 2019), among others. TSR focuses on both the actors as well as the wider policy, cultural, technological, and economic environments these actors are embedded in (Anderson et al. 2013). Accordingly, it has been applied to a variety of actors at the individual (Corus and Saatcioglu 2015; Hepi et al. 2017), community (Dean and Indrianti 2020; Feng et al. 2019; Keränen and Olkkonen 2022), and societal levels (Rosenbaum and Wong 2012; Mahdzan et al. 2023; Ungaro et al. 2022). Equally, it has been utilised

to study a range of policy (Boenigk, Fisk et al. 2021; Black and Gallan 2015), cultural (Meshram and Venkatraman 2022; Islam et al. 2023), technological (Henkel et al. 2020; Tanouri et al. 2019), and economic environments (Reynoso et al. 2015), but also increasingly the natural environment and the preservation of resources and biodiversity (Field et al. 2021; Ungaro et al. 2022).

While TSR applies to the above mentioned contexts and actors, it has placed a particular focus on populations encountering challenges and experiencing vulnerability, such as people in disaster zones where service provision has been disrupted (Cheung et al. 2017), ageing populations who might not be comfortable with certain servicescapes (Rosenbaum et al. 2017), refugees having entered a host country but being unaware of how to use certain services (Boenigk, Fisk et al. 2021; Eslami et al. 2023; Finsterwalder et al. 2021; Subramanian et al. 2022), individuals at the base of the pyramid encountering poverty and requiring inexpensive services to cater to their needs (Fisk et al. 2016), members of the LGBTQIA+ community experiencing discrimination (Rosenbaum et al. 2021; Tsiotsou and Diehl 2022), ethnically marginalised groups not receiving the same level of service as other groups (Hepi et al. 2017), people with mental (Finsterwalder et al. 2017; Schuster et al. 2015) or physical health issues (Parkinson et al. 2020), individuals with disabilities (Awan et al. 2022; Dodds and Palakshappa, 2021; Dodds et al. 2023), all struggling to use mainstream services for reasons of their special requirements, or people with multiple of these characteristics (Corus and Saatcioglu 2015). Such contexts might lead to perceived vulnerability due to these actors experiencing harassment and discrimination (Rosenbaum, Edwards, Malla et al. 2020).

There has been discussion as to what is included in the denomination of an actor's perceived vulnerability (Kabadayi et al. 2023). Some conceptualisations define consumer vulnerability as "a state of powerlessness that arises from an imbalance in marketplace interactions or from the consumption of marketing messages and products" (Baker et al. 2005, p. 134; Riedel et al. 2022). However, the use of such terms labels people and populations AS vulnerable and assumes that consumer vulnerability is an inherent or individual trait. At times, even more explicit labels are utilised to demarcate some populations, such as "hard-to-reach" individuals (Hepi et al. 2017, p. 428), a term that stigmatises and places the onus and attributes of being "hard-to-reach" solely upon populations experiencing vulnerability. The question here might rather be whether it is in fact the service that is hard to reach and there exists a system problem with the transformative service provider not being engaging or inclusive enough. Hence, some researchers (Dodds et al. 2023) avoid such labelling altogether and understand vulnerability as experiential and context specific. Other literature shifts the focus and builds on a strength-based approach of human actors (Fisk et al. 2023; Russell-Bennett et al. 2023; Heatley 2016; Hepi et al. 2017). This has been echoed by other recent publications, such as by Davey et al. (2023) and Raciti et al. (2022, p. 1140) who classify the above-mentioned stigmatisation as "a deficit approach [that] only focuses on what needs repairing" rather than isolating the problem from the human actor so that they can contribute to its solution. Such notion is also mirrored by recent TSR work (Chen et al. 2021, p. 387) that centres on augmenting a human actor's resources to overcome challenges by drawing on a "focal actor's (…) psychological ownership over [their] wellbeing" and "responsibilising" (Anderson et al. 2016) them to take over tasks in the co-creation of their own and others' wellbeing. As stated above, in addition to a focus on individual (Hepi et al. 2017), community (Rosenbaum et al. 2021) or national vulnerability and wellbeing (Dean and Indrianti 2020), more recent calls highlight TSR work that focuses on the vulnerability of the natural environment, how it can be better protected and capitalised on in a more sustainable manner (Field et al. 2021).

2.3. Novel TSR Considerations – The 10C Framework

Since its inception, TSR has gained momentum and continuously developed in the areas of *conceptual*, *methodological*, and *policy and practice approaches.* TSR scholars have outlined relevant *implications,* commenced *initiatives*, and pursued a range of *research avenues*. To build on these and fast forward into the future, this paper focuses on these different areas of TSR related work to further propel the TSR domain. This is done by employing the notion of a service ecosystem and its system levels (Field et al. 2021). Four system levels are distinguished here: the micro, the meso, the macro, and the meta levels of the service ecosystem (Field et al. 2021), bound together by the *Ten-Collaborators* (10C) *Framework* introduced here.

This framework denotes the collaborators at each of the service ecosystem's wellbeing levels (Finsterwalder and Kuppelwieser 2020) that might experience vulnerabilities but also must cooperate to enable, maintain, or re-establish a healthy service ecosystem. The *micro level* centres on the individual ***c**onsumer and/or **c**o-worker* and their wellbeing. The next level, the *meso level* encapsulates agglomerations of individuals organised in ***c**ommunities* and / or *(non-) **c**ommercial organisations* and their wellbeing. At the next higher *macro level*, ***c**ivilisation*, ***c**entral government, **c**ivil society organisations,* as well as *inter-**c**ontinental*, i.e., *international* and *inter-government organisations* and their wellbeing are located. The highest wellbeing level, the *meta level*, encompasses the *environmental **c**onditions* and ***c**ontext* which must be present for all animate life forms

to exist at the other levels. Here, environmental *c*onditions and *c*ontext are regarded as actors or collaborators equal to human actors. Such view removes the dichotomy caused by an anthropocentric worldview which regards humankind being separate from nature. This is different from a biocentric view adopted here which regards all life deserving equal consideration (Mang and Reed 2020).

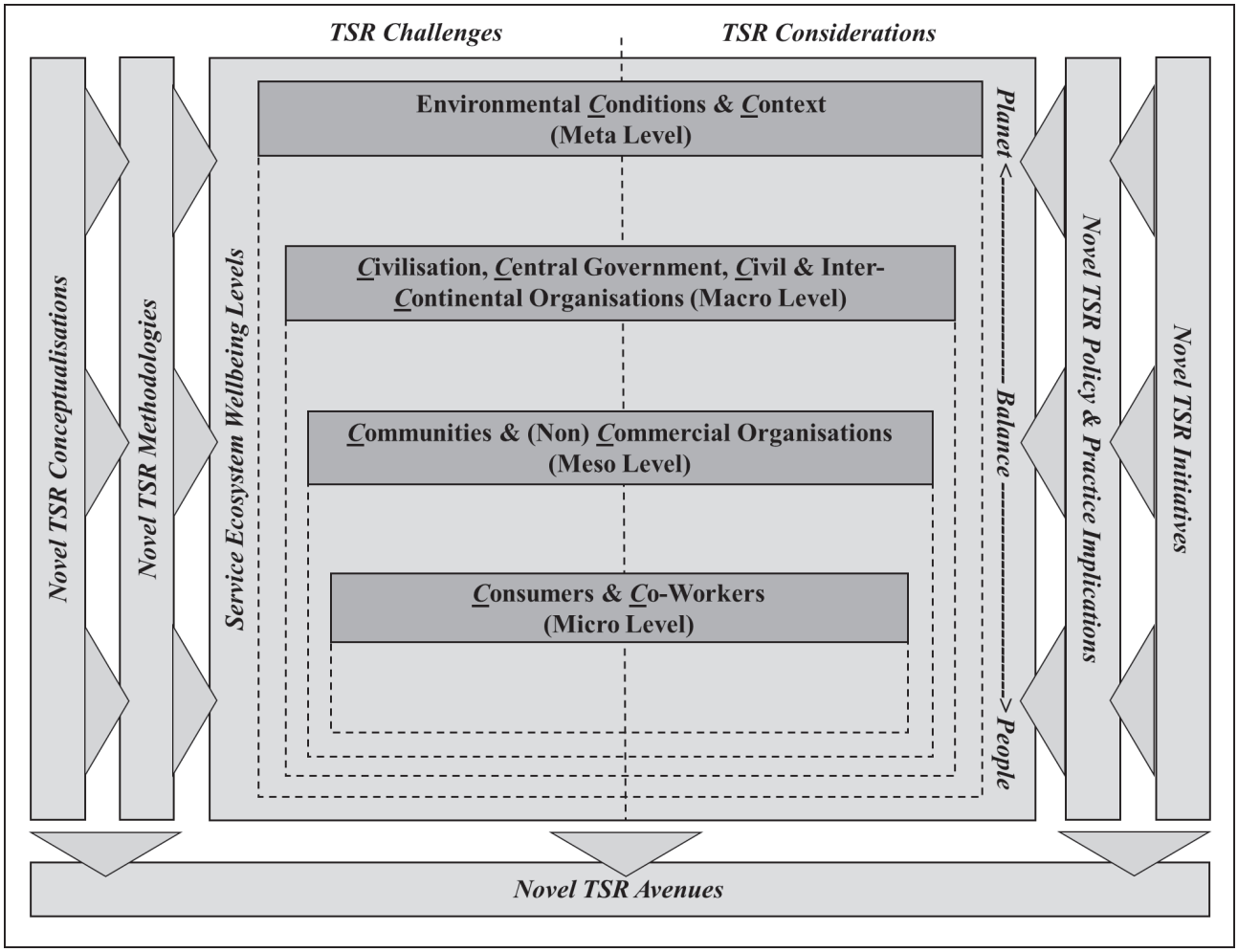

Fig. 1: The "10-Collaborators" Service Ecosystem Framework

For each of the elements of the 10C Framework, the subsequent sections outline the *characteristics* of each of the elements, current *challenges* encountered, as well as novel *considerations* for the TSR domain. Before concluding, the paper outlines research questions and action points for each of the elements in the novel TSR avenues section.

3. Novel TSR Perspectives at the Micro Level: Consumers and Co-Workers

By Martin Mende and Mark S. Rosenbaum

3.1. Characteristics of the Micro Level

A micro-level analysis focuses on understanding behaviours, decisions, and interactions that transpire among individual citizens, i.e., *consumers* and *co-workers* or small groups thereof within service settings. From a TSR perspective, a micro-level analysis encourages service systems to be designed so that "all customers have the ability to receive the same level of value that is inherent in a marketplace exchange" (Fisk et al. 2018, p. 851). This statement emphasises the fact that service consumers are all capable of receiving value. However, they may be blocked from using this capability through marketplace barriers, many of which have been exacerbated by the global pandemic's onslaught. Indeed, in response many service organisations are making goods and services more accessible and inclusive (Edwards et

al. 2018). As a result, service organisations, particularly retailers, are becoming more socially responsible to their customers by emphasising sustainability, ethical sourcing, corporate citizenship, and diversity, equity, and inclusion initiatives (Bolton 2019).

3.2. Challenges at the Micro Level

Although TSR scholars have begun to investigate commonly encountered vulnerabilities at the micro level (Mende and Van Doorn 2015; Mende et al. 2017; 2020; 2023; Rosenbaum et al. 2017), several new situational variables have emerged since the global pandemic. This is illustrated by an increased refugee crisis (Boenigk, Fisk et al., 2021) and the rise of digitised technologies (Rosenbaum, Russell-Bennett et al. 2022), which frequently create marketplace contexts of vulnerability in commercial, non-profit, physical, or virtual service settings. Table 1 provides TSR scholars with insights into seven modern and understudied contexts that frequently exacerbate service consumer and service (co-)worker vulnerabilities in consumption settings: digital, economic, educational, environmental, psychological, political and security, or social isolation vulnerabilities.

Tab. 1: Contemporary vulnerabilities that can impact consumers and co-workers in service settings.

Digital vulnerability: It stems from the 'digital divide', i.e., the gap between people with access to modern information and communications technology and those without:

- Consumers need access to affordable internet (digital) services.
- Consumers may not be able to easily access internet (digital) services including those provided by governmental, medical, educational, and social/entertainment providers.
- Consumers may be susceptible to data privacy infringements, computer viruses, phishing attacks, outdated software, payment card scheming and malware, due to a lack of understanding and costs associated with commonplace cybersecurity tools.

Economic vulnerability: This derives from income inequality, or the unequal distribution of income, wealth, and opportunities across different groups in society:

- Consumers need access to affordable consumer services, including budget-friendly options and resale markets.
- Citizens in urban areas experience food insecurity and limited consumer goods options (e.g., pharmaceutical drugs) due to retail store closures. In these "food deserts" and "retail deserts" affordable consumer goods and services are not easily accessible.
- Consumers may experience financial stress due to economic vulnerability which can have adverse effects on psychological and physical health.
- Economic vulnerability can result in potential difficulties paying rent or mortgages, leading to potential evictions or foreclosures, which impacts banking and financial services.
- Consumers may struggle to save for emergencies or retirement, impacting their long-term financial security.

Educational vulnerability: This refers to the "achievement gap," or a significant difference in academic outcomes or educational attainment between diverse groups of students:

- Underserved students may require affordable and easy access to online learning platforms, tutoring services, and other educational resources.
- Workforce development and upskilling options often require that service employees have knowledge, and access, to online learning platforms.
- Low-income service employees may fall behind in an increasing skills-based employment market.
- Service providers may not design services that facilitate consumers acquiring new skills.

Environmental vulnerability: It impacts service co-workers and customers in outdoor settings and at greater risk of negative health consequences associated with extreme heat or air pollution:

- Service employees working in outdoor retailing areas, especially in developing and least-developed nations, will increasingly experience health issues due to the climate.
- Climate change, which mounts outdoor air pollutants and heat exhaustion, will gradually impact elderly consumers and young children, and encourage them to engage in indoor service exchanges (e.g., e-commerce vs physical store shopping; alternative means of youth education and play).
- Consumers progressively focus on health and wellness services, such as wearable health technologies, specialty diets, and fitness memberships, which may exacerbate given environmental health challenges.

Psychological vulnerability: Some consumers may experience feelings of anxiety, fear, and apprehension due to the risk they perceive for some type of harm:

- Consumers, especially post-pandemic, are reporting increased levels of anxiety and depression, which has led to higher demand for mental health services, including mobile therapy applications and online counselling services.
- Consumers seek services, both in the physical and virtual domains, that help with stress reduction and mindfulness, such as mobile meditation applications and yoga classes.

Political and security vulnerability: This arises due to consumers experiencing the consequences of political upheaval, which often impacts their feelings of security and safety:

- Increased refugee and migrant populations have prompted support through organisations, charities, and businesses offering job training and housing solutions.
- Educational institutions are reeling from student reaction to recent events in the Middle East, resulting in students and faculty experiencing racism and discrimination.
- Many consumers (e.g., LGBTQIA+) are gradually more aware of human rights issues and support service businesses that prioritise ethical practices and social responsibility.

Social isolation vulnerability: It exists due to reduced, limited or no access to an engaged social network or a close attachment bond:

- Consumers, including older and elderly citizens, are looking to combat social isolation, resulting in a surging demand for social networking applications, virtual events, and online communities.
- Older consumers are particularly susceptible to social isolation due to factors, such as mobility issues, limited social connections, or living alone, leading to increased vulnerability to scams, abuse, and neglect. The need for senior care and living options is profound.
- Domestic violence, as well as physical and sexual violence, against women skyrocketed during COVID-19 and post-pandemic rates are still higher than pre pandemic. This rise in domestic violence has spurred support for organisations and services that provide help to victims and survivors.

Researchers must also understand the interconnectivity among the seven types of perceived vulnerabilities that often simultaneously impact consumers and co-workers. For example, older-aged and elderly consumers are likely to enter service settings with concurrent perceived vulnerabilities, including physical disabilities, social isolation, and digital vulnerability (Table 1; Rosenbaum, Walters et al. 2022). Moreover, economic vulnerability among service (co-)workers causes many to experience environmental issues.

3.3. Considerations for the Micro Level

This discussion suggests that, at the micro level, TSR scholars must consider consumers and co-workers who experience concurrent vulnerabilities, and that managers must create interventions to help curb such vulnerabilities. To illustrate a theoretical understanding of the issue, we draw on Luna's (2009; 2019) theory of "layered vulnerability" (Mende et al. 2023). Luna (2009; 2019) argues that there are different vulnerabilities resulting from distinct, though potentially overlapping layers of vulnerability; some of them may emerge due to a person's social circumstances (e.g., income) or reflect relations between persons and their situational circumstances or contexts (e.g., isolation, language). Luna posits that these different layers of vulnerability may be contextually acquired, or removed, one by one.

That is, consumers or (co-)workers may experience cascades of potential vulnerabilities in differing contexts, such as in physical versus online service settings. The idea of layered vulnerability provides more flexibility to the TSR concept of vulnerability, which is often investigated as a singular concept that impacts consumers, and to a lesser extent, employees, and makes it a contextual and relational one. Indeed, perceived vulnerability is not a permanent state that persists continuously throughout a person's existence or as a characteristic that permanently applies to certain citizenry or employment status (Fisk et al. 2023; Baker et. al. 2005; Luna 2009; 2019).

It is put forward that, at the micro level, perceived vulnerability is a situational concept that limits a consumer's ability to realise the maximum value potential that is available during a marketplace exchange (Fisk et al. 2018). Additionally, from the perspective of a service employee, situational vulnerabilities, particularly among workers in the "Global South," frequently result in low social status, marginalisation, limited opportunities for self-expression, and economic constraints, such as limited job availability and low wages (Subramony and Rosenbaum 2024). Equally, like the issues at the micro level described here, the meso level can also impact wellbeing.

4. Novel TSR Perspectives at the Meso Level: Communities and (Non-) Commercial Organisations

By Janet R. McColl-Kennedy and Rebekah Russell-Bennett

4.1. Characteristics of the Meso Level

The meso level of the service ecosystem appears to be the least applied or researched level (Luca et al. 2016; Russell-Bennett et al. 2013) and is situated between the macro level and the micro level (Hardyman et al. 2015; Kennedy et al. 2011; Mirabito and Berry 2015). At the meso level of the service ecosystem, two types of actors have traditionally been identified; *enactors* (directly involved in or responsible for the focal behaviour), such as government departments, and *influencers* (indirectly affecting the focal behaviour through persuasion and opinion-leadership), such as family members (Russell-Bennett et al. 2013) or (members of) *communities*. There is also a third type of actor, *commercial or non-commercial service organisations* that do not have direct responsibility for a focal behaviour, but which can be involved as they have direct interactions with the focal actor, such as banks for women experiencing triggers of homelessness (Russell-Bennett et al. 2021).

4.2. Challenges at the Meso Level

Key challenges for TSR at the meso level are tensions between the three types of actors within and across sys-

tem levels and with other systems (cf. McColl-Kennedy et al. 2020), for instance, commercial vs government vs non-profit vs communities (Gallan et al. 2019).

When the service interaction is complex, there is increased likelihood of conflicting goals (Alkire et al. 2023) creating a need for TSR interventions and initiatives (see also section nine below). The places for intervention in complex systems are called "leverage points" (Meadows 1999). The key challenge for meso level TSR interventions and initiatives is aligning mindsets and goals across the service ecosystem, fair distribution of power, and enacting rules of the system. Service thinking practices can assist in achieving this (Alkire et al. 2023). Ecosystem orchestrators (Breidbach et al. 2016), also known as "keystone actors" (Frow et al. 2019), can be viewed as the second type (enactors) or third type (service organisations that do not have direct responsibility for a focal behaviour). They play an important role as they provide transformation mechanisms that can help move the organisation toward its goals. Orchestrators improve the coordination of resource integration practices, such as facilitating actor involvement, learning, enabling information flow among actors (Frow et al. 2019), and increasing efficiencies in resource utilisation (Breidbach et al. 2016). Individuals do not exist in a vacuum. Individuals are members of service ecosystems and live within networks, engaging with a range of different institutions.

4.3. Considerations for the Meso Level

TSR examples, drawn from *healthcare* and *housing*, serve to illustrate the criticality of the meso level for facilitating transformation at the micro level. Healthcare and housing are two fundamental requirements of quality of life and wellbeing as noted in the United Nations' (2024) Sustainability Development Goals and Maslow's (1954) hierarchy of needs.

For a *healthcare context* Gallan et al. (2019) demonstrate how individual patient relationships can be leveraged to expand a patient's service ecosystem with additional resources from the first type of actors (enactors) that connect patients (focal actors) with one another (intra-alignment), and in turn, these connections enable community wellbeing (inter-alignment). Further, Gallan et al. (2019) illustrate that additional resources outside the individual's control are needed for the patient's wellbeing, including a neighbourhood community centre, as well as support groups and support from family and friends (influencers).

A novel TSR solution in the *housing context* is the Women's Butterfly Project which aims to empower mature women (micro level) to maintain secure housing (Russell-Bennett et al. 2021). This strengths-based (Raciti et al. 2022) preventative solution involves the third type of actor – service organisations – not typically engaged in housing crisis solutions to transform lives at the micro level (Russell-Bennett et al. 2021). In a pilot project researchers worked with a bank and council library to support women experiencing a change of circumstance – loss of job, relationship, or income – as triggers of homelessness. The paradox is that the meso level actors most likely to have service interactions with the focal actors do not have the responsibility to address the wellbeing challenge.

Similarly, the next level up, i.e., the macro level exhibits its own degree of complexity relating to wellbeing.

5. Novel TSR Perspectives at the Macro Level: Civilisation, Central Government, Civil Society, and Inter-Continental Organisations

By Mark S. Rosenbaum, Jörg Finsterwalder, and Amy Ostrom

5.1. Characteristics of the Macro Level

The *macro* level is situated between the *meso* and the *meta* level and is the most aggregate level within the service ecosystem involving institutions and human actors. It contains boundary-spanning service networks, organisations, and institutions, and encompasses both national and international entities. Boundary-spanning *inter-continental organisations* include institutions, such as the United Nations. The macro level also comprises the societies within our *civilisation*, both at national (e.g., members with a common culture and way of living inhabiting a territory, holding a particular country's citizenship) and international level (e.g., a society spread across multiple countries, but individuals are citizens of the country they live in). *Civil society organisations* are institutions, such as non-government organisations (NGOs), community groups, charitable organisations, or indigenous organisations (Rainey et al. 2017). At a national level, institutions, such as *central government* provide administration and devise policies for lower-level service organisations at the *meso* level and for the citizens at the *micro* level and might engage with other governments to resolve issues at the *meta level*.

5.2. Challenges at the Macro Level

Due to the multitude of interlinked institutions and human actors (Field et al. 2021), particularly challenging is the *design and orchestration of large-scale and complex service ecosystems* that have transformative impact on societies (macro level) and the environmental conditions of planet earth (meta level) (Ostrom et al. 2021). A focus on the macro level is required for one of the recurring themes in this paper (Dodds et al. 2023; Field et al. 2021; Kabadayi et al., 2023; Mende et al. 2023; Raciti et al., 2022; Rosenbaum et al. 2017), and that is the one of disadvantaged *consumers* and *communities* in contexts that create perceived vulnerability. While, as outlined earlier, multiple forms of such contexts may exist for one individual or a community, more recently particular forms of "political and security vulnerabilities" have occurred, evoked by variations of verbal abuse or "bashing," such as social (media) bashing, gay bashing, or ethnic bashing (e.g., Eckeberger 2022; Gilman 2023). Service organisations must respond to such experienced vulnerabilities by providing support, protection, and safer environments for affected individuals.

Moreover, *technology platform services* are becoming more crucial to service interactions and thus require more attention (Field et al. 2021). Specifically, their misuse is of concern. For example, police have used fake identities on social media platforms, such as Grindr and posed as members of the LGBTQIA+ community to arrest male or transgender people who engage in same-sex activities, or to uncover "illegal" activities, including merely being homosexual (Rosenbaum et al. 2022). Additionally, artificial intelligence (AI) deepfakes have the potential to mislead the public in a way that polarises society, spurs international conflicts, influences the outcomes of elections, jeopardizes public safety, among other societal harms (Byman et al. 2023; Chesney and Citron 2019). While the use of disinformation in settings such as these is not new, advances in AI and the scale of spread that can occur makes them worthy of focused attention (Albahar and Almalki 2019; Byman et al. 2023). While potential negative effects from deepfakes are concerning, beneficial uses do exist (e.g., increasing inclusiveness by enabling government officials, politicians, and others to present their message in any language to connect with diverse populations; van der Sloot and Wagensveld 2022), necessitating the consideration of ethical guidelines for their use.

