

Street-Level Bureaucracy in the Digital Age: The Changing Role of Civil Servants in Public Service

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Abstract

This study examines how digitalization reshapes the roles, discretionary practices, and innovative capacities of street-level bureaucrats in public service delivery. The rapid integration of digital technologies, including e-government systems, artificial intelligence, and data-driven platforms, has transformed traditional bureaucratic work and raised critical questions regarding discretion, professional identity, and service quality. This research employs a qualitative descriptive approach using in-depth interviews, non-participant observation, and document analysis, with data triangulation to ensure validity. Data were analyzed through thematic analysis and constant comparative methods within a socio-technical framework. The findings reveal that digitalization shifts bureaucrats from face-to-face decision-makers to system operators and digital facilitators, while also expanding their roles as intermediaries who assist citizens in navigating digital services. Discretion is not eliminated but reconfigured into three main forms: curtailment, enablement, and continuation. Furthermore, street-level bureaucrats emerge as local innovators who adapt policies and systems to contextual needs. However, digitalization also presents challenges, including reduced human interaction, risks of algorithmic opacity, and potential exclusion of digitally disadvantaged groups. In conclusion, digitalization produces an ambivalent transformation of street-level bureaucracy, requiring a balance between technological efficiency and human-centered governance to ensure inclusive and accountable public services

Keywords: Digitalization, Discretion, Public Service, Street-Level Bureaucracy, Technological Transformation

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1. Introduction

The rapid expansion of digital technologies in public administration has fundamentally transformed how governments deliver services and how citizens interact with the state. Over the past decade, digitalization—through e-government platforms, artificial intelligence (AI), and data-driven systems—has been widely promoted as a solution to inefficiency, corruption, and bureaucratic inertia. However, beyond institutional reforms and technological infrastructures, a critical yet often underexplored dimension lies in how these transformations reshape the role of street-level bureaucrats, who remain the primary interface between policy and citizens. Traditionally conceptualized as frontline agents exercising discretion in complex, uncertain environments, street-level bureaucrats are now increasingly embedded within digital systems that mediate, constrain, and sometimes redefine their professional functions. This shift has produced a new configuration of public service delivery in which human judgment interacts with algorithmic governance, thereby raising fundamental questions about discretion, accountability, and professional identity (De Boer & Raaphorst, 2021).

Empirical evidence from recent studies demonstrates that digitalization does not eliminate street-level bureaucrats but instead reconstitutes their roles into what has been termed “screen-level” or “system-level” bureaucracies. In this emerging paradigm, public servants spend more time interacting with digital interfaces than engaging in direct face-to-face communication with citizens. This transformation signifies not only a technological shift but also a profound reorientation of professional identity, where bureaucratic work becomes increasingly mediated by standardized digital procedures and automated decision-making systems. Consequently, the traditional image of frontline workers as autonomous decision-makers is being replaced by operators of complex information systems, whose actions are guided by embedded algorithms and procedural logics (Johansson, 2024; Northcott, 2025; Marienfeldt, 2024).

At the same time, the digital turn has expanded the functional scope of street-level bureaucrats in unexpected ways. Rather than merely implementing policy, many frontline workers now act as intermediaries who assist citizens in navigating digital platforms, effectively becoming “digital helpdesk” agents. This role is particularly significant in contexts characterized by unequal digital literacy, where citizens require guidance to access essential public services. As a result, street-level bureaucrats are increasingly tasked with bridging the digital divide, ensuring that technological advancements do not exacerbate social inequalities. This dual function simultaneously operating systems and supporting citizens reflects a hybrid professional identity that blends administrative, technical, and social competencies (Wihlborg & Iacobaeus, 2023; Wang, 2025; Kirjavainen & Jalonen, 2025).

Nevertheless, the integration of advanced technologies such as AI and big data into public service delivery introduces complex challenges related to discretion, privacy, and accountability. In areas such as welfare eligibility assessment, taxation, and law enforcement, algorithmic systems are increasingly used to support or even replace human decision-making processes. While these technologies promise efficiency and consistency, they also risk reducing bureaucratic discretion by imposing rigid decision rules and limiting the capacity for contextual judgment. Moreover, reliance on opaque algorithms raises concerns about transparency and fairness, potentially undermining public trust in government institutions. At the same time, some studies suggest that digital tools can enhance discretion by providing richer information and decision-support systems, enabling bureaucrats to make more informed and nuanced judgments (Busch, 2025; Wang, 2025).

