AI and the Transformation of Accountability and Discretion in Urban Governance

Abstract

This paper offers a conceptual analysis of the transformative role of Artificial Intelligence (AI) in urban governance, focusing on how AI reshapes governance approaches, oversight mechanisms, and the relationship between bureaucratic discretion and accountability. Drawing on public administration theory, tech-driven governance practices, and data ethics, the study synthesizes insights to propose guiding principles for responsible AI integration in decision-making processes. While primarily conceptual, the paper draws on illustrative empirical cases to demonstrate how AI is reshaping discretion and accountability in real-world settings. The analysis argues that AI does not simply restrict or enhance discretion but redistributes it across institutional levels. It may simultaneously strengthen managerial oversight, enhance decision-making consistency, and improve operational efficiency. These changes affect different forms of accountability: political, professional, and participatory, while introducing new risks, such as data bias, algorithmic opacity, and fragmented responsibility across actors. In response, the paper proposes guiding principles: equitable AI access, adaptive administrative structures, robust data governance, and proactive human-led decision-making, citizen-engaged oversight. This study contributes to the AI governance literature by moving beyond narrow concerns with perceived discretion at the street level, highlighting instead how AI transforms rule-based discretion across governance systems. By bridging perspectives on efficiency and ethical risk, the paper presents a comprehensive framework for understanding the evolving relationship between discretion and accountability in AI-assisted governance.

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1. Introduction

1.1. The Increasing Role of Data-Driven Approaches in Urban Governance

The integration of digital tools such as ubiquitous personal devices, the Global Positioning System (GPS), and various Internet of Things (IoT) devices into the urban environment is reshaping citizens' experiences and enabling new forms of data collection and analysis for urban governance. Digital systems facilitate the convergence of data generated by networked physical infrastructure, enhancing government performance and the quality of urban life through city-level centralized data structures, agency-tailored interfaces and systems for management, and site-specific digital twinning interventions (O'Reilly, 2010; Kitchin et al., 2015; Appio et al., 2019; Hawken et al., 2020; Yang and Rong, 2024). For example, Singapore's Smart Nation Sensor Platform harnesses real-time data from thousands of interconnected sensors to optimize public transportation, monitor environmental quality, and enhance public safety (MDDI, 2024). Similarly, Barcelona has deployed extensive IoT networks that track air quality and traffic flow, empowering municipal authorities to make agile, informed decisions that directly improve residents' daily lives (Barcelona City Council, 2025). In Amsterdam, the use of AI-powered analytics within smart grid systems has assisted the municipality to deliver more efficient solutions for energy management and waste reduction (Gemeente Amsterdam, 2024).

Technological advancements prompt paradoxical impacts on bureaucracy. On the one hand, aligning with Weber's view that technology as an enabler for bureaucratization (1946), emerging data- and AI-driven innovations might reinforce traditional bureaucratic structures and practices (Meijer et al., 2021; Newman et al., 2022). On the other hand,

urban governance faces complex, "wicked" problems (Rittel and Webber, 1973), necessitating new governance models that utilize flexible, cross-agency, and cross-sector institutional arrangements (Stead and Meijer, 2009). Digital technology has facilitated this shift towards networked organizational structures (Greenwood and Lawrence, 2005), creating odds with the Weberian bureaucratic model which traditionally emphasizes rigid rules and standardized processes. In particular, the increasing presence of data-driven technology in urban governance provides a more dynamic problem-solving approach to public administration. This digital transformation enhances agility and flexibility for public employees, enabling them to address societal needs more effectively (Goldsmith and Gardner, 2022).

1.2.   Rethinking Bureaucratic Discretion

Building upon the vast amount of data, the rapidly growing use of Artificial Intelligence (AI), particularly Generative AI (GenAI), promises a further transformation of urban governance. The intertwined relationship between humans and AI in bureaucracy resonates with the concept of "accountable discretion," suggesting that data-driven decision-making can enhance public outcomes without compromising democratic controls (Goldsmith and Crawford, 2014). Put in the context of AI, deploying AI in bureaucratic systems may further create opportunities to augment the discretion of bureaucrats while upholding stringent accountability standards due to AI's enabling effects on the data-processing capacities of government employees.

While much of the existing literature has predominantly focused on the perceived or "felt" discretion among street-level bureaucrats (Busch et al., 2018; Flügge et al., 2021; Brayne and Christin, 2021; de Boer and Raaphorst, 2023). In contrast, this paper distinguishes itself by also exploring the formal, rule-based dimensions of discretion embedded within governance structures and processes, especially when facing emergence of highly interactive AI applications following the rise of GenAI. By integrating perspectives into the institutional mechanisms that define discretion and accountability, this paper provides a more comprehensive understanding of how AI applications could reshape decision-making processes. Moreover, considering variations across frontline staff and senior management, this paper aims to reveal how different actors adapt and reallocate their discretionary powers in response to AI-enabled transformations.