There are also matters arising at the macro level with a focus on the *environmental conditions* at the meta level. For example, in *commercial transport services* taxi companies (e.g., EkoCabs) and ride sharing providers (e.g., Uber Green) increasingly utilise electric vehicles (EVs) (GenLess 2021; Uber 2024) which are labelled a more sustainable solution compared to vehicles using fossil fuel (Tabuchi and Plumer 2023) and, in some countries, have been exempt from certain taxes. However, while EVs emit zero emissions they are not emission-free along their lifecycle, e.g., concerning the environmental cost of sourcing raw materials for, and manufacturing of, EV batteries (Gonçalves 2018) as well as their disposal. Due to EVs also being road users benefitting from the national and regional infrastructure created and posing a potential new risk due to battery fires (Bijoux 2023), some governments have reneged on existing tax benefits for EVs – owned both by transportation providers and private citizens – and these EVs now must "contribute to the costs of the transport system" (Waka Kotahi 2024).

5.3. Considerations for the Macro Level

TSR scholars are called to assist with addressing issues from a macro-level perspective which, as visible from the previous section, can have implications in two directions of the service ecosystem, i.e., downstream and upstream. Regarding *citizens' vulnerability contexts*, commercial and non-profit service organisations and governmental services agencies have failed to provide some citizens with fair access to a service, fair treatment during a service, and with fair opportunity to exit a service (Fisk et al. 2018), such as public transport opportunities for individuals with disabilities. These failings have resulted not only in stigmatised or marginalised consumers experiencing discrimination in service establishments, as in the public transport example, but in some cases, their deaths or imprisonment, such as "illegal" homosexuals being prosecuted according to some countries' laws (Rosenbaum et al. 2021).

Regarding *digital technology platforms*, particularly mobile applications that rely on web-based services, are commonly associated with personal and societal risk. The hazards connected with digital technologies are frequently caused by technical faults, a lack of governmental regulation and monitoring, monetisation pressures from organisations, cultural insensitivity, and a lack of user-centric design. Surprisingly, organisations and government agencies alike usually know and accept some dangers connected with digitisation because the commercial benefits of digital services outweigh the hazards (Rosenbaum et al. 2021; 2022). Unfortunately, despite its universal appeal, service inclusiveness may be little more than a dream, especially when organisations fail to fully consider how digital technologies affect customer experiences or when governments engage in the "digital disruption" of human rights. Also negatively affecting the fabric of society is both the ability of deepfakes to impact consumer beliefs and behaviours based on what is being depicted but also, even if not believed, the potential that they will serve to increase uncertainty and undermine

trust in the media, government officials, and other institutions (Vaccari and Chadwick 2020).

Regarding macro-level actors focusing on the *meta level*, in the case of the potential environmental impact of new technologies used to provide services, such as EVs used in transportation services, and the (re-)design of large-scale, complex service ecosystems for citizens, communities and a society (Field et al. 2021), government regulations might have to be redrafted. For example, critics of the above-mentioned vehicle tax for EVs point out that it must be fair but is not as the policy might "introduce huge inequities into how vehicles are taxed" as it "will see many petrol-fuelled cars paying less to use the roads than EVs" (Birnie, cited in Better NZ 2024). This has already led to owners of hybrid vehicles having their plugs removed to avoid double taxes (Gibson 2024). TSR scholars can assist with improving public and commercial transportation and other services by researching consumers', providers' and government's needs, requirements, and conflicting views to better determine the incentives for citizens and subsequent policies relevant for a more environmentally conscious choice and use of services affecting the *meta level* by working together with policymakers at the macro level.

6. Novel TSR Perspectives at the Meta Level: Environmental Conditions and Context

By Jörg Finsterwalder

6.1. Characteristics of the Meta Level

The meta level denotes the biosphere and encapsulates the anthropocentric spheres at the lower system levels. More encompassing TSR approaches take into consideration the importance of the wellbeing of the environment (Alkire et al. 2022; Anderson et al. 2013), in this paper demarcated by its own dedicated (meta) level here to give it more prominence. The link to the meta level is already resonating from the case of transportation services outlined above which, apart from considering human actors also relates to the environmental impact of services and the relevance of the environmental conditions for humankind's survival and wellbeing. The *environmental conditions* and *context*, i.e., all interacting living and non-living elements other than human beings which permit life to be sustained, are regarded as actors or collaborators in their own right in this article. TSR approaches which pay tribute the environment refer to sustainable service ecosystems (Büttgen et al. 2023; Field et al. 2021) and service ecosystem wellbeing or health (Finsterwalder and Kuppelwieser 2020b; Fisk and Alkire 2022). The latter is defined as "the interdependent state of private, public, and planetary wellbeing necessary for sustaining life" (Fisk and Alkire 2022, p. 194).

6.2. Challenges at the Meta Level

To ensure a balanced state that facilitates life, "challenges and resources within and across system levels [have to be equalised] to achieve system-level specific and overall service ecosystem equilibria and wellbeing" (Finsterwalder and Kuppelwieser, 2020b, p. 1115) and the meta level plays an important role in achieving this.

Service researchers have identified themes relating to the planet's *environmental conditions* and *context* as important topics that require their input (Ostrom et al. 2021). This is in line with global initiatives, such as actioning the 17 Sustainable Development Goals (United Nations 2024; see also Russell-Bennett et al. 2024). Challenges for TSR scholars include the extension of their work to assist with crafting services to become more sustainable and regenerative. As global approaches require efforts on a different scale, novel approaches are needed which reach beyond national interests, protectionism and competition amongst states and countries.

6.3. Considerations for the Meta Level

The above-mentioned challenges can be addressed by novel approaches (see also section seven) and their application in initiatives (see also section nine). For example, Boenigk, Fisk et al. (2021) advocate for the creation of hospitable service ecosystems where people can thrive so that potential divides amongst people and nations can be surmounted by becoming more inclusive and integrative. Such notion is particularly relevant for the meta level serving all humanity and providing the resources to be fairly and equitably shared by humankind. Needless boundaries between nations and issues relating to resolving the trade-offs between United Nation's (2024) "prosperity" versus the "people" and "planet" dimensions at macro level must be overcome for this. Approaches where the natural environment is not only preserved but is in abundance again are needed and require the inclusion of TSR scholars to assist with finding solutions. It might be valuable to consider more relational approaches, such as advocated by indigenous peoples who have always had a strong connection to their ecosystem (Harmsworth and Awatere 2013; McGregor et al. 2020; Pierotti and Wildcat 2000). This is also represented

in latest efforts by legally giving the natural environment actor status, such as by granting rivers, land, or mountains personhood (Evans, 2024). It is also in line with viewing nature as contributing and providing services to humankind, such as freshwater provision or climate regulation, but also the reciprocal relationship of humans providing services to the environment, i.e., to maintain or enhance the environmental conditions (Comberti et al. 2015) and not making nature's services become more vulnerable.

Therefore, indigenous peoples should be given more prominence in finding solutions, simply because of their immersion in, and close connection to, the environmental conditions and context. For example, in a Māori context Wolfgramm et al. (2020) speak of values-driven transformation in indigenous relational economies of wellbeing. Such worldview encompasses the intra- and intergenerational connectedness of humankind and its embeddedness in the physical and nonphysical environment (Mead 2016; Wolfgramm et al. 2020). Anthropologist Annette Weiner (1980) points out that a space–time framework is needed which is designed around *regenerative cycles* that are culturally and symbolically demarcated. Weiner (1980, p. 71) explains that "any society must (…) regenerate certain elements [resources] (…) in order for the society to continue" (Weiner 1980, p. 71). By applying an indigenous lens to service ecosystems, some work speaks of regenerative service ecosystem wellbeing (Finsterwalder and Tombs 2021). There is much to (re-)learn to better (re-)connect people and planet, and indigenous peoples should be at the forefront of driving such transformation, with TSR scholars assisting. Such an approach as well as others, outlined in the next section, require a conscious shift to human actors participating *as nature* to co-evolve the entire living system of planet earth (Mang and Reed 2020).

7. Novel Conceptual TSR Approaches

By Jörg Finsterwalder and Sertan Kabadayi

7.1. Challenges

As outlined above, TSR focuses on "creating uplifting changes and improvements in the well-being of (…) actors" (Anderson et al., 2011, p. 3) and hence also has an inherent practical application focus in its definition. However, research-driven practical application necessitates the use of conceptual approaches or think tools which can act as roadmaps for TSR scholars and practitioners to address a particular service-related issue or Transformative Service Challenge (TSC) (cf. Subramanian et al. 2022). A TSC is defined as a context identified as posing a (potential) wellbeing issue to a consumer / co-worker, a community, (non-) commercial organisations, the civilization, or the environmental conditions and which may result in perceived vulnerability. Following a conceptual pathway permits the use of a theoretical lens best suited to the TSC and leads to the selection of the appropriate research methodology (see section eight below) to initiate closer examination. This then informs recommendations or the commencement of a Transformative Service Initiative (TSI, Boenigk, Kreimer et al. 2021; see section nine). Since TSCs can be manifold, TSR scholars might have to select from a range of conceptual approaches from within the service and marketing domains but also increasingly from other disciplines.

7.2. Considerations

The infusion of conceptual approaches from other disciplines by TSR scholars is also owed to the increasing complexity of market-related, societal, and environmental issues which cross domain boundaries and require novel thinking. For example, relating to the *micro level* and vulnerability contexts, such as outlined above and possibly occurring in multiple "layers" (Mende et al. 2023), Kabadayi et al. (2023) draw on Humanistic Management (Melé 2016) and devise a dignity–vulnerability framework for organisations at the *meso level* to enable them to move to a more inclusive, that is, a strength-based and dignity-recognised approach which views the focal human actor as a partner.

Similarly, Finsterwalder et al. (2021) apply a Conservation of Resources (COR) approach from Psychology (Hobfoll et al. 2018) and draw on Health Sciences' (Dodge et al. 2012) notion of wellbeing to study refugees in contexts that create vulnerability at the *micro level*. The authors also suggest a strength-based perspective which regards refugees as actors having resources to be drawn on.

Taking a *macro-level* perspective, other recent TSR work adopts a human rights perspective to study various systemic issues that create suffering and identify responsibilities of different actors at the micro, meso, and macro levels of service ecosystems to create wellbeing outcomes for all (Tsiotsou et al. 2024). This approach, using various conceptualisations of human rights from different disciplines, has wide ranging implications for governments and policymakers, service organisations, frontline employees, customers, and bystanders in service settings. For instance, putting the basic human right to health at the centre of healthcare service design and delivery will

ensure that all individuals regardless of their gender, race or ethnicity have fair access to such essential services to improve their wellbeing (Tsiotsou et al. 2024).

Focusing on the co-creative aspects of wellbeing and the systems individual actors at the *micro level* are embedded in, Cultural-Historical Activity Theory (CHAT) from Psychology (Vygotsky 1978) and popularised by Engeström (2015) for the education and knowledge management domains, is employed in other TSR work (Finsterwalder et al. 2017). CHAT assists with explaining the relationship between human mind and human activity, i.e. the "doing" of co-creation (Foot 2014), historically mediated by artifacts and communities. CHAT captures actors' individual contexts as well as their cultural-historical – including indigenous – backgrounds (Hepi et al. 2017) and requirements when designing TSIs. CHAT has already been successfully applied to pest management at the *meso level* (Vänninen et al. 2015) and hence appears suitable to address other issues, such as at the *meta level*.

8. Novel TSR Methodologies

By Jörg Finsterwalder

8.1. Challenges

TSR contexts can pose challenges for both researchers and research participants alike. Research participants can be enmeshed in previously mentioned vulnerability contexts (Dodds and Hess 2021; Dodds et al. 2023; Hepi et al. 2017; Parkinson et al. 2020; Rosenbaum et al. 2021). Equally, researchers can be exposed to challenging contexts. This applies not only when interacting with the research participants, for example, when studying death or interacting with dying patients (Azzari and Baker 2020; Six 2020), but also where environmental conditions are volatile, for example, when entering an earthquake zone for research (Dodds et al. 2023). This necessitates that TSR scholars carefully devise the appropriate research methodology to guide their research process, and pay attention to dedicated methods, procedures, and protocols (Dodds et al. 2023) that focus on the wellbeing of all involved.

8.2. Considerations

Due to unique TSR contexts, designing more encompassing approaches involves building relationships with research participants and considering their needs (Dodds et al. 2023) before formulating the actual research methods. However, particularly community-based research initiatives have not featured strongly in past research endeavours (Hurley et al. 2018). Moreover, for certain ethnicities or groups, such as indigenous peoples, it is customary that there is a visible benefit to those researched (McFarlane and McFarlane 2019). While at times benefits for participants might eventuate, for example, the sharing of their experiences can be healing and transformative in itself (Azzari and Baker 2020; Dodds et al. 2018), not all TSR projects might show such immediate benefits.

The above-described contexts require research methodologies that are inclusive of the participants and create an envelope so that they can feel safe, unintimidated, protected, supported, and valued, but more so as being empowered members in the process (Dodds et al. 2023; Hurley et al. 2018; Raciti et al. 2022), which includes establishing an open atmosphere that can also stimulate novel creative and transformative solutions that benefit the participants.

TSR scholars have contributed to the domain with dedicated articles on research metho(dologie)s, such as by Azzari and Baker (2018), Dodds et al. (2018), and Dodds and Hess (2021). Latest work (Dodds et al. 2023) builds on these publications and aims at creating a novel and more encompassing research methodology framework that can be applied to a diverse range of TSR contexts. The framework relates to common areas of sampling, ethical and technical set-up, research protocol, and research techniques and processes (Dodds et al. 2023; Azzari and Baker 2020). For example, online interviews in qualitative research can be used for non-intrusive participation of people feeling shy. Equally, engaging with communities which have experienced disasters is vital prior to qualitative or quantitative data collection (Dodds et al. 2023). At its centre the framework focuses on the research context and the empowerment of the research participants but also the role of support persons, peers or interpreters as well as the role of the researcher. All these roles must provide a "protective buffer" by ensuring the wellbeing of the partakers through employing a strength-based approach (Dodds et al. 2023). Other TSR work centres on the power of co-designing solutions with participants for their communities, the importance of giving voice to the participants while managing the co-design process so that user-driven value propositions can be generated (Dietrich et al. 2017; Hurley et al. 2018). Future TSR work should more strongly consider going beyond co-creative processes that encompass relationship building, data collection and co-design, by continuing the collaboration until initiatives, such as those highlighted in the next section, have been implemented.

9. Novel TSR Initiatives

By Sertan Kabadayi and Canan Corus

9.1. Challenges

Undoubtedly, TSR scholars have done remarkable work in laying the foundations for service research to generate ideas that aid with advancing individual and collective wellbeing (Boenigk, Fisk et al. 2021; Kabadayi et al. 2023). Various goals and approaches as adopted by such TSR-oriented studies for groups experiencing vulnerabilities have been discussed in the literature (e.g., Fisk et al. 2018; 2020). However, most of these have been conceptual studies (e.g., Alkire et al. 2023; Tuzovic and Kabadayi 2021), while empirical work remains limited to a few exceptions (e.g., Boenigk, Kreimer et al. 2021; Eslami et al. 2023).

Additionally, while the growing TSR literature highlights the role of service organisations in co-creating wellbeing outcomes with multiple stakeholders at the different levels of service ecosystems (Fisk et al. 2020; Gallan et al. 2021), few studies provide specific guidelines or approaches for service organisations as to the processes through which these wellbeing outcomes can be achieved. Little insight is offered into the factors that can explain *how* and *why* the effectiveness of wellbeing co-creation efforts by service organisations in collaboration with other actors may vary in their outcomes (Rosenbaum, Russell-Bennett et al. 2022). Finally, it is noteworthy that the long-standing TSR aspirations of providing multidisciplinary approaches to complex pressing problems are yet to materialise (Alkire et al. 2020).

9.2. Considerations

Several recent advancements, such as Transformative Service Initiatives (TSIs) assist with addressing the abovementioned issues. TSIs are defined as activities by public, private, or nonprofit organisations aiming at helping people experiencing vulnerability to improve their wellbeing (Boenigk, Kreimer et al. 2021). For example, a three-step integration process of awareness, alignment, and access has been outlined to demonstrate the effectiveness of TSIs in the context of a refugee programme for access to higher education (Boenigk, Kreimer et al. 2021). Studies on the integration of market actors, such as retailers, into the design of TSIs for improved outcomes provide further understanding of the efforts by service organisations to enhance wellbeing (Eslami et al. 2021). This work also suggests that market based TSIs can have broader impact than just benefiting those individuals who experience vulnerability, as these TSIs provide additional benefits for service organisations themselves, such as being able to increase their variety and assortment and promotional offers, as well as improving the customer service level.

The dignity–vulnerability framework by Kabadayi et al. (2023) offers a way to understand how service organisations can design TSIs to increase their effectiveness while minimising negative unintended consequences. The proposed framework suggests that when organisations adopt a strength-based approach and promote human dignity, such TSIs create better wellbeing outcomes for all stakeholders involved (Kabadayi et al. 2023). The framework is an example of the recent efforts by TSR scholars to adopt a more multidisciplinary lens to address problems. Similarly, Boenigk, Fisk et al. (2021) offer a transformative refugee service experience framework that emerged from a collaboration between marketing, service management, public policy scholars and practitioners to improve refugees' lives in service ecosystems. Innovatively, Tang and Blocker (2022) use metaphorical analogues from molecular biology to study how social resilience can be facilitated in service communities, and thus expand the boundaries of TSR by incorporating other disciplines. TSR scholars should continue to identify academics from other relevant disciplines they can collaborate with to achieve TSR's central goals.

Finally, in addition to cultivating multidisciplinary collaborations in TSR, the necessity and benefits of building partnerships between different stakeholders like scholars, service organisations, and policymakers has been highlighted to design and effectively manage efforts to follow the guidelines offered in various TSR work (Boenigk, Fisk et al. 2021). TSR scholars are increasingly encouraged to create initiatives with organisations like Responsible Research for Business and Management (RRBM) and ServCollab (servcollab.org) to engage in research to co-create wellbeing outcomes for all. TSR scholars should actively seek to build initiatives with other organisations and stakeholders worldwide to enrich TSR's impact, and to inform policymaking and practice.

10. Novel TSR Policy and Practice Implications

By Laurel Anderson and Mario Giraldo

10.1. Challenges

Although there is a myriad of challenges regarding the practices and policies that incorporate TSR, this section focuses on one of four "gnarly" issues in TSR (Anderson and Ostrom 2018) which is foundational: who defines wellbeing. Indeed, it remains unclear who decides which view of wellbeing is adopted in policy and in practice and what difference this makes.

Many definitions of wellbeing exist – some have been outlined in the introduction above and put forward or adopted by TSR scholars (e.g., Anderson et al. 2013; Chen et al. 2021). Definitions vary greatly across the different policy and practice contexts. This is due to the fact that wellbeing conceptualisations are dictated by, for example, insurance companies (e.g., the number of treatments deemed needed to achieve wellbeing), political and legal processes (e.g., immigration and asylum standards), algorithms (e.g., which locations assessed need more policing to ensure wellbeing), expert services that require compliance (e.g., physicians can "fire" patients for non-compliance with physician orders) and services provided for "captive consumers" (e.g., welfare recipients who by definition have more limited choice in the services seen to improve their wellbeing; Rayburn, 2015). At the practice and policy levels, service ecosystem tensions, in addition to the ones outlined in the meso-level section above, emerge when market actors operate from different explicit definitions and tacit meanings of wellbeing and act to safeguard desired outcomes. These differences may impede the accomplishment or improvement of individual or societal wellbeing. The notion of contexts that create perceived vulnerability outlined in this paper is used to illustrate that in service ecosystems, tensions about what wellbeing encompasses may arise. These can occur between; a) a service provider and its customers (e.g., Bottom-of-Pyramid consumers' difficulties in the use of formal banking services thereby excluding them from opportunities; Sanchez-Barrios et al. 2015); b) between providers themselves (e.g., disagreements between street vendors over taking advantage of government programmes advocating more formalised street vendor practices; Giraldo et al. 2020); and c) between service users experiencing vulnerability themselves (e.g., consumers' disagreements about whether or not to buy from informal entrepreneurs; by accepting the entrepreneurs as legitimate providers the providers can offer services to the consumers conveniently and thus affect that part of their wellbeing positively; Del Giudice et al. 2023; Giraldo et al. 2020). Differences also exist within a service ecosystem (e.g., formal banking services fail to understand service entrepreneurs' everyday practices in the informal economy thus hindering their opportunities for fairer financing; Giraldo et al. 2020), and at an institutional level (e.g., government programmes for inclusion fail to comprehend informal entrepreneurs' service practices and therefore are – at least in part – exclusionary; Del Giudice et al. 2023).

10.2. Considerations

It remains unclear what the consequences of different definitions of wellbeing in policy and in practice are. These differences may impede the attainment or enhancement of wellbeing.

Customer centricity is an inherent cornerstone of TSR (Anderson et al. 2013) and has been adopted by many service providers and ecosystems to advance wellbeing. Correspondingly, earlier work by Shin and Johnson (1978, p. 478, emphasis added) defines wellbeing as a "quality of life according to [one's] *own chosen criteria*." However, this emphasis on an individual customer defining wellbeing, while in many ways beneficial, also raises several questions. These relate to the level of expertise needed to make wellbeing decisions, various groups of consumers with different values and definitions of wellbeing, the voices of other stakeholders (such as providers), and limitations in choice due to issues such as provider shortages, safety concerns or restrictive public policy.

Additionally, the question of the persistence of a wellbeing definition must be considered. Among many, we suggest two perspectives to ponder. An individual's understanding and definition of their own wellbeing tends to change over time and developmental stages (cf. Boehm 2018, OECD 2021). Likewise, new research in health, medicine, education, and other fields (cf. Alkire et al. 2020; Nguyen and Thuy 2016) may be an impetus for wellbeing definitions to change. But a change in the definition of wellbeing that then becomes a new norm and is implemented throughout a service ecosystem incurs costs in terms of time, training and the adoption of the new definition and its standards. The question then becomes when and how should service providers change their notion of wellbeing and ways of managing the change and different meanings. Beyond responding to customer needs or novel research, another vivid example of an impetus that may require modification of the definition

and way of managing a commonly used wellbeing definition is a change in the political party in power which then impacts regulations, public policy, and funding. Thus, a service provider is challenged if and when to adapt and implement a changed notion of wellbeing provided by a government, how soon this should take effect, and whether their own understanding of wellbeing is congruent with the officially sanctioned definition of wellbeing.

The gnarly issue of who defines wellbeing in service settings and how this definition is used is especially pertinent to today's service reality. Power differences and dominance as well as hidden tensions that operate at the different levels of the service ecosystem are rich ground for TSR scholars to develop insights for addressing this phenomenon in practice.

11. Novel TSR Avenues

Co-authored by all TSR Scholars

11.1. Challenges

The paper has outlined a range of challenges for TSR specialists across the different system levels from the micro to the meta level as well as for the areas of conceptual approaches, methodological advances, initiatives, and practice and policy. While novel considerations have already been outlined in the above-mentioned sections, there is a need to further TSR work in these areas.

11.2. Considerations

Therefore, TSR scholars and practitioners are called to pay particular attention to the following research avenues and points of action which are outlined for each of the elements of the 10C Framework.

Micro Level: Consumers and Co-Workers

- Vulnerability and service design are inextricably linked. How can the impact of many vulnerabilities coming into play be considered, also in terms of their severity, throughout a customer's journey in a consumption setting or at a customer–co-worker touchpoint?
- How can opportunities better be leveraged to understand the impact of the seven under-researched vulnerabilities – digital, economic, educational, environmental, psychological, political and security, or social isolation – on both consumers and co-workers in service organisations?
- How can theoretical and humanistic inquiries assist with understanding the impact of artificial intelligence on reducing consumers' and service (co-)workers' perceived vulnerabilities across service interaction touchpoints?

Meso Level: Communities and (Non-) Commercial Organisations

- How can the service ecosystem mechanisms of linking, bridging and bonding practices be better investigated?
- Which service practices can be identified that resolve tensions between actors at different levels of the service ecosystem, such as shared worldviews, compliance, adherence, and concordance practices, to enable transformation at the micro level?
- How can the strengths of meso-level service actors be leveraged to support transformation at the micro level?