The impact of digitalization on discretion, therefore, is not unidirectional but rather characterized by a dynamic interplay of constraint, enablement, and continuity. On one hand, digital systems can curtail discretion through standardization and automation, aligning bureaucratic processes with principles of efficiency and predictability. On the other hand, they can empower bureaucrats by expanding access to information and improving decision-making capabilities. Importantly, discretion does not disappear; instead, it evolves, as bureaucrats develop “workarounds” and adaptive practices to reconcile system constraints with real-world complexities. This nuanced understanding challenges simplistic narratives that portray digitalization as either a threat or a solution to bureaucratic discretion, highlighting instead its

transformative and context-dependent nature (Northcott, 2025; Marienfeldt, 2024; De Boer & Raaphorst, 2021; Masood & Nisar, 2021).

Beyond their operational roles, street-level bureaucrats are increasingly recognized as potential innovators and “policy entrepreneurs” within digital governance frameworks. In many cases, frontline workers actively engage in “policy repair,” modifying or adapting digital systems and procedures to better align with local needs and conditions. This bottom-up innovation is particularly evident in initiatives aimed at digital inclusion, where bureaucrats experiment with new approaches to ensure equitable access to services. Such practices underscore the importance of involving street-level actors in the design and implementation of digital reforms, as their experiential knowledge and adaptive capacities can significantly enhance policy effectiveness. Conversely, the exclusion of frontline perspectives from reform processes often leads to implementation failures and unintended consequences (Nagel, 2024; Cohen & Aviram, 2021; Wang, 2025).

Despite these insights, significant research gaps remain in the literature on street-level bureaucracy in the digital era. First, much of the existing scholarship tends to focus on either technological systems or institutional outcomes, with limited attention to the lived experiences and evolving identities of bureaucrats themselves. While studies have documented the emergence of screen-level bureaucracies and the changing nature of discretion, there is still insufficient understanding of how these transformations affect professional norms, values, and motivations over time. Second, existing research often examines the effects of digitalization in isolation, without adequately considering the interaction between technological design, organizational context, and human agency. This gap limits the ability to develop a comprehensive theoretical framework that captures the complexity of digital-era governance.

Furthermore, there is a lack of integrative analysis that simultaneously examines the triadic relationship between role transformation, discretionary practices, and innovation at the street level. Most studies address these dimensions separately, resulting in fragmented insights that do not fully reflect the interconnected nature of bureaucratic change. For instance, while some research highlights the constraining effects of algorithms on discretion, others emphasize the enabling potential of digital tools or the persistence of informal practices. However, few studies attempt to synthesize these perspectives into a unified analytical model that explains how digitalization reconfigures the entire ecosystem of street-level bureaucracy. This fragmentation constitutes a critical gap that necessitates further empirical and conceptual investigation.

In response to these gaps, this study offers a novel contribution by proposing an integrated perspective on the transformation of street-level bureaucracy in the digital era. Unlike prior research that treats digitalization as either a deterministic force or a neutral tool, this study conceptualizes it as a socio-technical process that simultaneously constrains, enables, and reshapes bureaucratic roles and practices. By examining the interplay between technological systems, organizational structures, and individual agency, this research seeks to provide a more nuanced understanding of how street-level bureaucrats navigate and negotiate their evolving roles. Additionally, this study emphasizes the dual function of bureaucrats as both system operators and social mediators, as well as their emerging role as innovators within digital governance frameworks.

The novelty of this research also lies in its focus on the ambivalent nature of digital transformation, highlighting both its opportunities and risks for public service delivery. While digitalization can enhance efficiency, transparency, and accountability, it can also generate new forms of administrative burden, exacerbate digital exclusion, and erode the human dimension of public services. By critically examining these tensions, this study aims to move beyond binary debates and develop a more balanced and context-sensitive understanding of digital governance. Moreover, by incorporating recent empirical findings and theoretical developments, this research contributes to the advancement of street-level bureaucracy theory in the context of rapid technological change.