However, as AI broadens discretionary capacity, it must be managed carefully to ensure that enhanced flexibility does not compromise ethical standards or democratic principles. This change calls for a further rethinking of traditional accountability frameworks to accommodate the new human-AI interactions, ensuring that discretion is exercised in a manner that is both responsible and aligned with ethical values.

To further elaborate on these themes, the remainder of this paper is organized as follows: Section 2 reviews the traditional trade-off between discretion and accountability in governance, establishing the theoretical framework for our analysis. Section 3 investigates how AI impacts discretion and accountability in urban governance, focusing on AI-assisted approaches and their implications for decision-making and oversight. Section 4 outlines a

set of guiding principles for AI-enhanced governance in urban policy. Rather than offering a rigid framework, this section presents strategies that address key areas, including equitable AI deployment, adaptive administrative frameworks, robust data governance, transparent human–AI collaboration, and active citizen engagement, to help city governments harness AI's transformative potential while ensuring accountability, transparency, and ethical oversight. Section 5 concludes the paper and outlines directions for future research.

2.   Discretion, Accountability, and the Trade-off

Discretion encompasses the authority to make decisions in specific situations within a bureaucrat's authority. The early definition of discretion was broad and did not attempt to categorize specific types of discretion according to tasks or contexts, considering discretion as a public officer's freedom "... to make a choice among possible courses of action and inaction" within its effective authority limits (Davis, 1969, p.4). Michael Lipsky's seminal work, *Street-level Bureaucracy: Dilemmas of the Individual in Public Services* (1980), articulates discretion specifically for frontline bureaucrats, emphasizing that their discretionary power is an essential component of implementing policy and shaping service delivery, especially in situations where rules may be ambiguous, complex, or contradictory. Discretion allows these bureaucrats to interpret and apply rules in a manner that fits the specific contexts they encounter in their daily interactions with citizens (Hupe and Hill, 2007).

Building on Lipsky's studies, subsequent literature has recognized the significant role of street-level bureaucrats' discretionary actions in policy implementation. These bureaucrats are acknowledged as professionals who use their judgment to interpret and apply policies, often making decisions that directly impact public service delivery (Hupe, 2013; Thomann et al., 2018). Their decisions are shaped by their understanding of policy goals and political agenda (May and Winter, 2009), professional knowledge (Evans, 2011), as well as their own understanding of the relationships among citizen clients, coworkers, and the system (Maynard-Moody and Musheno, 2000). Research also argues that discretion may enhance field workers' perception of the meaningfulness created for citizens through their decisions (citizens might feel differently) and impacts the willingness of field workers to implement policies that accept certain degrees of flexibility (Tummers and Bekkers, 2014; Thomann et al., 2018; Wang et al., 2023). However, more rigid policies that leave little room for discretion, such as mandatory arrest policies, would usually lead to more predictable actions, even if those compulsory actions created harm or unfortunate outcomes. The ability of bureaucrats to make discretionary decisions in non-programmed situations is essential for maintaining the flexibility and responsiveness required in complex urban governance (Hupe and Hill, 2007; Hupe, 2013).

Concerns about accountability accompany the discussion of discretion. The traditional definition of *accountability* highlights the relational aspect of accountability, emphasizing the obligation of an agent to provide explanations and justifications for their actions to another entity (*principal or forum*), which could be a person, an organization, or the public in general, holding the power to question and evaluate those actions (Bovens, 1998, 2007,

2010; Mulgan, 2000, Mulgan, 2003). Traditionally, organizations ensure accountability through institutional mechanisms such as administrative procedures, which formalize processes and standards to be followed by bureaucrats (McCubbins et al.,1987) as well as democratic oversight, which allows citizens to be engaged in monitoring and evaluating government actions (McCubbins and Schwartz, 1984).

Accountability and discretion are often likely to be in an inverse relationship. High levels of discretion challenge the liberal framework of separation of powers of law-making and enforcement (Pires, 2011), leading to a perception of inadequate accountability. A key element underlying this trade-off is that as discretion increases, the standardization of decision-making tends to decrease. When decisions are tailored to specific contexts, the variability introduced makes it more challenging for oversight bodies to apply uniform accountability measures, such as audits or performance reviews, which rely on predictable, standardized processes.