Macro Level: Civilisation, Central Government, Civil Society, and Inter-Continental Organisations

- How can TSR scholars assist with micro, meso, and meta level collaborators being better considered, and, where applicable, responsibilised in wellbeing co-creation, and included in macro-level decisions and policymaking?
- How can policy frameworks be redrafted, and platform technology be made accessible to prevent various forms of discrimination, falsification and citizens be re-educated via novel TSIs?
- How can micro-level TSIs to reduce vulnerability of the environment and strengthen the planet's wellbeing be institutionalised at the meso and macro levels, and how can such grass roots initiatives be brought to a global scale?

Meta Level: Environmental Conditions and Context

- Which TSR projects focusing on educating citizens should be prioritised to reconnect human actors to the environmental conditions and context?
- How can TSR scholars assist service organisations with better connecting the anthropocentric with the biocentric spheres in their service approach to simultaneously improve people's and the planet's wellbeing?
- How can the role of indigenous peoples and their notion of stewardship of the earth be better utilised to inform TSR frameworks, initiatives, practice, and policy?

Novel Conceptual TSR Approaches

- What are the benefits and drawbacks of certain conceptual approaches applied in TSR?
- Which repository of conceptual approaches for TSR scholars can be created that future research endeavours can draw on?
- Which conceptual and theoretical domains are underexplored and could be used by TSR scholars?

Novel TSR Methodologies

- How can TSR scholars expand their methodological approaches to be more inclusive of the research participants, their needs and a focus on both process and outcome?
- How do methodological approaches have to change to incorporate more empirical research projects with a spotlight on impact?
- How do scholarly metrics have to change to incorporate and consider extended time and effort to conduct more encompassing research method(ologies) and implementation projects?

Novel TSR Initiatives

- How can more empirical and impactful TSI research be initiated, and which method(ologie)s are useful in analytically demonstrating the effectiveness of new TSIs?
- How can TSR scholars develop guidelines for service organisations to design and implement various TSIs to achieve intended outcomes for all relevant stakeholders?
- How can TSR scholars establish effective cross-disciplinary collaboration to realise novel TSIs and ideas in research that incorporate perspectives from other domains?

Novel TSR Policy and Practice Implications

- How do the market actors (e.g., service providers, consumers, co-workers) being studied define wellbeing according to the contextual/institutional reality they live in?
- What are the tensions and the static or shifting power dimensions regarding who is in charge of defining wellbeing?
- How are various definitions of wellbeing embedded in the actions and practices of individuals, organisations, and institutions, and what are the covert definitions of wellbeing?

12. Concluding Remarks

The present paper has drawn on the combined knowledge and experience of TSR scholars to further advance the field by infusing novel perspectives and drawing on the notion of the service ecosystem concept as an underlying roadmap to address wellbeing issues at the different system levels. The "10-Collaborators Framework" has been devised to focus on the actors that are located at each of the system levels, i.e., consumers and co-workers at the micro level; communities and (non-) commercial organisations at the meso level; civilisation, central government, civil and inter-continental organisations at the macro level; and environmental conditions and context at the meta level. These actors can encounter vulnerabilities but are also required to collaborate to prevent, mitigate or revert these, and to build on the collaborators' strengths, to enable wellbeing across all system levels. Subsequently, novel TSR concepts and methodologies, initiatives, policy and practice implications as well as future research avenues in TSR have been outlined.

The world faces big issues and wicked problems at the micro, meso, macro, and meta levels. TSR scholars and practitioners are called to invest more of their resources in assisting with resolving these challenges through service for the betterment of life on the planet. Equally, TSR specialists are asked to motivate other scholars as well as practitioners and policymakers to join the TSR movement.

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Keywords: Transformative Service Research; 10-Collaborators Framework; Service Ecosystem; Novel Perspectives; Future Avenues

ISSN 2511-8676

SMR JOURNAL OF SERVICE MANAGEMENT RESEARCH

Editor in Chief: Prof. Dr. Christiane Hipp, Prof. Dr. Martin Matzner

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Publisher and overall responsibility for printing and production: Nomos Verlagsgesellschaft mbH & Co. KG, Waldseestr. 3-5, 76530 Baden-Baden, Phone: 07221/2104-0, Telefax 07221/2104-27, www.nomos.de,
Geschäftsführer/CEO: Thomas Gottlöber,
HRA 200026, Mannheim,
Sparkasse Baden-Baden Gaggenau,
IBAN DE05662500300005002266,
(BIC SOLADES1BAD).

Frequency of publication: quarterly

Annual subscription prices: Individual customers: € 219 incl. digital access (single-user), Institutions: € 399,- incl. digital access (multi-user). Digital access is provided through the Nomos eLibrary. Single issue: € 61. Subscription prices include VAT and are subject to a distribution fee (domestic € 18,00/ foreign € 33,00) or direct order fee € 3,50. Invoices will be issued after publication of the first issue of the year.

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Ecosystem-Level Customer Experience with Smart Service: Insights from a Systematic Scoping Literature Review

By Philipp Hansmeier* and Daniel Beverungen

Smart service is fundamentally transforming customer experience in both commercial and private contexts. While the information systems and service disciplines have explored the properties and implementation of smart service, there is a gap in understanding how smart service relates to customer experience at the ecosystem level. With the increasing prominence of digital platforms and data spaces, this ecosystem perspective will become crucial for the success of smart service. We report findings from a systematic scoping literature review on smart service themes and related customer experience concepts. Our analysis of 26 high-quality papers reveals three key insights: (1) smart service systems play a pivotal role in enabling customer experience, (2) customer experience in smart service scenarios is often co-created through "hybrid" customer journeys, and (3) these scenarios are subject to an ecosystem-level. Additionally, we identify smart service fundamentals, embeddedness levels, and business innovation as core themes that shape ecosystem-level customer experience.

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Acknowledgements: The authors would like to thank two anonymous referees for their helpful and constructive comments.

1. Introduction

In today's hyper-connected world, smart service is not only embedded within digital ecosystems but also reshapes the idea of customer experience (Beverungen et al. 2021a). Generally, the concept of smart service describes a technology-enabled service that is delivered via or through a smart product (Allmendinger and Lombreglia 2005; Gonçalves et al. 2020; Wünderlich et al. 2012). As there are many types of smart products ranging from autonomously driving vehicles to industrial machines, medical equipment, smartphones, or smart home devices (Porter and Heppelmann 2014), smart service concerns almost every context in reality. In all these contexts, smart products commonly gather and often directly analyze user and environmental data (Porter and Heppelmann 2015) that is shared within a smart service system (Beverungen et al. 2019). The smart service systems approach, then, can illustrate the interaction but also smart service delivery and consumption between a single customer and provider (Beverungen et al. 2019). To gain a better understanding of the customer-provider interactions within smart service systems, we shortly introduce a smart blood glucose monitoring system as an example. A smart blood glucose monitoring system is able to record data on a patient's blood glucose levels in real time (Porter and Heppelmann 2014). Thus, this smart product provides diabetic patients not only with a convenient smart service to control their blood glucose levels but is also able to notify them when a critical level is reached (Porter and Heppelmann 2014). From a smart service system perspective, the smart product represents the smart blood glucose monitoring system, and the patient the customer, in this case (Beverungen et al. 2019). Simultaneously, the smart blood glucose monitoring system can easily transmit the patient's health data within the smart service system to the service provider, in our case, a physician, who is able to check on the patient if critical levels are reached (Beverungen et al. 2019; Porter and Heppelmann 2015).

Even if the established literature serves to conceptualize smart service system interactions, it has remained silent on how customers experience smart service encounters. Conceptualizing the link between smart service and customer experience poses a significant challenge, as it

requires to determine the desired customer experience during early design phases of smart service systems to ensure the intended outcome is achieved. Still, understanding how customer experience is co-created within the context of smart service and identifying compelling experience concepts is essential. Customer experience refers to the overall perception and response of individuals arising from distinct interactions and value co-creation practices between customers, providers, and potential third parties (Grove and Fisk 1992; Vargo and Lusch 2004, 2008). The level of involvement, actors, and smart service delivery process are likely to vary depending on each individual journey, including journey phases and touchpoints (Gonçalves et al. 2020). From that perspective, customer journeys can be divided into three phases, namely pre-purchase, purchase, and post-purchase phases during which the overall experience emerges (Lemon and Verhoef 2016). Even if recent customer experience frameworks benefit from acknowledging these phases, they mainly consider customer journeys on a dyadic level involving one customer and one service provider in purely physical environments (Lemon and Verhoef 2016; Voorhees et al. 2017), while user experience frameworks address purely digital settings (Cheng et al. 2021; Kohler et al. 2011).

Since some, but not necessarily all touchpoints in a smart service system are embedded in digital realms, customer and user experience frameworks struggle to adequately represent the actual customer journeys and experiences. We posit that considering either viewpoint alone is no longer sufficient, as customers can increasingly experience "hybrid" journeys that consist of analog as well as digital touchpoints (Hansmeier et al. 2024), for example, to inform themselves online in a pre-purchase phase before consuming service in a physical environment during the purchase phase, and finally turning back online to provide feedback in the post-purchase phase. The smart blood glucose monitoring system case, for instance, includes smart service touchpoints in physical realms, such as the physician's appointment, but also digital touchpoints referring to the subsequent health data transfer via a smart product for long-term medical treatment. By understanding the hybrid nature of customer journeys, research might more adequately explain how smart service shapes the overall perceived customer experience. Practitioners might design superior customer journeys by integrating the physical and digital realms.

Still, a dyadic perspective on customer-provider interactions, typically illustrated in smart service systems, might no longer be sufficient to explain complex smart service deliveries. In reality, more than just one provider and customer might be involved during smart service encounters that shape customer experience. For instance, there are device or server suppliers (e.g., smart blood glucose monitoring system supplier), other customers (e.g., other patients), external third parties (e.g., health insurance), or even other smart products (e.g., connected smartphone app) that are also involved in the smart service delivery adhering to a broadened service ecosystem lens (Lipkin and Heinonen 2022). So, we posit that a zoomed-in lens of a smart service system is indeed effective for understanding individual, dyadic interactions, but we need to access many-to-many actor interactions to explain how service experience emerges. Especially, digital infrastructures such as digital ecosystems and data spaces increase the scope by means of participating actors linked via multiple newly available touchpoints to co-create value through the provision of data-driven service (Beverungen et al. 2022). Even if we assume that established theories and frameworks may not suffice to explain the smart service provision and customer experience in digital ecosystems, we know little about the integration of these themes so far. For instance, it is unclear to what extent technologies such as smart products or digital infrastructures affect customer experience. Therefore, customer experience must not only be examined for smart service systems but also abstracted to fit an ecosystem lens. To access this ecosystem lens, however, we first need to thoroughly explore customer experience in hybrid customer journeys, exploring how more dynamic, complex, and increasingly "hybrid" customer journeys, consisting of a distinct set of physical and digital touchpoints, impact customer experience. A customer journey might also comprise firm-owned and non-firm-owned touchpoints (de Keyser et al. 2020) and can also be subject to actors that are connected through multiple ecosystem touchpoints, emphasizing the need to understand new challenges like data-driven smart service and customer experience.

In fact, smart service rapidly becomes part of digital ecosystems spreading across diverse domains. Currently, not only a health data space for sustainable exchange of patient data is under construction (European Commission 2024), but also a cultural heritage data space for personalized cultural program information service (European Commission 2022) as well as a data space mobility in the automotive industry to develop innovative mobility solutions (European Commission 2023). As digital data spaces provide an infrastructure to enable data exchange between the underlying actors in digital ecosystems (Nagel and Lycklama 2021), they are constitutive of smart service and value co-creation practices between the ecosystem actors. Digital ecosystems are typically characterized by multiple loosely coupled actors, including customers, providers, co-customers, suppliers, and third-party strangers, that promote data-driven value co-creation (Lipkin and Heinonen 2022; Vargo et al. 2017; Wang 2021). In practice, there might still be more actors

involved, and customers might simultaneously be part of diverse smart service encounters within the digital ecosystem at the same time, making it hard to predict whether customers will remain with one provider. As such, providers are not only more challenged to offer superior customer experience but also to understand the mechanisms causing distinct customer behavior within digital ecosystems. This problem is difficult to address since smart service has not been studied at an ecosystem level from a theoretical perspective so far. Even if theoretical frameworks like the smart service system (Beverungen et al. 2019) can thoroughly explain single bidirectional actor interaction moments along a value chain, they are not developed to capture a larger scope of simultaneous customer interactions with other ecosystem providers at once. Thus, several interactions or network effects that might be invisible for one provider through a lens that only captures dyadic interactions can be revealed through an ecosystem lens. By taking additional relevant (external) factors, like simultaneous customer interactions with other providers that go beyond bidirectional interactions into account, we need to better understand and predict the outcome of smart service encounters. Drawing on that knowledge, practitioners might benefit from being more aware of simultaneous and invisible customer interactions and can be encouraged to operate even more customer-centric and to design more personalized customer experiences.

By now, research on smart service is predominantly driven by two disciplines: information systems and service science (Dreyer et al. 2019). Although the subject of smart service broadly unites these disciplines, both maintain a unique perspective on similar topics. For instance, there seem to be distinct but overlapping contributions like smart service properties (Beverungen et al. 2019; Gonçalves et al. 2020), environments (Beverungen et al. 2019; Beverungen et al. 2021b; Herterich et al. 2022), strategy (Jussen et al. 2019; Poeppelbuss and Durst 2019), and various related customer experience concepts (Kabadayi et al. 2019; Ostrom et al. 2015; Wünderlich et al. 2015). Whereas information systems research emphasizes a socio-technical perspective on smart service systems and ecosystems, service research embraces a primarily perceptual, behavioral, and customer experience view. Nonetheless, smart service has not been studied at an ecosystem level from a customer experience perspective, bringing both theoretical and practical benefits as outlined above. For this reason, this paper takes on a boundary-spanning role by not only considering information systems and service perspectives but also by bridging the research streams of smart service, customer experience, and digital ecosystems. We propose the subsequent research question: What are the main research themes about smart service, and how does smart service relate to customer experience and digital ecosystems?

To address the research question, this study analyses not only smart service literature covering service and information systems disciplines but also uncovers other meaningful avenues for future research. By integrating both perspectives of information systems and service to explore smart service, inadequacies resulting from the isolated consideration of one discipline can be eliminated (Schreieck et al. 2023). By adopting this integrative approach, we strive to more holistically understand the boundary-spanning role of customer experience for smart service within digital ecosystems. As such, we contribute to service science by identifying popular smart service themes and their relations with customer experience and digital ecosystems. Practitioners can benefit from a better understanding of how smart service can shape customer experiences.

The paper is organized as follows. In Section 2, we revisit related research on smart service and customer experience. Subsequently, Section 3 elaborates on the applied method of a systematic literature review, while Section 4 reports the results with two concept matrices. Section 5 discusses central smart service themes and their relation to customer experience and digital ecosystems, respectively, research gaps and avenues. Section 6 concludes the paper, providing avenues for future research avenues and limitations.

2. Related Research

2.1. Smart Service and Smart Service Systems

Since the last decade, smart service remains a hot topic in both research and practice. Especially information systems and service research explore the fundamentals and principles of smart service. The concept of smart service scientifically originates from Allmendinger and Lombreglia (2005) and is defined as services that are delivered with or through smart products. Even if both disciplines agree upon this rather broad definition by accepting smart service as technology-enabled, -mediated, location- and time-independent service to ensure value co-creation practices among several actors (Beverungen et al. 2019; Wünderlich et al. 2012), not all facets of smart service knowledge entirely coincide. For instance, this becomes visible in terms of established but partly inconsistent smart service properties. Whereas Allmendinger and Lombreglia (2005) exclusively assign smart service the characteristics of awareness and connectivity, more recent contributions tag connectedness, embeddedness, interaction, and autonomy (Korper et al. 2020) or controllability, visibility, self-configuration, sustainability, and autonomy (Gonçalves et al. 2020) as central properties.

A similar impression emerges when understanding smart products as technological devices enabling smart service.

Research notices smart products primarily as information technologies that are equipped with hardware and software to autonomously collect, process, and transfer data (Porter and Heppelmann 2014; Rijsdijk and Hultink 2009). Nevertheless, different conceptualizations of smart product properties have been proposed. For example, service-oriented literature argues smart products entail physical components, network components, and smart components (Porter and Heppelmann 2014). In contrast, smart products are described in the information systems literature as boundary objects being equipped with sensors, connectivity, a unique ID, location information, data storage and processing, actuators, and interfaces as core properties (Beverungen et al. 2019). In line with this approach, we consider smart products as boundary objects that are constitutive of smart service since it roots in the smart product's components (Allmendinger and Lombreglia 2005; Beverungen et al. 2019; Heinz et al. 2022a).

As a boundary object, smart products are commonly embedded within smart service systems (Beverungen et al. 2019). In this regard, a smart service system is conceptualized as a service system encompassing at least two actors, being connected via smart products to achieve mutual benefit through smart service exchange and value co-creation practices (Beverungen et al. 2019; Demirkan et al. 2015). Besides diverse actor and service constellations, including user-user, user-provider, and provider-provider interactions, that co-create value (Heinz et al. 2022a), current research argues that especially the continuum of smart product, smart service, and the context contributes to the value-creation process along with the participating actors (Kurtz et al. 2023). By introducing an ecosystem lens on smart service, even more actors, such as related partners or external third parties, are involved in the value co-creation practices that then go beyond a dyadic level (Herterich et al. 2022; Kari et al. 2023). These interactions are visible at a (service) ecosystem layer, but the data exchange and infrastructure layers are rather invisible in the background (Kari et al. 2023). In this regard, the infrastructure and data exchange layers are not only necessary to connect multiple actors but also enable data-sharing practices for more personalized smart service (Kari et al. 2023).

2.2. Customer Experience

All participating actors are constantly gathering individual experiences during joint smart service interactions within digital (eco)systems (Beverungen et al. 2019). Especially the customer experience literature has come a long way to understand these experiences, shaped by smart service, in more detail. In general, customer experience is defined as the customer's subjective perception of and response to all touchpoints and encounters with one or more organizations during a customer journey (Lemon and Verhoef 2016; Meyer and Schwager 2007). Following this process-oriented view after Lemon and Verhoef (2016), the perceived experience is likely to arise from smart service encounters during diverse customer journeys. Indeed, many current customer journeys are "hybrid" since they include diverse touchpoints within the digital and physical realms (Hansmeier and zur Heiden 2024). For instance, customers typically inform themselves about an event via smart devices and online websites in the pre-purchase phase, whereas they often visit on-site events in person in the actual purchase phase before returning back to digital touchpoints for spreading feedback on social media platforms in the post-purchase phase.

Current research has outlined six components shaping the experience during customer journeys (Gentile et al. 2007): (1) sensorial components like hearing or smelling, (2) emotional components including feelings and moods, (3) cognitive components stimulating the thinking process, (4) pragmatic components caused by practical product usage, (5) lifestyle components from the adoption of the brand lifestyle, and (6) relational components involving the social context (Gentile et al. 2007).

Approaching customer experience from another angle, the literature outlines the importance of (smart) service constructs. This becomes apparent when drawing on Lemon and Verhoef's (2016) lens, outlining the evolution of multiple customer experience concepts in retailing. Whereas early customer experience research explores central topics of customer purchasing behavior, satisfaction and customer loyalty, more recent research topics deal with service quality and the service environment (Lemon and Verhoef 2016). Then, there was a shift toward customer relationship marketing and management, emphasizing the role of commitment, data, trust, and uncertainty (Lemon and Verhoef 2016). Nowadays, customer-centricity and engagement constructs attract great interest in information systems and service research (Lemon and Verhoef 2016).

Although customer experience theory is a mature field, service research has recently extended the perspective of this theory. Now, literature not only considers single customers but also involves the role of actors (besides the traditional customer role) and collective groups (Becker et al. 2023). Furthermore, actor perception, sensations, desires, thoughts, emotions, and actions are added as central topics which overlap with the prior experience frameworks (Becker et al. 2023; Gentile et al. 2007; Lemon and Verhoef 2016). Thus, (customer) experience literature enables us to understand the consequences of diverse smart service encounters at physical and digital touchpoints during hybrid customer journeys.

2.3. Digital Data Space and Ecosystem

Adopting a digital ecosystem lens fundamentally broadens our understanding of smart service encounters, highlighting the roles of multiple participating actors beyond dyadic settings. Indeed, from a service perspective, the digital ecosystem contains the actor roles of (1) customers, (2) providers, (3) intermediaries, (4) third-party stakeholders, or (5) complete strangers that can all encounter one another (Lipkin and Heinonen, 2022). From a more technical perspective, there are even more ecosystem actor roles. For instance, Oliveira et al. (2019) propose the actor roles of (1) data provider, (2) data producer, (3) data owner, (4) policies, laws and rules party, (5) keystone actor, (6) service provider, (7) re-user, (8) data intermediary, (9) data user/ data customer, (10) data curator, (11) infrastructure provider, (12) data sponsor, and (13) data consultant.

Just like the actor roles, there are diverse ecosystem terms in the literature ranging from (digital) data ecosystem (Hompel and Schmidt, 2022), data space (Beverungen et al., 2022), platform ecosystem (Tiwana, 2014) to innovation ecosystem (Wang, 2021) and service ecosystem (Vargo et al., 2017). Starting with the technical ecosystem terms, the established literature introduces digital data ecosystems that allow actors to trade their data without losing their own data sovereignty (Hompel and Schmidt, 2022; Rajabifard et al. 2002). Interestingly, the definition of a digital data ecosystem is highly similar to the concept of digital data space outlined as a digital infrastructure aiming to promote data-driven innovations among participating ecosystem actors (Beverungen et al. 2022; Kalmar et al. 2022). Both should not only ensure data security and sovereignty (Beverungen et al. 2022; Halevy et al. 2006) but also facilitate smart and evidence-based decision-making through data integration from multiple sources and active data management (Guo et al. 2023). Thus, digital data ecosystems or data spaces not only enable data sharing and trading but also hold a constitutive role, as a digital infrastructure, for enabling value co-creation between the participating actors within the digital ecosystem.

The motivation to establish digital data spaces is intertwined with the quest to employ a human-centered perspective on digital ecosystems. For instance, a digital platform ecosystem is an infrastructure of at least one digital platform and complementary applications (Tiwana 2014) that enables value co-creation between participating actors (Ceccagnoli et al. 2012). Apart from that, there are digital innovation ecosystems and service ecosystems as further human-centered ecosystem terms in the existing literature. In this regard, the digital innovation ecosystem focuses on accelerating innovation practices by linking loosely coupled and initially independent actors and organizations (Wang, 2021). Similarly, digital service ecosystems are defined as systems of resource-integrating actors to arrange value co-creation practices through service and resource exchange (Heimburg et al. 2023; Vargo et al. 2017).

Sticking to a human-centered understanding of digital ecosystems enables us to better understand how smart service can be delivered and consumed among the ecosystem actors. We no longer solely consider dyadic customer-provider interactions in smart service systems or triadic customer-provider-platform owner interactions on digital platforms but extend the scope to many-to-many actor interactions. This lens helps us, in particular, to explain smart service during modern and "hybrid" customer journeys, including touchpoints and actors, enabled by the digital ecosystem (Hansmeier and zur Heiden 2024).

3. Method

We answer the research question by performing a systematic literature review. Systematic literature reviews seek to derive comprehensive insights into a particular field by systematically synthesizing and summarizing accepted wisdom (Brandhorst 1982; Hulland and Houston 2020; Levy and Ellis 2006). For this purpose, a scoping review approach is adopted following Paré et al. (2015) to balance breadth and comprehensiveness of the results (Levac et al. 2010). This approach not only allows for a broad scope of questions and a wide search strategy but also integrates an explicit study selection that is analyzed, related, and evaluated by topic and contents (Levac et al. 2010; Paré et al. 2015). In practical application, Levy and Ellis's (2006) handy "input-processing-output" approach is employed. Concerning the applied inclusion and exclusion criteria for article selection (*cf. Tab. 1*), this literature review exclusively incorporates highly ranked academic journal and conference articles in English with direct relevance to the research question (Plomp 1990; Randolph 2009). All articles published by August 2023 are considered, although the number of citations is neglected to ensure a holistic review covering both disciplines, information systems and service, by adhering to the VHB JOURQUAL 3 ranking system (Hennig-Thurau and Sattler 2015; Plomp 1990; Watson et al. 2018). The VHB JOURQUAL ranking system provides not only a transparent overview of various economic (research) outlets but also serves as a structured framework and an agreed-upon quality standard for selecting journal and conference articles (Hennig-Thurau and Sattler 2015). In general, the VHB JOURQUAL distinguishes between the rankings of A(+), B, C, and D. The rankings of A(+) and B are regarded as leading and recognized scientific outlets, whereas C and D tend to be rather fast-publish-

ing outlets (Hennig-Thurau and Sattler 2015). As the VHB JOURQUAL 3 ranking system makes a clear separation between the information systems and service disciplines, it strongly defines the structure of our manuscript. Although an update is now available, it remains consistent with the former ranking system for the most part, and therefore does not cause any issues regarding the proposed findings. Moreover, *Fig. 1* informs about the broadly chosen search string and the performed search procedures after Moher et al. (2009).

