Review of Managerial Science
https://doi.org/10.1007/s11846-023-00620-5

ORIGINAL PAPER

Measuring and managing service productivity: a meta-analysis

Johannes Hofmeister[1] · **Dominik K. Kanbach**[1,2] · **Jens Hogreve**[3]

Received: 28 September 2022 / Accepted: 11 January 2023

Abstract

Despite service productivity's scholarly prominence and practical relevance, past research in marketing has primarily adopted isolated perspectives from which disjointed empirical findings reign supreme. As the acquisition of knowledge about service productivity accelerates, the collective evidence becomes more interdisciplinary but also more fragmented. This study uses a meta-analysis to integrate the substantial empirical record on service productivity. We formulate hypotheses on the moderators of service productivity-determinant relationships and meta-analyze 77 articles, relying on 81 independent samples with a cumulative sample size of 30,238 participants to test our predictions. Our meta-analysis provides empirical evidence that service quality and internal efficiency must be considered jointly, not in isolation, to maximize profitability. Thus, relying on one aspect in isolation is less appropriate for measurement purposes and might not lead to positive outcomes. This important finding should concern service scholars and managers because falling profit margins require service firms to move beyond the traditional manufacturing productivity that separates service quality from internal efficiency and consider service productivity as a profitability concept. In sum, our findings provide a viable model to explain the main service productivity determinants and moderating variables, offering valuable insights for practitioners that aim to deliver cost-efficient service quality and promising future research directions.

Keywords Service productivity · Service efficiency · Service effectiveness · Service excellence · Meta-analysis

Mathematics Subject Classification 00A05

✉ Johannes Hofmeister
Johannes.Hofmeister@hhl.de

Extended author information available on the last page of the article

Published online: 03 February 2023

1 Introduction

Over the last two decades, literature in marketing has shown increasing interest in the service productivity concept as a key to creating growth in a rising service economy (Anderson et al. 1997; Wirtz and Zeithaml 2018). Since service productivity emphasizes "the transformation of inputs into economic results" (Grönroos and Ojasalo 2004: 414), many successful service companies strategically manage their service productivity levels to maximize profits (Rust and Huang 2012). Yet, a conceptual fuzziness has plagued the service productivity research area where two different schools of thought argue about how service productivity should be defined and measured. One school of thought characterizes service productivity as the efficiency of a firm's services in its ongoing operations (Anderson et al. 1997; Rust and Huang 2012), where the dual nature of quality—standardization versus customization—determines whether there are tradeoffs between satisfaction, quality on the one and firm efficiency on the other side. The second research stream argues that customer satisfaction and firm efficiency are intertwined in services and therefore considers service productivity as a joint function of firms and customers' contributions, where firms and customers are co-creators of value (Grönroos and Ojasalo 2004; Parasuraman 2002). Consequently, these two distinct schools of thought have produced a fragmented empirical landscape, making it challenging for research on service productivity to advance with a unified understanding and greater clarity.

Moreover, developing a better understanding of how service quality and cost impact service productivity within different service industries is increasingly important for managers to achieve a competitive edge (Wirtz and Zeithaml 2018). A review of the literature reveals that the literature on service productivity has significantly evolved, especially as technological advancements have continued to accelerate. Automatized implementations of service processes, such as service robots (Wirtz et al. 2018) and artificial intelligence (Huang and Rust 2021), will be increasingly important to further enhance service business models' productivity.

However, while technological advancements progress and services become pivotal for economic growth, service productivity (Baumol and Bowen 1966; Brynjolfsson 1993) is declining in many developed countries (OECD 2021), suggesting that productivity-enhancing approaches at the firm level have yet to materialize. Service scholars have only recently addressed these puzzlingly low service productivity levels (Andreassen 2021)—and paradoxically, even after more than two decades of service productivity research, the service productivity concept remains far from fully understood despite its practical relevance and scholarly prominence.

We must build a more cohesive knowledge base to better understand the factors influencing service productivity. Yet, research in this field remains fragmented, dominated by siloed and context-specific studies. Some studies have

analyzed the concept by focusing on specific service productivity determinants in isolation, such as service standardization (e.g., Belanche et al. 2020), technology empowerment (e.g., Marinova et al. 2017), and corporate culture (e.g., Menguc et al. 2017). These studies have primarily focused on corresponding cost or quality effects but do not refer to combined productivity measures, such as financial measures, that provide complete information about a service provider's performance (Grönroos 1984). Since service revenues and costs are closely intertwined, the separation of cost and quality perspectives provides information about only distinct productivity determinants but makes identifying valid measures to improve a firm's entire service productivity difficult.

Moreover, other scholars examined service productivity through case studies on specific companies (e.g., Wirtz et al. 2008) or industry-specific experiments (e.g., Jung et al. 2021) and obtained context-specific results employing different terminologies. Thus, the heterogeneous terminology used to describe service productivity complicates the comparison of individual studies to draw necessary conclusions and advance the field.

Furthermore, service productivity effect sizes vary considerably between studies. For example, some scholars find evidence of positive effects of service innovation on service productivity and performance (e.g., Carbonell and Rodríguez Escudero 2015; Cheng and Krumwiede 2012), while other studies are unable to support such relationships (e.g., Melton and Hartline 2013) or find contrary evidence (e.g., Aspara et al. 2018). Thus, service research requires a reliable integration of the existing research on service productivity that accounts for service heterogeneity to not only meaningfully compare studies within different industries or strategic settings but also understand related strategies' and measures' actual productivity effects.

Essentially, the existing research on service productivity must be summarized and integrated because scholars still cannot understand the concept fully, as academic research on individual and disjoint concepts reigns supreme. In spite of this, assessing the state of knowledge in the service productivity research area has become increasingly relevant due to the growing number of publications on service productivity. Therefore, we aim to connect the literature's fragmented empirical landscape by conducting a comprehensive meta-analysis on service productivity that includes 77 articles, 81 independent samples, and 30,238 participants. This integration of the existing research enables us to examine the current academic knowledge base to combine quantitative information from across studies, drawing solid conclusions built on comparable research and creating a cohesive foundation for further theory development.

In sum, this meta-analysis aims to evaluate the evidence of effects on service productivity that are not dependent on the specifics of a single study and to provide researchers, policymakers, and practitioners with a concise synthesis of the research results. Moreover, we aim to test moderators of direct effects on service productivity, such as the way service productivity is measured or what service type was provided, that may be of particular interest to researchers, policymakers, and practitioners.

Our study offers several theoretical and practical contributions. First, from a theoretical perspective, we shed light on service productivity by synthesizing existing empirical research to develop and compare the determinants of service productivity

based on Grönroos and Ojasalo's service productivity model (2004). We base the meta-analysis on the Grönroos and Ojasalo model since this model reflects both firm efficiency and service quality, allowing us to equally consider the two different schools of thought characterizing service productivity either as the efficiency of a firm's services in its ongoing operations (Anderson et al. 1997; Rust and Huang 2012) or as the joint function of internal efficiency and external effectiveness (Grönroos and Ojasalo 2004; Parasuraman 2002). Thus, we group the main service productivity determinants into three different categories (i.e., *employee support* productivity levers, *service process* productivity levers, and *external service quality* productivity levers) while arguing based on a synergistic (rather than single) service quality and efficiency perspective (Parasuraman 2002). Our results show that, out of the three main determinants, *external service quality* and *employee support* have the strongest positive influence on service productivity, supporting studies that have called for those determinants as important service productivity levers (e.g., Menguc et al. 2016; Phyra Sok et al. 2018).

Second, we extend the literature on service productivity by analyzing the effects of the way of productivity measurement and three service-type moderators to explain the literature's inconsistent findings. Our results show that a dual measurement approach that jointly considers quality and cost perspectives positively moderates employee support's direct service productivity effect. Thus, our findings indicate that service companies should combine cost and quality measurements when they seek to manage total productivity to "benefit from synergies that elude service businesses focusing on a single perspective" (Parasuraman 2002: 7). This finding is important for research and practice because the meta-analysis provides empirical evidence for service scholars and managers that they should go beyond traditional manufacturing-based productivity theory and view service productivity as a profitability concept. Analyzing existing empirical literature, we show that the majority of service productivity research adopts a siloed (manufacturing-based) perspective that separates service quality from internal efficiency. Although valuable, these studies can only offer somewhat limited recommendations for a few businesses that can afford to spend more or less money (Lovelock and Wirtz 2022)—i.e., allow productivity to decrease or increase—for better or worse service quality. However, since overall service productivity declines (OECD 2021) and margins for the majority of service firms become smaller, service businesses must be able to deliver service quality that is also cost-effective, meaning they must focus mainly on profitability as a strategic decision variable.

Furthermore, we find that service types [i.e., the degree of intangibility, the degree of customer coproduction, or whether services relate to business-to-business (B2B) or business-to-consumer (B2C) services] moderate service-productivity determinants' relationships. We, therefore, propose a theoretical foundation from which to incorporate both a service-productivity-measurement perspective and a service-type perspective into the existing theory of service productivity.

Finally, we suggest avenues for future research to direct the service productivity domain toward new research areas. Therefore, this meta-analysis synthesizes and compares the collective evidence on service productivity in order to motivate research to identify apt measures for service productivity improvement and shed

new light on puzzlingly low service productivity levels from novel perspectives (e.g., Jung et al. 2021). We link our results to current research trends relating to new service productivity measurement approaches (e.g., Brynjolfsson et al. 2019), new service designs (e.g., Carbonell et al. 2009), and B2B services (e.g., Wirtz et al. 2015) to address the recent call for more service productivity research in an increasingly digitalized service economy (Andreassen 2021).

From a managerial perspective, our results show which tradeoffs organizations must consider when they seek to improve service productivity. According to our moderator analysis, evaluating service efficiency and service effectiveness separately, instead of jointly, underestimates the service productivity effect and, consequently, misdirects managers' decision-making. As a direct consequence of this, closely intertwined quality and cost effects cannot be steered correctly. Instead, managers should use primarily combined metrics (such as financial measures) that consider quality and cost effects in strategic decision-making because it is the key challenge for any service business to provide cost-efficient service quality. However, managing the tradeoff between cost and quality aspects is difficult in competitive markets, and only very few (world-class) service organizations achieve "quantum leaps in service quality and productivity at the same time" (Lovelock and Wirtz 2022: 513).

Furthermore, our service-type moderator analyses indicate that service firms must use caution when incorporating customers into service coproduction because the associated complexity increase reduces the service productivity effects of different service-productivity enhancement approaches. Our research also shows that service design (Patrício et al. 2011) is a promising way to increase the productivity of highly intangible services. Additionally, we show that back office enhancement particularly benefits B2B companies' service productivity. Thus, our findings encourage organizations to carefully reflect on their measurement approaches and productivity initiatives when they seek to optimize firm performance by considering the determinants and moderators discussed herein.