Conversely, excessive control or oversight can undermine the discretion that street-level bureaucrats need to perform their duties effectively. This can reduce the efficiency of government operations and the quality of services (Hupe and Hill, 2007). Furthermore, overly rigid bureaucratic procedures can erode public trust by either preventing sensible decisions or by creating cumbersome or confusing administrative processes, which hinder governmental agencies' performance (Handler, 1986; Bryner, 1987; as cited in Pires, 2011). Research has also shown that overly restricted discretion might lower frontline

bureaucrats' willingness to implement policies (Tummers and Bekkers, 2014; Thomann et al., 2018; Wang et al., 2023).

It is important to note, however, that this inverse relationship does not imply that accountability and discretion are fundamentally incompatible. Mostly, bureaucrats remain legally and normatively bound to justify their actions, but the inherent variability associated with higher discretionary power can complicate the monitoring of actions and outcomes. This paper adopts this trade-off framework as a lens to examine how emerging AI technologies are reshaping the balance between discretion and accountability in urban governance, setting the stage for subsequent discussions on achieving a more adaptive and transparent governance model.

3. AI's Impact on Bureaucratic Discretion and Accountability: A Conceptual Exploration

3.1. AI for Urban Governance

In the context of urban governance, the rapid development of AI technology may lead to a bundle of transformative tools that city managers and staff define, introduce, and adopt to address context-specific challenges. AI encompasses a variety of technologies and techniques, including machine learning, neural networks, and natural language processing to solve "complex goals" that typically involve tasks similar to human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding (Russell and Norvig, 2016; Tegmark, 2017). The following sections examine how AI's practical applications drive not only enhanced operational efficiency but also a fundamental

transformation in the balance between bureaucratic discretion and accountability in urban governance.

Urban governments have been increasingly incorporating AI to enhance operational efficiency and decision-making. The trend of developing various AI-driven tools for specific government tasks has been growing significantly in the past decades, delivering tools that range from chatbots for external inquiries or internal document-processing (see: Digital Dubai, 2023; Seoul Metropolitan Government, 2021; SNDGO, 2023) to deploying AI as a data analyst (Edinger, 2024) or as an assistant for resource management (Rueter, 2024). These examples illustrate how urban contexts adapt AI to meet local needs while contending with the challenges of integrating innovative technologies into established bureaucratic systems.

Generative AI (GenAI) represents one of the latest innovations being explored by urban governments. Although GenAI is often discussed in terms of its technical capabilities, such as generating text, images, or predictive insights (Ouyang et al., 2022; Cao et al., 2023), the transformative feature is its interactive capacity. On one level, GenAI's interactive capacity allows a wider range of stakeholders, including citizens and non-technical public officials, to tackle tasks ranging from document summarization to data analytics and even coding through conversational languages. This change may significantly expand AI's applicability in urban governance processes.

Beyond expanding access, GenAI allows users to iteratively prompt, refine, and interpret responses. This dialogic mode of interaction does not replace human judgment; rather, it may enhance discretionary decision-making by making it more reflexive and context-sensitive. Empirical findings provide a glimpse of this shift. Boulus-Rødje et al. (2024), for instance, illustrate how users develop iterative working relationships with the GenAI; these working relationships enhance users' understanding of both the AI's limitations and their own assumptions. Similarly, Law and Varanasi (2025) show how workers in diverse sectors enact a new managerial responsibility to verify or override GenAI outputs. Both examples suggest that GenAI may support more informed and traceable decisions which build upon users' evolving judgment and GenAI's refined responses.

As urban governance integrates more AI applications, these dynamics open up a new set of challenges and opportunities related to aligning tech-driven discretionary practices with established public values (see Moore, 2013). While AI applications could increase efficiency and scale, their true significance may lie in how they enable officials across government levels to exercise more discretion in ways that are more informed, traceable, and reflexive. This shift may advance positive outcomes without losing accountability. These considerations lay the groundwork for the analysis in Section 3 and the principles discussed in Section 4, which aim to balance the transformative potential of AI with the essential needs for ethical oversight and accountable discretion in urban governance.

3.2.   <u>Understanding Data-Driven and AI-Assisted Approaches' Impacts on Discretion</u>

Broadly speaking, the discussion on AI's impact on discretion draws parallel with the "curtailment-vs-enablement" debate regarding Information and Communication Technology's (ICT) effects on bureaucracy and discretion (Buffat, 2015). On one side of the debate, scholars like Snellen (1998), Zuurmond (1998), Barth and Arnold (1999), and Bovens and Zouridis (2002) argued that the expanded use of ICT applications may curtail discretion by automating tasks and reducing the need for human judgment. This reduction could lead to a decrease in discretionary power for human agents, potentially replacing street-level bureaucrats with data-driven algorithms.