Tab. 1. Inclusion and exclusion criteria for article selection

Inclusion and Exclusion criteria (after Plomp 1990; Randolph 2009; Watson 2018)		
Criterion	**Inclusion**	**Exclusion**
Direct reference to research question	Yes.	No.
Study type	Peer reviewed VHB JOURQAL 3 ranking conference and journal articles. Below B only if content-wise fit.	Non-scientific literature.
Article type	Information systems and service articles.	Any other journal types.
Language	English.	Any other.
Time period	Publications until August 2023.	/
Relevance	Smart service related.	Any other.
Citation number	No limit set.	/

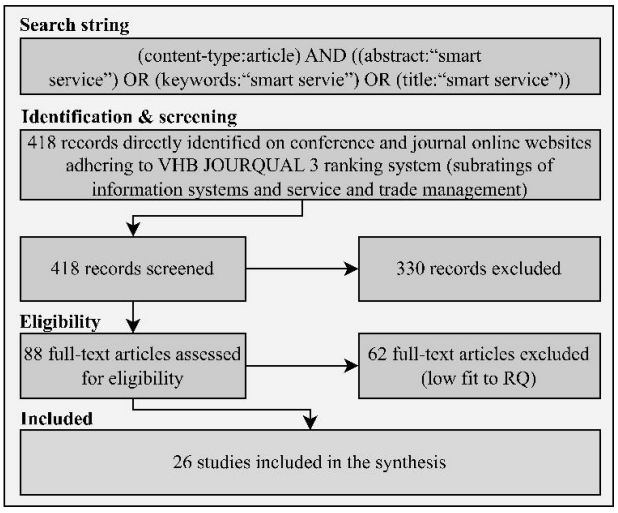

Fig. 1. Search strategy and procedures

As we aim not only to explore the smart service literature, but also strive to summarize key findings and unveil research gaps, we decided to apply a systematic scoping literature review at the beginning of our search (Arksey and O'Malley 2005; Levac et al. 2010). Next, we applied our broad search string (*cf. Fig. 1*) by hand-searching electronic information systems as well as service journal and conference outlets within the identification and screening phase (Arksey and O'Malley 2005). Since our review sought to cover a broad spectrum of literature (Levac et al. 2010) on smart service, we just used the term "smart service" and refrained from limiting our search with additional terms like "customer experience." After carefully reading the abstracts and screening the initial 418 papers, we excluded 330 irrelevant studies by adhering to our inclusion and exclusion criteria (*cf. Tab. 1*) guiding our selection (Arksey and O'Malley 2005). The papers needed to directly address the research question and focus on smart service as core topic to be considered in the analysis. In the eligibility phase, we then conducted an iterative full-text article assessment by once again adhering to our inclusion and exclusion criteria, finally excluding 62 papers (Arksey and O'Malley 2005; Levac et al. 2010). 26 articles remained in the review.

Next, central smart service themes and related concepts are gathered by interpreting qualitative data (Arksey and O'Malley 2005). We focus on the main results and core topics of the selected studies (Arksey and O'Malley 2005). To set up the classification scheme, a qualitative content analysis (Mayring 2000) of smart service themes and related concepts is performed to point out content-wise and thematic overlaps (see chapter 4.1). As in the case of the discovered smart service themes, no suitable concepts for a deductive classification exist; explorative-inductive procedures, respectively, the category formation are required (Mayring 2000). By following Mayring (2000), we formulated step-by-step inductive categories out of the material for the central smart service themes. After working through thirteen randomly chosen articles (50% of the total material), we revised our category system and started the final article classification. For the central smart service themes, we identified the following three inductive categories: fundamentals of smart service (with the two subcategories of smart service types, and smart service dimensions), embeddedness of smart service (with the four subcategories of smart products, smart service system, digital platforms, and smart service ecosystem), smart service (business) innovation (with the two subcategories of smart service strategy and smart service design).

Contrary to that, the related concepts are assigned to deductive categories by matching them with established literature (Mayring 2000). In this regard, we theoretically defined the main categories and coding rules adhering to the established customer experience literature before revising the categories once again after working through half of the selected articles and proceeding with the final

classification (Mayring 2000). Alongside the interesting approach of examining smart service through a customer experience perspective, we noticed during the first inductive coding that the smart service literature deals with many customer experience variables as related concepts. Finally, we deductively chose the following four categories for the related concepts according to Lemon and Verhoef (2016): customer buying behavior, satisfaction & loyalty (with the two subcategories of pre-purchase to purchase concepts and early post-purchase concepts), service quality (with the two subcategories of service environment and perceived quality), customer relationship marketing & management (with the four subcategories of commitment & cooperation, data & technology, trust, and uncertainty), customer centricity & engagement (with the three subcategories of customer-to-customer market, emotions, and late-post-purchase concepts). For both deductive and inductive categories, *Tab. 2* lists the coding rules that were used to aggregate the mentioned themes and related concepts.

Tab. 2. Coding rules overview

Category	Coding rule
Fundamentals of smart service	All central themes being assigned to this category predominantly focus on types, characteristics, or dimensions of smart service. (Inductive coding).
Embeddedness of smart service	All central themes being assigned to this category predominantly focus on specific environments in which smart service can occur. (Inductive coding).
Smart service (business) innovation	All central themes being assigned to this category predominantly focus on (business) innovation in the context of smart service. (Inductive coding).
Customer buying behavior, satisfaction & loyalty	All related customer experience concepts being assigned to this category focus on customer buying behavior, satisfaction, and loyalty (Lemon and Verhoef 2016). (Deductive coding).
Service quality	All related customer experience concepts being assigned to this category focus on service quality (Lemon and Verhoef 2016). (Deductive coding).
Customer relationship marketing & management	All related customer experience concepts being assigned to this category focus on customer relationship marketing and management (Lemon and Verhoef 2016). (Deductive coding).
Customer centricity & engagement	All related customer experience concepts being assigned to this category focus on customer centricity and engagement (Lemon and Verhoef 2016). (Deductive coding).

In terms of the classification scheme development, every smart service theme and related concept being content-wise core element of the article, is considered. Besides that, this review assures the established quality criteria of systematic review procedures, adherence to inclusion and exclusion criteria, narrative reader guidance, and uncovering new insights after Hulland and Houston (2020) while adhering to the VHB JOURQUAL 3 service and trade management and information systems subratings (Hennig-Thurau and Sattler 2015).

4. Results

4.1. Organizational Framework for Classification of Research Contributions

After reviewing the remaining 26 papers, we aggregated central smart service themes and related concepts into seven categories. The smart service themes cover three inductively generated categories, whereas the related concepts include four categories that were identified deductively.

Starting with inductively deriving smart service themes, the first category – fundamentals of smart service – encompasses the two subcategories of smart service types (targeting smart service typologies) and smart service dimensions (revealing characteristics of smart services). In contrast, the second category – the embeddedness of smart service – refers to specific environments in which smart service is implemented. They include the subcategories of smart product level (an individual actor consumes a service), smart service system level (at least two actors exchange service and co-create value), digital platform level (at least two actors deliver and consume service resulting in value co-creation that is enabled by a platform owner as a third party), and smart service ecosystem level (multiple actors exchange service and co-create value in several spheres). Then, the smart service (business) innovation category includes smart service strategy (concerning innovation at the strategic business level) and smart service design (concerning innovation at the operative service delivery level).

Concerning the four related concepts, the selected papers are deductively sorted according to Lemon and Verhoef's (2016) overview of customer experience historical contributions. The first category inspired by Lemon and Verhoef (2016) – 1960s-1970s: customer buying behavior, satisfaction & loyalty – features the two subcategories pre-purchase to purchase phase concepts (considering concepts that are part of the path to purchase) and early post-purchase phase concepts (like initial satisfaction). Next, contributions to the two subcategories of service environment and perceived quality refer to the category of the 1980s: service quality (Lemon and Verhoef 2016). The third category – 1990s-2000s: customer relationship marketing & management – is split into the four sub-

categories commitment & cooperation, data & technology, trust, and uncertainty (Lemon and Verhoef 2016). The concepts of customer-to-customer market, emotions, and late post-purchase phase concepts (like ultimate satisfaction level or repurchase intention) refer to the last category, 2000s-2010s: customer centricity & engagement (Lemon and Verhoef 2016).

4.2. Results of the Literature Search Process

In the following, the relevant 26 papers are mapped to the organizational framework (cf. *Tab. 3 and 4*). Subsequently, the discussion outlines the identified smart service contributions by means of central themes and related concept categories.

Tab. 3. Smart service themes, inductive classification

	Fundamentals of smart service		**Embeddedness of smart service**				**Smart service (business) innovation**	
Author (VHB JOURQUAL ranking)	Smart service types	Smart service dimensions	Smart products	Smart service system	Digital platforms	Smart service ecosystem	Smart service strategy	Smart service design
Alt et al. (2019) (B)							X	
Anke (2019) (B)		X					X	
Beverungen et al. (2021) (B)				X	X		X	
Beverungen et al. (2019) (B)			X	X				
Boukhris & Fritzsche (2019) (B)		X	X					
Dreyer et al. (2019) (B)			X					X
Fischer et al. (2020) (B)	X	X	X					
Gäthke (2020) (B)								X
Gonçalves et al. (2020) (B)		X	X					
Han & Geum (2022) (B)							X	
Hanke et al. (2018) (B)							X	
Heinz & Anke (2023) (B)							X	
Heinz et al. (2022b) (A)				X				X
Herterich et al. (2022) (A)			X		X	X		
Kabadayi et al. (2019) (B)		X						X
Kandampully et al. (2023) (B)								X
Kang et al. (2020) (A)			X	X				
Knote et al. (2021) (A)		X	X					
Laubis et al. (2019) (B)								X
Otto (2022) (B)						X		
Paukstadt et al. (2019) (B)		X						
Poeppelbuss et al. (2021) (B)				X				X
Rau et al. (2020) (A)	X	X						
Wiegard & Breitner (2019) (B)				X				
Wünderlich et al. (2012) (A)	X	X						
Yang et al. (2021) (A)	X							
Σ	4	9	8	6	2	2	6	7

Tab. 4. Related concepts, deductively sorted according to Lemon and Verhoef's (2016) customer experience contributions overview

	1960s-1970s: customer buying behavior, satisfaction & loyalty		**1980s: service quality**		**1990s-2000s: customer relationship marketing & management**				**2000s-2010s: customer centricity & engagement**		
Author (VHB JOURQUAL ranking)	Pre-purchase to purchase phase concepts	Early post-purchase phase concepts	Service environment	Perceived quality	Commitment & cooperation	Data & technology	Trust	Uncertainty	Customer-to-customer market	Emotions	Late post-purchase phase concepts
Alt et al. (2019) (B)					X						
Anke (2019) (B)	X										
Beverungen et al. (2021) (B)					X	X					
Beverungen et al. (2019) (B)					X						
Boukhris & Fritzsche (2019) (B)					X						
Dreyer et al. (2019) (B)	X			X	X	X		X			X
Fischer et al. (2020) (B)			X								
Gäthke (2020) (B)		X	X	X							X
Gonçalves et al. (2020) (B)					X	X					
Han & Geum (2022) (B)						X					
Hanke et al. (2018) (B)			X								
Heinz & Anke (2023) (B)					X						
Heinz et al. (2022b) (A)						X					
Herterich et al. (2022) (A)						X					
Kabadayi et al. (2019) (B)				X	X			X		X	
Kandampully et al. (2023) (B)			X								
Kang et al. (2020) (A)	X			X							X
Knote et al. (2021) (A)					X						
Laubis et al. (2019) (B)						X			X		
Otto (2022) (B)						X					
Paukstadt et al. (2019) (B)	X										
Poeppelbuss et al. (2021) (B)								X			
Rau et al. (2020) (A)						X					
Wiegard & Breitner (2019) (B)	X							X			X
Wünderlich et al. (2012) (A)	X				X	X	X				X
Yang et al. (2021) (A)									X		
Σ	6	1	4	4	10	10	1	4	2	1	5

4.3. Quantitative Perspective on the Results

Before proceeding with the discussion, we present a quantitative perspective of our findings. Starting with an overview of the papers per year (*cf. Fig. 2*), our results show that most smart service studies were published around the turn of 2020, even if the earliest study dates back to 2012. In contrast, a slight downward trend in the number of smart service papers can be observed after 2019. Interestingly, twenty smart service papers were published in information systems journals, while six were published in service journals (*cf. Fig. 3*), reflecting the information systems discipline's role in smart service research. Also, seven papers are published in A-ranked journals, while nineteen appeared in B-ranked journals (*cf. Tab. 5*), which is consistent with our selection of more B-ranked than A-ranked journals. Electronic Markets and the Journal of Service Management published most of the identified papers (*cf. Tab. 5*).

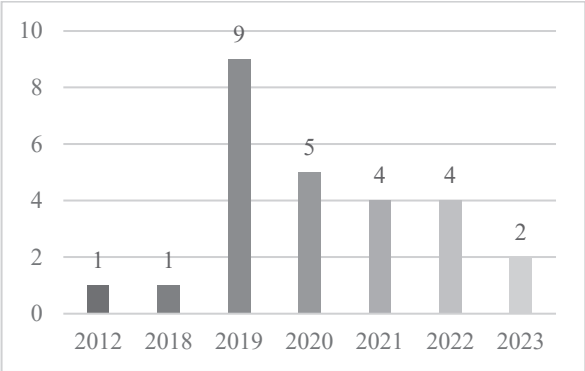

Fig. 2. Papers per year

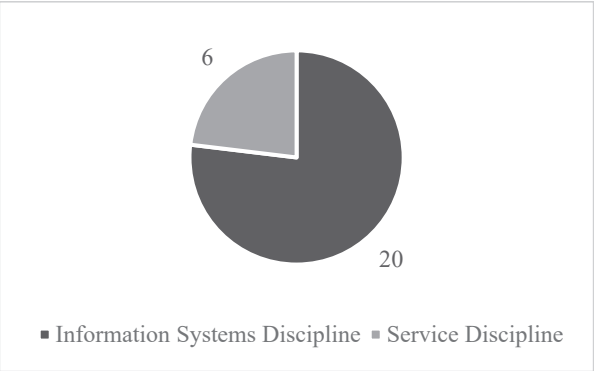

Fig. 3. Papers per discipline

Tab. 5. Quantitative overview of papers identified in different journals

Discipline	Journals	VHB JOURQUAL 3 ranking	Number of publications per journal
Information Systems	Communications of the ACM	B	1
	Electronic Markets	B	8
	IEEE Transactions on Engineering Management	B	1
	Information Systems Journal	A	1
	Journal of the Association for Information Systems	A	3
	Proceedings of the European Conference on Information Systems	B	4
	Proceedings of the International Conference on Information Systems	A	2
Service	Journal of Service Management	B	5
	Journal of Service Research	A	1

According to our data, smart service research focuses on three major themes and four related customer experience concepts (*cf. Fig. 4*). Generally, there is profound literature on the fundamentals of smart service (N=13) that provides insights into smart service types and smart service dimensions. Although the types and dimensions differ, a fair amount of foundational knowledge is available. Even more papers deal with the embeddedness of smart service in different environments (N=18) compared to the literature on the fundamentals of smart service. While smart service provision at the smart product and smart service system level seems to have been widely researched, few papers refer to the levels of the digital platform and service ecosystems (*cf. Tab. 3*). Finally, the third stream of smart service papers (N=13) deals with smart service (business) innovation at both a strategic and a design level.

In terms of the customer experience concepts, *Fig. 4* shows that these concepts are researched to varying degrees. So far, the least researched topics are customer behavior, satisfaction and loyalty in the context of smart service (N=7). Whereas pre-purchase to purchase phase concepts appear sufficiently investigated, research regarding early post-purchase phase concepts is scarce (*cf. Tab. 4*). With a total of N=8 papers, service quality concepts with the two subcategories of service environment and perceived quality seem sufficiently explored as established marketing theories on servicescape and service quality can also be applied to smart service. Interestingly, customer relationship marketing & management concepts have been profoundly explored (N=25). Particularly on commitment & cooperation and data & technology, twenty papers reflect broad scientific investigation. In contrast, the customer experience concepts of uncertainty and trust are less explored but provide great potential for future research as both concepts are decisive for successful smart service experiences. Finally, the concepts of customer centricity & engagement remain moderately researched (N=8). Whereas smart service scholars often deal with late post-purchase concepts, both customer-to-customer market and emotions concepts have gained little attention so far.

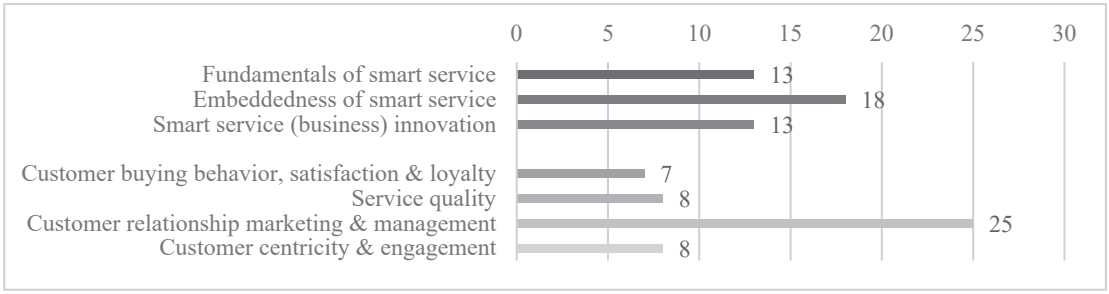

Fig. 4. Studies per category

5. Discussion

Our results reflect the main smart service research themes and point out how smart service relates to customer experience and digital ecosystems. In the following, we combine the qualitative results section with the discussion to achieve a cohesive and direct presentation of the findings along with meaningful linkages to existing literature to easily uncover research gaps. This approach ensures an efficient line of argumentation that increases the comprehensibility for readers as important findings and conclusions can be drawn immediately after the presentation of the article contents (Bem 2021; Wu et al. 2016).

5.1. Central Smart Service Themes in Information Systems Research and Service Science

Regarding smart service, information systems and service research focus on smart service fundamentals, embeddedness, and (business) innovation as overarching themes.

The first theme of smart service fundamentals comprises contributions of two subcategories, smart service types and smart service dimensions. Regarding smart service types, literature (Rau et al. 2020; Wünderlich et al. 2012) closely aligns with Allmendinger and Lombreglia's (2005) notion of smart service as service that is delivered with or through smart products. For instance, Wünderlich et al. (2012) empirically introduce the type of smart interactive services that specifically require human-to-human interaction via smart products. Rau et al. (2020) regard smart service from a complementary perspective, in which proactive service is understood as smart service evolution, anticipating and directly addressing customer needs.

Still, the literature also contains other conceptualizations. Referring to Yang et al. (2021), smart service can be split into three categories according to the particular service environment: (1) services being performed on the Internet of Things and by wearables, (2) services being performed on platforms and sharing economy, and (3) services being performed by intelligent agents. Fischer et al. (2020) provide a smart service archetype taxonomy for the context of smart living, including the smart service types named (1) monitor, (2) diagnostics and automation, (3) command execution, (4) personal tracker, and (5) trainable assistant. Thus, research on smart service types appears quite inconsistent and lacks a holistic typology.

Continuing with the second subcategory – smart service dimensions – the literature offers several smart service dimensions and characteristics from a technical, a behavioral, and a joint socio-technical perspective, as illustrated in *Tab. 6*.

Tab. 6. Smart service dimension overview

Perspective	Smart service dimensions and characteristics
Technical	Boukhris and Fritzsche (2019): (1) data richness, (2) decision support engine, (3) outcome delivered to the service user(s), (4) architecture of stakeholders, (5) automation of service processes
	Knote et al. (2021): (1) hardware: communication mode, directionality, integration, (2) software: knowledge model, request complexity, adaptivity, collective intelligence, representation
Behavioral	Gonçalves et al. (2020): (1) controllability, (2) visibility, (3) self-configuration, (4) sustainability, (5) autonomy
	Wünderlich et al. (2012): (1) user activity, (2) provider activity
Joint/ socio-technical	Anke (2019): (1) data transmission, (2) external services, (3) services as a combination of functions, (4) value co-creation, (5) costs and pricing models
	Fischer et al. (2020): (1) configuration, (2) data analytics, (3) service object, (4) benefit, (5) duration of service
	Kabadayi et al. (2019): (1) integrated technology and intelligent data usage, (2) adaptability with respect to varying customer needs
	Paukstadt et al. (2019): (1) service concept: value proposition, bundle, main outcome, visibility, (2) service delivery: operation mode, interaction between actors, main interface, (3) service monetization: payment mode, pricing model
	Rau et al. (2020): (1) consumer: relief, benefit, risk, (2) data: source, analysis, smartness, (3) interaction: trigger, representation, integration

From a *technical perspective*, scholars discuss smart product-related hardware and software components enabling smart service (Knote et al. 2021). While the communication mode, directionality, and integration belong to the hardware components, the implemented knowledge

model, request complexity, adaptivity, collective intelligence, and representation are regarded as software components (Knote et al. 2021). In addition, there are further rather technical but deviating dimensions to conceptualize the smartness of services in research, namely data richness, decision support engine, delivered outcome, stakeholder architecture, and service process automation (Boukhris and Fritzsche 2019). From a *behavioral perspective*, the literature offers two contributions. A comparison reveals that Wünderlich et al. (2012) limit the dimensions to user or provider activity, while Gonçalves et al. (2020) broaden the classification and distinguish between perceived controllability, visibility, self-configuration, sustainability, and autonomy. Shedding light on the *socio-technical* view of smart service, several authors consider technical and behavioral dimensions. This includes data transmission, external services, services as a combination of functions, value co-creation, costs, and pricing models (Anke 2019), configuration, data analytics, service object, benefit, duration of service (Fischer et al. 2020), or integrated technology and intelligent data usage and adaptability with respect to varying customer needs (Kabadayi et al. 2019). Research also classifies smart service dimensions in a more specific manner. For example, Paukstadt et al. (2019) differentiate between service concept (covering value proposition, bundle, main outcome, visibility), service delivery (compromising operation mode, interaction between actors, main interface), and monetization (including payment mode, pricing model) dimensions. Finally, Rau et al. (2020) find similar but not identical smart service dimensions, considering consumer (relief, benefit, risk), data (source, analysis, smartness), and interaction (trigger, representation, integration).

We infer that customers encounter smart service of different types, while customer experience is subject to socio-technical systems. Although we already know that customers interact with providers in smart service systems based on smart products as boundary objects (Beverungen et al. 2019), customer experience does not always involve human interaction. For instance, self-service or interactions with artificial agents become increasingly relevant in digital service settings (Yang et al. 2021). This observation encourages research to explore the roles digital technologies, such as generative artificial intelligence, can obtain in smart service systems and discover how experiences are shaped by these technologies. Clearly, data richness is key for addressing customer needs particularly well (Boukhris and Fritzsche 2019; Kabadayi et al. 2019). Indeed, new types and qualities of field data need to be collected and analyzed across the continuous and routinized technology-mediated interactions to enable even more individualized value propositions (Beverungen et al. 2019).

The second theme deals with the embeddedness of smart service in diverse environments. On a smart product level, smart service is closely wrapping around individual users. Typically, smart products collect data from local contexts, perform analyses, and enable local service (Boukhris and Fritschze 2019; Dreyer et al. 2019). Research in this subcategory argues from a behavioral perspective that smart products need to fulfill three properties, including accessibility, ease of use, and ease of learning (Gonçalves et al. 2020). Besides that, research from a socio-technical perspective describes the three smart product dimensions capability level, communication, and data source (Fischer et al. 2019) and the four smart technology attributes of monitoring, control, advisory support, and responsive support (Kang et al. 2020). However, research agrees on the following smart product properties: unique identification, localizing, connectivity, sensors, storage and computation, actuators, interfaces, and invisible computers (Beverungen et al. 2019; Heterich et al. 2022; Knote et al. 2021). Equipped with these features, smart products can also be regarded as boundary objects enabling data sharing, service exchange, and value co-creation in a broader environment, namely the smart service system (Beverungen et al. 2019).