2 Conceptual framework

2.1 Service productivity determinants

We structure existing service productivity research based on Grönroos and Ojasalo's (2004) service productivity model. This model is most suitable for our purposes as it reflects firm efficiency and service quality equally and also considers the important "inter-linkages among various components of the company-customer perspective of productivity" (Parasuraman 2002: 6). Furthermore, we follow extant research on service productivity (e.g., Aspara et al. 2018) that also uses the definition of service productivity derived from the Grönroos and Ojasalo model. Thus, we define service productivity as the efficiency with which a firm converts service input resources into customer-valued service outputs. As such, service productivity is conceptualized and measured using combined metrics (e.g., financial return) that account for company and customer perspectives on productivity (Parasuraman 2002). In Grönroos

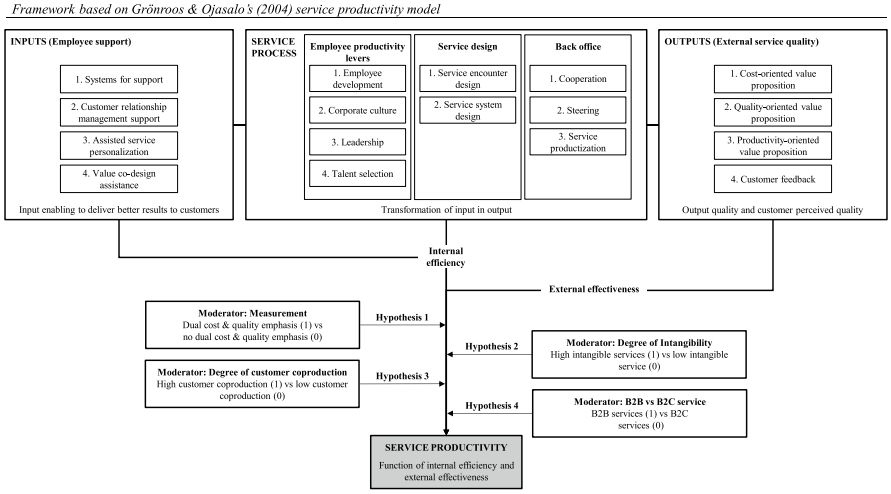

Fig. 1 Meta-analytic framework

and Ojasalo's (2004) model, service productivity determinants are separated into an *input* perspective, a *service process* perspective, and an *output* perspective. The *input* perspective refers to *employee support* that enables service providers to deliver better services to customers (i.e., firm inputs such as personnel, systems, and technology, as well as customer inputs such as time and effort). The *service process* perspective refers to how these inputs are transferred into outputs (i.e., employee productivity levers, service design, or back office enhancement), whereas the *output* perspective refers to the *external service quality* aspect (e.g., customer perceived quality). Figure 1 shows that our framework also features sub-constructs for *employee support*, the *service process*, and the *external service quality* dimensions so that we can delve deeper into each of the determinants' drivers. Table 1 lists all of the constructs' definitions and most representative articles.

2.1.1 Employee support and service productivity

Researchers have investigated *employee support* (e.g., Mathwick et al. 2001) as an approach for service productivity enhancement. The *employee support* service-productivity determinant refers to all business-model decisions that support employees during customer interactions (Lechner and Mathmann 2020; Menguc et al. 2020) that directly influence service productivity. Figure 1 shows that employee support can be improved in four different ways. First, service productivity can be achieved through *systems for support* in customer interfaces by reducing complexity, mainly through self-services (Belanche et al. 2020), service scripts (Victorino et al. 2012), and new technologies (Schepers et al. 2011) at the front line. Second, service productivity can be improved through enhanced *customer relationship management support.* Fostering (e.g., favoring longstanding customer relationships) long-term relationships with customers helps increase the quality of the relationships between

Table 1 Construct definitions, common aliases, and representative studies

Construct	Definition	Common aliases	Most representative study
Employee support	*Ways to enable employees to deliver better results to customers*		
Systems for support	Complexity reduction at the customer interface through service standardization	Service augmentation, self-services	Collier and Barnes (2015)
Customer relationship management support	Marketing and communication methods to establish long-term customer relationships	Customer linking, customer orientation, service recovery performance	Suhartanto et al. (2018)
Assisted service personalization	Add-on services to achieve highly customized services	Inter-functional coordination, customer, competitor orientation	Mathwick et al. (2001)
Value co-design assistance	Customer education and mutual learning experiences to achieve high service productivity	Customer involvement, playfulness, customer readiness, assistive intent	Zhao et al. (2018)
Employee productivity levers	*Ways to improve the service workforce*		
Employee development	Development of employee competencies to increase service efficiency and/ or effectiveness	Self-efficacy, employee productivity, trust, empowerment, education, personality	Phyra Sok et al. (2018)
Corporate culture	Firm culture that promotes high service productivity	Cross-selling initiative climate, service climate, supervisory guidance	Menguc et al. (2017)
Leadership	Leadership styles required in a competitive service environment to foster trust and achieve interest alignment	Rewards, developmental feedback, monitoring, leader autonomy support	Jung et al. (2021)
Talent selection	Personality traits that promote high service productivity	Social skills, agreeableness, conscientiousness, emotional stability	Doucet et al. (2016)
Service design	*Ways to improve the service design*		
Service encounter design	Activities that promote incremental service design changes at the frontend	Information recording and reviewing, Information use, innovation incentives	Aspara et al. (2018)
Service system design	Activities that promote high (radical) multilevel service design changes	Abductive reasoning, experimentation, learning by failing, radical innovation	Nakata and Hwang (2020)
Back office	*Ways to streamline the back office (in isolation from the customer)*		

Table 1 (continued)

Construct	Definition	Common aliases	Most representative study
Cooperation	Supplier structures and balanced partnerships to achieve processual synergies	Cooperation, supplier collaboration	Heirati et al. 2016
Steering	Steering models that break up silos and thereby employ a better processual business acumen among staff	Implementation, measurement, analysis	Olsen et al. (2014)
Service productization	Premises for target operating models that will help focus equally on efficiency and customer orientation	Adoption level of customized IT, IT infrastructure, modular independence, service architecture	Strydom et al. (2020)
External service quality	*Ways to improve the value proposition or brand*		
Cost-oriented value proposition	Cost-oriented value proposition focusing on the core services offered	Market entry time in cost-oriented market, focus on core services	Pingjun Jiang and Talaga (2006)
Quality-oriented value proposition	Quality-oriented value proposition in which services satisfy customer needs entirely	Social interaction quality, loyalty to the service provider, service expectations	Habel et al. (2016)
Productivity-oriented value proposition	Dual quality and cost perspective from which modular services are offered at competitive prices	Flexibility, market orientation implementation, learning orientation	Calabuig et al. (2014)
Customer feedback	Customer feedback gathering, utilization, and monetarization	Incorporation of customers personal needs, interpretation of E-SERVQUAL	Herington and Weaven (2009)
Dual emphasis	Articles measuring service productivity by focusing on quality and cost impacts, by either measuring quality and costs combined through service productivity or measuring the perceived service quality and service cost separately within one study	Market performance, service performance, firm performance, sales performance, new service performance, proactive service performance	Aspara et al. (2018)
Quality emphasis	Articles measuring the quality impact by measuring only perceived service quality	Customer satisfaction, customer perceived value, perceived service performance	Phyra Sok et al. (2018)

Table 1 (continued)

Construct	Definition	Common aliases	Most representative study
Cost emphasis	Articles measuring the cost impact by measuring only service cost	service efficiency, cost position	Collier and Barnes (2015)
Intangibility	The demarcation between studies in which customers cannot (1) or can (0) easily evaluate a service or product using their senses before purchase	*Intangible services:* Communication services (e.g., via telephone), education, knowledge-intensive services, professional services	Heirati et al. (2016)
		Tangible services: Retail banking, airline, logistics, manufacturing, travel	Lechner et al. (2020)
Coproduction	The demarcation between studies focusing on services with high (1) versus low customer participation (0) in the service creation process	*High customer coproduction:* Health services, insurance, customer service, internet support service	Rosenbaum and Massiah (2007)
		Low customer coproduction: Retail bank, airline, logistics, travel, restaurant	Jung et al. (2021)
B2B versus B2C	The demarcation between studies published in a business-to business (1) versus business-to-consumer research domain (0)	*B2B context:* Logistics, industrial services, sales services (e.g., pharmaceuticals)	Luu (2020)
		B2C context: Retail bank, retail (e.g., beauty services, casino services), airline	Prentice and King (2013)
Journal quality	The quality of the journal in which an article was published	See Table 5 in the Web Appendix for the journal quality classifications	

customers and service providers, which allows for enhancing service productivity in the long run (Wan et al. 2016). Third, employee support can also be improved through *assisted service personalization* (Menguc et al. 2020) to provide more tailored services and *value co-design assistance* (van Birgelen et al. 2002) to enhance user benefits. Thus, the input perspective of the service productivity model suggests that employee support is a critical service-productivity determinant.

2.1.2 Service process and service productivity

A substantial body of literature focusing on service processes has provided evidence that *employee productivity levers* (e.g., Yu et al. 2013), *service design* (e.g., Melton and Hartline 2013), and *back office* (e.g., De Jong et al. 2003) enhancements allow organizations to achieve higher service productivity levels. *Employee productivity levers* as service a productivity determinant refers to employee skills and competencies that allow for more productive services.

Figure 1 shows four essential levers to improve employee productivity. They all have direct implications for service productivity. First, *employee development* is a common way to optimize employee productivity. Developing employee skills—such as ambidexterity (Phyra Sok et al. 2018), self-efficacy (Hammerschmidt et al. 2012), and cultural sensitivity (Stauss 2016)—is crucial to improve service productivity. *Corporate culture* is the second driver of employee productivity (Menguc et al. 2017). It advocates for feedback (Lechermeier et al. 2020), job autonomy (Qi et al. 2020), and a shared vision (Melton and Hartline 2013) among employees. Third, the literature points out that *leadership*—which encompasses the alignment between management and staff (Schepers et al. 2016)—is key to enhancing employee productivity. Findings in this area show that management ought to be authentic (Luu 2020) and attenuative (Wilson and Frimpong 2004) to foster exchange quality between managers and (frontline) service employees. Moreover, reciprocal goals and expectations between management and staff are important to gain high service productivity (Chan and Lam 2011).

Finally, researchers also regard *talent selection* as an important determinant of employee productivity. Talent selection refers to analyzing personality traits that promote high service productivity. The current literature in this area observes that agreeableness (Medler-Liraz 2020) and emotion recognition (Doucet et al. 2016) are among the most favored personality traits for high service productivity propensities. Thus, the literature stream relating to *employee productivity levers* has provided noteworthy evidence that *corporate culture*, *employee development*, *leadership*, and *talent selection* are important means with which to improve service productivity (see Fig. 1).

Service design (Patrício et al. 2011) is another service-productivity determinant in the service process group. Research suggests two ways to improve service productivity through service design. As Fig. 1 shows, the first way is *service encounter design,* which is mainly achieved through customer orientation (Santos-Vijande et al. 2016). Research shows that customer involvement and rapid information processing are essential to improve the frontline (Carbonell et al. 2009). While customer orientation usually spurs incremental change at the service encounter, *service system design*—the second

way to improve service productivity—denotes more transformational efforts, such as inter-functional coordination (Cheng and Krumwiede 2012), to enhance new services' performance. As Fig. 1 shows, *service encounter design* and *service system design* are two pivotal ways to improve service productivity that have received notable scholarly attention (e.g., Nakata and Hwang 2020; Shaner et al. 2016).

The final service process-related service-productivity determinant is a firm's *back office*. A service company's organizational and processual alignment along the back office is essential to its entire business model. As Fig. 1 shows, back office enhancement can improve service productivity in three ways. First, to enhance the back office, *cooperation* (Wiertz et al. 2004) with a noncompetitor or competitor (Wang and Chen 2022) and, subsequently, customer pooling (Thompson et al. 2008) in a service market where positive synergies are possible are important service productivity determinants. Second, the back office can be improved through *organizational steering*, such as using balance-scorecard-type programs or performance-management systems that allow for a productivity-driven strategy (Min et al. 2009). Third, the back office can also be optimized by *productizing services* (Harkonen et al. 2017) to make services more repeatable and comprehensible (Harkonen et al. 2015) by establishing the necessary structures to control service processes and outcomes. Thus, research relating to the service process perspective shows that back office enhancements are an important way to improve service productivity.