Accordingly, the primary objective of this study is to analyze how digitalization transforms the roles, discretionary practices, and innovative capacities of street-level bureaucrats in public service delivery. Through this analysis, the study seeks to elucidate the

mechanisms through which digital technologies reconfigure the relationship between bureaucrats and citizens, as well as the implications of these changes for service quality, equity, and accountability. Ultimately, this research aspires to provide both theoretical insights and practical recommendations for policymakers and practitioners aiming to design more inclusive, adaptive, and human-centered digital public services (Northcott, 2025; Wihlborg & Iacobaeus, 2023; Kirjavainen & Jalonen, 2025).

2. Method

This study employs a qualitative research design with a **descriptive-analytical approach** to comprehensively explore how digitalization transforms the roles, discretionary practices, and innovative capacities of street-level bureaucrats in public service delivery. A qualitative approach is particularly suitable because the research seeks to understand complex social phenomena, professional experiences, and organizational dynamics that cannot be adequately captured through quantitative measurement alone. The research focuses on selected public service institutions that have implemented digital systems, such as e-government platforms, AI-assisted decision-making tools, and integrated service applications. Data are collected through multiple techniques to ensure richness and validity. First, **in-depth semi-structured interviews** are conducted with street-level bureaucrats (e.g., frontline officers, administrative staff, and digital service operators) to capture their experiences, perceptions, and adaptive strategies in navigating digital systems. Second, **non-participant observations** are carried out to examine how bureaucrats interact with digital platforms in real service settings, including their communication patterns with citizens. Third, **document analysis** is used to review relevant policy documents, standard operating procedures (SOPs), and digital service guidelines to understand the formal framework shaping bureaucratic roles. To strengthen data credibility, the study applies **triangulation techniques** by comparing findings across different data sources and informants.

The data analysis process follows an **interactive model of qualitative analysis**, consisting of data reduction, data display, and conclusion drawing. Initially, all collected data are transcribed and organized systematically, followed by **data coding** to identify key themes related to role transformation, discretion (curtailment, enablement, and continuation), and innovation practices among street-level bureaucrats. The analysis then proceeds with **thematic analysis**, where patterns and relationships between digital systems, organizational context, and bureaucratic behavior are interpreted critically. To enhance analytical rigor, the study adopts a **constant comparative method**, continuously comparing data across cases to identify similarities and differences in how digitalization shapes bureaucratic practices. Furthermore, the findings are interpreted using a **socio-technical perspective**, emphasizing the interaction between technology, human agency, and institutional structures. The final stage involves drawing conclusions and formulating implications for public service reform, particularly in designing digital systems that balance efficiency, discretion, and human-centered service delivery.