In contrast, the "enablement" perspective posits that ICT tools enhance the ability of street-level bureaucrats by improving data-processing capacities and facilitating more informed decisions. This view suggests that the emergence of ICT tools may empower discretionary decision-making rather than suppressing human discretion. When bureaucrats embrace the use of digital tools in daily operations, they still deem discretionary power an indispensable component of governance (Busch et al., 2018; Busch and Eikebrokk, 2019). In addition, the complexity of tasks in public administration also makes it difficult for digital systems to capture the full scope of frontline social works (Buffat, 2015; Nagtegaal, 2021). For instance, Jorna and Wagenaar's (2007) empirical study on ICT and subsidy allocation in the Netherlands demonstrated that while the ICT-driven monitoring records social workers' decisions, it also omits information about how much discretion a social worker had exercised. This study further reinforces the point that discretion remains an impactful component in governance despite the wide deployment of digital technologies. Overall,

literature has provided evidence for both enablement and curtailment theories when addressing ICT's effects on discretion (Buffat, 2015; Busch and Henriksen, 2018), reaching a consensus that ICT's impacts on discretion are highly dependent on the nature and contexts of the tasks.

When addressing the emergence of AI technology, literature recognizes a similar co-existence of curtailment and enablement effects, with specific task characteristics, such as the level of discretion required, complexity, or repetitiveness, playing a critical role (Gillingham et al., 2025). AI's effect on tasks is likely to vary. It reduces discretion in routine activities by automating processes, yet it can enhance decision-making in complex cases by offering high-quality data and predictive insights (Young et al., 2019; Bullock, 2019; Bullock et al., 2020).

Repositioning Discretion Rather than Replacing Discretion

That being said, as AI presents the opportunity to reallocate routine tasks, it allows bureaucrats to concentrate on complex decisions that require human judgment. This repositioning reflects the hybrid nature of governance where AI supports human decision-making without entirely removing human judgment.

Theoretically, the repositioning proposition connects with the theory of Pääkkönen et al. (2020), which compares algorithmic systems with Michel Crozier's (1964) conceptualization of bureaucratic organizations as complex socio-technical setups where inflexibility is a defining feature. The rigid rules within such setups do not eliminate human

discretion but rather redistribute it to areas where uncertainty remains. Similar dynamics occur in algorithmic systems for governance and public administration, where the operation of algorithms cannot yield actionable outcomes without subsequent human judgment. As AI becomes more integrated, human discretion shall remain crucial in managing uncertainties and ensuring responsible decision-making (Alkhatib and Bernstein, 2019; Wang et al., 2022).

Empirical studies also suggest that discretionary practices in social work remain a cooperative endeavor, emphasizing interpersonal consultation and interaction between citizens and bureaucrats rather than arbitrary choice (Petersen et al., 2020; Flügge et al., 2021). Table 1 summarizes selected cases where AI tools were integrated into bureaucratic routines in a way that supported, rather than supplanted, human discretion. These examples underscore the importance of system design, institutional norms, and human interpretation in shaping the discretionary decision-making, which remains operative and effective in AI-assisted public service delivery.

Table 1 Summary of selected examples of AI's impacts on discretion.

Case / Study	AI Application	Impact on Discretion
SALER: Algorithmic Support with Preserved Bureaucratic Discretion (Criado et al., 2020)	Implementation of SALER, an algorithm-based early warning system to detect financial irregularities in public procurement processes within the Generalitat Valenciana (GVA), Spain.	SALER is a decision support tool, not a decision-maker. Civil servants use its alerts as starting points but retain full discretion to interpret or override them. By handling routine detection, SALER preserves human judgment for complex or context-sensitive cases, ensuring decisions remain grounded in professional expertise and situational awareness.
Danish AI-supported Job Placement Services (Flügge et al., 2021)	AI components are embedded in caseworker tools to predict long-term unemployment risk, providing suggestions on program placements and interventions.	Caseworkers retained discretion in accepting or rejecting AI suggestions. AI helped save human discretion for more complex, uncertain, or ethically sensitive cases by handling simple tasks or offering information for caseworker's conversations with supervisors or clients.
Swedish Automated Social Assistance Management (Ranerup & Svensson, 2023)	Robotic Process Automation (RPA) and algorithmic systems are integrated into the case management routines for social benefit applications in two Swedish municipalities. These technologies automate routine, repetitive tasks by generating suggested decisions based on structured data.	Caseworkers exercised 'digital discretion' by navigating between automated routines and human judgment. Caseworkers retained final decision-making authority in situations requiring professional judgment, such as inconsistent application data, client-specific contexts, or discussions around self-sufficiency goals.