2.1.3 External service quality and service productivity

External service quality is another important determinant of service productivity. In this context, external service quality can be improved in four ways. In Fig. 1, the initial three drivers of external service quality relate to *cost-oriented value propositions* (Grace and O'Cass 2004), *quality-oriented value propositions* (Finn 2012), or *productivity-oriented value propositions*. Productivity-oriented value propositions allow targeting specific customer segments, mainly through service modularization (Abbu and Gopalakrishna 2019). Finally, *customer feedback* is the fourth determinant of service productivity since customers are often considered the best judges of service quality (Fodness and Murray 2007); thus, their feedback should mainly determine service processes. Finally, external service quality is a central determinant of service productivity, comprising four different sub-constructs that have each received high levels of attention from scholars.

Since the service-productivity determinants' direct effects have been analyzed thoroughly in previous studies, we do not formulate hypotheses on these relationships. Consistent with previous meta-analyses (e.g., Schepers and van der Borgh 2020), we show the main service-productivity effects of the different employee support, external service quality, and service process approaches, hypothesizing and statistically testing the moderating effects that influence these direct service-productivity-determinant relationships.

2.2 Service productivity measurements' moderating role

Scholars have been able to show that not referring to service productivity's cost and quality dimensions might lead to poorer results because corporate culture suffers (e.g., Menguc et al. 2017), service quality weakens (e.g., Finn 2012), revenues decrease (e.g., Brady and Cronin Jr 2001), and long-term profits decline (e.g., Rust and Huang 2012). Since service costs and revenues are closely intertwined (Grönroos and Ojasalo 2004), the theory of optimal service productivity explicates that service managers can be misled into assuming that they can improve each part in isolation. Furthermore, data show that firms that can balance internal frugality with high customer satisfaction can achieve superior long-term financial returns (Mittal et al. 2005); thus, the literature argues that internal efficiency and external effectiveness should be managed jointly to achieve the highest service productivity outcome (Wirtz and Zeithaml 2018). Therefore, we propose that such a dual perspective—simultaneously referring to costs and quality—is required when activities should translate both service effectiveness and efficiency targets into profits. Thus, employee support's, external service quality's, and service process' positive service-productivity effects should be stronger when service quality and internal efficiency effects are measured jointly—instead of separately—as this measurement approach considers the "*interrelationship* between the use of inputs or production resources and the perceived quality of the output produced with these resources" (Grönroos and Ojasalo 2004: 417).

Hypothesis 1 The positive service productivity effect of (a) employee support, (b) external service quality, and (c) service process levers is stronger when service quality and internal efficiency effects are measured jointly instead of separately.

2.3 Service types' moderating role

An important characteristic of services is the *intangibility* of their outcomes. Intangibility makes evaluating service quality more difficult for customers compared to products. Therefore, for service firms, understanding customers' expectations is essential (Hansen et al. 2008). This understanding might enable innovative service designs to effectively meet customer expectations (Lievens and Moenaert 2000). We assume that intangible services are also more likely to be knowledge-intensive (Santos-Vijande et al. 2016). Organizations that provide knowledge-intensive services are typically less equipped with standardized service processes and lack sufficient potential to reduce internal costs. Although researchers hold ambivalent beliefs about what measures generate more productive intangible services, we argue that developing new services that allow for differentiation is increasingly important in service firms' quest for profitability. Therefore, we assume that service firms offering highly intangible services are more likely to improve the tradeoff between service efficiency and service quality by enhancing their service design as a service process service productivity lever.

Hypothesis 2 Service design as a service process lever more strongly affects service productivity when services are highly intangible.

Parasuraman et al. (1991) show that the level of *customers' coproduction* during service delivery significantly affects service productivity levers' effects. These authors suggest that if customers are included in service production, productivity is a joint function of an organization's and customers' inputs. Thus, organizations that aim to heavily involve customers increase customers' efforts and should reward customers for any resulting inconvenience (Andreassen et al. 2018). Additionally, the theory of optimal service productivity (Grönroos and Ojasalo 2004) shows that different service industries require varying degrees of customer coproduction; cross-country studies demonstrate that firm competitiveness differs according to the extent to which organizations can engage with their customers (Sekhon et al. 2016), making customer coproduction an essential moderator of the direct impact of service productivity determinants (Janeschek et al. 2013).

Customer coproduction is especially important in the context of service design. Studies show that involving lead users (Carbonell and Rodríguez Escudero 2015) and close customer contact (Carbonell and Rodríguez-Escudero 2014) can translate into improved (new) service performance. However, when customer coproduction is high, complexity increases and service firms must considerably invest in employees (Yu et al. 2013) to reduce the competence gap between the service provider and the customer. Although customer involvement and its influence on productivity are subject to debate, we propose that high customer coproduction reduces the positive effects of employee productivity levers and service design on service productivity because customer-coproduction processes create more complexity (Carbonell et al. 2009).

Hypothesis 3 The positive service productivity effect of (a) employee productivity levers and (b) service design (as service process levers) is weaker when customer coproduction is high.

Finally, we argue that the differentiation between *B2B and B2C services* moderates the effect of some service-productivity determinants. B2B services' operational complexity distinguishes them from B2C services (Rodríguez et al. 2018). In a B2B context, for example, scholars suggest that a focus on streamlining internal processes (Rodríguez et al. 2018) or actively engaging in synergetic cooperation (Abdul Rahman et al. 2014), as well as having a more limited and strategic customer base (Theoharakis et al. 2009) is more important than in a B2C context. On the contrary, for B2C services, we propose that handling a broader and more heterogeneous customer base requires an additional focus on service quality, employee development (Chan and Wan 2012), and corporate culture to improve service productivity. We argue that the back office's positive service productivity effect is stronger for B2B than for B2C services.

Hypothesis 4 The back office's positive service productivity effect, as a service process lever, is stronger for B2B services than for B2C services.

3 Method

3.1 Literature search strategy

We applied a systematic and replicable research method to identify empirical evidence on service productivity by minimizing authors' individual biases (Korherr and Kanbach 2021; Kraus et al. 2022). Our comprehensive search followed a strict research protocol to ensure reliability about the steps taken to transform the empirical study's outcomes into common metrics. We used the Scopus and EBSCO Business Source Ultimate databases for keyword searches. We searched two different databases because we aimed to maximize our likelihood of identifying all relevant studies in a systematic manner (Salmony and Kanbach 2022). The applied search string (see Table 6 in the Web Appendix for more information) focuses on entirely covering the service productivity concept from all three perspectives defined in Grönroos and Ojasalo's (2004) service productivity model. First, "service productivity" and "service performance" were both considered search terms because the *productivity* and *profitability* concepts merge within their service productivity model and might be used interchangeably. Both terms relate to a similar mix of the internal-efficiency and external-effectiveness perspectives (Grönroos and Ojasalo 2004). Second, the search terms "service effectiveness" and "service excellence" were included to reflect the productivity concept's quality side. Third, "service efficiency" and "cost-effective service" were included to reflect the productivity concept's cost side. We included a broad set of different terms in our systematic literature review to find sufficient evidence on a meta-level and to uncover areas in which more research is needed, which is critical for testing the broad and open-ended theory on optimal service productivity. The respective articles were selected if the search terms appeared in the title, abstract, or author-supplied keywords. Since Grönroos and Ojasalo (2004) laid much of the conceptual basis for service productivity research, we considered the years around their article's publication as the starting point for our search.

We focused on peer-reviewed journals to ensure a high-quality level to fit our pre-specified inclusion criteria (Snyder 2019). Books, business periodicals, and conference proceedings were excluded since we only focused on peer-reviewed articles. We concentrated our efforts primarily on journals published in the domains of service, marketing, business-to-business marketing, and innovation to collect the characteristics of service productivity that are debated by the research communities that are the most pertinent (refer to Table 8 in the Web Appendix for a list of all articles included in our systematic review). Thus, we followed a systematic search funnel that ensured a replicable approach (Tranfield et al. 2003). Additionally, we applied a snowball sampling approach to check for publications that did not appear during our search's initial steps. The database searches and application of our inclusion criteria as filters (see Table 6 in the Web Appendix)

led to the identification of a total of 179 articles. Next, the articles were classified according to their methodological approach. If studies reported a correlation matrix or other measures that could be converted into a correlation coefficient, we considered them for our meta-analysis. When we came upon a study that gave us cause to believe that the authors had calculated correlations but had not presented any correlation data, we reached out to the authors to inquire about their respective correlation tables. In accordance with other meta-analyses of a similar nature, we used the classification of the articles to extract dependency and reliability data from the relevant quantitative empirical studies in order to compute the effect sizes of the main service-productivity determinants (e.g., Babić Rosario et al. 2016). Finally, we identified 77 articles, including 81 independent samples with a cumulative sample size of 30,238 participants, to test our model. Table 5 in the Web Appendix list all studies included in this meta-analysis. Furthermore, Table 8 in the Web Appendix lists all studies included in the systematic literature review to show which studies have been dropped (e.g., when they did not report a correlation matrix). Since we used two very large databases for keyword searches, no additional studies have been added after the snowballing check.

3.2 Coding procedures and coded variables

Our categorization and coding of the reviewed articles followed a structured approach. We first condensed the individual articles' information, described as *common aliases* in Table 1. Second, using this information, we combined articles based on their links and interactions to form *construct sub-groups*. Third, all of the current study's authors further abstracted the information to cluster the *sub-groups*, based on the theory's main perspectives on optimal service productivity, to finally form *constructs* representing the main service productivity-determinant-relationships, as Table 1 shows. Fourth, for each study, we used the study samples' industry information to determine the service-type moderators and differentiate between studies based on levels of service intangibility, customer coproduction, or business models (i.e., B2B versus B2C services). To determine the measurement moderators, we recorded the articles' information to see whether the researchers of the examined studies had measured quality and cost effects combined through service productivity or by measuring perceived service quality and service cost effects separately or jointly. Finally, each of the current study's authors reevaluated our coauthors' coding assessment to achieve reliability and reduce individual bias. The final intercoder reliability was 90%, and differences in opinion were quickly resolved. Table 5 in the Web Appendix shows the coding protocol, and Table 7 in the Web Appendix shows how we generally coded different industries. Furthermore, Table 1 displays the definitions of the service productivity determinants and moderators.

To account for the reviewed studies' individual cost and quality measurement effects, we integrated two *measurement control variables.* With the help of these variables, we tested whether either quality or cost measurement effects were

significant if a dual emphasis were not to ensure the robustness of our results. Additionally, we controlled *journal quality* using existing journal quality ratings. Table 3 illustrates the measurement, service-type moderators, and control variables.

3.3 Meta-analytic calculation

We gathered each study's raw observed correlations and corrected their bivariate correlations for measurement errors using reliability scores. If a study did not provide reliability scores, we used the average weighted reliabilities from studies referring to the same service-productivity determinant (Schmidt and Hunter 2015). Additionally, we transformed the correlation coefficients into Fisher's Z effect sizes to ensure that different studies' population effect sizes were randomly drawn from a normal distribution in order to account for the significantly varying effect sizes in some studies (Tully and Winer 2014). Furthermore, we weighted each effect size by its inverse variance (Babić Rosario et al. 2016) to calculate the average weighted reliability-corrected correlations (ρ)[1] to smooth studies' highly varying number of participants and reduce heteroscedasticity. To avoid overestimating the population value of z, we transformed the average weighted reliability-corrected correlations (ρ)[2] back into their correlational form (Silver and Dunlap 1987). If a study reported more than one outcome measure, we built separate effect sizes for service productivity, external effectiveness, and internal efficiency to distinguish between the three main service productivity perspectives. We also calculated the standard deviation of the corrected correlations (SD) and their 95% confidence interval (95% CI). Finally, we calculated the Q homogeneity statistic to analyze whether moderating effects were present.

