

Original Article

# Envisioning the Future of Professional Services: ERP, AI, and Project Management in the Age of Digital Disruption

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**Abstract:** *The study explores the impact of digitalization on professional service firms (PSFs) amidst the rise of technologies like ERP, AI, and project management systems. It addresses the need to understand frontline workers' responses to digital disruption in auditing and public relations/communication (PR/C) consulting firms in the USA. By integrating insights from service intelligence, occupational identity, service climate, and frontline service work, the study uncovers nuanced reactions to digitalization. It finds that the fit between service intelligence and technology shapes firms' perceptions, with auditing firms perceiving digitalization as more disruptive and embracing automation, while public relations/communication (PR/C) firms maintain human-centric approaches. Occupational identity influences frontline workers' perceptions, and service climate significantly influences firms' adoption of digitalization. Digitalization prompts the emergence of new service roles, with auditing firms innovating tech-based services and public relations/communication (PR/C) firms relying on traditional ones. Premium service firms adopt coordinating roles, and translators bridge auditing and technological domains. The study offers theoretical understanding and practical insights for navigating digital disruption in professional services.*

**Keywords:** *ERP, AI, Projection Management, Digital Disruption.*

## I. INTRODUCTION

### A. Overview

The landscape of professional services stands at a crucial juncture as it grapples with the disruptive forces propelled by the advent of digital technologies such as Enterprise Resource Planning (ERP), Artificial Intelligence (AI), and innovative project management systems. Scholars have underscored the transformative potential of these technologies, heralding a paradigm shift in the service sector (Keating et al., 2018). Indeed, the service industry finds itself at an inflection point, with prognostications suggesting an imperative for fundamental adaptations to confront the looming specter of disruption (Ostrom et al., 2015; van Doorn et al., 2017).

While prior research predominantly delved into the impact of new technologies on standardized business-to-consumer (B2C) services, the focus is now expanding to encompass the realm of knowledge-intensive business-to-business (B2B) services (Okhuysen et al., 2015; Wirtz et al., 2018). This shift is significant as it challenges the longstanding assumption that such services, reliant on human expertise and interaction, are impervious to digitalization (Susskind & Susskind, 2015; Wirtz et al., 2018). However, this transition into digital terrain remains largely uncharted in frontline research, creating a pressing need for empirical investigations (Singh et al., 2017).

Professional services epitomize the quintessence of knowledge intensive B2B services, exemplified by domains like auditing and consulting (Nordenflycht, 2010). Over the past few decades, this sector has burgeoned into a cornerstone of the knowledge economy, characterized by its intricacy, customization, and reliance on the expertise and interpersonal skills of its workforce (Okhuysen et al., 2015). Frontline workers, constituting the majority of professional service firms (PSFs), are intricately enmeshed in client interactions, their specialized occupations underpinning the reputation of these firms (Singh et al., 2017).

Yet, the advent of disruptive technologies like IBM's Watson and Ross has precipitated a juncture of anticipation and apprehension within the professional service domain (Brynjolfsson & McAfee, 2014). Predictions about the impact of digitalization on professional services oscillate between narratives of resilience, hinging on the indispensability of social skills and creativity, and forecasts of obsolescence, propelled by the disruptive potential of emerging technologies (Keating et al., 2018);



Susskind & Susskind, 2015). The ensuing narrative is one of evolving service delivery models, where frontline workers are envisaged to harness digital technologies to augment their services, navigate human-robot or human-AI collaborations, and redefine client interfaces and interactions (Davenport & Kirby, 2015; Wirtz et al., 2018).

In this context of uncertainty, empirical studies exploring the intersection of ERP, AI, and project management within professional services are imperative, yet notably lacking (Singh et al., 2017). The evolving landscape of digitalization holds profound implications for frontline workers in professional service firms (PSFs), who are at the forefront of client interactions and service delivery (Singh et al., 2017). As these workers navigate the influx of digital technologies into their daily workflows, understanding their responses and adaptations becomes paramount.

Not only does this exploration promise theoretical insights into the dynamics of technological change within professional services (Keating et al., 2018; Singh et al., 2017), but it also holds practical significance, given the role of PSFs as key advisors guiding organizations through strategic challenges such as digital transformation (Reihlen and Werr, 2012).