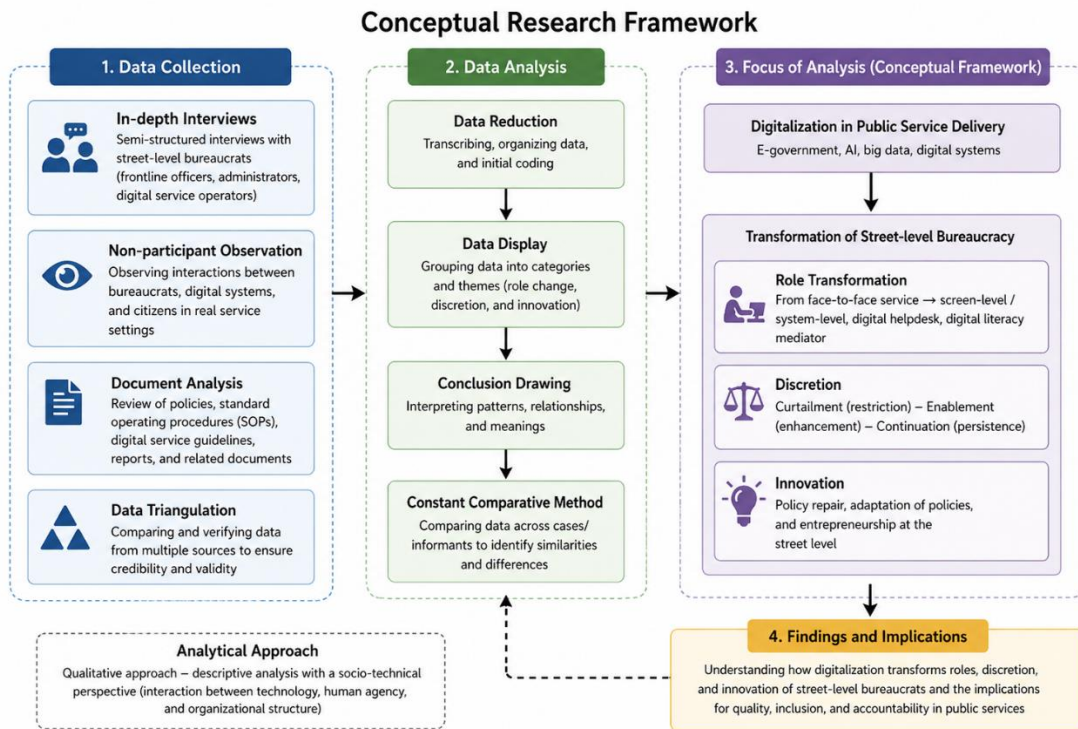


Figure 1. Conceptual Diagram of the Research Method

3. Results and Discussion

Result

The findings of this study present a comprehensive overview of how digitalization has fundamentally transformed the roles and working practices of street-level bureaucrats in public service delivery. Based on data collected through in-depth interviews, observations, and document analysis, it is evident that digital transformation affects not only the technical aspects of service provision but also the professional, relational, and institutional dimensions of bureaucratic work. These changes include shifts in how bureaucrats interact with citizens, their work orientation, knowledge base, and their position within policy structures. In addition, this study reveals new dynamics in discretionary practices, which are no longer singular but have evolved into multiple forms influenced by the presence of digital systems. Therefore, to facilitate a clearer understanding of the research findings, the results are presented in two main tables illustrating (1) the transformation of street-level bureaucrats' roles in the digital era and (2) the patterns of discretion changes in digital public service delivery.

Table 1. Transformation of Street-Level Bureaucrats' Roles in the Digital Era

No	Dimension of Change	Before Digitalization	After Digitalization	Empirical Implication
1	Mode of Interaction	Face-to-face service delivery	Screen-based / system-mediated interaction	Reduced direct human contact, increased reliance on digital platforms
2	Professional Role	Decision-maker with high discretion	System operator and digital facilitator	Shift toward procedural compliance and system navigation
3	Service Function	Policy implementation	Digital helpdesk and citizen assistance	Role expansion in guiding citizens with low digital literacy

4	Knowledge Base	Experiential and tacit knowledge	Data-driven and system-informed knowledge	Increased dependence on digital information systems
5	Work Orientation	Case-by-case judgment	Standardized and automated processes	Reduced flexibility but increased efficiency
6	Institutional Role	Policy executor	Policy adapter and local innovator	Emergence of bottom-up innovation practices

The findings presented in Table 1 indicate a significant transformation in the roles and identities of street-level bureaucrats as a result of digitalization. The shift from face-to-face interaction to screen-based service delivery reflects a broader transition toward system-mediated governance, where bureaucrats increasingly operate through digital interfaces rather than direct engagement with citizens. This transformation not only alters the mode of interaction but also reshapes professional identity, positioning bureaucrats as system operators and digital facilitators rather than autonomous decision-makers.

Moreover, the expansion of roles into digital assistance highlights the growing importance of bureaucrats as intermediaries in addressing digital inequality. While digitalization enhances efficiency and standardization, it simultaneously introduces new responsibilities, particularly in supporting citizens with limited digital literacy. The findings also reveal that bureaucrats are not merely passive implementers of digital systems; rather, they actively adapt and innovate within institutional constraints. This dual role as both system operators and local innovators underscores the complex and evolving nature of street-level bureaucracy in the digital era.