For the moderator analysis, we simultaneously[3] regressed the average weighted reliability-corrected correlations (ρ) on the defined moderator variables (Zablah et al. 2012) via a multilevel meta-analysis approach (Viechtbauer 2010). Within the multilevel regression model, correlations referring to the same study, sample, or service productivity measure were treated with the same random effect to account for the dependencies between multiple outcomes in a study, while all other studies, samples, and outcomes were assumed to be independent. These nested random

[1] Akin to Babić Rosario et al. (2016), we calculated the weight w as follows: $w_i = 1/(se^2_{zt} + \hat{v}_i)$, where se is the standard error of the effect size, which is calculated as $se_{zt} = -1/\sqrt{(n-3)}$, and $\hat{v}_i$ is the random-effects variance component. The average weighted reliability-corrected correlations ρ were calculated as follows: $\rho = \sum (w \times z_r)/\sum w$, where z_r refers to the Fisher's Z effect size. The standard error for ρ was calculated as follows: $se_\rho = \sqrt{(1/\sum w)}$; the 95% CI_ρ confidence intervals were computed as follows: lower CI $= \rho - 1.96\ (se_\rho)$/ upper CI $= \rho + 1.96\ (se_\rho)$.

[2] The transformation of the average weighted reliability-corrected correlations back into a correlational form was calculated as follows: $\rho = (e^{2z}-1)/(e^{2z}+1)$.

[3] We also individually regressed the average weighted reliability-corrected correlations (ρ) of the different moderator variables to determine whether our results were stable. None of the effects changed except for the service productivity-service design determinant relationship. Here, the results lost statistical significance because we had to leave out industry-agnostic studies that did not allow for a service-type moderator classification. Thus, the findings for this service productivity determinant are subject to further scrutiny, and more research is needed to see whether our assumptions hold.

effects are very helpful for modeling the dependence induced by outcomes derived from the same article or sample (Konstantopoulos 2011). We chose a multilevel model because the covariance between all raw observed correlation scores within a study did not need to be known since using between-sample variance automatically accounts for covariance (Moeyaert et al. 2017). Thus, by applying our multilevel model, we could also use partial correlations or studies that did not report the covariances between bivariate correlations.

4 Results

4.1 Bivariate meta-analytic correlations

Table 2 displays the meta-analytic correlations of the service productivity-determinant relationships where we measured the effect sizes of the cost impact, the quality impact as well as the combined dual quality and cost impact (i.e., service productivity impact) to provide full transparency on all three perspectives defined in Grönroos and Ojasalo's (2004) service productivity model. Our results show that the corrected service productivity effect sizes (ρ) for *external service quality* ($\rho = .59$) and *employee support* ($\rho = .47$) are the highest, followed by the *service process* ($\rho = .32$), which is further separated into *service design* ($\rho = .37$), *employee productivity levers* ($\rho = .30$), and *back office* ($\rho = .30$). Furthermore, all main service productivity determinants are significant at $p < .05$, as the results of our fail-safe N calculation (which refers to the number of studies required to refute significant meta-analytic results) using the Rosenthal approach (n_{fs}) indicated. Thus, our sample is robust and resistant to a file drawer threat (these results have also been validated by checking the respective funnel plots) even though we did not collect unpublished research because our sample size is sufficient to entirely cover the most important literature on service productivity. Furthermore, comparable meta-analyses had similar sample sizes (e.g., Gelbrich and Roschk 2011; Tully and Winer 2014). As anticipated, the standard deviations of the mean true score correlations (95% CI) were relatively high, demonstrating that the dependencies could be moderated by different variables. Consequently, we calculated the Q homogeneity statistic of ρ. Since all main Q-tests were significant, we assume that the true effects are heterogeneous and potentially moderated by different variables.

Overall, the results of our bivariate meta-analytic correlations show that, of the three categories of the service productivity model, the categories related to employee support and external service quality levers have a stronger direct impact on service productivity than service process levers (i.e., employee productivity levers, service design, and back office). More specifically, the results show that the service productivity effect sizes (ρ) for *external service quality* ($\rho = .59$) and *employee support* ($\rho = .47$) are the highest, followed by the corresponding effect sizes for *service process levers (i.e., service design* ($\rho = .37$), *employee productivity levers* ($\rho = .30$), and *back office* enhancement ($\rho = .30$)). In addition, Table 2 shows, we also examined the service productivity effect sizes of the sub-constructs for each of the five main determinants. For *external service quality*, the *quality-oriented value proposition*

Table 2 Meta-analytic correlations

	Descriptives		Service efficiency (cost impact)			Service effectiveness (quality impact)			Service productivity (combined cost and quality impact)			Test	
	k	*N*	*ρ*	*SD*	*95% CI*	*ρ*	*SD*	*95% CI*	*ρ*	*SD*	*95% CI*	n_{fs}	*Q*
Overall	**77**	**30,238**											
Employee support	**12**	**12,225**	**−.04**	**.05**	**[−.14, .07]**	**.51**	**.06**	**[.38, .63]**	**.47**	**.05**	**[.26, .57]**	**12,377**	**612.88*****
Systems for support	1	350	−.04	.05	[−.14, .07]								0
Customer relationship management support	5	1863				.37	.07	[.23, .52]	.27	.07	[.14, .40]	563	110.71***
Assisted service personalization	3	1450				.66	.08	[.51, .82]	.82	.06	[.38, .91]	2052	179.13**
Value co-design assistance	3	8562				.48	.03	[.42, .55]	.33	.03	[.26, .39]	1808	80.74***
Service process	**55**	**14,313**	**.36**	**.28**	**[−.19, .92]**	**.26**	**.10**	**[−.07, .47]**	**.32**	**.06**	**[.20, .45]**	**20,415**	**919.32*****
Employee productivity levers	**33**	**10,207**				**.20**	**.11**	**[−.01, .41]**	**.30**	**.07**	**[.18, .44]**	**6531**	**611.53*****
Employee development	12	4601				.12	.11	[−.09, .33]	.43	.06	[.30, .55]	474	264.20***
Corporate culture	9	3041				.31	.09	[.14, .49]	.62	.06	[.50, .74]	1681	288.72***
Leadership	6	1417				.18	.09	[.00, .35]	.01	.09	[−.14, .21]	69	15.56***
Talent selection	6	1148				.20	.14	[.08, .48]	.16	.05	[.07, .26]	78	33.47***
Service design	**12**	**2410**				**.44**	**.12**	**[.23, .71]**	**.37**	**.05**	**[.28, .46]**	**1190**	**99.63*****
Service encounter design	10	1863				.44	.12	[.23, .71]	.23	.06	[.12, .34]	572	50.74***
Service system design	2	547							.51	.04	[.44, .58]	110	22.17***
Back office	**10**	**1696**	**.36**	**.28**	**[−.19, .92]**	**.25**	**.08**	**[.10, .41]**	**.30**	**.07**	**[.15, .44]**	**737**	**173.50*****
Cooperation	3	504				.55	.08	[.38, .71]	.34	.08	[.19, .49]	186	25.85***
Steering	1	320							.28	.04	[.20, .36]	9	0
Service productization	6	872	.36	.28	[−.19, .92]	−.04	.07	[−.19, .10]	.27	.11	[.06, .49]	104	108.71***
External service quality	**10**	**3700**				**.33**	**.09**	**[.17, .54]**	**.59**	**.11**	**[.38, .81]**	**1746**	**497.60*****
Cost-oriented value proposition	1	151				.00	.00	[.00, .00]	.23	.12	[.00, .46]	2	0
Quality-oriented value proposition	3	956				.53	.08	[.36, .69]	.89	.14	[.62, 1.0]	560	33.87***
Productivity-oriented value proposition	4	1949				.15	.10	[.03, .40]	.66	.08	[.51, .82]	84	190.34***

Table 2 (continued)

	Descriptives		Service efficiency (cost impact)			Service effectiveness (quality impact)			Service productivity (combined cost and quality impact)			Test	
	k	*N*	*ρ*	*SD*	*95% CI*	*ρ*	*SD*	*95% CI*	*ρ*	*SD*	*95% CI*	n_{fs}	*Q*
Customer feedback	2	644				.33	.10	[.13, .52]	.00	.00	[.00, .00]	49	.40

The bold figures show the main service productivity determinants. Service efficiency = effect sizes measuring the cost impact; service effectiveness = effect sizes measuring the quality impact; service productivity = effect sizes measuring the dual quality and cost impact; *k* = number of studies contributing to meta-analysis; *N* = total sample size for construct/ subconstruct; *ρ* = average weighted reliability-corrected correlations; SD = standard deviation of *ρ*; 95% CI = 95% confidence interval around *ρ*; n_{fs} = Fail-save *N* calculation using the Rosenthal approach; *Q* = homogeneity statistic of *ρ*

***$p < .01$; **$p < .05$; *$p < .10$

sub-construct ($\rho = .89$) has the strongest service productivity effect. Whereas for *employee support*, the results suggest that the *assisted service personalization* sub-construct ($\rho = .82$) offers the greatest leverage to increase service productivity. For *service design*, *service system design* ($\rho = .51$) presents the strongest service productivity mean, and for *employee productivity levers*, *corporate culture* ($\rho = .62$) has the highest contribution to service productivity. Lastly, for the *back office* determinant, the *cooperation* sub-construct ($\rho = .34$) offers the biggest potential to improve service productivity. In sum, these findings reply to the initial call of Grönroos and Ojasalo's (2004: 422) to test the "relative importance of the various components" of their model and therefore provide an important agenda for further research (see Table 4 and our section on the discussion of future research).

4.2 Moderating effects

Regarding the boundary conditions of the service-productivity-determinant–outcome relationship, we examined different moderating effects. Table 3 displays the quantitative results of the associated meta-regressions, and Table 4 summarizes and explains those results. First, the results show that Hypothesis 1 is supported, such that the positive effect of employee support ($\beta = .96$, $p < .05$) is stronger when service quality and internal efficiency effects are measured jointly instead of separately. According to the findings of our study, using a dual lens that considers the effects of both quality and cost positively moderates the direct service productivity-determinant relationships. This finding suggests that when studies separately measure quality and cost effects, they underestimate the service productivity effect because they fail to account for the link between quality and costs. However, alternative explanations may challenge our measurement findings. We cannot assume that our meta-analytic measure of service productivity truly represents the actual service productivity measure that has guided the researchers and their studies within our sample since the most appropriate measure of service productivity (for most studies) would seem to be dependent on the purpose and goals of a given research project. Despite this, we looked at the specific characteristics of the various measurement techniques to determine whether researchers measured quality and cost effects combined through service productivity or whether they measured perceived service quality and service cost effects separately or jointly (see Table 1).