However, when embedding AI into governmental systems, it is critical to recognize how such technologies can introduce new risks. Firstly, AI systems can disrupt incentive structures. In Swiss public employment services, Kortner and Bonoli (2023) found that AI-generated employability scores nudged caseworkers to prioritize "easier" clients, thereby undermining equity goals by incentivizing work efficiency over need. Secondly, algorithms can create confusion or reduce trust when their inner workings are opaque. In Pennsylvania's judiciary, Pruss (2023) documents that judges often disregarded AI-

generated recidivism scores due to a lack of clarity about how the tool functioned. Thirdly, discretion may be displaced into less visible spaces, which can reduce accountability. Brayne and Christin (2021) show how legal professionals resisted algorithmic oversight through subtle practices like data obfuscation and foot-dragging, seeking to preserve autonomy in the face of managerial control. Lastly, over-reliance on AI-driven recommendations by government employees could occur and risk a devaluation of the nuanced understanding and professional judgment that come from human empathy and experiences. These examples illustrate that when algorithmic tools are integrated into existing institutional structures, they can result in practices that privilege procedural efficiency or symbolic compliance over actual fairness and public values. To address these risks, AI must be governed through transparent design, robust oversight, and sustained investments in capacity-building to ensure it augments rather than overrides professional judgment (as discussed in Section 4).

3.3.   Reshaping Accountability in AI-Assisted Urban Governance

In public administration, accountability is essential for maintaining public trust and ensuring effective governance. Data-driven and AI-assisted approaches introduce new concerns to accountability, particularly in ensuring explanation, justification, fairness, and oversight for AI-driven decisions (Busuioc, 2021; Novelli et al., 2023). These concerns can be viewed from two key angles: *algorithmic accountability*, referring to that AI systems themselves operate transparently and ethically, and *accountable AI use*, referring to how human agents, assisted by AI, maintain accountability in their decision-making processes. For the former, the inherent opacity of algorithmic processes makes it difficult to

understand and justify AI-driven decisions (Bullock, 2019; Zuiderwijk et al., 2021; Busuioc, 2021). For the latter, because interpreting algorithmic outcomes remains technically difficult, scholars have turned to governance approaches as a way to secure explanations and justifications for AI-assisted decisions (Liu et al., 2019; Zuiderwijk et al., 2021; Dwivedi et al., 2021). These governance approaches typically involve implementing external oversight, designing clear explanation criteria, establishing procedures for hearings, and enforcing consequences for non-compliance (Busuioc, 2021).

To further explore how AI reshapes accountability within bureaucratic systems, it is useful to distinguish among three types of public accountability: *political, professional,* and *participatory* (Hupe and Hill, 2007). *Political accountability* characterizes vertical relationships between street-level bureaucrats and their supervisors; *professional accountability* focuses on horizontal accountability to peers and professional associations, adhering to professional standards and norms; and *participatory accountability* centers on client-based evaluations and feedback from citizens as well as collaborative decision-making processes among citizens and public officials. Each form of accountability may necessitate a different mechanism for AI-driven oversight and control, allowing for a more nuanced approach that respects the need for both discretion and accountability for context-specific challenges.

Political Accountability

Deploying highly interactive AI applications has the potential to reinforce top-down authority from managers to street-level bureaucrats by enhancing managerial control over

frontline behaviors. In this framework, AI may facilitate data-driven oversight and evaluations of bureaucratic decisions, thereby enhancing political accountability. Officials have traditionally used data to understand and monitor patterns of rules, decisions, and behaviors to safeguard accountability and performance (Janssen et al., 2020). A compelling illustration comes from the Brazilian Environmental Military Police, where officers transitioned from face-to-face "street" policing (face-to-face and discretionary) to "screen" policing (data-driven analytics and GPS tools). This shift enabled commanders to observe and evaluate officers' actions through digital dashboards and data trails, illustrating how increased visibility into field decisions could reconfigure the oversight relationship between supervisors and frontline officers (Aviram et al., 2024).

The recent emergence of interactive AI tools may accelerate the transition from traditional "street" practices to data-driven "screen" practices. Most applications based on Large-Language Models (LLMs) can respond intelligently to plain language requests, significantly lowering the hurdle for frontline workers and their supervisors to deploy AI applications data-related tasks. In addition, AI has also demonstrated strong capabilities to organize unstructured inputs into meaningful insights (Williams et al., 2024; Gupta et al., 2025) as well as to detect abnormal patterns in behaviors or decision-making (Jassen et al., 2020; Criado et al., 2020). That being said, AI applications could help produce a clear, auditable trail of decisions and actions, making it easier for managers to understand the rationale behind street-level decisions. Such transparency is crucial for alleviating concerns about arbitrary or biased decision-making.