In light of these considerations, this study embarks on an exploration of how frontline workers in PSFs enact their service work amidst the tide of digitalization and potential disruption. Drawing on insights from a multifaceted analytical framework that integrates perspectives from service intelligence, service climate, occupational identity, and frontline service work, we delve into the nuanced responses of professionals in auditing and public relations/communication (PR/C) consulting firms in the US (Huang & Rust, 2018; Bowen & Schneider, 2014; Nelson & Irwin, 2014; Pratt et al., 2006).

Through an in-depth interview study, we uncover divergent approaches to digitalization between auditing and public relations/communication (PR/C) firms, shedding light on the intricate interplay between technology, organizational climate, and individual identity. By elucidating how frontline workers navigate this landscape of change, we contribute to both theoretical understanding and practical insights into the future of professional services in the age of digital disruption.

## **B. Professional Services**

Professional service firms (PSFs) constitute a distinct sector characterized by frontline workers who deliver specialized, personalized, and knowledge-based advisory services while maintaining frequent client interactions (Singh et al., 2017). The essence of their operations lies in the cultivation of highly developed social and analytical skills, coupled with adaptability and innovative thinking (Wirtz et al., 2018). These competencies, often deemed irreplacable, serve as a cornerstone for sustaining competitive advantage within PSFs (Nordenflycht, 2010; Wirtz & Lovelock, 2016). Such capabilities are meticulously honed through selective recruitment from premier educational institutions and comprehensive internal training programs (Wirtz & Jerger, 2016).

Moreover, PSFs operate in dynamic environments necessitating continuous alignment with the latest trends in management, technology, legislation, and industry practices to uphold their reputation for cutting-edge expertise (Reihlen & Werr, 2012). Despite the impetus for service innovation, PSFs exhibit conservatism in their internal organizational structures, including processes, competencies, and business models (Anand et al., 2007). This conservatism is rooted in the delicate balance PSFs must strike between innovation and maintaining the integrity of established practices, essential for preserving their brand identity and client relationships (Reihlen & Werr, 2012).

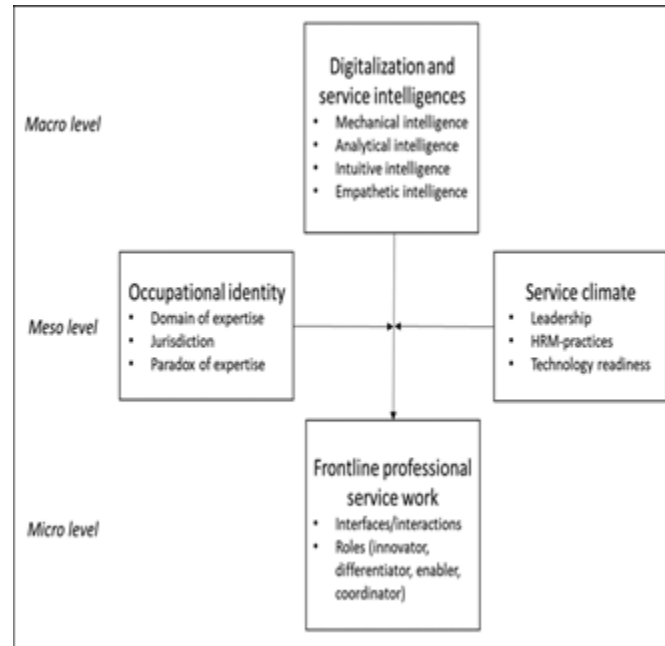
Furthermore, PSFs are characterized by their mono-occupational nature, where a predominant majority of employees belong to specific occupations, such as lawyers in law firms (Nordenflycht, 2010). This occupational identity not only influences recruitment and promotion within these firms but also underpins clients' confidence in the quality-of-service provision (Bévort & Suddaby, 2016). Traditionally, the reliance on human expertise and interpersonal skills, coupled with a dearth of suitable technologies, has rendered PSFs somewhat resistant to technological integration (Nordenflycht, 2010).

However, the advent of digital technologies has eroded this barrier, compelling PSFs and their frontline workers to confront the imperative of digitalization to maintain competitiveness and relevance in the contemporary market landscape (Susskind & Susskind, 2015; Wirtz et al., 2018). Thus, the dichotomy between tradition and innovation presents PSFs with the challenge of navigating digital disruption while preserving the core values and practices that define their organizational identity and client value proposition.