Supporting Hypothesis 2, our findings show that the positive effect of service design is stronger when services are intangible ($\beta = .47$, $p < .01$), confirming our initial theorizing that service firms offering highly intangible services can improve productivity through a new service design. Regarding Hypothesis 3, we find that the positive service productivity effect of employee productivity levers ($\beta = -.20$, $p = .09$) and service design ($\beta = -.30$, $p = .06$) is weaker when customer coproduction is high, which suggests that high customer coproduction might indeed increase complexity, in turn reducing the service productivity effect. Regarding Hypothesis 4, we find that the positive service productivity effect of back office enhancement is stronger for B2B services than for B2C services ($\beta = .70$, $p < .05$), which further

Table 3 Moderator analysis

Moderators	Intercept	Measurement moderator	Service-type moderators				Control variables		
		Dual lens	In-tangibility	Co-production	B2B versus B2C	Quality lens	Cost lens	Journal quality	Q_m
Employee support → service productivity	**−.31**	**.96****		**.28**		**.59**		**−.07**	11.65**
Systems for support									
Customer relationship management support	.25	.18		.25*					3.11
Assisted service personalization									
Value co-design assistance									
Service process → service productivity	**.23**	**.03**	**.11**	**−.14**	**.16**	**.04**	**.12**	**−.18**	12.39*
Employee productivity levers → service productivity	**.10**	**.24**	**.03**	**−.20***	**.03**	**−.22**		**−.22****	7.96
Employee development	.44***	.07	−.06	−.43*				−.46**	7.88*
Corporate culture	.21	.34	.37	−.56	−.06			.10	2.96
Leadership	.30	.13		−.12	−.14			−.14	1.20
Talent selection	.07	.08	−.44	.40**		−.02			4.86
Service design → service productivity	**.13**		**.47*****	**−.30***	**.29****				31.02***
Service encounter design	.13		.47***	−.30*	.29**				31.02***
Service system design									
Back office → service productivity	**.72***	**−.70**	**.26**	**.03**	**.70****	**−.64**	**.35**	**.20**	9.21
Cooperation									
Steering									
Service productization	.02		.27		.69		.34	.19	2.69
External service quality → service productivity	**.54***	**.17**	**.28**	**−.50***	**−.31**			**−.28**	4.90
Cost-oriented value proposition									
Quality-oriented value proposition									

Table 3 (continued)

Moderators	Intercept	Measurement moderator	Service-type moderators				Control variables		
		Dual lens	In-tangibility	Co-production	B2B versus B2C	Quality lens	Cost lens	Journal quality	Q_m
Productivity-oriented value proposition	.01	.71***	.25***					−.49***	121.96***
Customer feedback									

The bold figures show the main service productivity determinants. We only ran regressions for sub-categories for which $k > 3$; *service productivity* = nested effect sizes measuring the cost, quality, and (dual) productivity impact that receive the same random effect on a study level to account for measurement dependencies within studies; *dual lens* = both quality and cost combined (1) versus quality or cost emphasis (0); *quality lens* = quality emphasis (1) versus no quality emphasis (0); *cost lens* = cost emphasis (1) versus no cost emphasis (0); *intangibility* = high intangible services (1) versus low intangible services (0); *coproduction* = high customer coproduction (1) versus low customer coproduction (0); *B2B* versus *B2C* = B2B services (1) versus B2C services (0); *journal quality* = high journal quality (1) versus low journal quality (0)

***$p < .01$; **$p < .05$; *$p < .10$; Q_m = test for residual heterogeneity

Table 4 Summary of main findings and future research questions based on the study results

Hypothesis	Findings	Explanation	Potential future research questions unfolding from our findings
Hypothesis 1 Supported	The positive service productivity effect of employee support is stronger when service productivity is measured using combined metrics that consider cost and quality effects	The literature suggests that measurements and associated ways to improve employee support should focus on service quality since customers are pivotal drivers of firm profit (see Rust et al. 1995); however, to improve service productivity overall, productivity measures must consider the interrelationship between service quality and costs because they cover service productivity more accurately and therefore allow for a more productive steering of subsequent implementation efforts	What changes if the actual productivity measurement approaches will be transferred to the digital world? How can policy makers and scholars more accurately measure the productivity contribution of (free) digital services–compared to other services' contribution–to better understand what drives the puzzling low service productivity levels of major service economies? How do (dual) measurement approaches change when industry-specific strategies transform toward more technology-oriented applications? How is service productivity measurement affected by the presence of big data, different data types? How does the tracking of consumer and employee behaviors via sensors or similar devices affect service productivity and its measurement?
Hypothesis 2 Supported	The positive service productivity effect of service design is stronger when services are highly intangible	When services are highly intangible, they are typically more knowledge intensive and lack sufficient potential to reduce internal costs. Thus, service design offers opportunities for service productivity improvements as innovative service designs can meet customer expectations more effectively	How does service productivity differ for design efforts that either exploit or explore new opportunities for firms offering intangible services? How do usability-oriented, experience-oriented, or context-oriented service design configurations affect the productivity of intangible services?

Table 4 (continued)

Hypothesis	Findings	Explanation	Potential future research questions unfolding from our findings
Hypothesis 3 Supported	The positive service productivity effect of employee productivity levers and service design is weaker when customer coproduction is high	High customer coproduction reduces the positive service productivity effects of employee productivity levers and service design because customer-coproduction creates more complexity	How can firms educate customers to successfully outsource non-productive service tasks? Should firms invest in specific employee productivity levers or service designs on the customer side to lever productivity? How can service productivity be improved when a network of service providers coproduce services with its customers (e.g., within service-platform ecosystems)?
Hypothesis 4 Supported	The positive service productivity effect of the back office is stronger for B2B services than B2C services	B2B service productivity requires operational excellence; reducing organizational and processual slack effectively increases service productivity	What part of the service economy's growth can be explained by either B2C or B2B service productivitycontribution? How can streamlining the back office help overcome B2B firms' service productivity barriers?

supports our initial hypothesis that, for B2B firms, streamlining the back office is an important way to improve service productivity.

Finally, regarding journal quality, we find significant effects for the links between employee productivity levers and service productivity ($\beta = -.22$, $p < .05$), including employee development and service productivity ($\beta = -.46$, $p < .05$). Furthermore, we find significant effects for the links between productivity-oriented value propositions and service productivity ($\beta = -.49$, $p < .01$). In conclusion, the three journal quality moderator results suggest that these links are weaker for high quality journals. For all other links, we do not find significant moderator effects.

5 Discussion

5.1 Theoretical implications

Since service research covers many different industries, theories and practical implications are often assumed to apply only to certain industries (Voss et al. 2016), leading to different understandings among scholars. Our meta-analysis presents the first study to statistically aggregate the substantial empirical record on service productivity, thereby allowing us to make several theoretical contributions.

First, we aim to help scholars get an overview of the field by proposing three main service-productivity determinants to integrate studies that apply the same or similar terminology. For example, some approaches to service productivity have been labeled as "education" (e.g., Menguc et al. 2017; Phyra Sok et al. 2018), "organizational learning" (Panayides 2007), or "close monitoring" (Auh et al. 2016) in studies that have all analyzed the service productivity effect of employee productivity levers. We, therefore, take a more holistic approach to integrate similar studies, combining effect sizes to achieve comparability.

Second, we validate the measurement assumption of the theory of optimal service productivity, which states that productivity (and, therefore, financial) measures that consider cost and quality perspectives are most suitable to measure the service productivity effect (Grönroos and Ojasalo 2004). In doing so, we take an inclusive approach to demarcate between cost-oriented, quality-oriented, and dual measurement approaches to compare the closely intertwined efficiency and effectiveness effects.

On the one hand, we do not find any defined service productivity levers to improve when service productivity is measured using a quality lens. This finding is surprising since "return on quality" became an established term (Rust et al. 2002), and approaches to improving service productivity are often purely service-quality-oriented. Additionally, we do not find evidence that service productivity-determinant relationships are affected by applying a cost lens. On the other hand, we find that a dual cost and quality measurement approach positively moderates employee support's beneficial impact on service productivity. Looking closer, Table 3 shows the service productivity impact of a productivity-oriented value proposition—relating to the external service quality service productivity lever—is more pronounced when measured using a dual lens. Taken together, these findings extend the theory

of optimal service productivity by showing that measuring productivity-enhancing activities using combined measures increases the determinant relationship between employee support and service productivity and between productivity-oriented value propositions and service productivity. By delineating between different measurement contexts, our results show that when studies measure quality or cost effects in isolation, they understate the service productivity effect by overlooking the interrelationship between quality and costs. This finding provides further evidence for the proposition made by Grönroos and Ojasalo's (2004) service productivity model, which states that the association between simultaneous changes in customer satisfaction and efficiency should be measured jointly, instead of separately, to benefit from synergies of a dual customer and firm perspective (Parasuraman 2002). Additionally, this finding adds to the literature that could show that the conflict between customer satisfaction and efficiency (e.g., Wirtz and Zeithaml 2018) "are likely to become increasingly common" (Anderson et al. 1997: 142), where firms must equally consider the interrelationship between quality and cost, especially in the light of continued growth of the service economy.

To conclude, our meta-analysis provides empirical evidence that service quality and internal efficiency must be considered jointly, not in isolation, to maximize profitability. Service scholars should care about this important finding because the service production process is open and customer inclusive. Thus, partial productivity measurement is less appropriate for measurement purposes. Hence, service productivity research should rather be seen as a profitability concept since customers participate in the service production process.

Third, we test the service productivity model using a service-type perspective to investigate whether there are tradeoffs to consider within the service productivity model (Anderson et al. 1997). We find that customer coproduction, intangibility, and services' B2B or B2C status moderate the service productivity outcome for certain service productivity determinants.

Our findings indicate that when customer coproduction is high, the positive service productivity effect of employee productivity levers, service design, and external service quality weakens because customer involvement creates more complexity, in turn reducing service productivity. This result is surprising since scholars have found that customer coproduction can significantly enhance new service performance (Santos-Vijande et al. 2016) or sales performance (Carbonell et al. 2009) and, therefore, suggested different directions than our results. We attribute this difference to previous findings' relating to only certain productivity aspects since other studies' arguments are based on more granular efficiency or effectiveness measures (e.g., Santos-Vijande et al. 2016). In Table 3, we also show the moderating effects of the sub-constructs for each of the determinants. The results suggest that when employee productivity levers are enhanced through employee development, high customer coproduction reduces its service productivity effects, whereas, for talent selection, service productivity effects are more pronounced when customer coproduction is high, suggesting that firms must be ambidextrous and employees able to engage in high and low levels of customer coproduction simultaneously (Phyra Sok et al. 2018) as customer coproduction's moderating impact varies for certain employee productivity lever sub-constructs. To be (contextual) flexible and achieve

ambidexterity, Gibson and Birkinshaw (2004) suggest that firms should allocate conflicting goals (e.g., cost-effectiveness versus service excellence) primarily to the individual (service) employee level. This helps service employees practice their own judgment and learn to cope with conflicting situations (especially when role stress is high due to a high degree of customer coproduction). Hence, this particular finding adds to the organizational ambidexterity literature (Gibson and Birkinshaw 2004; Raisch and Birkinshaw 2008). Furthermore, from a meta-analytic perspective, we argue that although customer coproduction offers promising approaches to improve service firms' market responsiveness, these advantages very likely accompany a decline in overall service productivity.

We also find that service design's positive service productivity effect is more pronounced when services are intangible, indicating that service design is a promising avenue for service-productivity enhancements. In this vein, this finding adds to the literature by challenging the notion that service design enables service productivity growth. Our results indicate that service managers' struggle to capitalize on introducing new service designs (see Aspara et al. 2018) does not necessarily apply to highly intangible services, such as knowledge-intensive services, for which new design largely refers to renewing intellectual capital that can lever service productivity (Teece 2006). The implications of this finding are significant in that the access, control, and licensing of know-how is becoming an increasingly important driver of service productivity for firms offering highly intangible services. Furthermore, the moderator analysis of the sub-constructs reveals that the service productivity effect of a productivity-oriented value proposition gets stronger when services are more intangible (see Table 3). This finding provides further understanding for scholars investigating service productivity enhancement in intangible service markets suffering from a persistent rise of labor costs which keeps service productivity at low levels (Baumol and Bowen 1966).