Table 2. Patterns of Discretion Transformation in Digital Public Services

No	Type of Discretion Change	Characteristics	Practical Example	Impact on Public Service
1	Curtailment (Restriction)	Standardization, automation, rule-based decision-making	Automated eligibility assessment systems	Increased consistency but reduced flexibility
2	Enablement (Enhancement)	Access to richer data, decision-support tools	Data dashboards for welfare targeting	Improved accuracy and efficiency in decisions
3	Continuation (Persistence)	Informal practices, workarounds, adaptive behavior	Manual intervention despite system rules	Maintained human judgment in complex cases
4	Hybrid Discretion	Combination of system guidance and human adjustment	Semi-automated service verification	Balanced efficiency and contextual sensitivity
5	Invisible Discretion	Embedded discretion within algorithms	Algorithm-based risk scoring	Reduced transparency and accountability concerns

Table 2 demonstrates that digitalization does not eliminate bureaucratic discretion but rather transforms it into multiple, coexisting forms. The curtailment of discretion occurs through standardization and automation, which aim to enhance consistency and reduce subjectivity in decision-making. However, this often comes at the cost of flexibility, particularly in complex or exceptional cases where rigid systems fail to capture contextual nuances.

Conversely, digital tools also enable discretion by providing bureaucrats with access to comprehensive data and analytical support, thereby enhancing their decision-making capacity. This duality highlights the ambivalent nature of digitalization, where technology simultaneously constrains and empowers bureaucratic action. Importantly, the persistence of informal practices and workarounds indicates that human agency remains central in public service delivery. Bureaucrats continue to exercise judgment, especially when digital systems prove inadequate or misaligned with real-world conditions.

The emergence of hybrid and invisible forms of discretion further complicates the landscape, as decision-making becomes increasingly distributed between humans and algorithms. While hybrid discretion offers a balance between efficiency and contextual sensitivity, invisible discretion embedded within algorithms raises critical concerns regarding transparency and accountability. Overall, these findings underscore that discretion in the digital era is not diminished but reconfigured, requiring new frameworks to understand its implications for governance and public service outcomes..

Discussion

The transformation of street-level bureaucracy in the digital era, as identified in this study, demonstrates a multidimensional shift in the roles, discretionary practices, and innovative capacities of public servants. The findings presented in Table 1 reveal that digitalization has significantly altered the mode of interaction between bureaucrats and citizens, shifting from face-to-face encounters to screen-mediated service delivery. This transition reflects what contemporary scholarship describes as the emergence of “screen-level” or “system-level” bureaucracies, where frontline workers increasingly rely on digital platforms to perform their duties. Such a shift is not merely technical but also sociological, as it redefines the nature of public service work and the relational dynamics between state and society. Empirical studies confirm that digital interfaces restructure bureaucratic workflows, embedding decision-making processes within technological systems that standardize and regulate interactions (Andersson et al., 2021; Johansson, 2024).

This transformation has profound implications for the professional identity of street-level bureaucrats. As shown in the findings, bureaucrats are no longer primarily autonomous decision-makers but are increasingly positioned as system operators and facilitators of digital services. This aligns with recent research highlighting that digitalization reshapes professional identity by emphasizing compliance with system logics and algorithmic outputs rather than experiential judgment. The integration of AI and data-driven systems into public administration further reinforces this shift, as bureaucrats must adapt to new forms of knowledge production that prioritize data analytics over tacit knowledge. Consequently, the bureaucratic role becomes hybrid, combining technical competencies with traditional administrative functions (Jung & Camarena, 2024; Lin et al., 2025).

At the same time, the study finds that the expansion of bureaucratic roles into digital facilitation particularly as “digital helpdesk” agents—reflects an adaptive response to the challenges of digital inequality. This finding is consistent with the broader literature emphasizing that digital transformation does not automatically lead to inclusive service delivery. Instead, it often creates new barriers for citizens with limited digital literacy, thereby necessitating the intervention of street-level bureaucrats as mediators. In this context, bureaucrats play a critical role in ensuring equitable access to services by guiding citizens through complex digital systems. This intermediary function underscores the continued relevance of human agency in an increasingly automated environment and highlights the limitations of purely technological solutions to public service challenges (Wang, 2025; Peeters & Campos, 2022).