## II. LITERATURE REVIEW

### A. Digitalization and Frontline Professional Service Work

To comprehend the utilization of digital technologies by frontline workers in their service work amidst digitalization and potential disruption, contextual understanding is imperative (Christensen, Wang, & Van Beaver, 2013). Drawing inspiration from Subramony and Pugh (2015), this study adopts a multilevel, interdisciplinary approach, integrating insights from the literature on service intelligence, occupational identity, service climate, and frontline service work into an analytical framework (see Figure 1).



**Figure 1: The Analytical Framework Illustrates How Digitalization—A Macro Level Phenomenon**

Figure 1. The analytical framework illustrates how digitalization—a macro level phenomenon—is enacted by frontline workers at the micro-level (illustrated by the vertical arrow), and how that, in turn, is shaped by meso-level phenomena, that is, the frontline workers' occupational identities and service climates (illustrated by the horizontal arrows).

The analytical framework succinctly delineates how the integration of digitalization into frontline service work hinges upon several key factors. Firstly, the type of service intelligence underpinning the services determines the applicability of new technologies (Huang & Rust, 2018). Secondly, the frontline workers' occupational identity, particularly pronounced in professional service firms (PSFs), influences their response to digitalization (Pratt et al., 2006; Bévort & Suddaby, 2016). Moreover, the prevailing service climate within organizations, dictating the legitimate use of digital technologies, significantly shapes frontline service practices (Schneider & Bowen, 2019). Lastly, insights from the literature on service work elucidate the emergence of new roles and actions among frontline workers in the era of digitalization (Bowen, 2016; Singh et al., 2017). Each facet of this framework will be meticulously examined in subsequent discussions.

### B. Digitalization and Service Intelligence

Digitalization, propelled by advancements in information technology and artificial intelligence (AI), holds the potential to reshape service industries fundamentally (Brynjolfsson & McAfee, 2014; Wirtz et al., 2018). While the literature on digitalization in services has primarily focused on human-centric perspectives, there's a growing recognition of the transformative role of technology in service work (Keating et al., 2018; Preyaa Atri, 2018) [36]. Keating et al. (2018) underscore the need for deeper insights into how digital technologies redefine services and how service workers adapt to potential disruptions.

Huang and Rust (2018) further elucidate this shift, proposing the types of intelligence underpinning service tasks, ranging from mechanical to empathetic intelligence. These intelligences delineate the complexity of tasks and their susceptibility to automation, with implications for the future composition of service workforces (Huang & Rust, 2018).

Frontline workers, particularly in professional services, are poised to witness significant changes as digital technologies augment service delivery (Davenport & Kirby, 2015). However, the integration of AI and robotics into service provision raises questions about the evolving nature of service relationships (Gutek, Groth, & Cherry, 2002).

While tasks rooted in mechanical and analytical intelligence are susceptible to automation, those requiring empathetic intelligence pose challenges for technology (Huang & Rust, 2018; Wirtz et al., 2018). Consequently, a hybrid model may emerge, wherein humans handle emotional and relational aspects, complemented by technology's analytical capabilities (Wirtz et al., 2018). Nonetheless, empirical investigations into the practical implications of this transition, particularly in services combining different types of intelligence, remain scarce (Keating et al., 2018; Smets et al., 2017). Thus, a deeper understanding of how frontline workers navigate this evolving landscape is essential to inform future strategies in service industries.

### **C. Occupational Identity**

The willingness of frontline workers to integrate new technologies into their service work is intricately intertwined with their occupational identity, shaping how they perceive and engage with innovations (Bévort & Suddaby, 2016; Nelson & Irwin, 2014; Pratt et al., 2006). Occupational identity, rooted in members' perceptions of "who we are" and "what we do," delineates the boundaries of expertise and professional conduct within specific occupations (Pratt et al., 2006; Nelson & Irwin, 2014). As technology increasingly permeates occupational domains, occupations may engage in negotiations over emerging areas of competence, seeking to assert ownership over them (Okhuysen et al., 2015; Verbaan & Cox, 2014). However, the adoption of new technologies can challenge established occupational identities, necessitating a reevaluation of "what we do" and potentially reshaping entire occupations (Nelson & Irwin, 2014; Okhuysen et al., 2015).