However, heightened monitoring introduces costs. While it enables greater top-down accountability and protects against misconduct, it can also reduce officers' trust in technology, especially if tools are perceived as instruments of control rather than support. Such perceptions may negatively affect receptivity to future AI systems (Kellogg et al., 2020; Aviram et al., 2024). Effective political accountability, therefore, must balance oversight with professional autonomy to sustain discretion and flexibility in frontline work.

Ultimately, incorporating AI applications into government structures will likely spark new forms of work relationships and positions, although they might take time to surface (Kellogg et al., 2020). These new divisions of labor might inherit characteristics from traditional government roles while adopting emerging technologies that expand the power of relationships, teams, and networks. How and whether these changes might impact the overall organizational structure and managerial relationships within government systems will remain a question as adoption increases. This dynamic shift sets the stage for Section 4.2, which advocates adaptive administrative structures for AI adoption.

Professional Accountability

Professional accountability involves adherence to professional standards and norms, ensuring that bureaucrats perform their duties competently and ethically (Hupe and Hill, 2007). At its core, it demands that agency operations are guided by specialized skills, ethical values, and a commitment to values that citizens demand (Moore, 2013). Also, Evans' (2011) critique of Lipsky's street-level bureaucracy underscores that professionalism is key for the quality of public services, as street-level bureaucrats view

themselves not merely as implementers of rules but as autonomous decision-makers who rely on deep expertise and ethical considerations to mitigate personal bias (Maynard-Moody and Musheno, 2000). In this context, AI can serve as an assistant to standardize critical processes and align goals while still allowing for professional discretion where necessary.

AI-driven recommendations, either requested by human agents or integrated into on-site applications, can generate prompt, scenario-specific suggestions, reducing variability and personal biases (Selten et al., 2023). In fields like social work, AI can help standardize aspects of decision-making, therefore enhancing procedural justice by bridging the gap between management objectives and day-to-day practice (Bullock, 2019; Bullock et al., 2020; Young et al., 2019). Moreover, when AI tools are designed collaboratively, they not only support more consistent outcomes but also foster a culture of continuous learning and professional development (Cukurova et al., 2024).

The case of two Swedish municipalities, previously discussed, offers a clear example of how AI-enabled systems can reinforce professional accountability (Ranerup & Svensson, 2023). In Mölndal, Robotic Process Automation (RPA) was used to handle routine eligibility assessments, allowing caseworkers to concentrate on client engagement; standardized e-applications and automated workflows also enhanced the consistency and reduced errors in decisions. Meanwhile, in Malmö, these tools created capacity for more frequent follow-up meetings, supporting a shift toward personalized, proactive care. Crucially, through collecting inputs from frontline caseworkers for the development and

updates of RPA, there fosters a sense of professional ownership and collaborative relationship between caseworkers and the algorithmic system. Together, these changes illustrate how AI can strengthen, rather than displace, core professional values in public service delivery.

However, risks persist. While AI could assist with tasks like data analysis or risk prediction, professional public workers may resist any technological tool perceived as undermining professional expertise or limiting the flexibility required for client-centered practice (Kellogg et al., 2020; Pruss, 2023; Stevenson & Doleac, 2024). Additionally, tensions between different management philosophies may arise. While efficiency-driven managers may prioritize rapid, data-driven decisions, frontline practitioners often emphasize the importance of client-centered, meaningful service delivery (Evans, 2011; Wang et al., 2022). These challenges underscore the need for adaptive administrative structures (as discussed in Section 4.2) and transparent human–AI collaboration (as discussed in Section 4.4). By addressing these tensions through administrative reforms for AI adoptions and clear guidelines for AI-human partnerships, public agencies can better integrate AI applications in ways that support both accountability and the capacity of professionals, reinforcing established professional standards and client-centered practices.

Participatory Accountability

While frontline bureaucrats mostly either facilitate citizens' interactions with governmental agencies (e.g., obtaining a license, paying a fee) or regulate citizens' actions (e.g., stopping speeding), with established feedback and client-based evaluations, frontline

bureaucrats can also be held accountable by citizens (Hupe and Hill, 2007). This mutually accountable relationship creates a complex scenario where participatory accountability coexists with other forms of accountability. Bureaucrats may find themselves accountable not only to their managers and colleagues but also to citizens who may also be equipped with AI tools.