Switching to the smart service system level, smart service not only wraps around single users but is also located in a service system consisting of at least two actors that co-create value. Since the embeddedness levels seem to build on each other, smart service can still function locally around the user and thus fulfill the smart product embeddedness level, even if they are located in the smart service system embeddedness level. Typically, the smart service system considers at least two parties (service consumer and provider) digitally exchanging services and co-creating value by utilizing smart products as boundary objects (Beverungen et al. 2019). For instance, Wiegard et al. (2019) draw on that knowledge and exemplarily demonstrate how smart service systems are realized by means of health insurance. In short, by using a smart product such as a fitness tracker, customers track their health and lifestyle data, which is then collected and analyzed by the service provider and ultimately forwarded to the insurance company (Wiegard et al. 2019).

Further research highlights the role of innovation in smart service systems (Heinz et al. 2022b; Kang et al. 2020; Poeppelbuss et al. 2021). Information systems research conceptually establishes smart service platforms – a boundary object building on smart products to enable value co-creation between at least two distinct groups – which leads to the environment of a digital platform (Beverungen et al. 2021b). When smart service is embedded on a digital platform level, it is situated around at least two actors that co-create value, enabled by a platform owner as a third party. While smart service on digi-

tal platforms is still underexplored, Herterich et al. (2022) mention the role of data platforms – for storing and processing data – for providing personalized smart service production. The same paper (Herterich et al. 2022) proposes smart service ecosystems – ecosystems of multiple actors and (external) partners that co-create value – also representing the ecosystem level subcategory in which smart service is embedded. In line with this, Otto (2022) outlines the vision of bringing together smart service and digital data spaces and ecosystems. This idea implies that smart service encounters in digital ecosystems and data spaces will not only rely on bidirectional interactions but rather involve multiple resource-integrating ecosystem actors and arrangements (Vargo et al. 2017). As loosely coupled collectives, actors across the digital ecosystem will repeatedly connect to co-create value through or via more personalized smart service. An infrastructure such as a data space that enables sovereign data exchange within the whole digital ecosystem (Otto 2020) could enable highly personalized smart service. Beyond that idea of data exchange in digital data spaces and ecosystems (like Gaia-X) to develop and deliver new smart service to the ecosystem and data space participants (Otto 2022), research in this field is scarce. In fact, the existing literature is limited to dyadic or triadic embeddedness levels (e.g., smart product embeddedness level, and smart service system embeddedness level). Also, the embeddedness of smart service has been scarcely investigated on the levels of a digital platform and an ecosystem. Although there is literature mentioning smart service in different environments with distinct actors being involved, it remains unclear what characteristics smart service environments can possess. However, we conclude that diverse smart service types and environments can be used to shape customer experience (*cf. Tab.* 7). We also found multiple studies dealing with the embeddedness level of smart service system, suggesting that customer experience is primarily enabled by smart service systems, either between customer and provider or between customer and technology.

Tab. 7. First transformational force and promising research perspectives

First transformational force	Research perspectives
Customer experience is enabled by smart service systems	■ Explore innovative technologies like generative artificial intelligence in smart service systems ■ Strategically shape customer experience with smart service (environments)

These insights highlight that customer experience is likely to vary depending on the smart service environment. Referring to the customer experience determinants proposed by Verhoef et al. (2009), it is conceivable that the impact of these determinants on the customer experience is likely to change depending on the smart service environment. For instance, the smart service assortment or the social impact on customer experience (Verhoef et al. 2009) will be greater due to the multitude of participants in the digital ecosystem compared to a smart service system with one provider and customer. In contrast, there is reason to assume that prices (Verhoef et al. 2009) in ecosystems become lower as a result of increased supply. Therefore, practitioners need to know which smart service environment is most suitable for their needs. As research regarding this issue is scarce, we encourage scholars to explore smart service environments to better understand which determinants interfere with the environment in which smart service is embedded that consequently shape the customer experience.

These insights suggest that customer experience is likely to touch on diverse environments along customer journeys. For example, customers can dive into digital environments when informing themselves online about a service or into physical environments when requiring on-site assistance from service providers. These so-called "hybrid" customer journeys include personal on-site interactions as well as digital interactions (Hansmeier and zur Heiden 2024). Moreover, physical and digital interactions are likely to influence each other as a duality. In terms of virtual reality, for instance, physical and digital aspects even merge, as customers use technology on-site while immersing in digital worlds at the same time (Gäthke 2020). Still, we lack knowledge on how this duality of environments works to co-create customer experience. We posit that data can be collected at various local contexts and (physical, digital) touchpoints (Boukhris and Fritzsche 2019; Hanke et al. 2018), allowing to re-think customer journeys as "self-learning" journeys driven by smart service that anticipate future customer needs. Beyond that, value co-creation among diverse actors (Beverungen et al. 2022; Kabadayi et al. 2019) and the involvement of IT can also be expected to shape the actors' interactions and their co-creation of service experience, resulting in the additional challenge of matching and managing actors in ecosystems.

The third overarching theme discovered is smart service (business) innovation, encompassing two subcategories: smart service strategy and smart service design. At its core, smart service strategy refers to the corporate strategic business level. For strategically enhancing smart service and boosting value, the literature draws on two central aspects: the offered value and the established business model (Alt et al. 2019). To enable value-creation practices, businesses rely on customer data as a crucial driver for business innovation (Han and Geum 2022; Hanke et al. 2018). Following the approach of Han and Geum (2022), data can serve as a supporter (effi-

ciency improvement), mediator (service optimization), and value generator (achieving a data-centered business model). Adhering to a data-driven business model, the literature also outlines strategic options for businesses to transform a smart service provider into a platform provider (Beverungen et al. 2021b). To establish a smart data, smart product, or matching platform, the literature argues that businesses need to respect the following properties: openness, affiliation, direct interactions, and network effects (Beverungen et al. 2021b). Here, research not only conceptualizes that value co-creation through smart service innovation methodologies happens in a joint sphere in which local practitioners and global research meet (Heinz and Anke 2023), but also merges the product service system framework with business model dimensions to provide insight into which business model dimensions are affected during distinct product and service design phases (Anke 2019). This allows the transition to the second subcategory, entitled smart service design, located at the concrete service delivery level. Even if smart service design is deemed to be context- and servicescape-dependent (Dreyer et al. 2019; Gäthke 2020) and possessing several data sources is key (Laubis et al. 2019), research identifies four types of smart service innovation events in smart service systems (Heinz et al. 2022b). Indeed, innovation happens if (1) problem-solving (by utilizing smart products in established processes), (2) harvesting (by changing smart product usage routines), (3) modularizing (by reconfiguring the initial purpose of smart products), or (4) market-shaping (by linking several smart product users) takes place in the smart service system (Heinz et al. 2022b). Besides this, the literature examines five dimensions (user empowerment, seamless experience, accurate service delivery, privacy and security, user enjoyment) determining the smart service experience (Kabadayi et al. 2019) as well as uncertainty reduction properties (actor management, joint service crafting, technical development, economic viability) during the smart service design phase (Poeppelbuss et al. 2021).

By jointly considering both topics of servicescape and service experience, literature recently contributes an experiencescape framework (Kandampully et al. 2023). In more detail, Kandampully et al. (2023) contribute servicescape-related factors shaping the service experience by pointing out physical, technological, social, cultural, and natural environmental elements. Nevertheless, that approach seems to suffer from a lack of holism and a missing process orientation. Drawing on these contributions, it seems that research lacks wisdom concerning the conceptualization of smart servicescapes and a smart service engineering guideline. Given that the customer experience literature incorporates many servicescape concepts, such as retail atmosphere, service interface, and social environment (Verhoef et al. 2009), this literature is remarkably suitable for proposing guidelines for conceptualizing smart servicescapes. Similar to conceptualizing smart servicescape, should the smart service engineering focus on customer centricity being also a central part of the customer experience research as well (Lemon and Verhoef 2016). By doing this, both smart servicescape and smart service are likely to directly match the underlying customer needs. Therefore, we suggest that research and practice design smart servicescapes and smart service innovation through the eyes of the customers.

We conclude that (smart) servicescapes and service innovations need to be designed on an ecosystem level. Due to network effects, changes no longer only affect individuals alone but propel to a large number of actors in open ecosystems and data spaces (Beverungen et al. 2022; Heinz and Anke 2023). We posit that initial (smart) service systems need to be engineered on an ecosystem level as customer experience goes beyond dyadic relations in the near future. Instead, multiple actors will be involved in creating customer experience on an ecosystem level in emergent settings that are hard or impossible to control. Simultaneously, the increased complexity, ambiguity, speed, and transformation of customer experience at an ecosystem level may result in service episodes becoming blurred. To counteract that issue, both scholars and practitioners need to better understand the role of technology in enabling and constraining interactions in digital ecosystems as well as immediately start ramifications of customer experience on an (eco-)systemic level.

5.2. Central Smart Service-Related Concepts in Information Systems and Service Research

Altogether, common customer experience constructs can be identified as related concepts of smart service research in the information systems and service disciplines. Due to that observation, the analyzed contributions are deductively arranged in accordance with the customer experience contributions overview after Lemon and Verhoef (2016). Correspondingly, T*ab. 8* highlights the most relevant related concepts being investigated for smart services.

Regarding customer buying behavior, satisfaction, and loyalty concepts, there are contributions that can be sorted into the two subcategories, namely pre-purchase to purchase phase and early post-purchase phase concepts. Contributions falling under the pre-purchase to purchase phase category refer to the consumer's path to purchase (Lemon and Verhoef 2016). In this respect, the perceived value and pricing influencing the purchase decision are central concepts in the smart service literature. For example, Kang et al. (2020) and Wiegard and Breitner (2019) address the perceived value of smart ride-hailing and healthcare service. Apart from that, pricing is a meaning-

ful concept related to the field of smart service. Here, research seems pretty consistent as all selected articles (Anke 2019; Dreyer et al. 2019; Paukstadt et al. 2019) focus on pricing models and strategies for businesses delivering smart service. Moving to the second subcategory, early post-purchase phase concepts, there are related concepts occurring early after the initial purchase and first consumption. In terms of smart service research, Gäthke (2020) finds that artificial intelligence and augmented reality improve the level of customer satisfaction, positive word of mouth, and loyalty directly after the interaction. Aside from that study, there are no other studies exploring rather impulsive responses in the field of smart service.

Regarding service quality, we identified the subcategories of service environment and perceived quality (Lemon and Verhoef 2016). On service environments, literature focuses on the concept of servicescape, the physical environment in which service takes place (Bitner 1992). Scholars investigate smart service in brick-and-mortar retail settings (Hanke et al. 2018), but also consider digital settings like smart living, augmented reality mobile apps, or virtual reality solutions (Fischer et al. 2020; Gäthke 2020; Kandampully et al. 2023). Although a smart servicescape framework is still missing, an experiencescape framework has been proposed to add technological, social, cultural, and natural dimensions to the physical dimensions (Kandampully et al. 2023). In terms of perceived quality, several papers deal with service quality. Overall, research in this area seems very mature, providing measures for service quality in diverse contexts (Dreyer et al. 2019; Gäthke 2020; Kabadayi et al. 2019; Kang et al. 2020).

In terms of customer relationship marketing and management concepts, research focused on commitment and cooperation, data and technology, and trust and uncertainty (Lemon and Verhoef 2016). Regarding commitment and cooperation, the literature not only explores customer involvement in terms of customer roles and requirements (Dreyer et al. 2019), but also extends that idea to service providers and potential third parties by emphasizing the involvement of these actors during joint cooperation practices (Gonçalves et al. 2020). Beyond the evidence suggesting that various actors can engage to diverse degrees, Kabadayi et al. (2019) argue that customer empowerment is especially strengthened within smart service experiences, as customers are frequently involved in proactive collaborations. Other authors focus on the goal of those practices, the shared value co-creation between the participating actors (Beverungen et al. 2019). In sum, smart service literature considers not only fundamentals of value co-creation, such as the processes in the smart service system (Beverungen et al. 2019), on digital platforms (Beverungen et al. 2021b) or a shared value co-creation environment between researchers and practitioners (Heinz and Anke 2023), but also smart service type classifications based on user and provider activity during the value co-creation (Wünderlich et al. 2012). Moreover, the literature examines value types of smart service (Boukhris and Fritzschke 2019), brings together smart service values and business model forms (Alt et al. 2019), and delves into functional affordances in the value co-creation process with smart personal assistants (Knote et al. 2021).

Tab. 8. Related smart service concepts overview

1960s-1970s: customer buying behavior, satisfaction & loyalty concepts	
Pre-purchase to purchase phase	Perceived value (Kang et al. 2020; Wiegard and Breitner 2019) Pricing (Anke 2019; Dreyer et al. 2019; Paukstadt et al. 2019)
Early post-purchase phase	Satisfaction (Gäthke 2020) Word of mouth (Gäthke 2020)
1980s: service quality concepts	
Service environment	Servicescape & experiencescape (Gäthke 2020; Hanke et al. 2018; Kandampully et al. 2023) Smart living (Fischer et al. 2020)
Perceived quality	Service quality (Dreyer et al. 2019; Gäthke 2020; Kabadayi et al. 2019; Kang et al. 2020)
1990s-2000s: customer relationship marketing & management concepts	
Commitment & cooperation	Involvement & empowerment (Dreyer et al. 2019; Gonçalves et al. 2020; Kabadayi et al. 2019) Value co-creation (Alt et al. 2019; Beverungen et al. 2019; Beverungen et al. 2021; Boukhris and Fritzschke 2019; Heinz and Anke 2023; Knote et al. 2021; Wünderlich et al. 2012)
Data & technology	Data-driven service (Laubis et al. 2019) Digital data spaces (Otto 2022) Smart data (Heinz et al. 2022b; Rau et al. 2020) Smartness of technology (Beverungen et al. 2021b; Dreyer et al. 2019; Gonçalves et al. 2020; Herterich et al. 2022)
Trust	Trustworthiness (Wünderlich et al. 2012)
Uncertainty	Perceived risks and security (Dreyer et al. 2019; Kabadayi et al. 2019; Wiegard and Breitner 2019) Uncertainty reduction (Poeppelbuss et al. 2021)
2000s-2010s: customer centricity & engagement concepts	
Customer-to-customer market	Crowd-based services (Laubis et al. 2019) Sharing economy, collaborative consumption, peer-to-peer markets (Yang et al. 2021)
Emotions	Enjoyment (Kabadayi et al. 2019)
Late post-purchase phase concepts	Postadoption attitude and usage behavior (Dreyer et al. 2019; Kang et al. 2020; Wiegard and Breitner 2019; Wünderlich et al. 2012) Repurchase intention (Gäthke 2020)

Regarding data and technologies, scholars classify smart service as data-driven services (Dreyer et al. 2019; Laubis

et al. 2019) requiring smart data (Heinz et al. 2022; Rau et al. 2020). For instance, this smart data is usually acquired from technologies like smart products during organizational routines (Heinz et al. 2022b). Moreover, the smart data can also be gathered and shared in smart service systems, on digital (smart data) platforms (Beverungen et al. 2021b), in digital data spaces (Otto 2022), or in smart service ecosystems (Herterich et al. 2022). As customers frequently use innovative technologies like smart products, they inevitably touch smart service systems, digital platforms, digital data spaces, or digital ecosystems during their so-called "hybrid" customer journeys, letting them access smart data. Simultaneously, customers leave smart data like personal or transactional data when interacting during their so-called "hybrid" customer journeys at physical and digital touchpoints (Hansmeier et al. 2024). Along such hybrid customer journeys, smart data can be captured from multiple touchpoints and different data sources like personal or contextual data and may require a basic or extended data analysis (Hansmeier et al. 2024; Rau et al. 2020). These touchpoints may be not only physical or digital but also firm-controlled or non-firm-controlled, incentivizing providers to consider customer journeys through the customer's eyes. After processing data, more personalized smart service offerings can be realized to positively shape the overall customer experience. This insight lets us introduce the second transformational force, which is that customers will either actively co-create the customer experience during hybrid customer journeys through their own actions or passively through the smart data they (un)intentionally leave behind (*cf. Tab. 9*). In an ideal world, such hybrid customer journeys might also evolve into self-learning customer journeys that build on smart data (Rau et al. 2020) to adapt themselves to recent customer needs through autonomous, innovative technology.

We encourage future research to explore and design hybrid customer journeys encompassing physical and digital smart service interactions. Relying on that knowledge, practitioners will be able to strategically design more personalized smart service that directly matches and anticipates the customer needs during each customer journey. In particular, the new technologies that enable these hybrid customer journeys by linking data and a wide range of actors in a dynamic data space or ecosystem setting are still little explored but seem to be promising avenues for future researchers as well.

In terms of trust and uncertainty, relatively few studies exist. Wünderlich et al. (2012) discuss customer trust and trustworthiness of technologies in the context of smart interactive service encounters. Apart from that, research on uncertainty particularly addresses perceived risks and uncertainty reduction., proposing that individuals perceive high risk when sensitive data is shared (Wiegard and Breitner 2019) or when perceiving low privacy and security levels (Dreyer et al. 2019; Kabadayi et al. 2019). To solve this issue, recent findings suggest reducing uncertainty by increasing the engagement of all participating actors (Poeppelbuss et al. 2021).

Tab. 9. Second transformational force and promising research perspectives

Second transformational force	Research perspectives
Customer experience will be co-created (actively and passively) during "hybrid" customer journeys	■ Explore and design hybrid customer journeys encompassing physical and digital smart service interactions ■ Make sense of contextual data acquired during hybrid customer journeys to enable future "self-learning" customer journeys

Finally, centricity and engagement concepts feature three subcategories: customer-to-customer market, emotions, and late post-purchase phase concepts. First, in customer-to-customer markets, smart service research investigates peer-to-peer markets, sharing economy, collaborative consumption (Yang et al. 2021), and crowd-based services monitoring the vehicle road condition (Laubis et al. 2019). Second, research on emotions still appears underresearched, featuring one paper to briefly mention the concept of emotional value (Kabadayi et al. 2019). We conclude that emotions experienced in smart service could offer a promising topic for future research. Third, research on late post-purchase phase concepts refers to customer behavior that occurs long after purchase and consumption (Lemon and Verhoef 2016). We identified a handful of studies on behavioral customer responses (Wünderlich et al. 2012) and postadoption attitudes such as (long-term) usage behavior (Dreyer et al. 2019) or long-term satisfaction with smart ride-hailing service (Kang et al. 2020). Along with these contributions, there are quantitative insights about the intention to reuse smart service in healthcare (Wiegard and Breitner 2019) or the repurchase intentions and positive word-of-mouth (Gäthke 2020).

We conclude that customer behavior, satisfaction and loyalty, service quality and customer relationship and management concepts have been sufficiently explored. However, research concerning customer centricity and engagement, especially in digital ecosystems, offers great potential for future research. Achieving high customer centricity and engagement in digital ecosystems remains challenging since they might include diverse actors with heterogeneous needs, while social withdrawal (avoiding social interactions) is also increasingly appearing in digital environments (Wei et al. 2018). To overcome this issue and to incentivize the actors, highly personalized smart service and customer journeys seem promising, even if

this individualization might result in high degrees of customization and complexity. However, this complexity of customer journeys, and hybrid customer journeys in particular, is inevitable as we recognize from the literature that collaborative consumption and crowd-based services (Laubis et al. 2019; Yan et al. 2021) are becoming increasingly popular in recent times. Simultaneously, hybrid customer journeys featuring a high level of customization will have a considerably positive impact on the customer experience as the customer needs can be directly addressed. In line with that, we propose our third transformational force: customer experience will be created on an ecosystem level (*cf. Tab. 10*). Closely relating to the second transformational force, we argue that hybrid customer journeys build on digital ecosystems as they not only enable sharing of contextual and personal data but also embrace other ecosystem actors to interact with each other which consequently shapes the customer experience due to more engagement and social interaction.

Accordingly, research needs to update the dyadic customer experience frameworks to apply them to an ecosystem level in which several actors jointly shape the customer experience and not only the two parties of customer and provider. We also conclude that smart service (system) engineering at an ecosystem level requires considering more actors and network effects as well as contextual and personal data. Moreover, smart service (system) engineering could also consider precisely triggering customer emotions to encourage them to actively participate within the ecosystem and thereby improve their overall customer experience. Finally, multimodal interfaces (voice, text, visual) could be implemented to create a truly seamless, more intuitive, and customer-centered experience. In this regard, researchers are also encouraged to explore how seamless customer experience, e.g., through hybrid customer journeys, can be achieved.

Tab. 10. Third transformational force and promising research perspectives

Third transformational force	Research perspectives
Customer experience will be created on an ecosystem level	■ Bring smart service (system) engineering to an ecosystem level, including dynamic interactions of multiple and heterogeneous actors ■ Update dyadic customer experience frameworks to apply them to an ecosystem level

6. Conclusion

Within this study, we posed the research question of what the main research themes about smart service are, and how smart service relates to customer experience and digital ecosystems. By addressing this research question, we explored smart service themes (smart service fundamentals, embeddedness of smart service, and smart service business innovation) and related concepts (customer buying behavior, satisfaction & loyalty, service quality, customer relationship marketing & management, and customer centricity & engagement) within information systems research and service science in an interdisciplinary scoping literature review. Our findings contribute to a deeper understanding of the relationship between smart service and customer experience, particularly at the service ecosystem level. Altogether, our results indicate that the recent smart service literature covers many foundational contributions by means of smart service types, dimensions, or embeddedness levels. In the case of the embeddedness levels of smart service (smart product, smart service system, digital platform, and digital ecosystem), we recognize that there is a lack of knowledge regarding the conceptual clarity concerning the proposed levels. We also argue that the smart service embeddedness level of digital ecosystem needs to be further investigated by future research, as the established theories that build on bidirectional interactions are just poorly applicable to smart service encounters within digital ecosystems and multiple actors. Thus, we create awareness that ecosystem actors who are initially invisible to individual providers may also be relevant for any smart service encounter from a theoretical perspective. By drawing on that knowledge, practitioners also benefit from being more aware of simultaneous and initially invisible customer interactions within the digital ecosystem and are incentivized to realize more personalized experiences.

The numerous customer experience concepts in the smart service literature demonstrate, in particular, how close customer experience wraps around smart service. When considering smart service encounters as core of modern customer journeys, commitment, cooperation, data, and technology are key elements that shape the customer experience. Following that understanding, we repeat the first transformational force we have proposed again: recent customer experience is enabled by smart service (systems) according to the recent literature. In agreement with the first transformational force, we suggest with our second transformational force that customer experience will be more often co-created during hybrid customer journeys that enable more personalized experiences due to making sense of contextual and personal data. By understanding these modern hybrid customer journeys, research benefits from being able to more adequately explain how smart service shapes the overall customer experience. Being equipped with this knowledge, practitioners can then more strategically design their customer journeys through the customer's eyes and implement meaningful smart service offerings. Our third transformational force anticipates that customer experience will not

only be created during hybrid customer journeys but also on an ecosystem level. Both researchers and practitioners learn from this transformational force that service engineering at an ecosystem level requires more actors and network effects to be considered successful, as there are no longer only dyadic or triadic but rather polyadic actor relationships.

Based on our insights, we encourage service researchers to conceptualize smart servicescapes (design) and develop new guidelines for engineering smart service systems to enhance customer experience within digital ecosystems further. For instance, multimodal interfaces (e.g., voice, text, visual) could be leveraged to create a seamless, intuitive, and user-centered customer experience. Additionally, exploring the role of customer engagement and emotions in smart service contexts presents auspicious research opportunities. As emotion detection technologies continue advancing, they have significant potential for enhancing smart service experiences. Future research might investigate how to use these technologies to understand and respond to customers' emotions, such as frustration or anger, in real-time. This approach could empower practitioners to provide more responsive and empathetic customer interactions, improving overall service quality and satisfaction.

While we assert that our research process is robust, we acknowledge that we included more papers and journals from the information systems discipline than those from service marketing. As a result, our review may emphasize socio-technical insights at the expense of behavioral aspects. Additionally, excluding grey literature and journals ranked below B could have narrowed the breadth of our findings.

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Keywords: Smart Service, Customer Experience, Digital Ecosystem, Data Space, Systematic Literature Review

Understanding the role of (dual) entitlement effects on industrial customers' willingness-to-pay for ancillary services

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Equipment manufacturers increasingly pursue servitization strategies, yet their salesforces frequently find that industrial customers display a low willingness-to-pay (WTP) for ancillary services, in particular when offered in conjunction with high-priced capital goods. Drawing on entitlement theory and a unique dataset gathered in a field survey among more than 440 decision-makers, we establish a negative relationship between vendors' equipment prices and their industrial customers' WTP for ancillary services. In a follow-up experimental study, we investigate the explanatory mechanism and find support for entitlement as the underpinning rationale. In a second experimental study, we explore dual-entitlement effects and show that customers' perceptions of vendors' profitability directly and indirectly impact their WTP for ancillary services. Our findings contribute to the emerging literature on customer entitlement and the dual-entitlement principle in industrial markets and offer practical implications for price communication and the sales process in capital goods markets.