Furthermore, the findings indicate that digitalization has reconfigured the knowledge base of bureaucratic work, shifting from experiential and context-specific knowledge to data-driven decision-making. While this transition enhances efficiency and consistency, it also raises concerns about the potential loss of contextual sensitivity. The reliance on standardized data and algorithmic outputs may overlook the nuanced realities of individual cases,

particularly in complex service domains such as welfare provision and taxation. This tension between efficiency and contextualization reflects a central dilemma in digital governance, where the pursuit of uniformity may conflict with the need for personalized service delivery. Previous studies have highlighted that machine-based systems often struggle to capture the moral and social dimensions of public service work, thereby necessitating continued human involvement (Considine et al., 2022).

The transformation of discretion, as illustrated in Table 2, further elucidates the complex impact of digitalization on bureaucratic practices. The study identifies three primary patterns—curtailment, enablement, and continuation—each representing a distinct mode of interaction between technology and human agency. The curtailment of discretion, characterized by standardization and automation, reflects the increasing dominance of rule-based systems in public administration. Digital tools are designed to minimize variability and ensure consistency, thereby reducing the scope for individual judgment. This finding is supported by existing literature, which argues that automation tends to constrain discretionary space by embedding decision rules within technological systems (De Boer & Raaphorst, 2021; Marienfeldt, 2024).

However, the study also finds that digitalization can enhance discretion by providing bureaucrats with access to richer information and decision-support tools. This enablement dimension highlights the potential of digital technologies to augment human capabilities rather than replace them. By offering comprehensive data and analytical insights, digital systems can support more informed and accurate decision-making. This perspective challenges deterministic views of technology as inherently restrictive and instead emphasizes its role as an enabler of professional judgment. Empirical research corroborates this finding, demonstrating that digital tools can improve efficiency and decision quality when effectively integrated into organizational processes (Abdullah et al., 2025; Alshallaqi, 2022).

Importantly, the persistence of discretion—referred to as continuation—indicates that bureaucrats continue to exercise judgment despite technological constraints. The emergence of workarounds and informal practices reflects the adaptability of street-level bureaucrats in navigating the limitations of digital systems. This finding aligns with the socio-materiality perspective, which views technology and human agency as mutually constitutive rather than oppositional. Bureaucrats do not simply follow system rules; they actively interpret, modify, and sometimes circumvent them to address real-world complexities. Such practices highlight the resilience of human discretion and its indispensability in public service delivery (Alshallaqi, 2022; Zaitsev, 2023).

The identification of hybrid and invisible forms of discretion further enriches the analysis by revealing how decision-making authority is increasingly distributed between humans and algorithms. Hybrid discretion represents a collaborative model in which bureaucrats and digital systems jointly shape outcomes, balancing efficiency with contextual sensitivity. In contrast, invisible discretion refers to the embedding of decision-making logic within algorithms, which may obscure the role of human judgment and reduce transparency. This phenomenon raises critical concerns about accountability, as decisions influenced by algorithms may be difficult to scrutinize or contest. Scholars have noted that algorithmic governance introduces new challenges related to opacity and legitimacy, particularly when citizens are unable to understand or question automated decisions (Northcott, 2025; Paraciani & Rizza, 2024).

Beyond discretion, the study also highlights the emerging role of street-level bureaucrats as innovators and policy entrepreneurs. The findings indicate that bureaucrats actively engage in “policy repair” by adapting digital systems and procedures to better align with local contexts. This bottom-up innovation challenges traditional hierarchical models of public administration, emphasizing the importance of frontline actors in shaping policy outcomes. Such practices are particularly evident in initiatives aimed at digital inclusion, where bureaucrats experiment with new approaches to address the needs of marginalized populations. This finding is consistent with research that underscores the role of street-level bureaucrats as agents of change within digital transformation processes (Nagel, 2024).

Moreover, the involvement of bureaucrats in innovation processes enhances the effectiveness of digital reforms by ensuring that technological solutions are grounded in practical realities. When frontline workers are excluded from the design and implementation of

digital systems, there is a higher risk of policy failure due to misalignment between system capabilities and user needs. Conversely, participatory approaches that incorporate bureaucratic insights can lead to more adaptive and responsive governance. This underscores the importance of fostering organizational cultures that support experimentation and learning, particularly in the context of rapid technological change (Larsen et al., 2025).