Highly accessible and interactive AI tools have the potential to reshape the dynamics between bureaucrats and citizens by serving as empowerment instruments. Just as AI enhances data-processing capacities for bureaucrats, it can similarly empower citizens, enabling them to participate more actively in political life by reducing informational opacity between authorities and the public. Theoretically, AI applications can simplify the process for citizens to source, understand, and evaluate traditionally complex policy documents. As a result, citizens can become better informed about actionable goals, prerequisites, potential risks, and other relevant details of their inquiries.

For example, Larsen & Følstad (2024) illustrates how Norwegian municipal chatbot "Kommune-Kari" provides citizens with 24/7 self-service access to local government information and services. Municipal staff then analyze anonymized chatbot logs to better understand recurring pain points and refine processes. This arrangement fosters bottom-up feedback and strengthens administrative accountability. Similarly, Pislaru et al. (2024) shows how AI-based virtual assistants significantly increase citizens' comfort and trust in interacting with public administration, especially among digitally literate groups. By

reducing waiting times and clarifying bureaucratic procedures, these chatbots enhance both responsiveness and transparency, reinforcing a citizen-centric approach.

Such enhancements reflect a form of participatory accountability: empowered with AI-paraphrased responses and open communication tools, citizens not only receive more respectful and comprehensible replies but also gain improved capacity to interpret government messaging critically and provide informed feedback. In essence, the AI-enabled interaction structure allowed citizens to better scrutinize government actions while simultaneously being reassured by clearer, more empathetic responses. Furthermore, community-based organizations (CBOs), in particular, can harness such tools to identify patterns, make cross-neighborhood comparisons, and hold local agencies accountable. Thus, AI may not only improve the quality of bureaucratic responses but also enable both individuals and collectives to participate more meaningfully in oversight and governance.

The potential of AI to democratize access to information and enhance public engagement is substantial, but it also leads to challenges for both citizens and local governments. For citizens, firstly, the ease of access to large volumes of policy information risks overwhelming individuals with too much content, leading to confusion rather than clarity. Secondly, education-linked disparities in AI literacy and digital skills could exacerbate existing inequalities in who gets to participate effectively (Pislaru et al., 2024), leading to situations where those with more resources and knowledge are empowered to interact more effectively with government, while others being further marginalized. Thirdly, privacy

concerns may deter citizens from engaging, especially when it is unclear how personal data collected through AI platforms is used or protected.

On the government side, firstly, a significant challenge lies in the fragmented data-driven expertise among public officials. The skill gap is twofold: there is a disparity between individuals with little to no data knowledge and those with some level of data expertise, and even among those with data skills, proficiency can vary significantly. This uneven landscape hampers effective collaboration and impedes the ability to critically assess and integrate AI-generated insights with professional judgment. Secondly, rising expectations for responsiveness and personalization can easily outpace the actual capacity of public agencies to deliver, thereby potentially undermining public trust. Lastly, many local governments may struggle to process and respond to the influx of citizen input generated through AI-enabled systems. These challenges underscore the need for equitable AI deployment and proactive human-led measures (as discussed in Section 4) to ensure that AI-enabled citizen engagement is both inclusive and transparent, thereby strengthening overall public oversight.

3.4.   <u>Accountable Discretion: Balancing Discretionary Flexibility with Oversight</u>
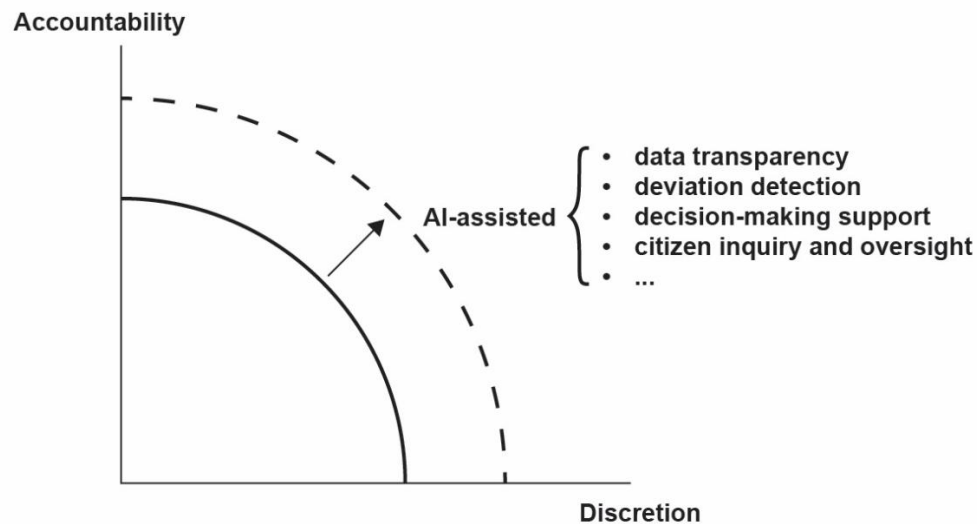

Figure 1 - With enhanced data transparency, real-time monitoring, and algorithmic decision support, the introduction of AI has the potential to shift the trade-off boundary outward, thereby enhancing both accountability and discretion. Source: Authors' own diagram.