Additionally, our results provide evidence that the positive service productivity effect of the back office is more beneficial in B2B contexts than in B2C contexts because B2B firms use more industrialized service processes. This finding contributes to the service operations literature (Levitt 1972, 1976) by showing that B2B organizations can increase their service productivity levels by reducing organizational complexity and process variability. We, therefore, agree with scholars who suggest that B2B service industries with lower customer contact should strategically focus on back-office improvement (Chase 1978). This finding also implies that structural ambidexterity (Gibson and Birkinshaw 2004) is a key capability for B2B firms seeking to keep costs low in their back office while providing sufficient resources to simultaneously improve service quality at the front line.

5.2 Managerial implications

With our manifold results, we respond to recent calls to provide more guidance on improving service productivity (Andreassen 2021). First, we provide a central recommendation for the kind of service productivity measurement. Our results suggest

that metrics that combine internal efficiency and external effectiveness are better suited to strategic decision-making because they consider the interrelationship between service quality and costs. We, therefore, advise managers to use measures that combine quality and cost perspectives to implement practices that can improve front-end service quality and efficiency, thus improving service productivity.

Akin to scholars, practitioners should also care about this important measurement finding because tight margins (Hofmeister et al. 2022) in many service industries do not allow "firms the luxury of increasing costs to improve quality" (Lovelock and Wirtz 2022: 507). Hence, "service firms must deliver service quality and satisfaction to their customers in ways that are cost-efficient for them" (Lovelock and Wirtz 2022: 513) (e.g., by using holistic management approaches such as the Balanced Scorecard (Kaplan and Norton 1992)). Thus, for managers aiming for high profitability, the "dual" measurement and management of service productivity is superior to taking either the "quality" or the "cost" perspective.

Furthermore, our results show that service design more strongly influences service productivity when services are intangible. Hence, service business models that offer intangible services (e.g., professional or knowledge-intensive service firms) should strategically emphasize improving service productivity through a new service design since our results provide evidence that this approach leads to higher productivity levels.

Additionally, we find that service productivity effects change with customer coproduction levels. We find that the positive service productivity effect of employee productivity levers, service design, and external service quality is weaker when customer coproduction is high. Therefore, for firms that engage in customer coproduction, employee productivity levers, service design, or the external service quality appears not to significantly increase service productivity. These findings suggest that service managers should take caution when outsourcing parts of service production to customers because customers cannot help to improve productivity significantly. Therefore, customers' efforts during coproduction must be adequately rewarded (Carlborg et al. 2013). These contextual findings contribute to a better understanding of the dynamic service provider–customer relationship (e.g., Andreassen et al. 2018) and indicate that firms must be prepared when incorporating customers, allocating sufficient resources to ensure that customer satisfaction remains at a high level.

Finally, our results suggest that, in a B2B environment, back office enhancement positively influences service productivity. Since specialized B2B services continue to largely contribute to economic growth as digitalization allows for the centralization of expertise across different domains (Wirtz et al. 2015), we argue that many service firms should integrate external efficiency-oriented business services in their own value chains so that they can outsource costly back-office services to low-cost locations to stay competitive. Moreover, combining competence from external service providers with a firm's own expertise allows for improved organizational efficiency. In concluding this subsection, we advise B2B service managers to streamline their back office to further enhance service productivity. Processual methods, such as service blueprinting (Bitner et al. 2008), are particularly helpful in allocating appropriate resources, designing organizations, and forecasting cost structures; therefore, they represent promising approaches to improving service productivity.

5.3 A roadmap for future service productivity research

Although research on service productivity has grown remarkably over the past two decades, some scientific gaps persist in the literature, calling for future research. Based on our statistical findings, we stated specific research questions in Table 4 that may motivate scholars in leading international journals (e.g., Mas-Tur et al. 2020) to conduct further research taking service productivity's measurement and optimization challenges into account. We also formulated broader research avenues to stimulate research in this important field.

First, we call for more research on how to measure and manage service productivity in the digital era (e.g., Bouncken et al. 2021; Endres et al. 2022; Kraus et al. 2019; Song et al. 2022) as customers increasingly rely on services from digital service companies (e.g., Blanco-Oliver and Irimia-Diéguez 2021), capturing significant value (as these companies' profits show), but the associated service productivity effect is often difficult to measure because records of direct customer–provider transactions are often unavailable (Andreassen 2021) as observed in the case of free digital services. We find that, especially in an increasingly digital world, service productivity research must emphasize how different service productivity measurements affect service productivity outcomes—especially as services become more complex because they have been developed in digital platform ecosystems (Brynjolfsson et al. 2019). Furthermore, the literature still offers scope for research measuring how data types and digital platforms' sensors are reinforced or mutually hinder each other. The question arises whether the permanent tracking of employee and customer behaviors finally eases the measurement of service productivity. The interdisciplinary aspect of this research area is especially valuable since the narrative of service-dominant logic has found great appeal in service research (Vargo and Lusch 2017), and technological advancements continue to accelerate, causing previous industry-specific strategies to converge toward similar technology-oriented approaches. Future service productivity research should consider these measurement challenges to advance the field, especially for digital services.

Second, we motivate future research based on the three service-type moderators we identified. The results suggest that service design more strongly affects service productivity when services are highly intangible. Thus, future research could explore how different service design configurations (e.g., usability-oriented, experience-oriented, or context-oriented service design configurations) affect highly intangible services' productivity. Furthermore, the moderator analysis indicates that incorporating customers into service coproduction during employee productivity lever enhancement or service design creates additional complexity and reduces service productivity. Further research could analyze how firms might educate customers in preparing for or during coproduction. In addition, research might unveil how service productivity changes when multiple service providers coproduce services with customers within service networks. Lastly, the moderator analysis shows that back office enhancement particularly benefits B2B companies' service productivity. Therefore, we suggest that future research investigates how much B2B firms' productivity contributes to the overall service economy and what approaches help to streamline their back office.

In addition to these findings and the research questions summarized in Table 4, we, third, encourage research that captures longitudinal service productivity effects. Our literature review revealed that a limited number of studies have hitherto addressed service productivity from a longitudinal perspective. Of the 77 articles we analyzed, only three applied longitudinal approaches. Thus, service productivity research aims to empirically analyze service productivity measures' impact and outcomes using cross-sectional data. Since firms tend to gradually industrialize their services as they mature, an interesting future research avenue may be to compare how different service productivity-determinant relationships change with a firm's life cycle. Therefore, more longitudinal-oriented research is needed.

Fourth, akin to Hogreve et al. (2017), we call for more research that explains the relationships between employee support, external service quality, and service process means used to improve service productivity. Since we have primarily focused on the service productivity outcomes of employee support and external service quality as well as service process means, an interesting future research avenue would be to analyze the effect between those determinants (e.g., using structural equation-modeling techniques).

Finally, we encourage research identifying sensitive (i.e., non-linear) service productivity effects. Since we used linear correlation data to aggregate our statistical results to draw our conclusions, we could not identify whether the determinants differ in their input–output relationships. Therefore, we strongly encourage future research identifying how service productivity outputs change with varying inputs for each of the service-productivity determinant categories.

5.4 Limitations

Meta-analyses entail strengths and limitations. Since we found similar constructs referring to the same service-productivity measurement type in previous studies, we argued that their population effect sizes were the same, and we used the average of the observed effects to proceed with our analyses because combining multiple within-study effect sizes leads to better estimates of true effects (Moeyaert et al. 2017). As such, we applied a multilevel meta-analysis approach in which we accounted for the dependence between measures by giving them the same random effect. However, averaging effect sizes within studies presents the limitation of ignoring the dependence between similar measures, which can result in underestimating standard errors (Hedges and Olkin 2014).

Another limitation of the current study is its selection of peer-reviewed journals. By focusing on journals within the service management, general marketing, business-to-business marketing, and innovation fields, we focused our reviewed literature on the most important communities that have contributed to the service productivity literature, and we did not consider conference papers or books. Moreover, adjacent meta-analyses in services marketing research have used similar limitation criteria (Gelbrich and Roschk 2011). Thus, we applied equivalent limitations to achieve comparability with other fields. Furthermore, our keyword selection determined our sample size and content. Since service productivity is a diverse research

field, our initial keyword selection cannot cover all available studies even though our literature review (Snyder 2019) and meta-analysis (Schmidt and Hunter 2015) followed a thorough and comprehensive approach. Therefore, we are confident that the systematic and transparent filters we used to distill the vast literature on service productivity yielded a representative sample explaining service productivity's traditional and new tenets.

In conclusion, we reiterate that this article offers important contributions to advance the theory of optimal service productivity, suggesting that the most suitable way of measuring it is via financial measures combining quality and cost effects (Grönroos and Ojasalo 2004). By assessing the theory of optimal service productivity in different contexts, we have refined established theoretical measurement assumptions and developed novel ones for different employee support and external service quality as well as service process perspectives to advance knowledge in a field that deserves further research.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11846-023-00620-5.

Funding Open Access funding enabled and organized by Projekt DEAL.

Data availability All data generated or analyzed during this study are included in this published article.

Declarations

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

References

Abbu HR, Gopalakrishna P (2019) Synergistic effects of market orientation implementation and internalization on firm performance: direct marketing service provider industry. J Bus Res 125:851–863. https://doi.org/10.1016/j.jbusres.2019.06.004

Abdul Rahman NA, Melewar TC, Sharif AM (2014) The establishment of industrial branding through dyadic logistics partnership success (LPS): the case of the Malaysian automotive and logistics industry. Ind Mark Manag 43:67–76. https://doi.org/10.1016/j.indmarman.2013.09.003

Anderson EW, Fornell C, Rust RT (1997) Customer satisfaction, productivity, and profitability: differences between goods and services. Mark Sci 16:129–145. https://doi.org/10.1287/mksc.16.2.129

Andreassen TW, van Oest RD, Lervik-Olsen L (2018) Customer inconvenience and price compensation. J Serv Res 21:173–183. https://doi.org/10.1177/1094670517738370

Andreassen TW (2021) Service productivity: a call for action! https://www.servsig.org/wordpress/2021/05/service-productivity-a-call-for-action/?utm_source=ServSIG&utm_campaign=459aa