Occupational members' deep expertise can engender reluctance to embrace new technologies that diverge from established practices, giving rise to the paradox of expertise (Nelson & Irwin, 2014). This paradox arises when technology's approach to task performance deviates from occupational norms, leading members to devalue alternative solutions (Nelson & Irwin, 2014). Moreover, occupational identities play a pivotal role in shaping perceptions of new technologies and influencing their integration into organizational practices (Nelson & Irwin, 2014; Pratt et al., 2006). Bridging the gap between "what we do" and "who we are" requires the integration of new technologies into formal organizational practices and behaviors (Bévort & Suddaby, 2016; Nelson & Irwin, 2014). Thus, understanding the organizational context is crucial for comprehending how frontline workers enact digitalization amidst evolving occupational identities (Bowen & Schneider, 2014).

### **D. Service Climate**

Extant service research has predominantly concentrated on either macro-level phenomena shaping aggregate customer outcomes or micro-level factors influencing individual customer experiences (Subramony & Pugh, 2015). However, there's a paucity of studies delving into how organizational dynamics at the meso level influence frontline workers and customer interactions at the micro level (Subramony & Pugh, 2015). Yet, understanding the organizational context is crucial, as it directly impacts frontline workers' adoption of new technologies and subsequent adjustments in service delivery (Schneider & Bowen, 2019).

The service climate, characterized by employees' perceptions of organizational practices and behaviors related to customer service, plays a pivotal role in shaping service quality and organizational practices (Bowen & Schneider, 2014; Schneider & Bowen, 2019). Furthermore, a service-focused climate fosters leadership behavior. Human management practices, employee knowledge and skills, fair treatment, and recognition, of which contribute to enhanced service delivery (Bowen & Schneider, 2014; Schneider & Bowen, 2019). It is proposed that the service climate also influences frontline workers' "technology readiness," impacting their propensity to adopt and utilize new technologies in their service roles (Doorn et al., 2017).

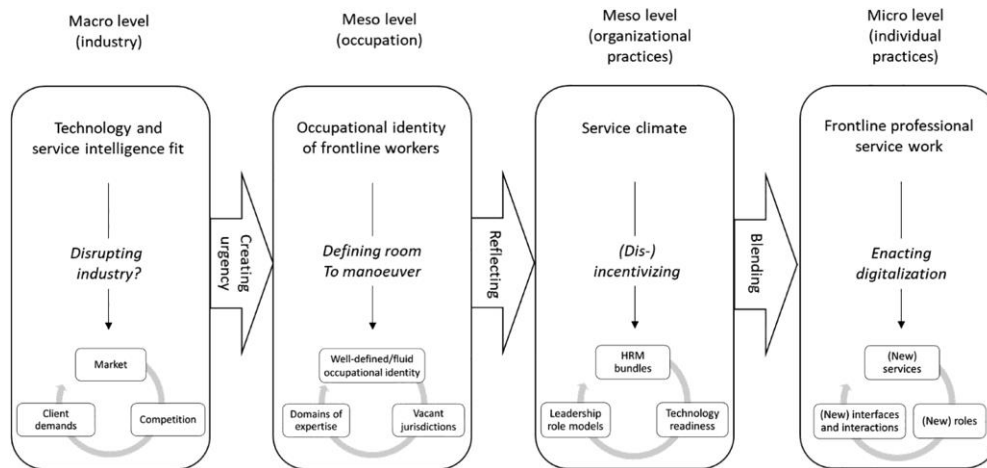
### **E. Service Work at the Frontlines**

At the micro-level, organizational frontline research delves into interactions between organizations and customers at points of contact, facilitating value creation and exchange (Singh et al., 2017). In this study, we utilize Singh et al.'s (2017) framework for organizational frontline inquiry, which delineates how frontline workers' utilization of digital technologies varies based on the nature of service interfaces and problem-solving interactions (Singh et al., 2017). Professional services, characterized by complex, knowledge-based problem-solving and rich human-to-human client interfaces, necessitate the adoption of digital technologies like co-robots and human-AI teams (Singh et al., 2017; Wirtz et al., 2018).

Studies suggest that as organizations transition from manual to knowledge-based work to maintain competitiveness, the nature of service work will evolve (Okhuysen et al., 2015). Digitalization is anticipated to enable frontline workers to assume innovative roles, enhancing service differentiation and managing interdependencies among various stakeholders (Bowen, 2016). These roles - innovators, differentiators, enablers, and coordinators - contribute to role congruency, positively influencing client evaluations (Wirtz et al., 2018; Bowen, 2016). However, whether these roles are pertinent in knowledge-intensive B2B service contexts, such as professional services, remains unexplored, warranting further investigation.