The findings also reveal the ambivalent impact of digitalization on public service outcomes. On one hand, digital technologies improve efficiency, consistency, and accountability by standardizing processes and reducing opportunities for corruption. On the other hand, they introduce new challenges, including increased administrative burdens, change fatigue among bureaucrats, and the risk of excluding vulnerable populations. These trade-offs highlight the need for a balanced approach to digital transformation that considers both its benefits and limitations. Studies have shown that excessive reliance on digital systems can lead to unintended consequences, such as reduced service accessibility and diminished trust in public institutions (Barodi & Lalaoui, 2025).

In addition, the transformation of bureaucratic work has implications for employee well-being and job satisfaction. The shift toward system-mediated work and the increasing demands of digital competencies can contribute to stress and burnout among street-level bureaucrats. This is particularly relevant in contexts where organizational support and training are insufficient to meet the challenges of digital transformation. Research indicates that the reconfiguration of professional identity and work practices can have significant psychological effects, underscoring the need for effective change management strategies in the public sector (Lin et al., 2025).

Another critical dimension highlighted by the study is the continued importance of human interaction in public service delivery. Despite the proliferation of digital technologies, the findings emphasize that trust, empathy, and relational engagement remain essential components of effective governance. This is especially true for vulnerable populations, who may require personalized support and face-to-face interaction to access services. The persistence of human-centered practices suggests that digitalization should complement rather than replace traditional forms of service delivery. This perspective aligns with recent scholarship advocating for hybrid service models that integrate digital efficiency with human responsiveness (Chang & Brewer, 2022).

Furthermore, the study contributes to the theoretical advancement of street-level bureaucracy by integrating insights from digital governance and socio-technical systems. By examining the interplay between technology, organizational context, and human agency, the research provides a more comprehensive understanding of how digitalization reconfigures bureaucratic roles and practices. This integrative approach addresses existing gaps in the literature, which often treat these dimensions in isolation. The findings demonstrate that the transformation of street-level bureaucracy is not a linear process but a dynamic and context-dependent phenomenon shaped by multiple interacting factors (Marienfeldt, 2024; Northcott, 202).

Overall, the discussion highlights that digitalization does not eliminate the relevance of street-level bureaucrats but rather transforms their roles in complex and sometimes contradictory ways. Bureaucrats become system operators, digital facilitators, and innovators, navigating a landscape characterized by both constraints and opportunities. Discretion is not diminished but reconfigured, taking on new forms that reflect the interaction between human judgment and algorithmic governance. These findings underscore the need for policies and practices that support the adaptive capacities of bureaucrats while ensuring that digital systems remain transparent, accountable, and inclusive.

In conclusion, this study successfully addresses its objective by demonstrating that the transformation of street-level bureaucracy in the digital era is multifaceted, involving shifts in roles, discretion, and innovation. The findings contribute to a deeper understanding of how digital technologies reshape public service delivery and highlight the importance of maintaining a balance between technological efficiency and human-centered governance. By situating bureaucrats at the center of digital transformation, the study provides valuable insights for

policymakers seeking to design more effective and equitable public services in an increasingly digital world.

4. Conclusions and Suggestions

In conclusion, this study demonstrates that digitalization fundamentally transforms the roles, discretionary practices, and innovative capacities of street-level bureaucrats in public service delivery. Rather than eliminating their relevance, digital technologies reconfigure bureaucrats into hybrid actors who function simultaneously as system operators, digital facilitators, and local innovators. The findings confirm that discretion does not disappear but evolves into multiple forms—being constrained through standardization, enhanced through data-driven decision support, and sustained through adaptive practices such as workarounds. Moreover, bureaucrats play a crucial role in bridging the digital divide and ensuring inclusive service delivery, particularly for vulnerable populations. At the same time, the integration of algorithms and automated systems introduces new challenges related to transparency, accountability, and professional identity. Therefore, the transformation of street-level bureaucracy in the digital era is inherently ambivalent, shaped by the interaction between technology, organizational context, and human agency, and requires a balanced approach that integrates efficiency with human-centered governance to achieve equitable and effective public services.

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