1. Introduction

Growing firms' service business beyond their traditional good-centric core has become a strategic imperative in industrial markets (Krämer et al. 2022; Worm et al. 2017). In line with this transformational shift from a product-centric to a service-centric business model and logic widely recognized in the academic and practitioner literature as servitization (Kowalkowski and Ulaga 2017; Ulaga and Kowalkowski 2022), firms develop broader and deeper portfolios of ancillary services. Ancillary services are defined as services that complement a core product (Kowalkowski and Ulaga 2024) and are literally "wrapped around the industrial good" (Steiner et al. 2016, p. 158), thereby ancilly service ensure an industrial good's proper functioning and enhance its efficiency throughout its lifecycle. This paves the way for a host of new value-adding activities, such as remote monitoring of customers' installed devices, retrofitting, and software upgrades, among others. (Eggert et al. 2013; Lilien et al. 2010).

Extant research has investigated enablers and barriers of servitization, such as service business models, service innovation, company structures and processes, industry structures, as well as particular business functions (see Raddats et al. 2019; Worm et al. 2017; Zhang and

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Conflict of interest

The authors declare that they have no conflict of interest.

Banerji 2017). For example, at the sales organization level, scholars have highlighted the idiosyncrasies of selling business-to-business services above and beyond goods, explored service-specific sales competencies and skills, and investigated salespersons' personality traits favoring services versus product sales (Ulaga and Loveland 2014; Ulaga and Reinartz 2011).

Pricing ancillary services represent a long-recognized, albeit underresearched domain (Anderson and Narus 1995). Researchers identified setting prices and leading price negotiations with customers as a particularly nagging managerial problem in B2B contexts (Witell and Löfgren 2013). Sales executives often complain about inadequate price levels that neither reflect actual costs of service provision nor value created for customers (Hinterhuber 2008; Liozu et al. 2012; Mustak et al. 2023).

Customers' WTP is one of the most immediate factors to consider in pricing decisions. Anecdotal evidence from interviews we conducted with managers in the exploratory stage of our research suggests that those services that are closely linked to a capital good sale are particularly subject to customers' expectations of obtaining such services at little additional costs. This might be especially relevant to situations in which the price of the capital good – e.g., a high-voltage circuit-breaker in a power station – is relatively high compared to the price of an attached service (e.g., a remote-monitoring service). Consider the following quote of an executive indicating customers' expectation that the ancillary service offering should be covered by the much larger machine price:

"What do you think happens when [customers] call the service department asking something and they reply: 'Yes, we can offer this service and it costs 150,000 Swedish kronor?' Oh. Then it's like no, 'I [will] call the one I bought the machine [from] and talk a little.'" (Palo et al. 2019, pp. 491-492).

In line with prior exploratory research (Palo et al. 2019), such quotes suggest that B2B customers may feel entitled to receive ancillary services almost for free when the price level of the capital good increases, despite recognizing the value created by an ancillary service. In the present research, we aim at understanding the role of an underlying good's price as one of the determinants of customers' WTP for ancillary services. Specifically, we shed light on *customer entitlement* as a psychological mechanism that explains the relationship between an underlying good's price and the customer's WTP for ancillary services. We further explore the conditions that account for the strength of the customer entitlement effect on customers' WTP for ancillary services. In particular, we investigate the dual-entitlement principle, which reflects the customer's attitude toward the seller being entitled to a reasonable reference profit (Kahneman et al. 1986b). To the best of our knowledge, this research is the first that focuses on the interplay between "customer entitlement" and "dual-entitlement" and their effects on customers' WTP.

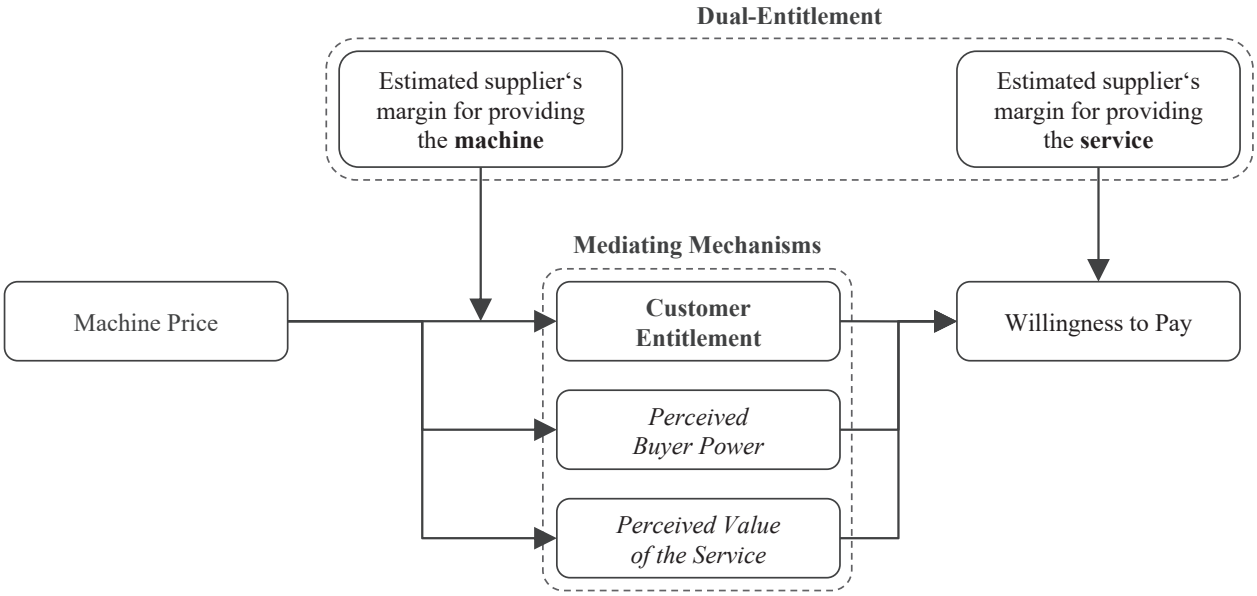
In short, we explore the following three research questions:

> Does an underlying good's price influence industrial customers' WTP for ancillary services?
> Does customer entitlement explain a lower WTP for ancillary services when the underlying good's price is high?
> In concert with customer entitlement, how does the dual-entitlement principle affect customers' WTP for ancillary services?

Fig. 1 summarizes our conceptual model. To address the first question, we collected data from more than four hundred procurement decision-makers. We complement the first study with two experiments shedding light on the explanatory mechanisms of entitlement (2nd question) and dual-entitlement (3rd question). Our research contributes to existing literature in several ways.

First, starting from the anecdotal evidence of a lowering of industrial customers' WTP when the machine price increases, our study is the first to establish a theoretical explanation for this effect. Second, our research shows how the price of the underlying capital goods influences customer entitlement perceptions and that customers perceiving greater entitlement than others are also less willing to pay for ancillary services. Third, our research shows that in the presence of customer entitlement and dual-entitlement perceptions, both have an independent – i.e., compensatory or complementary – effect on customers' WTP. We find that dual-entitlement moderates the formation of customer entitlement perceptions and directly affects WTP for ancillary services. Fourth, we provide managerial guidance for salespeople on how to raise customers' WTP when selling ancillary services. We share recommendations on leveraging the dual-entitlement principle to increase the WTP for ancillary service, particularly when the underlying capital good is expensive.

Our article is structured as follows: First, we develop the theoretical foundation and derive the hypotheses for our study. Next, in the empirical part, we introduce our three studies that address the raised research questions, lay out the methodology we apply, perform the analysis, and discuss the results. Finally, we summarize respective findings and provide implications for academics and practitioners. An overview of the limitations of this study and a proposal for future research avenues conclude this article.



Notes: We probe „Perceived Buyer Power" and „Perceived Value of the Service" as alternative explanations to „Customer Entitlement".

Fig. 1: Conceptual model

2. Theoretical background

We draw on customer entitlement theory to explain a lower WTP for ancillary services when the underlying capital good price is high.

Research on customer entitlement is rooted in business-to-consumer research. Originally, researchers defined customer entitlement "as a stable and pervasive sense that one deserves more and is entitled to more than others" (Campbell et al. 2004, pp. 30–31). Customer entitlement is understood as a character trait or "personality lifestyle" (Boyd III and Helms 2005, p. 282) that is inherent to consumers and stable across time and situations. Customer entitlement shares roots with narcissism (Raskin and Terry 1988).

Wetzel and colleagues (2014) adapted the concept to the business-to-business marketing domain. They argued that industrial customers derive their entitlement perceptions from a rationale, such as their rank order in a supplier's customer portfolio. Thus, they demonstrated that entitlement can be situation-specific in B2B contexts. Building on this understanding, we define customer entitlement for the purpose of this study as customers' expectations and claims of a price reduction from a supplier based on the rationalized belief that they deserve it.

To position the present research in light of the existing literature, we systematically screened 20 leading marketing, consumer research, service research, and industrial marketing journals over a period of more than three decades (1989–2024) with a most inclusive search string (i.e., "entitlement") in the EBSCO Academic Search Ultimate database.[1] We first compiled a list of 45 potentially relevant articles and removed 14 articles that did not relate to customer entitlement or dual-entitlement as part of a conceptual research model (thereof, six articles related to employee entitlement, three articles related to entitled leaders or business owners, two articles related to measuring customer entitlement, two articles related to other than customer entitlement, i.e., vacation entitlement & armed self-defense entitlement, and one article was not related to customer entitlement, but narcissism).

Through this systematic literature review, we identified the antecedents and dependent variables in the respective studies, whether entitlement or dual-entitlement was included, and the relevant research context (i.e., B2B vs. B2C). We found that 22 studies focussed on customer entitlement, and nine studies researched dual-entitlement. Overall, only five studies shed light on a B2B context. *Tab. 1* provides an overview of the extant body

1 We applied the following search string in the EBSCO database: (("entitlement") AND ((JN "Journal of Marketing") OR (JN "Journal of Marketing Research (JMR)") OR (JN "Journal of the Academy of Marketing Science") OR (JN "Journal of Consumer Research") OR (JN "Marketing Science") OR (JN "Journal of Applied Psychology") OR (JN "International Journal of Research in Marketing") OR (JN "Journal of Retailing") OR (JN "Journal of Service Research") OR (JN "Journal of Product Innovation Management") OR (JN "Journal of Consumer Psychology (John Wiley & Sons, Inc.)") OR (JN "Marketing Letters") OR (JN "Psychology & Marketing") OR (JN "Journal of Personal Selling & Sales Management") OR (JN "Journal of Business Research") OR (JN "Industrial Marketing Management") OR (JN "Journal of Business & Industrial Marketing") OR (JN "Journal of Professional Services Marketing") OR (JN "Journal of Service Management Research (SMR)" OR (JN "Journal of Marketing Behavior"))

of literature on customer entitlement and the dual-entitlement principle

Tab. 1: Prior research on customer entitlement and dual-entitlement

Authors	Antecedent	Dependent Variable	CE	DE	Context	Key Finding
FOCUS: CUSTOMER ENTITLEMENT						
Albrecht et al. (2017)	Group service failure (GSF, multiple customers affected) vs. individual service failure (ISF, individual customer affected)	(1) customer behavior (negative word-of-mouth, complaint intention), (2) emotion (anger)	Moderator	No	B2C	In case of a ISF, customers with high CE will more readily attribute blame externaly than customers with low CE. Overall, customers with high levels of CE exhibit greater anger, negative-word-of-mouth, and complaint intentions after a service failure.
Bernthal et al. (2005)	Qualitative research: understanding the factors behind credit card usage (interviews)	Credit card usage	Antecedent	No	B2C	Depending on the cultural background, consumers develop a CE ideology that treat credit cards as means to claim "well-earned rewards" contributing to high levels of credit card debt.
Celsi et al. (2017)	Qualitative research: understanding the factors behind self-efficacy in a debt management plan (interviews)	Self-efficacy in responding to spending temptations	Antecedent	No	B2C	Perceived entitlement reduces self-efficacy to resist spending temptations.
Gelderman et al. (2019)	Qualitative research: understanding the strategies underlying opportunistic purchase behavior (interviews & critical incident technique)	Opportunistic purchasing behavior	Antecedent	No	B2B	CE is one of six strategies that explain opportunistic purchase behavior (other strategies: acknowledgement, denial, rationalization, attributional egotism, and ego aggrandizement).
Goor et al. (2020)	Luxury (vs. non-luxury) consumption	Feelings of inauthenticity	Moderator	No	B2C	CE weakens the relationship between luxury consumption and the perception of the luxury producs as an undue privilege that creates feelings of inauthenticity.
Kemper et al. (2022)	Brand type (luxury vs. non-luxury)	Sharing likelihood (on social media)	Moderating Moderator	No	B2C	Consumer rather share luxury purchases when they are material (vs. experiential) and CE is high, i.e., CE moderates the moderating effect of purchase type (material vs. experiential) on the relationship between brand type and sharing likelihood.
Lee et al. (2022)	Gratitude (vs. amusement)	Materialism	Mediator	No	B2C	Higher level of gratitude reduces CE which in turn reduces perceived resource scarcity, and ultimately, decreases materialism.
Lee and Winterich (2022)	Subjective social class	Purchase of product with high social costs	Mediator	No	B2C	Upper-class customers are more likely to buy a product with high social costs if the price for the product is high as a higher product price raises CE that allows for easier justification of the purchase.
Li and Fumagalli (2022)	Regular vs. non-systematic delivery of free gifts	Desire for revenge (e.g., spreading negative word-of-mouth)	Mediator	No	B2C	Offering suprise gifts in regular intervals (vs. randomly) increases CE that lead to desire for revenge if the seller stops giving surprise gifts; only found if the surprise gift's value is high.
Nusrat and Huang (2024)	Self- vs. regular checkout (during shopping)	Customer loyalty	Mediator	No	B2C	Extra work for self-check out increases CE and expectations for better treatment than regular checkout customers resulting in lower levels of satisfaction and, hence, customer loyalty.
Pelser et al. (2015)	(1) Program value, (2) benevolent motives, (3) ulterior motives	Sales effort	Moderator	No	B2B	CE decreases the positive effect of perceived program value on partner gratitude (that is positively linked to sales effort) while increasing the effect of ulterior motives on indebtedness (that is negatively linked to sales effort).
Pizzi et al. (2022)	Type of (user) data (behavioral vs. biometric)	(1) Patronage intention, (2) expected amount of discount	Mediator	No	B2C	If customers have to disclose behavioral (vs. biometric) personal data to obtain a personalized price they perceive the price as more equitable, lower data privacy concerns, increase CE, and, ultimately, increase patronage intention and the expected amount of the discount.

Authors	Antecedent	Dependent Variable	CE	DE	Context	Key Finding
Sanjeev et al. (2019)	iPhone users (vs. other smartphone users)	Narcissism	Dependent variable	No	B2C	iPhone vs. other smartphone users show a higher level of general narcissim that can be attributed to adaptive narcissim (indicator for leadership and authority) but not to maladaptive narcissim (indicator for entitlement exploitness or grandiose exhibitionism).
Septiano et al. (2019)	Emotion (pride, happiness, neutral)	Repurchase intention	Dependent variable	No	B2C	Pride and happiness increase repurchase intentions in a customer loyalty program. As a side effect, hubristic (vs. authentic) pride increases CE.
Septiano et al. (2020)	Hubristic pride	Intention to engage in negative word-of-mouth	Mediator	No	B2C	Customers with hubristic (vs. authentic) price feel more entitled and, hence, are more likely to spread negative word-of-mouth in case of a service failure.
Shepherd et al. (2024)	Political ideology	Complaining intentions	Mediator	No	B2C	As conservatism is related to entitlement, conservative customers perceive greater CE and, hence, are more likely to engage in complaining behavior.
Strong and Martin (2024)	(1) Entitlement, (2) perspective taking	Prosocial behavior	Antecedent	No	B2C	Only for consumers with low level of CE, taking the perspective of others has a positive influence on prosocial behavior.
Wang and Zhang (2021)	Customer entitlement	Supplier performance	Antecedent	No	B2B	CE leads to better supplier performance by facilitating supplier's information and knowledge sharing with the customer. Suppliers anticipate more demanding requests from more entitled customers and engage in more proactive information & knowledge sharing.
Wetzel et al. (2014)	(1) Core benefit provision, (2) preferential treatment, (3) status elevation	(1) Sales growth, (2) service cost growth, (3) profit growth	Mediator	No	B2B	In case of customer prioritization programs, CE functions as a parallel mediator to gratitude that (negatively) links core benefit provision, preferential treatment, and status elevation to sales growth, cost growth and their profit implications.
Wolter et al. (2019)	Self-relevant vs. self-neutral brand relationships	Complaint behavior after service failure	Mediator	No	B2C	Strong self-relevant brand relationships increase CE and higher expectations for a special treatment that lead to a greater complaining propensity in case of a service failure.
Xia et al. (2010)	Perceived effort (to obtain a lowerprice in a promotion)	Price fairness	Moderator	No	B2C	The more effort customers invest to get a lower price (e.g., via coupon clipping or invoking a price-matching guarantee) the higher is their CE leading to a higher price unfairness perception if the promoted price is denied (e.g. due to expiration of the offer).
Xia and Kukar-Kinney (2013)	(1) Relationship status, (2) previous error history, (3) control, (4) severity	(1) Customer loyalty, (2) future compliance	Moderator	No	B2C	A longer relationship, no incidences in the past, uncontrolability of the error, and a lower severity of the incident increase CE that reduces fairness perception of a customer penality (e.g., fee for late payment) which, ultimately, reduces customers loyalty and, hence, future compliance.
FOCUS: DUAL-ENTITLEMENT						
Boyd and Bhat (1998)	Supplier costs	Price fairness	No	Yes	B2B	Increased supplier costs increase perceived fairness of price changes.
Chen et al. (2018)	Assymmetric pricing (i.e., increase price if costs increase, but maintain price if costs decrease)	(1) Price fairness & (2) behavioral intentions (continue shopping)	No	Yes	B2C	Interdependent consumers regard assymetric pricing as less fair than independent consumers because the former perceive this practice as a violation of communal norms.
Chen et al. (2019)	Managers from collectivist (vs. individualist) culture	Price fairness	No	Yes	B2C	Managers in a collectivist culture perceive assymmetric pricing decisions as less fair then managers in individualistic cultures due to the stronger perception of violating communal norms.
Lepthien et al. (2017)	Customer demarketing	(1) Brand attitude, (2) negative word-of-mouth	No	Yes	B2C	Perceived fairness of the customer demarketing efforts explain its effect on brand attitude and negative word-of-mouth intentions.

Authors	Antecedent	Dependent Variable	CE	DE	Context	Key Finding
Lu et al. (2020)	Firm market power	(1) Price fairness & (2) purchase intentions	No	Yes	B2C	The positive effect of cost-justified price increases diminishes for companies with high (vs. low) market power because customers assume a greater controllability of the price increase.
Sahut et al. (2016)	Yield management practices	Price fairness	No	Yes	B2C	Customers perceive price increases due to yield management as fairer if the customers concludes that the hotel does not aim at increasing its profit due to the price increase and the price increase is beyond the provider's control.
Tarrahi et al. (2016)	Cost-justified price increase motive	Price fairness	No	Yes	B2C	Meta-analytical review: Cost-justified motives behind price increases increase price fairness perceptions (studies in sample focus on B2C, context, i.e., B2C vs. B2B, not coded).
Urbany et al. (1989)	Cost-justified price increase motive	(1) Price fairness & (2) customer reaction (write a letter, personal complaint, switch provider)	No	Yes	B2C	Cost-justified motives moderate the relationship between price increase and customers' fairness perceptions and behavioral reactions.
Vaidyanathan and Aggarwal (2003)	(1) Locus of control and (2) controllability of price increases	Price fairness	No	Yes	B2C	Customers perceived price increases as fairer if (1) the locus of control is external and (2) is beyond the control of the sellers.
Current study	**Price of the capital (core) product**	**Willingness to pay for the ancillary service**	**Mediator**	**Yes**	**B2B**	**The price of the core product positively affects CE perception which in turn reduces customers' willingness to pay for the ancillary service. This process is moderated by the profitability of the core product and ancillary service, respectively.**

Through customer entitlement as the explanatory mechanism, we link the price of the core product to a managerially relevant outcome variable, i.e., customers' WTP for ancillary services. WTP serves as a precursor to the price that customers will actually accept (Jedidi and Zhang 2002), which, in turn, is a critical determinant of a company's financial performance: "Of all the tools available to marketers, none is more powerful than price" (Han et al. 2001, p. 435).

Pricing of ancillary services for a core product appears to be related to multi-component bundle pricing, i.e., bundles of two products of which one is of secondary importance (Bertini and Wathieu 2008), and pricing of hybrid bundles, i.e., bundles consisting of a product and a service (Meyer et al. 2018). Previous research in this domain primarily focussed on the product characteristics and contexts that affect customers' WTP for the bundle components and normatively suggests adding up the prices for the underlying components or keeping them separate (Venkatesh and Mahajan 2009). The relationship of prices for individual components in the bundle is limited to discount decisions for either component and their impact on customers' purchase intention (e.g., Khan and Dhar 2010). Our research complements the domain of pricing research as it investigates the impact of the price of the core product on the customers' WTP for the ancillary services - a constellation that could be considered a "hybrid bundle" - while keeping the offers and prices separately.

Our research makes several contributions to existing literature. To the best of our knowledge, we are the first to (a) simultaneously explore customer entitlement perception and the dual-entitlement principle, (b) examine the price of a core product as a factor influencing customer entitlement, and (c) consider customer's WTP for ancillary services as the outcome variable in this context.

In the following sections, we first investigate the role of customer entitlement and then turn to the role of dual-entitlement.

2.1. The role of customer entitlement

In this paper, we investigate the impact of the price level for an underlying good on the WTP for ancillary services that might be explained by customer entitlement effects, defined as customers' perception of deserving a special treatment (Boyd III and Helms 2005).

Two streams of research lay the foundation for our hypotheses about the entitlement effect. First, social exchange theory suggests that partners in an exchange setting weigh their economic and social outcomes and compare them to the expected outcome of alternative exchange relationships (Anderson & Narus 1990). Positive outcomes increase trust, raise the odds of continuing

the relationship, and create exchange norms that guide the relationship between the manufacturer and the customer firm (Lambe et al. 2001). Relational norms can be understood as shared expectations among exchange partners about their respective behavior (Gundlach et al. 1995), even though behaving according to established norms might contradict neoclassical rational behavior (Emerson 1976). Meeker (1971) suggests six norms that govern social exchanges; among them, "[s]tatus consistency or rank equilibration is the allocation of benefits based on one's station within a social group" (Cropanzano & Mitchell 2005, p. 879). According to this norm, customers who perceive themselves as being relatively important to their suppliers may demand more benefits. Prior research showed that companies proactively offer preferential prices to prioritized customers, signaling to their customers that their relative importance to a company leads to better pricing terms (Homburg et al. 2008), and, thereby, establishing a relational norm of price concessions for more important customers. In light of these findings, customers might relate their current spending on a high-priced machine to their ranking within the supplier's customer base. Therefore, clients who spend more on their core product are more likely to expect the seller to grant benefits in accordance with the relational norm of status consistency. These normative expectations lead to a greater sense of customer entitlement, making buyers more likely to demand concessions such as low-cost ancillary services (Boyd III & Helms 2005). Consequently, past research has linked entitlement effects to higher costs and lower profits in B2B settings (Wetzel et al. 2014). In sum, social exchange theory suggests that customers who perceive themselves as more important to their suppliers by spending more on a machine than other customers may feel entitled to lower prices according to established norms.

Second, suppliers frequently provide ancillary services at low prices, in particular for high-priced capital goods (Anderson and Narus 1995; Indounas 2009; Meyer et al. 2018; Witell and Löfgren 2013). Based on past experience, customers establish normative and predictive expectations (Boulding et al. 1993; Boyd III and Helms 2005). If customers have received services at low prices in the past when placing larger investments with their suppliers, this low price might become the expected price for the future (Mazumdar et al. 2005).