234cf-SERVSIG_News_04_17_COPY_02&utm_medium=email&utm_term=0_001adc251a-459aa234cf-208495021. Accessed 17 Dec 2021
Aspara J, Klein JF, Luo X, Tikkanen H (2018) The dilemma of service productivity and service innovation. J Serv Res 21:249–262. https://doi.org/10.1177/1094670517738368
Auh S, Menguc B, Spyropoulou S, Wang F (2016) Service employee burnout and engagement: the moderating role of power distance orientation. J Acad Mark Sci 44:726–745. https://doi.org/10.1007/s11747-015-0463-4
Babić Rosario A, Sotgiu F, de Valck K, Bijmolt THA (2016) The effect of electronic word of mouth on sales: a meta-analytic review of platform, product, and metric factors. J Mark Res 53:297–318. https://doi.org/10.1509/jmr.14.0380
Baumol WJ, Bowen WG (1966) Performing arts: the economic dilemma. Twentieth Century Fund, New York
Belanche D, Casaló LV, Flavián C, Schepers J (2020) Robots or frontline employees? Exploring customers' attributions of responsibility and stability after service failure or success. J Serv Manag 31:267–289. https://doi.org/10.1108/JOSM-05-2019-0156
Bitner MJ, Ostrom AL, Morgan FN (2008) Service blueprinting: a practical technique for service innovation. Calif Manag Rev 50:66–94. https://doi.org/10.2307/41166446
Blanco-Oliver A, Irimia-Diéguez A (2021) Impact of outreach on financial performance of microfinance institutions: a moderated mediation model of productivity, loan portfolio quality, and profit status. Rev Manag Sci 15:633–668. https://doi.org/10.1007/s11846-019-00353-4
Bouncken RB, Kraus S, Roig-Tierno N (2021) Knowledge- and innovation-based business models for future growth: digitalized business models and portfolio considerations. Rev Manag Sci 15:1–14. https://doi.org/10.1007/s11846-019-00366-z
Brady MK, Cronin JJ Jr (2001) Customer orientation: effects on customer service perceptions and outcome behaviors. J Serv Res 3:241. https://doi.org/10.1177/109467050133005
Brynjolfsson E (1993) The productivity paradox of information technology. Commun ACM 36:66–77. https://doi.org/10.1145/163298.163309
Brynjolfsson E, Collis A, Diewert WE, Eggers F, Fox KJ (2019) GDP-B: Accounting for the value of new and free goods in the digital economy. https://www.nber.org/system/files/working_papers/w25695/w25695.pdf. Accessed 30 Jan 2023
Calabuig F, Núñez-Pomar J, Prado-Gascó V, Añó V (2014) Effect of price increases on future intentions of sport consumers. J Bus Res 67:729–733. https://doi.org/10.1016/j.jbusres.2013.11.035
Carbonell P, Rodríguez Escudero AI (2015) The negative effect of team's prior experience and technological turbulence on new service development projects with customer involvement. Eur J Mark 49:278–301. https://doi.org/10.1108/EJM-08-2013-0438
Carbonell P, Rodríguez-Escudero A-I (2014) Antecedents and consequences of using information from customers involved in new service development. J Bus Ind Mark 29:112–122. https://doi.org/10.1108/JBIM-04-2012-0071
Carbonell P, Rodríguez-Escudero AI, Pujari D (2009) Customer involvement in new service development: an examination of antecedents and outcomes. J Prod Innov Manag 26:536–550. https://doi.org/10.1111/j.1540-5885.2009.00679.x
Carlborg P, Kindström D, Kowalkowski C (2013) A lean approach for service productivity improvements: synergy or oxymoron? Manag Serv Qual 23:291–304. https://doi.org/10.1108/MSQ-04-2013-0052
Chan K, Lam W (2011) The trade-off of servicing empowerment on employees' service performance: examining the underlying motivation and workload mechanisms. J Acad Mark Sci 39:609–628. https://doi.org/10.1007/s11747-011-0250-9
Chan KW, Wan EW (2012) How can stressed employees deliver better customer service? The underlying self-regulation depletion mechanism. J Mark 76:119–137. https://doi.org/10.1509/jm.10.0202
Chase RB (1978) Where does the customer fit in a service operation? Harv Bus Rev 56:137–142
Cheng CC, Krumwiede D (2012) The role of service innovation in the market orientation—new service performance linkage. Technovation 32:487–497. https://doi.org/10.1016/j.technovation.2012.03.006
Collier JE, Barnes DC (2015) Self-service delight: exploring the hedonic aspects of self-service. J Bus Res 68:986–993. https://doi.org/10.1016/j.jbusres.2014.09.036
De Jong A, De Ruyter K, Lemmink J (2003) The adoption of information technology by self-managing service teams. J Serv Res 6:162–179. https://doi.org/10.1177/1094670503257046
Doucet L, Shao B, Wang L, Oldham GR (2016) I know how you feel, but it does not always help. J Serv Manag 27:320–338. https://doi.org/10.1108/JOSM-11-2014-0307

Endres H, Huesig S, Pesch R (2022) Digital innovation management for entrepreneurial ecosystems: services and functionalities as drivers of innovation management software adoption. Rev Manag Sci 16:135–156. https://doi.org/10.1007/s11846-021-00441-4

Finn A (2012) Customer delight: distinct construct or zone of nonlinear response to customer satisfaction? J Serv Res 15:99–110. https://doi.org/10.1177/1094670511425698

Fodness D, Murray B (2007) Passengers' expectations of airport service quality. J Serv Mark 21:492–506. https://doi.org/10.1108/08876040710824852

Gelbrich K, Roschk H (2011) A meta-analysis of organizational complaint handling and customer responses. J Serv Res 14:24–43. https://doi.org/10.1177/1094670510387914

Gibson CB, Birkinshaw J (2004) The antecedents, consequences, and mediating role of organizational ambidexterity. AMJ 47:209–226. https://doi.org/10.5465/20159573

Grace D, O'Cass A (2004) Examining service experiences and post-consumption evaluations. J Serv Mark 18:450–461. https://doi.org/10.1108/08876040410557230

Grönroos C (1984) A service quality model and its marketing implications. Eur J Mark 18:36–44. https://doi.org/10.1108/EUM0000000004784

Grönroos C, Ojasalo K (2004) Service productivity: towards a conceptualization of the transformation of inputs into economic results in services. J Bus Res 57:414. https://doi.org/10.1016/S0148-2963(02)00275-8

Habel J, Alavi S, Schmitz C, Schneider J-V, Wieseke J (2016) When do customers get what they expect? Understanding the ambivalent effects of customers' service expectations on satisfaction. J Serv Res 19:361–379. https://doi.org/10.1177/1094670516662350

Hammerschmidt M, Falk T, Staat M (2012) Measuring and improving the performance of health service networks. J Serv Res 15:343–357. https://doi.org/10.1177/1094670512436804

Hansen H, Samuelsen BM, Silseth PR (2008) Customer perceived value in B-t-B service relationships: investigating the importance of corporate reputation. Ind Mark Manag 37:206–217. https://doi.org/10.1016/j.indmarman.2006.09.001

Harkonen J, Haapasalo H, Hanninen K (2015) Productisation: a review and research agenda. Int J Prod Econ 164:65–82. https://doi.org/10.1016/j.ijpe.2015.02.024

Harkonen J, Tolonen A, Haapasalo H (2017) Service productisation: systematising and defining an offering. J Serv Manag 28:936–971. https://doi.org/10.1108/JOSM-09-2016-0263

Hedges LV, Olkin I (2014) Statistical methods for meta-analysis. Academic Press, Cambridge

Heirati N, O'Cass A, Schoefer K, Siahtiri V (2016) Do professional service firms benefit from customer and supplier collaborations in competitive, turbulent environments? Ind Mark Manag 55:50–58. https://doi.org/10.1016/j.indmarman.2016.02.011

Herington C, Weaven S (2009) E-retailing by banks: e-service quality and its importance to customer satisfaction. Eur J Mark 43:1220–1231. https://doi.org/10.1108/03090560910976456

Hofmeister J, Schneider MHG, Kanbach DK, Kraus S (2022) Combining strategies for high service productivity with successful service innovation. Serv Ind J 42:948–971. https://doi.org/10.1080/02642069.2022.2098952

Hogreve J, Iseke A, Derfuss K, Eller T (2017) The service-profit chain: a meta-analytic test of a comprehensive theoretical framework. J Mark 81:41–61. https://doi.org/10.1509/jm.15.0395

Huang M-H, Rust RT (2021) Engaged to a robot? The role of AI in service. J Serv Res 24:30–41. https://doi.org/10.1177/1094670520902266

Janeschek S, Hottum P, Kicherer F, Bienzeisler B (2013) The dynamics of service productivity and value creation: a service life cycle perspective. Serv Ind J 33:366–377. https://doi.org/10.1080/02642069.2013.747518

Jiang P, Talaga J (2006) Building a customer base in the electronic marketplace: an empirical exploration of the e-tailing industry. J Serv Mark 20:429–438. https://doi.org/10.1108/08876040610704865

Jung JH, Yoo JJ, Arnold TJ (2021) The influence of a retail store manager in developing frontline employee brand relationship, service performance and customer loyalty. J Bus Res 122:362–372. https://doi.org/10.1016/j.jbusres.2020.09.010

Kaplan RS, Norton DP (1992) The balanced scorecard: measures that drive performance. Harv Bus Rev 70:71–79

Konstantopoulos S (2011) Fixed effects and variance components estimation in three-level meta-analysis. Res Synth Methods 2:61–76. https://doi.org/10.1002/jrsm.35

Korherr P, Kanbach D (2021) Human-related capabilities in big data analytics: a taxonomy of human factors with impact on firm performance. Rev Manag Sci 182:113. https://doi.org/10.1007/s11846-021-00506-4

Kraus S, Roig-Tierno N, Bouncken RB (2019) Digital innovation and venturing: an introduction into the digitalization of entrepreneurship. Rev Manag Sci 13:519–528. https://doi.org/10.1007/s11846-019-00333-8

Kraus S, Breier M, Lim WM, Dabić M, Kumar S, Kanbach D, Mukherjee D, Corvello V, Piñeiro-Chousa J, Liguori E, Palacios-Marqués D, Schiavone F, Ferraris A, Fernandes C, Ferreira JJ (2022) Literature reviews as independent studies: guidelines for academic practice. Rev Manag Sci 16:2577–2595. https://doi.org/10.1007/s11846-022-00588-8

Lechermeier J, Fassnacht M, Wagner T (2020) Testing the influence of real-time performance feedback on employees in digital services. J Serv Manag 31:345–371. https://doi.org/10.1108/JOSM-10-2018-0341

Lechner AT, Mathmann F (2020) Bringing service interactions into focus: prevention- versus promotion-focused customers' sensitivity to employee display authenticity. J Serv Res 30:109467052090441. https://doi.org/10.1177/1094670520904417

Lechner AT, Mathmann F, Paul M (2020) Frontline employees' display of fake smiles and angry faces: when and why they influence service performance. J Serv Res 66:109467052097514. https://doi.org/10.1177/1094670520975148

Levitt T (1972) Production-line approach to service. Harv Bus Rev 50:41–52

Levitt T (1976) The industrialization of service. Harv Bus Rev 54:63–74

Lievens A, Moenaert RK (2000) Communication flows during financial service innovation. Eur J Mark 34:1078. https://doi.org/10.1108/03090560010342485

Lovelock CH, Wirtz J (2022) Services marketing: people, technology, strategy. World Scientific, New Jersey

Luu TT (2020) Linking authentic leadership to salespeople's service performance: the roles of job crafting and human resource flexibility. Ind Mark Manag 84:89–104. https://doi.org/10.1016/j.indmarman.2019.06.002

Marinova D, de Ruyter K, Huang M-H, Meuter ML, Challagalla G (2017) Getting smart: learning from technology-empowered frontline interactions. J Serv Res 20:29–42. https://doi.org/10.1177/1094670516679273

Mas-Tur A, Kraus S, Brandtner M, Ewert R, Kürsten W (2020) Advances in management research: a bibliometric overview of the Review of Managerial Science. Rev Manag Sci 14(5):933–958. https://doi.org/10.1007/s11846-020-00406-z

Mathwick C, Malhotra N, Rigdon E (2001) Experiential value: conceptualization, measurement and application in the catalog and Internet shopping environment. J Retail 77:39. https://doi.org/10.1016/S0022-4359(00)00045-2

Medler-Liraz H (2020) Customer incivility, rapport and tipping: the moderating role of agreeableness. JSM ahead-of-print:629. https://doi.org/10.1108/JSM-06-2019-0220

Melton HL, Hartline MD (2013) Employee collaboration, learning orientation, and new service development performance. J Serv Res 16:67–81. https://doi.org/10.1177/1094670512462139

Menguc B, Auh S, Katsikeas CS, Jung YS (2016) When does (mis)fit in customer orientation matter for frontline employees' job satisfaction and performance? J Mark 80:65–83. https://doi.org/10.1509/jm.15.0327

Menguc B, Auh S, Yeniaras V, Katsikeas C (2017) The role of climate: implications for service employee engagement and customer service performance. J Acad Mark Sci 45:428–451. https://doi.org/10.1007/s11747-017-0526-9