**III. METHODOLOGY**

The research adopts a qualitative, explorative methodology to investigate how frontline workers navigate digitalization in professional services within the US context, known for its high digital maturity and innovation (Gioia et al.,2013). Interviews with 50 partners and digital experts from auditing and public relations/communication (PR/C) consulting firms were conducted, focusing on firms' digital strategies and the integration of technology in service delivery (Pratt et al., 2006). Auditing and PR/C consulting were chosen as exemplars of "classic" and "neo" professions, respectively, illustrating differing levels of regulation and domain specificity (von Nordenflycht, 2010). The iterative data analysis process, inspired by Gioia et al. (2013), involved coding, theoretical reflection, and dimension identification, leading to the emergence of key dimensions: technology-service intelligence fit, occupational identity, service climate for digitalization, and frontline professional service work (Gioia et al., 2013). The analysis revealed industry-specific patterns, with auditors displaying a shared emphasis on digital skill development to counter disruption, contrasting with PR/C firms' less strategic approach to digital expertise (Gehman et al., 2018). These findings informed the development of research propositions and a conceptual model (see Figure 2) to elucidate the dynamics of digitalization in professional service settings.



**Figure 2: Conceptual Model**

Fig.2 Conceptual model of how the frontline workers’ enactment of their service work in times of digitalization and potential disruption is contextually embedded and shaped by the technology-service intelligence fit, occupational identity, and service climate.

**IV. FINDINGS**

The findings indicate that the dimensions of service intelligence, occupational identity, and service climate shape how frontline workers enact their service work albeit with industry-specific differences. These are summarized in Table 2.

**Table 2. Overview of the Industry-Specific Findings (Based on the Theoretical Categories from the Data Analyses).**

Professional service industry	Service Intelligence	Occupational Identity	Service Climate	Service Work
Auditing	Shrinking market for traditional auditing services	Auditing—a conservative and regulated industry in transition	Auditing partners act as role models in learning digital skills	Developing new digital auditing services
	Increased competition	Expanding the	New human resource	New service roles in

	from new entrants offering tech-based auditing services and policymaker initiatives	auditors' domain of expertise	management (HRM) practices reward digital expertise	auditing firms—coordinators and translators
	Clients demand digital auditing services	Entering new digital jurisdictions	High levels of technology readiness	New human-to-robot and robot-to-robot interfaces and interactions
Public relations/communication (PR/C)	Digitalization expands the market for traditional PR/C services	PR/C consulting—an elusive industry	PR/C partners act as role models and embrace traditional skills	Providing traditional PR/C services with a digital twist
	Tech-based entrants do not increase the competition in the PR/C industry	Defining the PR/C consultants' domain of expertise	Established HRM practices do not capture digital skills	A new service role in PR/C firms—coordinator
	Clients demand traditional PR/C services	Demarcating the jurisdiction	Varying levels of technology readiness	Relying on human-to-human interfaces and interactions

**V. DISCUSSION**

In addressing the imperative question of how frontline workers within Professional Service Firms (PSFs) navigate the realms of digitalization and potential disruption (Ostrom et al., 2015; Singh et al., 2017; Subramony & Pugh, 2015), this study has yielded a nexus of intertwined contributions. Through meticulous examination, we illuminate multifaceted insights that collectively elucidate the landscape.

**A. Fit Between Service Intelligence and Technology:**

This study provides fresh insights into digitalization's impact on frontline professional service work, addressing conflicting predictions on automation and disruption (Subramony & Pugh, 2015; Wirtz et al., 2018; Susskind & Susskind, 2015). We illustrate how the alignment between technological advancements and service intelligence shapes workers' perceptions of digitalization's disruptiveness, crucially influencing firms' responses (Huang & Rust, 2018).

A close fit prompts urgency, notably in auditing firms, while a weak fit results in less urgency, as observed in PR/C firms. Expanding Huang and Rust's framework, we identify channels through which this fit affects market dynamics, competitive landscapes, and client demands, driving industry change. Hence, proposition 1a suggests that firms with a close fit perceive market shifts and view digitalization as disruptive. Moreover, we uncover two responses: auditing firms embrace automation through service unbundling, while PR/C firms maintain human-centric approaches, leading to Proposition 1b indicating firms with a close fit develop more blended services. These insights illuminate professional service industries' nuanced transitions amid digitalization (Keating et al., 2018; Smets et al., 2017).