Based on normative and predictive expectations, we hypothesize the following relationship. In the empirical studies, we consider manufacturing machines as underlying capital goods and formulate our hypotheses accordingly:

H1: The higher a machine's price, the lower the purchasing managers' WTP for ancillary services.

We hypothesize customer entitlement theory as a mechanism that links the level of the machine price to the managers' WTP for ancillary services:

H2: The negative relationship between the machine price and the purchasing managers' WTP for ancillary services is mediated by customer entitlement.

To probe alternative explanations for the negative relationship between the price for an underlying good and a manager's WTP for ancillary services, we also consider two other explanations: perceived buyer power and the perceived value of a service.

Perceived buyer power reflects "(…) the buyer's perception of the firm's negotiating strength in a particular buying decision situation" (Bunn 1993, p. 45). Purchasing managers could conclude that the relative dependence of the seller in the seller-buyer relationship increases with higher machine prices (Anderson and Narus 1990). This greater dependence results in a negotiation strength that often manifests in a lower WTP (Ganesan 1994). Therefore, we include the following hypothesis as an alternative explanation:

H2a: The negative relationship between the machine price and the purchasing managers' WTP for ancillary services is mediated by perceived buyer power.

The perceived value of the service considers "(…) the trade-off between the multiple benefits and sacrifices of a supplier's offering as perceived by the decision-makers in the customer's organization (…)" (Eggert and Ulaga 2002, p. 110). As the sacrifice for the overall transaction increases with a higher machine price, the overall perceived value of the service might deteriorate. Hence, we probe the alternative explanation:

H2b: The negative relationship between the machine price and the purchasing managers' WTP for ancillary services is mediated by the perceived value of the service.

2.2. The role of dual-entitlement

Dual-entitlement introduces the concept of fairness to an otherwise profit-maximizing agent: "The absence of considerations of fairness and loyalty from standard economic theory is one of the most striking contrasts between this body of theory and other social sciences – and also between economic theory and lay intuitions about human behavior" (Kahneman et al. 1986a, p. 285). The dual-entitlement principle "(…) governs community standards of fairness: Transactors have an entitlement to the terms of the reference transaction and firms are entitled to their reference profit" (Kahneman et al. 1986b, p. 729). This principle suggests that both, the seller and the buyer, in a first step, feel entitled to receiving a fair outcome of a transaction. In a second step, they develop the expectation that the other party is also entitled to a fair profit and

fair price, which becomes an upper limit to their own, entitlement-induced outcome.

Although the dual-entitlement principle is regarded as "a pillar of behavioral pricing research" (Chen et al. 2018, p. 2), research on this effect has been relatively scarce. Previous research on the dual-entitlement principle has largely focused on price changes and found that increasing prices to maintain profits is fair, increasing prices to raise profits is unfair (e.g., exploiting a demand spike), and keeping prices when cost decline is fair (customers still get their reference price) (Urbany et al. 1989). Chen et al. (2018) found that the fairness perception of asymmetric pricing – raising the price when costs increase but maintaining prices when costs fall – is moderated by the (individualistic vs. collectivistic) cultural setting. Within the context of industrial firms, Boyd and Bhat (1998) found that B2B clients perceive the price as fairer the higher the costs of the suppliers are or, vice versa, the lower the suppliers' margins have become due to a price change.

We separate the effect of the dual-entitlement principle into two stages. In the first stage, we investigate the role of dual-entitlement on the formation of customer entitlement and raise the question: How does the dual-entitlement principle affect the link between a higher machine price and customers' entitlement perceptions? The second stage sheds light on the link between customer entitlement and its impact on customers' WTP and focuses on the question: How does customers' WTP change as a function of the supplier's cost (or profit) situation given a certain level of customer entitlement?

The entitlement effect makes customers feel deserving of a lower price, whereas the dual-entitlement principle lets customers think that the seller deserves a reasonable profit, too. Customers seek to solve these two dissonant cognitions (Festinger 1962). According to the dual-entitlement principle, this is done by giving less importance to their self-interest and more importance to fair treatment in exchange relationships as reflected by the "(…) willingness of people to enforce fairness at some costs for themselves" (Kahneman et al. 1986a, p. 299). We conclude that customers feel less entitled if this is deemed fairer in a given purchase situation and hypothesize:

H3: If purchasing managers assume lower (vs. higher) supplier margins for providing the machine, the effect of the machine price on entitlement expectations is weaker (stronger).

The dual-entitlement principle suggests that buyers are entitled to their expected reference price and sellers to their reference profits. When the reference profit – in this case for the ancillary service – is threatened, it has precedence over the expected reference price (Kahneman et al. 1986b); in this case, the entitlement-adjusted expected price. Therefore, in the second stage, we expect a direct effect of the dual-entitlement-induced margin expectation for the ancillary service on the WTP for the ancillary service.

H4: If purchasing managers assume that the suppliers' margins for providing the service are lower (i.e., the costs for providing the service are higher), their WTP for the ancillary service becomes higher.

Fig. 2 summarizes our research model and links studies to tested hypotheses.

3. Empirical studies

We conduct three studies to test our hypotheses. In Study 1, we test the relationship between the price of a machine and managers' WTP for ancillary services (H1). In Study 2, we probe the theoretical mechanisms that might explain this relationship, namely customer entitlement (H2). In Study 3, we investigate the moderating effect of supplier costs for providing the machine (H3) on the relationship between the machine price and customer entitlement and the direct effect of supplier costs for providing the ancillary service on the WTP for the service (H4). *Tab. 2* summarizes the methods applied, subsamples, and tested relationships in each study.

3.1. Study 1: Effect of machine price on customers' willingness-to-pay for ancillary services

Study 1 establishes the foundational hypothesis H1 that industrial customers' WTP for ancillary services is negatively related to the price of the underlying capital good (i.e., machine). We rely on a unique and large-scale data set of decision-makers involved in industrial procurement decisions to ensure the validity of the results.

3.1.1. Design, participants, and procedures

Study 1 involved industrial buyers who intend to buy a machine tool with accompanying services in the near future. We chose the German machine-building industry as it is the second largest industry in Germany, with more than €260 billion in annual revenue (GTAI 2022).

As a first step, we aimed to develop a comprehensive list of different types of services (e.g., guarantee extension) that would cover most market needs. To assemble this list, we involved executives of service subsidiaries of two leading companies in the machine-building industry. In total, we included 19 service types (see appendix A, *Tab. A1*).

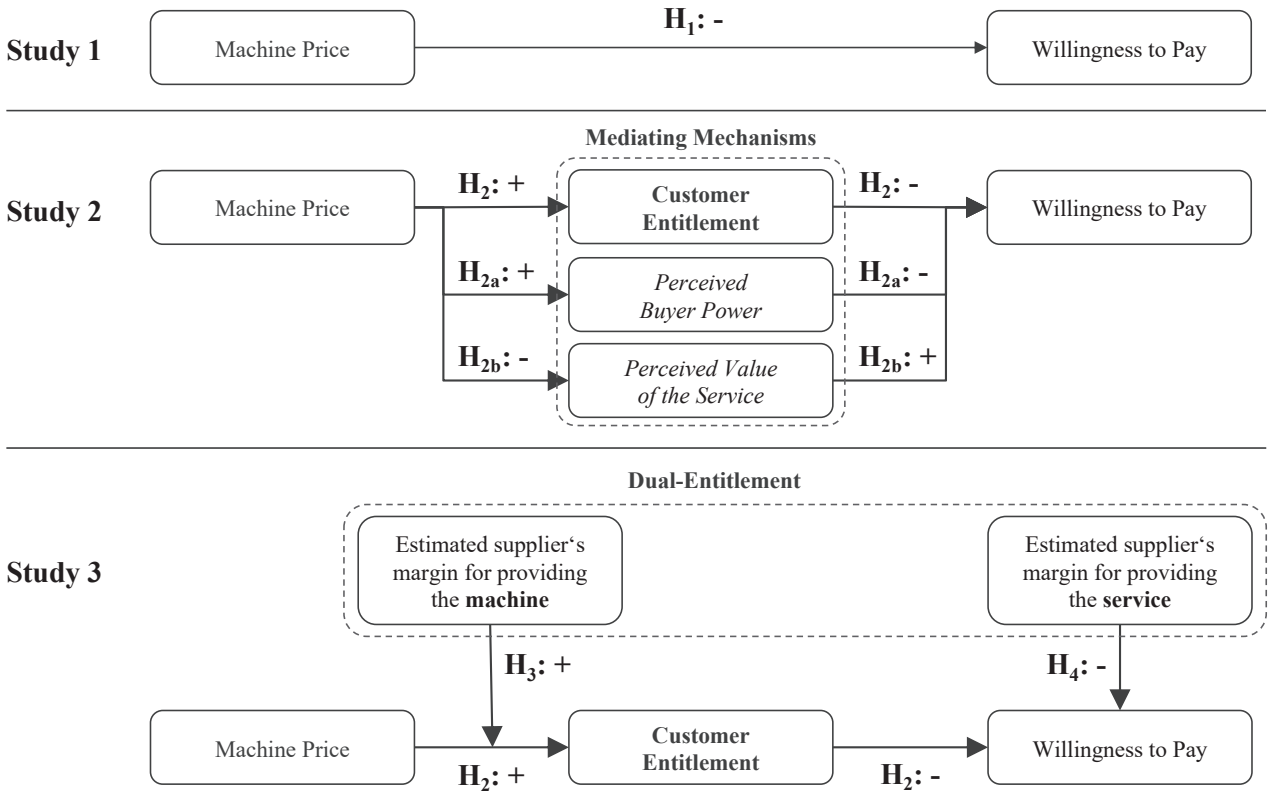


Fig. 2: Research model

Tab. 2: Overview of empirical studies

	Study 1	Study 2	Study 3
Study focus	Relationship between Machine Price and Willingness-to-Pay for ancillary services	Explanatory mechanisms (Customer Entitlement & Perceived Value of the Service) in parallel mediation	Moderators on the relationship between Machine Price and Customer Entitlement
Method	Linear regression	Parallel mediation with OLS (Hayes 2022, model 4)	Moderated mediation with OLS (Hayes 2022, model 21)
Sample	444 procurement managers from Germany, approached by market research institute via computer-aided interview	218 participants with negotiation experience in B2B settings recruited from academic research platform platform (Prolific), United States	242 participants with negotiation experience in B2B settings recruited from academic research platform platform (Prolific), United States
Hypothesized relationships			
H1	✓	✓	✓
H2	n.t.	✓	✓
H2a	n.t.	✓	n.t.
H2b	n.t.	✓	n.t.
H3	n.t.	n.t.	✓
H4	n.t.	n.t.	✓

Notes: ✓ = tested, n.t. = not tested

In a second step, we contacted executives responsible for machine procurement decisions. To ensure that respondents in our survey exerted substantial influence in procurement processes, we obtained a commercial list of organizational buyers and reached out to about 1,600 possible candidates. As this target group of respondents is relatively challenging to involve in surveys, we drew on a professional provider of telephone interviews that we

briefed on this study's purpose, content, and importance of interviewing the right person.

During the interview, the interviewer would share a link with the respondent to our online survey and support them during the whole interview process and the accompanying web-based questionnaire. In the telephone-assisted online survey, participants recalled their current or immediately planned machine procurement and answered various questions related to this real-life procurement decision.

In total, we received responses from 444 managers representing ten different industries with active roles in organizational procurement decision-making who procured a machine in the past twelve months (average price of 460k EUR, ranging from 15k to 15M EUR) and intend to buy another machine with ancillary services in the future. See appendix A for details.

3.1.2 Variables and measures

To test our hypotheses on WTP for ancillary services, participants were asked whether each of the 19 services is relevant in the buying situation. Then, participants indicated their WTP for each relevant service. In our analysis, we operationalize WTP for ancillary services as the sum of WTP across all relevant services. This variable serves as an indicator of the total WTP for relevant ancillary services. We solicited WTP as a percentage of the machine price to ensure comparability across different levels of machine prices. As a robustness check, we asked participants to select the top four most important services out of all relevant services. For these most important services, we calculated the WTP separately and ran additional analyses using the WTP for the top four services. Thereby, we ensured that all respondents applied a comparable level of importance to the respective services.

To account for the high variance in machine prices, we entered the natural logarithm of machine price as an independent variable in our model. We included dummy variables for ten different industries to control for industry-specific heterogeneity.

3.1.3 Results and discussion

To test the relationship between the machine price and customers' WTP, we conducted a linear regression analysis and included industry dummy variables. We found a negative relationship between the machine price and customers' WTP (Model 1: b = -3.201, $p < .0001$). *Tab. 3* summarizes the results of the linear regression model. Conducting this analysis with the WTP for only the top four most important services does not change the results.

Tab. 3: Regressing machine price on WTP for ancillary services (Study 1)

	Model 1		Model 2	
	Estimate	***p* value**	**Estimate**	***p* value**
Dependent Variable	WTP (in % of machine price)		ln(WTP (in % of machine price))	
Intercept	51.736	<.0001	5.956	<.0001
Main Effect				
Machine price (ln)	-3.248	<.0001	-.304	<.0001
Control Variables				
Perceived Buyer Power	.310	.167	.024	.218
Dummy (1 - Machine building industry)	-1.232	.419	-.002	.991
Dummy (2 - Automobile industry)	-1.525	.429	.003	.987
Dummy (3 - Supplier for the automobile industry)	-.536	.740	-.007	.959
Dummy (4 - Metal production)	.526	.759	.102	.497
Dummy (5 - Contract manufacturing)	-.121	.966	.076	.759
Dummy (6 - Other vehicle construction (e.g., shipbuilding))	10.044	<.01	.744	<.05
Dummy (7 - Electrical industry)	-1.978	.334	-.219	.221
Dummy (8 - Aviation/space flight)	1.646	.546	.112	.640
Dummy (9 - Fine mechanics/optics)	1.490	.477	.159	.385
N	444		431	
R-squared	.130		.118	
adjusted R-squared	.107		.094	

Our analysis supports hypothesis H1, that a higher machine price reduces customers' WTP for ancillary services. Turning the regression analysis into a log-log specification and taking the natural logarithm for the machine price (as in Model 1) and also for the WTP (Model 2), the coefficient measures the elasticity of customers' WTP (in percent) as a reaction to a change increase in the machine price. Focusing on respondents with a WTP above one percent (n = 431) ensures that its natural logarithm remains positive. The coefficient becomes -.3, meaning that a 1% increase in the machine price reduces customers' WTP for ancillary services by -.3%.

For example, assuming the machine price is 100,000 EUR. Model 2 predicts that the customers' WTP for ancillary services is 13.37% ($e^{2.593}$):

Eq. 1: ln(WTP) = 6.030 - .3 · ln(100,000) + .017 [average across industry dummies] = 2.593

If the machine price increases by 1% to 101,000 EUR, the customers' WTP reduces by -.3% to 13.37% • (1 - .3%) = 13.33%.

3.2 Study 2: The role of customer entitlement

With Study 2, we probe the proposed theoretical mechanism via customer entitlement that explains the negative relationship between machine price and customers' WTP. We find empirical evidence that customer entitlement (H2) fully mediates the relationship between machine price and customers' WTP. For alternative explanations, namely perceived buyer power (H2a) and perceived value of the service (H2b), we do not find empirical support.

3.2.1 Design, participants, and procedures

We recruited 218 participants from Prolific (https://www.prolific.com/), an established platform for recruiting participants for academic studies (Peer et al. 2017). To ensure respondents had experience with B2B sales, we prescreened those participants with negotiation experience. In the survey, we checked whether participants have B2B sales experience, either on the seller or buyer side. Respondents had, on average, 7.24 years of experience in B2B sales and were involved in transactions with an average value of USD 247K (42% female, M_{age} = 39.5).

The study took the form of a two-level (machine price level: US$ 50,000 [low price] vs. US$ 500,000 [high price]) between-subject online experiment. Participants were randomly assigned to either condition. As self-reported entitlement expectations are negatively correlated with social desirability (Watson et al. 1984), we used third-party scenario descriptions that have been shown to reduce social desirability bias (Fisher 1993); i.e., respondents were shown a choice context of a hypothetical procurement manager named Mr. Smith and asked to evaluate how he felt during the decision-making process. The study scenarios described a B2B buying decision that involved a core product ("bending machine") and an ancillary, optional service ("remote service & maintenance"). The price for the optional service was set to 4% of the machine price. The machine prices, as well as the price for the optional service, reflect a realistic price point according to the data we collected in Study 1. For the scenario descriptions, please refer to appendix B.

3.2.2 Variables and measures

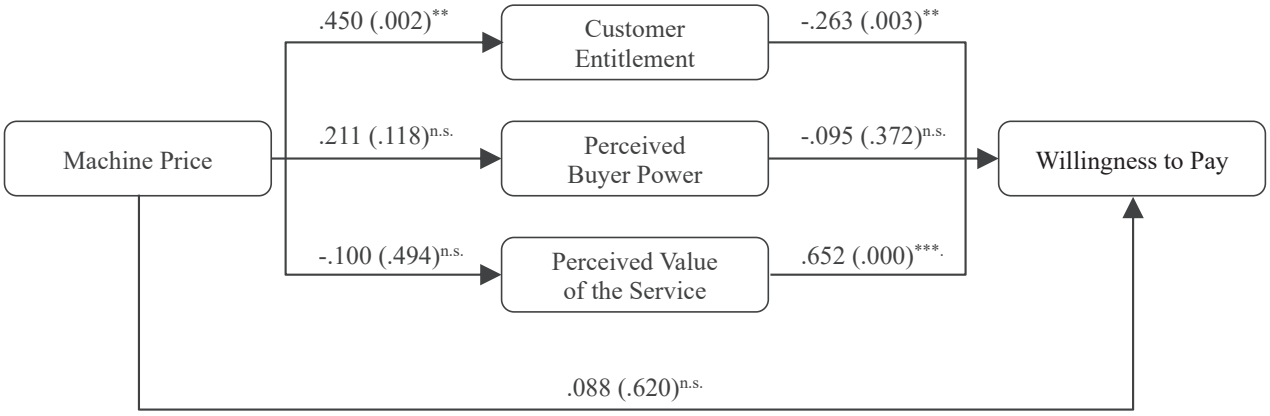
As the dependent variable, we measured customers' WTP for the ancillary service – as in Study 1 – as a percentage of the machine price. We included dummy variables for ten different industries to control for industry-specific heterogeneity in participants' responses to customers' WTP.

As mediators, we measured customer entitlement on three items (adapted from Wetzel et al. 2014), perceived buyer power on four items (adapted from Steiner et al. 2016), and perceived value of the service on three items (adapted from Eggert and Ulaga 2002). The scales showed adequate reliabilities and factor loadings (see appendix B, Tab. B1). All items were measured on 7-point Likert-type scales ranging from "strongly disagree" to "strongly agree."

Participants described the situation as realistic (M = 5.55) and had no difficulty imagining themselves in the situation (M = 5.75) (Dabholkar and Bagozzi 2002). There was no statistically significant difference between buyers and sellers in the sample. The manipulation check provides evidence of the success of the machine price manipulation; we validated it by asking participants how Mr. Smith would evaluate the size of the investment for the bending machine on a seven-item Likert scale ranging from "very small" to "very high" (M_{low} = 3.936, M_{high} = 4.771, t = 4.464, p < .001).

3.2.3 Results and discussion

From a parallel mediation analysis conducted using ordinary least squares path analysis (Hayes 2022, model 4), we found that the machine price-level indirectly influenced customers' WTP through its effect on customer entitlement. As can be seen in *Fig. 3*, participants in the high-price condition felt more entitled (b = .45, p < .01), and participants with a greater sense of entitlement expressed a lower service WTP (b = -.263, p < .01). A bootstrap confidence interval for the indirect effect based on 10,000 bootstrap samples was below zero (b = -.119, 95% confidence interval [CI] = [-.266, -.023]). Concerning the direct effect, there was no evidence that the machine price would affect customers' WTP independent of its effect on customer entitlement (b = .088, p = .620). We find no empirical support that the machine price of a single purchase occasion would affect perceived buyer power (b = .211, p = .118) or perceived value of the service (b = -.1, p = .494). The relationship between perceived buyer power and customers' service WTP was not significant (b = -.095, p = .372). As predicted, the perceived value of the service positively impacts customers' service WTP (b = .652, p < .001). The indirect effects of machine price on customers' service WTP through perceived buyer power (b = -.02, CI = [-.098, .021]) and through perceived value of the service (b = -.066, CI = [-.275, .12]) were not statistically significant. In sum, we find support for customer entitlement as the mechanism that explains the negative effect of machine price on customers' WTP for ancillary service in support of H2.



Notes: path coefficient (*p*-value), * p ≤ .05, ** p ≤ .01, *** p ≤ .001, n.s. not significant

Fig. 3: Customer Entitlement fully mediates the negative relationship between machine price and willingness-to-pay (study 2)

In study 2, we find empirical support for customers feeling entitled when the machine price is high and that a greater sense of customer entitlement decreases customers' WTP for ancillary services. In the following study, we stay with the perspective of the buyer but turn the focus to the seller and add the dual-entitlement principle, suggesting the seller is entitled to a reasonable profit. This interplay of oneself's entitlement and the other party's entitlement in a procurement situation is the focus of the following study 3.

3.3 Study 3: The role of dual-entitlement

With Study 3, we investigate the direct and moderating effects of dual-entitlement in the process that explains the relationship between machine price and customers' WTP through customer entitlement. The dual-entitlement principle posits that sellers are also entitled to a reasonable profit. In the procurement situation of a core product (bending machine) and an ancillary service (guarantee extension with on-site support), we consider both as a source for a reasonable profit. Therefore, we analyze whether the supplier's margin for providing the machine serves as a boundary condition for developing customer entitlement perceptions due to a higher machine price. We also test whether the supplier's margin for providing the service directly affects customers' WTP for ancillary services or whether it moderates the relationship between customer entitlement and customers' WTP.

3.3.1 Design, participants, and procedures

As in Study 2, we recruited 242 participants from Prolific (https://www.prolific.com/; Peer et al. 2017) and ensured that the subject had negotiation experience and an active role in B2B sales activities, either on the seller or buyer side. Respondents had, on average, 7.01 years of experience in B2B sales and were involved in transactions with an average value of USD 294K (30% female, M_{age} = 36.5). We operationalize the "reference profit" that suppliers are entitled to according to the dual-entitlement principle as the profit margin for their respective products or services. As in study 2, we used third-person scenarios (Fisher 1993) to reduce a potential social desirability bias for self-reported entitlement expectations (Watson et al. 1984).

The study took the form of a 2 (machine price: low vs. high) x 2 (estimated supplier's margin for providing the machine: low vs. high) x 2 (estimated supplier's margin for providing the service: low vs. high) between-subjects factorial design.

In a pre-study with 115 participants recruited on Prolific, we calibrated the low and high margins in the scenario for both – machines and services – at 5% and 50%, respectively (see appendix C, *Tab. C2*). Participants were randomly assigned to each of the eight conditions. The study scenario descriptions were almost identical to Study 1, i.e., we again relied on the third-person technique and the hypothetical procurement manager Mr. Smith (see appendix C for details).

3.3.2 Variables and measures

As the dependent variable, we measured customers' WTP for ancillary services – as in Studies 1 and 2 – as a percentage of the machine price. We included dummy variables for ten different industries to control for industry-specific heterogeneity in participants' responses to customers' WTP. As in Study 1, customer entitlement was operationalized with three items (adapted from Wetzel et al. 2014). The scale showed adequate reliability and factor loadings (see appendix C, *Tab. C1*). All items were measured on 7-point Likert-type scales ranging from "strongly disagree" to "strongly agree."

Participants described the situation as realistic (M = 5.41) and had no difficulty imagining themselves in the situ-

ation (M = 5.40) on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree" (Dabholkar and Bagozzi 2002). There was no statistically significant difference between buyers and sellers in the sample. The manipulation checks provide evidence of the success of the machine price, the machine margin, and the service margin manipulation. We validated it by asking participants how Mr. Smith would evaluate the size of the investment for the bending machine on a seven-item Likert scale ranging from "very small" to "very high" (M_{low} = 4.296, M_{high} = 5.252, t = 6.296, p < .001), how might Mr. Smith perceive the margin that the supplier generates with the machine (M_{low} = 3.896, M_{high} = 5.231, t = 8.346, p < .001) and with the service (M_{low} = 4.148, M_{high} = 5.140, t = 5.227, p < .001), respectively.