Menguc B, Auh S, Wang F (2020) Customer participation variation and its impact on customer service performance: underlying process and boundary conditions. J Serv Res 23:299–320. https://doi.org/10.1177/1094670519899161

Min H, Min H, Joo S (2009) A data envelopment analysis on assessing the competitiveness of Korean hotels. Serv Ind J 29:367–385. https://doi.org/10.1080/02642060701849865

Mittal V, Anderson EW, Sayrak A, Tadikamalla P (2005) Dual emphasis and the long-term financial impact of customer satisfaction. Mark Sci 24:544–555. https://doi.org/10.1287/mksc.1050.0142

Moeyaert M, Ugille M, Natasha Beretvas S, Ferron J, Bunuan R, van den Noortgate W (2017) Methods for dealing with multiple outcomes in meta-analysis : a comparison between averaging effect sizes, robust variance estimation and multilevel meta-analysis. Int J Soc Res Methodol 20:559–572. https://doi.org/10.1080/13645579.2016.1252189

Nakata C, Hwang J (2020) Design thinking for innovation: composition, consequence, and contingency. J Bus Res 118:117–128. https://doi.org/10.1016/j.jbusres.2020.06.038

OECD (2021) Growth in GDP per capita, productivity and ULC. https://stats.oecd.org/Index.aspx?DataSetCode=PDB_GR#
Olsen LL, Witell L, Gustafsson A (2014) Turning customer satisfaction measurements into action. J Serv Manag 25:556–571. https://doi.org/10.1108/JOSM-01-2014-0025
Panayides PM (2007) The impact of organizational learning on relationship orientation, logistics service effectiveness and performance. Ind Mark Manag 36:68–80. https://doi.org/10.1016/j.indmarman.2005.07.001
Parasuraman A (2002) Service quality and productivity: a synergistic perspective. Manag Serv Qual 12:6–9. https://doi.org/10.1108/096045202104
Parasuraman A, Berry L, Zeithaml V (1991) Refinement and reassessment of the SERVQUAL scale. J Retail 67:420–450
Patrício L, Fisk RP, Falcão e Cunha J, Constantine L (2011) Multilevel service design: from customer value constellation to service experience blueprinting. J Serv Res 14:180–200. https://doi.org/10.1177/1094670511401901
Prentice C, King BEM (2013) Impacts of personality, emotional intelligence and adaptiveness on service performance of casino hosts: a hierarchical approach. J Bus Res 66:1637–1643. https://doi.org/10.1016/j.jbusres.2012.12.009
Qi JM, Wang S, Koerber MA (2020) When do frontline service employees feel more grateful? Eur J Mark 54:2107–2137. https://doi.org/10.1108/EJM-06-2019-0496
Raisch S, Birkinshaw J (2008) Organizational ambidexterity: antecedents, outcomes, and moderators. J Manag 34:375–409. https://doi.org/10.1177/0149206308316058
Rodríguez R, Svensson G, Román S, Wood G (2018) Teleological sales and purchase approaches in complex business relationships—customers' expectations before and perceptions after purchase. J Bus Ind Mark 33:523–538. https://doi.org/10.1108/JBIM-11-2016-0262
Rosenbaum MS, Massiah CA (2007) When customers receive support from other customers. J Serv Res 9:257–270. https://doi.org/10.1177/1094670506295851
Rust RT, Huang M-H (2012) Optimizing service productivity. J Mark 76:47–66. https://doi.org/10.1509/jm.10.0441
Rust RT, Zahorik AJ, Keiningham TL (1995) Return on Quality (ROQ): making service quality financially accountable. J Mark 59:58–70. https://doi.org/10.1177/002224299505900205
Rust RT, Moorman C, Dickson PR (2002) Getting return on quality: revenue expansion, cost reduction, or both? J Mark 66:7–24. https://doi.org/10.1509/jmkg.66.4.7.18515
Salmony FU, Kanbach DK (2022) Personality trait differences across types of entrepreneurs: a systematic literature review. Rev Manag Sci 16:713–749. https://doi.org/10.1007/s11846-021-00466-9
Santos-Vijande M, López-Sánchez J, Rudd J (2016) Frontline employees' collaboration in industrial service innovation: routes of co-creation's effects on new service performance. J Acad Mark Sci 44:350–375. https://doi.org/10.1007/s11747-015-0447-4
Schepers JJL, van der Borgh M (2020) A meta-analysis of frontline employees' role behavior and the moderating effects of national culture. J Serv Res 23:255–280. https://doi.org/10.1177/1094670520918669
Schepers J, De Jong A, De Ruyter K, Wetzels M (2011) Fields of gold. J Serv Res 14:372–389. https://doi.org/10.1177/1094670511412354
Schepers JJL, Nijssen EJ, van der Heijden GAH (2016) Innovation in the frontline: exploring the relationship between role conflict, ideas for improvement, and employee service performance. Int J Res Mark 33:797–817. https://doi.org/10.1016/j.ijresmar.2016.01.004
Schmidt FL, Hunter JE (2015) Methods of meta-analysis: correcting error and bias in research findings. SAGE Publications, London
Sekhon H, Yalley AA, Roy SK, Shergill GS (2016) A cross-country study of service productivity. Serv Ind J 36:223–238. https://doi.org/10.1080/02642069.2016.1165671
Shaner MB, Beeler L, Noble CH (2016) Do we have to get along to innovate? The influence of multilevel social cohesion on new product and new service development. J Prod Innov Manag 33:148–165. https://doi.org/10.1111/jpim.12327
Silver NC, Dunlap WP (1987) Averaging correlation coefficients: should Fisher's z transformation be used? J Appl Psychol 72:146–148. https://doi.org/10.1037/0021-9010.72.1.146
Snyder H (2019) Literature review as a research methodology: an overview and guidelines. J Bus Res 104:333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Sok P, Sok KM, Danaher TS, Danaher PJ (2018) The complementarity of frontline service employee creativity and attention to detail in service delivery. J Serv Res 21:365–378. https://doi.org/10.1177/1094670517746778

Song Y, Escobar O, Arzubiaga U, de Massis A (2022) The digital transformation of a traditional market into an entrepreneurial ecosystem. Rev Manag Sci 16:65–88. https://doi.org/10.1007/s11846-020-00438-5

Stauss B (2016) Retrospective: "culture shocks" in inter-cultural service encounters? J Serv Mark 30:377–383. https://doi.org/10.1108/JSM-04-2016-0153

Strydom G, Ewing MT, Heggen C (2020) Time lags, non-linearity and asymmetric effects in an extended service-profit chain. Eur J Mark 54:2343–2363. https://doi.org/10.1108/EJM-12-2019-0906

Suhartanto D, Dean D, Nansuri R, Triyuni NN (2018) The link between tourism involvement and service performance: evidence from frontline retail employees. J Bus Res 83:130–137. https://doi.org/10.1016/j.jbusres.2017.10.039

Teece DJ (2006) Reflections on "Profiting from Innovation." Res Policy 35:1131–1146. https://doi.org/10.1016/j.respol.2006.09.009

Theoharakis V, Sajtos L, Hooley G (2009) The strategic role of relational capabilities in the business-to-business service profit chain. Ind Mark Manag 38:914–924. https://doi.org/10.1016/j.indmarman.2009.04.006

Thompson GM, Kwortnik Jr, Robert J (2008) Pooling restaurant reservations to increase service efficiency. J Serv Res 10:335–346. https://doi.org/10.1177/1094670508314267

Tranfield D, Denyer D, Smart P (2003) Towards a methodology for developing evidence-informed management knowledge by means of systematic review. Br J Manag 14:207–222. https://doi.org/10.1111/1467-8551.00375

Tully SM, Winer RS (2014) The role of the beneficiary in willingness to pay for socially responsible products: a meta-analysis. J Retail 90:255–274. https://doi.org/10.1016/j.jretai.2014.03.004

van Birgelen M, de Ruyter K, de Jong A, Wetzels M (2002) Customer evaluations of after-sales service contact modes: an empirical analysis of national culture's consequences. Int J Res Mark 19:43–64. https://doi.org/10.1016/S0167-8116(02)00047-2

Vargo SL, Lusch RF (2017) Service-dominant logic 2025. Int J Res Mark 34:46–67. https://doi.org/10.1016/j.ijresmar.2016.11.001

Victorino L, Verma R, Bonner BL, Wardell DG (2012) Can customers detect script usage in service encounters? An experimental video analysis. J Serv Res 15:390–400. https://doi.org/10.1177/1094670512446062

Viechtbauer W (2010) Conducting meta-analyses in R with the metafor package. J Stat Softw 36:1–48. https://doi.org/10.18637/jss.v036.i03

Voss C, Perks H, Sousa R, Witell L, Wünderlich NV (2016) Reflections on context in service research. J Serv Manag 27:30–36. https://doi.org/10.1108/JOSM-04-2015-0115

Wan E, Chan K, Chen R (2016) Hurting or helping? The effect of service agents' workplace ostracism on customer service perceptions. J Acad Mark Sci 44:746–769. https://doi.org/10.1007/s11747-015-0466-1

Wang M-C, Chen J-S (2022) Driving coopetition strategy to service innovation: the moderating role of coopetition recognition. Rev Manag Sci 16:1471–1501. https://doi.org/10.1007/s11846-021-00488-3

Wiertz C, de Ruyter K, Keen C, Streukens S (2004) Cooperating for service excellence in multichannel service systems: an empirical assessment. J Bus Res 57:424. https://doi.org/10.1016/S0148-2963(02)00276-X

Wilson A, Frimpong J (2004) A reconceptualisation of the satisfaction-service performance thesis. J Serv Mark 18:471–481. https://doi.org/10.1108/08876040410557258

Wirtz J, Zeithaml V (2018) Cost-effective service excellence. J Acad Mark Sci 46:59–80. https://doi.org/10.1007/s11747-017-0560-7

Wirtz J, Heracleous L, Pangarkar N (2008) Managing human resources for service excellence and cost effectiveness at Singapore Airlines. Manag Serv Qual 18:4–19. https://doi.org/10.1108/09604520810842812

Wirtz J, Tuzovic S, Ehret M (2015) Global business services. JOSM 26:565–587. https://doi.org/10.1108/JOSM-01-2015-0024

Wirtz J, Patterson PG, Kunz WH, Gruber T, Lu VN, Paluch S, Martins A (2018) Brave new world: service robots in the frontline. JOSM 29:907–931. https://doi.org/10.1108/JOSM-04-2018-0119

Yu T, Patterson PG, de Ruyter K (2013) Achieving service-sales ambidexterity. J Serv Res 16:52–66. https://doi.org/10.1177/1094670512453878

Zablah AR, Franke GR, Brown TJ, Bartholomew DE (2012) How and when does customer orientation influence frontline employee job outcomes? A meta-analytic evaluation. J Mark 76:21–40. https://doi.org/10.1509/jm.10.0231

Zhao Y, Yan L, Keh HT (2018) The effects of employee behaviours on customer participation in the service encounter. Eur J Mark 52:1203–1222. https://doi.org/10.1108/EJM-10-2016-0559

Authors and Affiliations

Johannes Hofmeister[1] · Dominik K. Kanbach[1,2] · Jens Hogreve[3]

Dominik K. Kanbach
Dominik.Kanbach@hhl.de

Jens Hogreve
Jens.Hogreve@ku.de

[1] HHL Leipzig Graduate School of Management, Jahnallee 59, 04109 Leipzig, Germany

[2] School of Business, Woxsen University, Hyderabad, India

[3] Ingolstadt School of Management, Catholic University of Eichstaett-Ingolstadt, Auf der Schanz 49, 85049 Ingolstadt, Germany