**B. Occupational Identity and the Perceived Room to Manoeuvre:**

While the technology-service intelligence fit sheds light on why auditors felt more threatened by disruption than PR/C consultants, understanding how they enacted their service work requires examining their perceived room to manoeuvre (Nelson & Irwin, 2014; Pratt et al., 2006; Verbaan & Cox, 2014).

Contrary to previous notions, we propose that occupations with well-defined identities might paradoxically have more room to experiment, as clear occupational roles allow for innovation without jeopardizing identity (Nelson & Irwin, 2014; Pratt et al., 2006). By appropriating vacant jurisdictions, auditors could transition to tech-based services, while PR/C consultants, tied to traditional identities, resisted digitalization (Verbaan & Cox, 2014). This highlights how occupational identity influences technology adoption and service innovation, contributing to a deeper understanding of occupational dynamics (Nelson & Irwin, 2014). Hence, we propose Proposition 2, suggesting that a well-established occupational identity facilitates frontline workers to expand their service work by appropriating vacant jurisdictions.

### **C. Service Climate and Digitalization:**

This study enriches the understanding of service climate dynamics amid digitalization (Subramony & Pugh, 2015). Drawing on Bowen and Schneider's framework (2014), we show how external factors like digitalization and meso-level phenomena like employees' occupational identities influence the service climate. Leadership role models, HRM practices, and technology readiness are pivotal in driving or hindering digitalization adoption (Bowen & Schneider, 2014; Schneider & Bowen, 2019; Doorn et al., 2017).

The findings highlight how leaders' actions, such as providing training shape the service climate's stance on digitalization. Furthermore, HRM practices, including talent management and reward systems, significantly impact frontline workers' engagement with digital technologies. Notably, technology readiness emerges as a critical aspect, with firms exhibiting high readiness being more inclined to embrace digitalization in frontline service work. Thus, we propose Proposition 3, suggesting that firms with high technology readiness incentivize the adoption of digitalization in frontline service work.

### **D. Enacting Knowledge-Intensive Service Work at the Frontlines:**

The study responds to the scarcity of empirical research on how digital technologies are integrated into frontline service work within professional services (Singh et al., 2017; Smets et al., 2017). Building upon previous conceptual frameworks (Singh et al., 2017; Wirtz et al., 2018), we delve into the nuances of digitalization's impact on frontline service workers. By examining the interplay of technology-service intelligence fit, occupational identity, and service climate, we elucidate how frontline workers innovate and blend their services.

In auditing firms, digitalization spurs the development of tech-based services like predictive analyses, expanding service portfolios, and shifting service interactions. Conversely, PR/C firms predominantly rely on traditional services with minimal digital integration. The findings extend Wirtz et al.'s framework (2018) by showcasing varied team constellations in response to digitalization, emphasizing the role of human-robot collaboration. Additionally, we identify a new coordinating role among frontline workers, crucial for managing evolving client service ecosystems. Proposition 4 posits that premium service firms will increasingly adopt outward-looking coordinating roles to retain strategic positioning. Moreover, we introduce the translator role in auditing firms, bridging auditing and technological domains, which we predict will grow in significance (Proposition 5) as digital technologies further permeate frontline service work.

## **VI. CONCLUSION**

This study illuminates digitalization's complexities in professional service firms (PSFs), notably in auditing and public relations/communication (PR/C) consulting firms. Insights from service intelligence, occupational identity, service climate, and frontline service work reveal varied responses to digital disruption. The alignment between service intelligence and technology shapes firms' perceptions, with auditing firms perceiving digitalization as more disruptive and embracing automation, while PR/C firms maintain human-centric approaches.

Occupational identity influences frontline workers' perceptions, with well-defined roles allowing for innovation. Service climate significantly influences firms' adoption of digitalization, fostering innovation among frontline workers. Digitalization prompts the emergence of new service roles, with auditing firms innovating tech-based services and PR/C firms relying on traditional ones. Premium service firms adopt coordinating roles, and translators bridge auditing and technological domains, contributing to theoretical and practical insights into digital disruption's future in professional services.

## **VII. RECOMMENDATIONS**

Professional service firms (PSFs) should invest in digital skills development, particularly in industries with a close fit between service intelligence and technology. Foster a culture of innovation, encourage experimentation, align leadership and HRM practices with digitalization strategies, and develop blended service offerings leveraging both human expertise and technology. Anticipate future service trends and technological advancements to capitalize on new opportunities. By implementing these recommendations, PSFs can position themselves for success in the rapidly evolving digital landscape, ensuring continued relevance and competitiveness.

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