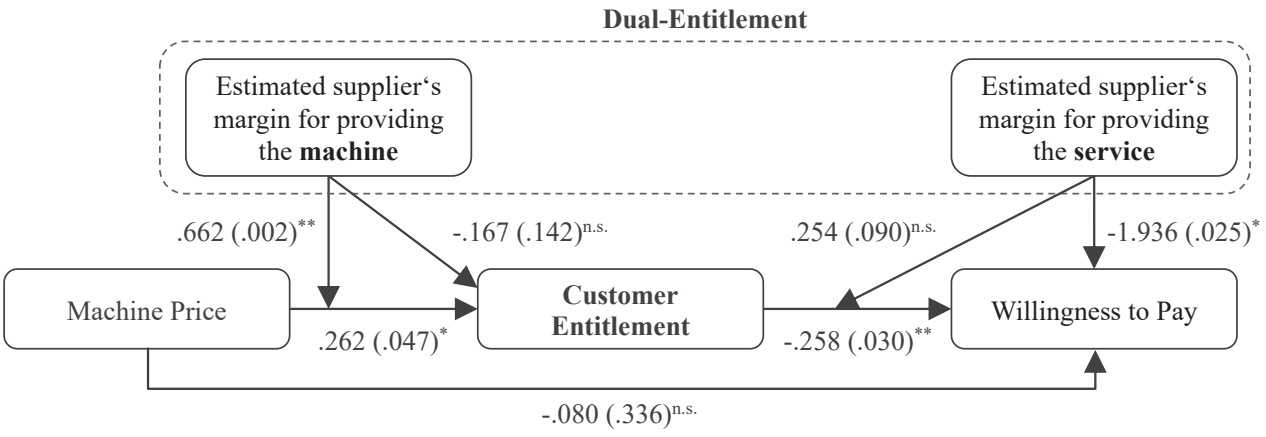
3.3.3 Results and discussion

We conducted a moderated mediation analysis using ordinary least squares path analysis (Hayes 2022, model 21). As can be seen in *Fig. 4*, replicating Study 2, participants felt more entitled when the machine price was high (b = .262, p = .047, one-sided) and exhibited a lower WTP for ancillary services when they felt more entitled (b = -.258, p = .03, one-sided).

The effect of the machine price on customer entitlement is conditional on the estimated supplier's margin for providing the machine; we found a significant direct effect of the interaction between machine price and estimated machine margin on customer entitlement (b = .662, p = .002, one-sided) lending support to hypothesis H3. Given the same machine price, customers felt more entitled when the estimated suppliers' margin for providing the machine was higher. These results suggest that dual-entitlement (operationalized via the estimated suppliers' margin for providing the machine) plays a role in forming customer entitlement expectations and mitigates the negative impact of customer entitlement on customers' WTP for ancillary services.

In support of hypothesis H4, we found a direct effect of the estimated supplier's margin for providing the service on the WTP for ancillary services (b = -1.936, p = .025, one-sided).

In sum, customer entitlement and dual-entitlement (operationalized via the estimated supplier's margin for providing the service) affect the WTP for ancillary services so that dual-entitlement can amplify the negative impact of customer entitlement on customers' WTP (high margin) or compensate for this negative effect (low margin) almost entirely. The maximum impact of customer entitlement on customers' WTP is 7 (i.e., measured on a 7-point scale) · -.258 = -1.806, whereas dual-entitlement adds +1.936 to the WTP for ancillary services via signaling a low margin for providing the services to the buyer.



Notes: path coefficient (p-value, one-sided), * p ≤ .05, ** p ≤ .01, *** p ≤ .001, n.s. not significant

Fig. 4: Dual-Entitlement directly and indirectly affects willingness-to-pay (study 3)

4. General discussion

Capturing the value of ancillary services is a major challenge for capital goods suppliers who are expanding their service portfolios to better differentiate themselves from the competition and strengthen their competitive position (Krämer et al. 2022; Worm et al. 2017). In today's highly competitive markets for industrial equipment, ancillary services often go beyond basic offerings such as installation, training, and maintenance and can include complex, value-adding services (Ulaga and Reinartz 2011). For example, with the growing trend towards connected machines, equipment suppliers are increasingly offering cloud-based services that allow clients to remotely monitor and manage their installed base (Kowalkowski et al. 2024). While these ancillary services provide significant value to the customer, suppliers often find it difficult to

charge a fair price (Mustak et al. 2023). Anecdotal evidence suggests that customers' WTP for ancillary services decreases as the investment in the underlying product increases. Indeed, salespeople report that their customers feel entitled to receive ancillary services at low prices when they have spent a substantial amount on the capital good (Palo et al. 2019).

This paper, therefore, focuses on services that are innovative from a machine manufacturer's perspective and offer significantly more value to consumers than standard market offerings (for example, we considered automatic SMS and e-mail notifications of machine errors, remote services, subscriptions to machine software updates, consignment stock, advanced software and machine training, digital twins, the availability of a marketplace to sell free machine capacity, etc.). This study is, therefore, not based on 'standard' services, which are sometimes provided free of charge to machine buyers. What differentiates these new and innovative services from standard market services is the fact that buyers often lack experience with them and are limited in assessing their benefits in advance. For example, procurement managers face difficulties evaluating the benefits of a subscription to machine software updates. As a consequence, buyers might be prone to psychological influences such as the entitlement and dual-entitlement effect.

Based on a unique dataset of 444 decision-makers in industrial firms, we empirically show that decision-makers' WTP for ancillary services decreases significantly as the machine price increases, and lay the ground to further understand the explanatory mechanism.

Our research is important since customer entitlement research has received limited attention, in particular for industrial markets (see *Tab. 1*) but, since it influences customers' WTP, it may substantially impact a service provider's profitability. Drawing on social exchange theory (Anderson and Narus 1990) and by extending this research based on findings from reference pricing research (Mazumdar et al. 2005), we develop a conceptual model of customer entitlement as an explanatory mechanism for a lower WTP for the ancillary services when the price of the core product is high. In an experimental study, we identify customer entitlement as the mechanism that explains the relationship between the machine price and the WTP for ancillary services. In a second experimental study, we investigate the dual role of dual-entitlement in this causal chain, namely, its moderating effect on the formation of customer entitlement and its direct effect on the customer's WTP for the ancillary service (Boyd and Bhat 1998; Kahneman et al. 1986a). We demonstrate that, in the first stage, the dual-entitlement principle moderates the effect of the machine price on customer entitlement – i.e., a lower machine margin attenuates the effect of a higher machine price on customer entitlement perceptions. For the second stage, we find that the dual-entitlement principle has an additional effect on customers' WTP. That is, a lower service margin compensates for the negative effect of a higher level of customer entitlement (for example, due to a higher machine price) on the WTP for ancillary services. These results have important implications for marketing theory and practice.

4.1 Theoretical contributions

Our research contributes to marketing theory in several ways. First, our knowledge on psychological phenomena in B2B procurement contexts is still limited, especially when considering research during the last 35 years on entitlement (see *Tab. 1*, 4 publications) and dual-entitlement (see *Tab. 1*, 1 publication). Per our knowledge, our research is the first to link prices for a core product and WTP for an ancillary service via customer entitlement and extending the findings to the interplay with dual-entitlement.

First, our findings answer the call for additional research on the pricing of (ancillary) services (e.g., Mustak et al. 2023; Kowalkowski and Ulaga 2024). The present research extends customer entitlement and dual-entitlement effects in industrial markets to the domain of pricing (Chen et al. 2018; Wang and Zhang 2021). Prior literature suggests that customers' WTP for ancillary services may decrease when the price of the core product increases (Palo et al. 2019). We extend previous research by providing a theoretical mechanism underlying this relationship. Thus, beyond providing additional evidence for the robustness of a phenomenon (study 1), we experimentally provide insight into the "why." To the best of our knowledge, we are the first to quantitatively explore this effect and establish a theoretical explanation for the relationship between the price of a core product and the WTP for ancillary services. Understanding the underlying mechanism is important since this enables managers to proactively influence customers' WTP that includes group buying decisions. More precisely, our findings empirically not only complement the emerging interorganizational research literature that roots collective group buying decisions in the subjective norms, attitudes, and anticipated emotions of the individuals who make up an organizational buying center (Kleinaltenkamp et al. 2022), but also opens new avenues for researchers to deepen our understanding of B2B procurement decisions.

Second, as identified in our literature review, only Wetzel and colleagues (2014) have considered customer entitlement as a mediator for customer behavior in a B2B context. This research focused on more salient cues that demonstrate the importance of customers to sellers, such as deliberate customer prioritization efforts (Wetzel et al.

2014). We establish that also seemingly more subtle cues can be highly impactful: a higher price of the capital good also serves as an indirect signal for buyers to conclude their relative standing with the seller. Such research is important since it increases our understanding of biases of B2B procurement managers and, as a consequence, lays the groundwork for research on other contexts and more subtle cues from which customers conclude their ranking in the sellers' portfolio and that might become relevant for pricing and impact customers' WTP, which has a direct impact on a firm's profitability.

Third, our research is the first to simultaneously investigate customer entitlement and the dual-entitlement principle. We argue that in the presence of customer entitlement and dual-entitlement perceptions, each has an independent – i.e., compensatory or complementary – effect on the behavioral outcome (e.g., expressed WTP). These findings add to our understanding of the interdependencies between pursuing one's self-interest, considering the interest of others, and complying with norms of fairness (Kahneman et al. 1986a). Our research sheds light on the interplay between customer entitlement and the dual-entitlement principle and theoretically shows how entitlement and dual-entitlement perceptions share roots in (price) fairness judgments. These findings contribute to the growing body of research that extends the classical understanding of fully rational, value-maximizing, and self-centered industrial buyers (Sheth 1973) and answer the call for additional research on the dual-entitlement principle (Chen et al. 2018).

4.2 Managerial implications

Our research provides important managerial implications that question common wisdom and are likely to change managerial decision making. From a managerial perspective, our research helps pricing managers and salespeople to better capture the value of ancillary services for expensive capital goods (Krämer et al. 2022; Worm et al. 2017).

An important managerial implication is that entitlement is not a long-term outcome of a customer relationship but is already likely to evolve within a single transaction. Thus, selling companies need to consider potential entitlement effects right at the beginning of a customer interaction and proactively manage entitlement effects early on.

Moreover, not all machine prices are likely to evoke relevant entitlement effects. Anecdotal evidence suggests that the WTP for ancillary services drops if the machine price is sufficiently high and crosses a certain threshold. Marketers and salespeople need to keep an eye on the tipping point when reasonable customer expectations turn into customer entitlement. The tipping point results from customers' believing the purchase of a more expensive machine makes them more important to the company and, therefore, are entitled to a treatment that reflects their higher rank position.

Conducting a post-hoc analysis to gain additional managerial insights, we revisited the dataset with senior procurement managers collected in study 1. To identify a potential threshold – or 'break-point' in regression terminology – in a nonlinear relationship between machine price and WTP, we conducted a piecewise regression – also segmented or broken-line regression – of machine price and personal risk on WTP (Pindyck and Rubinfeld 1997). The piecewise regression analysis applies an iterative, maximum-likelihood-based procedure that fits the model by adjusting the gap between adjacent segments and the differences in slopes for respective segments so that the gap between segments narrows to almost zero (Muggeo 2003). The regression model converges at a break-point at ln(machine price) = 11.918 (SD = .34) – i.e., at a machine price of 150k EUR – with no slope up to this break-point b = .26 (95% CI [-3.942; 4.461]) and a negative slope beyond b = -4.033 (95% CI [-5.41; -2.666]). Hence, we find empirical support for a nonlinear relationship between the machine price and customer entitlement perceptions that lead to a downward shift in the WTP for ancillary services.

The discovery of the break point holds significant value for sales managers, demonstrating that our findings specifically pertain to machines with a price tag of €150,000 or higher. Knowing that entitlement effects start at a specific machine price point allows sales managers to tailor their strategies accordingly. Thus, we suggest implementing distinct strategies depending whether the machine value is below or above this threshold. Below, we focus on selling machines priced above the break point. This knowledge can help in customizing sales pitches, negotiation tactics, and marketing efforts.

A first recommendation is that suppliers selling expensive machines should provide subtle cues to customers to adjust their perception of the relative rank in the company's client portfolio. Providing information about expensive lighthouse projects, the number of past transactions, or the size of their customer base not only builds credibility and reduces the perceived risk of a purchase but could help customers realistically assess their importance to the supplier and also reduce the influence of entitlement effects.

Second, while we did not consider customer prioritization programs in our studies, our experiments still offer important insight into the influence of entitlement effects. To date, many prioritization programs offer price-related perks such as preferential terms, discounts, and rebates (Homburg et al. 2008). We propose that benefits offered to top-tier customers should not directly relate to lower

prices. Otherwise, the established norm of preferential pricing makes entitled customers to demand price reductions (due to a lower WTP) instead of other, less costly benefits, such as better customer service.

Third, our research indicates that relationships in industrial markets are not only driven by self-interests; they are also impacted by fairness perceptions (Boyd and Bhat 1998). We demonstrate that the dual-entitlement principle is also present in B2B negotiations. Based on the dual-entitlement principle, customers believe that suppliers are entitled to a reasonable profit. This means that if the suppliers' margin is unreasonably low, customers are more likely to be willing to pay a price that allows a reasonable profit. Therefore, we recommend suppliers to correct customers' potentially inflated margin assumptions by disclosing costs. Correcting margin assumptions downward might trigger the dual-entitlement principle, compensate for entitlement expectations, and raise customers' WTP for ancillary services. Managers might communicate profit margins achieved in both equipment and service sales. This is particularly relevant in times when industry-wide reports document declining operating profit margins. For example, a recent study of German machinery companies documented EBIT margins declining from 8.7 percent in 2016 to 6.0 percent in 2019 (McKinsey 2020). Similarly, with profit margins hovering at, or slightly above, break-even in selected industries, the argument in favor of seeking profitability through service activities can be more easily made.

4.3 Limitations and future research directions

This research has several limitations that offer fruitful avenues for further research. First, we demonstrated that the price of the core product positively affects customer entitlement expectations and that the dual-entitlement principle indirectly moderates the formation of customer entitlement and directly influences customers' WTP for ancillary services. Future research could identify the boundary conditions that might define the contours of our findings more brightly and alter the effectiveness of the dual-entitlement principle on B2B customers' entitlement perception and their WTP for services. The cultural setting, industry characteristics as well as the decision-maker's role in the procurement process might be such boundary conditions.

As the dual-entitlement principle is based on communal norms of fairness, the cultural setting and its inherent norms might moderate the results of the present study. In particular, future research could shed light on the effect of Hofstede's (2001) cultural dimensions on the formation of customer entitlement perception, the role of the dual-entitlement principle, and the joint impact on customers' WTP for ancillary services.

Considering the industry, the context of our study is machine-building. This specific industry requires high capital investments and high costs to service individual customers and favors long-term relationships with customers (Turnbull and Zolkiewski 1997). Future research could investigate whether the effects of WTP for ancillary services depend on a specific subcategory of the industry (e.g., electrical industry within the machine-building industry) or whether similar effects also occur in other industries. For example, does this effect extend from manufacturing machines as core products to services, such as large-scale consulting projects?

With respect to decision-maker characteristics, in the current studies, we focus on procurement managers (i.e., those people with financial expertise that might be more price sensitive than others). Future research should assess how different members of a buying center (e.g., top management, members with technical expertise, etc.) are influenced by entitlement and dual entitlement.

Second, we focus on customers' WTP as the behavioral outcome and dependent variable. Previous research investigated the direct or indirect effect of customer entitlement in other contexts, such as resellers' sales effort in sales partner programs (Pelser et al. 2015) or customer relationship profitability in customer prioritization programs (Wetzel et al. 2014). Thus, they consider a long-term relationship instead of a single choice. Future research should provide a deeper insight into the dynamics that shape entitlement and dual-entitlement perceptions. Thus, future research should turn from a transactional to a long-term perspective spanning the lifecycle of a customer, to include the impact of selling a service on customers' lifetime value when defining an optimal pricing strategy. Such research could also shed light on the perceptions of the seller, such as gratitude and indebtedness, and on the dyadic relationships that might be affected by the seller's sales approaches and their product and service knowledge.

Third, we defined the services in this study together with managers from the machine-building industry. Our goal was to define highly innovative services that are not yet common on the market and that were expected to provide a substantial return to the service provider in the future. Of course, completely new services might evolve in the future (e.g., services based on augmented reality which might help users repair a machine). Thus, our study considers the current scope of available ancillary services. As new services emerge, it might be interesting to test how they are influenced by entitlement and dual entitlement.

Fourth, in line with previous research, our empirical studies solicit customers' WTP as a percentage of the machine price, either before the negotiation concluded

(study 1) or in scenario-based experiments (studies 2 and 3). Although we involved participants in our field study from a unique sample of senior decision-makers, we solicited their WTP before the procurement concluded. Future research might investigate the effect of other operationalizations of customers' WTP, such as absolute values.

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Appendix A: Details on decision-maker sample for study 1

Please find here a summary of the identified service types and a statistical description of the sample of managers that we drew on for study 1.

Tab. A1: Service types

Service types
3D CAD data of the machine
Customized machine training
Customized software training
Feasibility analysis (beginning of production)
Guaranteed availability of spare parts
Guaranteed maintenance (within defined timeframe)
Guaranteed trade-in at market value
Installation of the machine
Machine status monitoring (SMS, e-mail, online)
Marketplace for free machine capacity
Price stability for spare parts
Remote service
Service hotline
Software updates for the machine
Solutions to integrate the machine in an existing manufacturing facility
Standard machine training
Standard software training
Virtual machine
Warranty extension

Tab. A2: Sample composition by key informant

Primary function of respondent in company	*n*	%
Chief Executive Officer / Managing Director	43	9.7
Office of the Chief Executive Officer / Managing Director	18	4.1
Manager in Commercial Procurement	16	3.6
Manager in Technical Procurement	68	15.3
Manager in R&D / Construction	25	5.6
Manager in General Administration	3	0.7
Manager in Production	224	50.5
Manager in Other Function	47	10.6
Total	**444**	**100.0**

Tab. A3: Sample composition by industry

Company Sector	*n*	%
1 - Machine building industry	156	35.1
2 - Automobile industry	35	7.9
3 - Supplier for the automobile industry	88	19.8
4 - Metal production	57	12.8
5 - Contract manufacturing	10	2.3
6 - Other vehicle construction (e.g., shipbuilding)	5	1.1
7 - Electrical industry	26	5.9
8 - Aviation/space flight	11	2.5
9 - Fine mechanics/optics	24	5.4
10 - Other	32	7.2
Total	**444**	**100.0**

Tab. A4: Sample composition by machine price

Machine price in EUR	*n*	%
0 to 100,000	45	10.1
> 100,000 to 500,000	301	67.8
> 500,000 to 1,000,000	82	18.5
> 1,000,000 to 10,000,000	15	3.4
> 10,000,000	1	0.2
Total	**444**	**100.0**

Tab. A5: Sample composition by annual revenue

Revenue in million EUR	*n*	%
≤ 1	6	1.4
> 1 to 5	15	3.4
> 5 to 25	53	11.9
> 25 to 50	55	12.4
> 50 to 100	48	10.8
> 100 to 250	69	15.5
> 250 to 1,000	62	14.0
> 1,000	128	28.8
No answer	8	1.8
Total	**444**	**100.0**

Tab. A6: Sample composition by the number of employees

Number of employees	*n*	%
< 10	4	0.9
10 to 49	15	3.4
50 to 249	85	19.1
250 to 499	66	14.9
500 to 999	48	10.8
≥ 1,000	225	50.7
No answer	1	0.2
Total	**444**	**100.0**

Appendix B: Scenario descriptions and measurements for study 2

Scenario description

Please imagine the following situation:

- Mr. Smith is a procurement manager at a larger manufacturing company with annual sales of US$ 500 million.
- He oversees a total annual budget of US$ 10 million.
- After weeks of negotiation, he agreed on the purchase of a bending machine for **[LOW PRICE] US$ 50,000/ [HIGH PRICE] US$ 500,000** with the supplier.
- After the purchase of the machine was concluded, the supplier offers Mr. Smith "remote service & maintenance" as an additional service. The one-time price is **[LOW PRICE]**
  US$ 2,000 (i.e., a 4% surcharge over the machine

price) / **[HIGH PRICE] US$ 20,000** (i.e., a 4% surcharge over the machine price).
- Mr. Smith acknowledges the relevancy of this service for his company and thinks about the decision also to procure this service.

Tab. B1: Measurement scales (study 2)

Item	Factor loading	AVE	CR	CA
Customer entitlement (adapted from Wetzel et al. 2014)				
[1] In this purchase situation, we claim significant effort from the supplier because we deserve it.	.886	.720	.885	.812
[2] In this purchase situation, we demand the best possible level of service and price from the supplier because we feel we are entitled to it.	.874			
[3] In this purchase situation, we demand the best price from the supplier because we are worth it.	.782			
Perceived buyer power (adapted from Steiner et al. 2016)				
[1] We had considerable bargaining power in this purchase situation.	.596	.534	.817	.751
[2] The supplier was really motivated in making the machine sale to us.	.618			
[3] The supplier we chose gave us a better deal on the machine when compared to most of ist other customers.	.865			
[4] The suppliers in this market pay a great deal of attention to my organization.	.807			
Perceived value of the service (adapted from Eggert and Ulaga 2002)				
[1] Compared to the price we pay for the service, we would get reasonable additional benefits.	.895	.765	.907	.846
[2] Compared to the additional benefits we would get from the service, we pay a reasonable price.	.922			
[3] The purchase of the service would deliver us superior net value.	.802			

Notes: AVE = average variance extracted, CR = composite reliability (rho $_C$), CA = Cronbach's alpha

Appendix C: Scenario descriptions and measurements for study 3

Scenario description

Please imagine the following situation.

- Mr. Smith is a procurement manager at a larger manufacturing company with annual sales of US$ 500 million.
- He oversees a total annual budget of US$ 10 million.
- After weeks of negotiation, he agreed on the purchase of a bending machine for **[LOW PRICE] US$ 50,000 / [HIGH PRICE] US$ 500,000** with the supplier.
- After the purchase of the machine was concluded, the supplier offers Mr. Smith a "guarantee extension with on-site support" as an additional service. The price is **[LOW PRICE]**
  US$ 2,000 / [HIGH PRICE] US$ 20,000 (i.e., a 4% surcharge over the machine price).
- Mr. Smith estimates that the supplier generates a margin of **[LOW MACHINE MARGIN] 5% / [HIGH MACHINE MARGIN] 50%** for the machine.
- He also estimates that the supplier calculates with a margin of **[LOW SERVICE MARGIN] 5% / [HIGH SERVICE MARGIN] 50%** for providing the service.
- Mr. Smith acknowledges the relevancy of this service for his company and thinks about the decision also to procure this service.

Tab. C1: Measurement scales (study 3)

Item	Factor loading	AVE	CR	CA
Customer entitlement (adapted from Wetzel et al. 2014)				
[1] In this purchase situation, we claim significant effort from the supplier because we deserve it.	.792	.648	.847	.728
[2] In this purchase situation, we demand the best possible level of service and price from the supplier because we feel we are entitled to it.	.851			
[3] In this purchase situation, we demand the best price from the supplier because we are worth it.	.771			

Notes: AVE = average variance extracted, CR = composite reliability (rho $_C$), CA = Cronbach's alpha

Pre-study to calibrate low/high margins for machines and services

We applied an adapted version of the Price Sensitivity Meter (PSM) question and asked the following questions for machines and services separately (van Westendorp 1976). We also checked whether the machine price (low vs. high) affects margin expectations.

> What is a machine [service] margin (in percent) that Mr. Smith thinks is almost too low to be economically viable for the supplier?
> What is a machine [service] margin (in percent) that Mr. Smith thinks is low but reasonable for the supplier?
> What is a machine [service] margin (in percent) that Mr. Smith thinks is a reasonable, healthy margin for the supplier?
> What is a machine [service] margin (in percent) that Mr. Smith thinks is an unreasonable high margin for the supplier?

Tab. C2: Pre-study to calibrate margin levels for the scenario descriptions (study 3)

	Low margin (question 1)	High margin (question 4)
Machine Margin (machine price = low)	11.62[a]	43.49[b]
Machine Margin (machine price = high)	10.46[a]	43.90[b]
Service Margin (machine price = low)	11.85[a]	42.94[b]
Service Margin (machine price = high)	10.06[a]	40.62[b]

Notes: values with the same letter are not statistically significantly different

Expectations of low and high margins do not differ between machines and services and are not moderated by the machine price. For the scenario descriptions, we used 5% for low and 50% for high margins, each about five percentage points below and above the estimated margins.

Keywords: B2B marketing; servitization; service pricing; dual entitlement; service sales