AI can play a significant role in reshaping the dynamics between discretion and accountability by enhancing the government's internal technical capacity (see Figure 1). However, enhanced capacities across different bureaucratic levels, in turn, yield different impacts. For frontline bureaucrats, as discussed in previous sections, these enhanced capacities are likely to manifest through offloading routine tasks, aligning operational objectives, and ensuring adherence to broader regulatory and ethical frameworks. For example, a social worker handling a case involving a family with multiple socio-economic issues can use AI to analyze historical data, available assistance, and previous case notes

before finalizing potential interventions and resources. This collaborative approach ensures that experienced case workers retain their discretion in decision-making while also making sure that decisions meet operational objectives and adhere to organizational values and guidelines.

For managers, AI can significantly enhance oversight capabilities by processing extensive amounts of data in either real-time or ex-post reviews. As suggested in the previous sections, rather than reiterating traditional accountability challenges, managers now have the capacities to compare decisions against established protocols, legal standards, and ethical norms through automated detection systems that flag deviations promptly. This immediate feedback loop enables swift intervention with corrective actions when necessary.

In sum, as detailed above, AI enables a shift where routine tasks are automated and human judgment is reserved for complex decision-making. This shifted balance is maintained through discretionary flexibility and robust oversight measures, ensuring decisions remain both professional and accountable.

3.5.   <u>Acknowledging the Technical Challenges of Embedding Ethics into AI</u>

AI's potential contributions come with significant technical and normative challenges. One major challenge is how to operationalize public values, such as equity, transparency, justifiability, and administrative integrity (Moore, 2003) into rules that can be programmed and applied consistently across foundational models and their downstream applications (see Dwivedi et al., 2021; Sun and Medaglia, 2019; Wirtz et al., 2019; Bommasani et al.,

2023). Crucially, algorithmic applications in high-stakes domains must be assessed not only for fairness and transparency but also for their broader societal implications (Mittelstadt et al., 2016).

The second challenge is to ensure that AI systems are transparent, traceable, and capable of providing justifications for their decisions (Busuioc, 2021; Novelli et al., 2023). AI systems often operate as "black boxes," making it difficult for users to understand how decisions are made (Adadi and Berrada, 2018; Došilović et al., 2018; OECD, 2024); the same problem persists even with the recent reasoning models which supposedly show their working through Chain-of-Thoughts (Chen et al., 2025). Addressing this challenge requires more than a call for transparency. It demands actionable governance mechanisms, such as algorithmic impact assessments (see Reisman et al., 2018) and algorithmic documentation (see Floridi, 2020; Cath and Jansen, 2021; Goelzer, 2023), which can potentially make opaque systems legible to both users and oversight bodies. Together, these strategies aim to form a foundation for checking technical opacity and achieving the normative expectations of accountability. The following Section 4.4 elaborates on the details and caveats of such institutional and procedural responses.

4.   Guiding Principles for AI-Enhanced Governance in Urban Policy

As city governments integrate AI into public administration, it is essential to have a balanced approach to governance, which leverages AI's transformative capabilities while upholding accountability, transparency, and ethical standards. Rather than a prescriptive, step-by-step framework, this section outlines a set of guiding principles to inform policy

design and implementation at the intersection of AI and urban governance. Each principle reflects an emerging aspect of governing with AI, providing a flexible yet cohesive structure to cultivate accountable discretion, engage with citizens, and enhance public service delivery through responsible AI adoption.

4.1. Equitable AI Deployment: Ensuring Uniform Accountability in Urban Governance

Principle 1: AI should be deployed in a manner that ensures equitable enhancement of capabilities across government roles, so that all employees, irrespective of their technical background, can benefit uniformly from AI integration, thereby reinforcing accountability. Disparities in AI literacy and access, among both bureaucrats and citizens, risk entrenching existing inequalities (Agostino et al., 2022; Goelzer, 2023). For government operations, AI applications do more than simply modularize discretionary decision-making at the street level; they amplify the capacities of individual governmental employees. Yet, AI's magnifying effect is likely to be distributed unevenly. Those with stronger backgrounds in data analysis and technical skills are better positioned to benefit, while employees without formal STEM training may face steeper barriers to adoption. Such internal disparities can shift decision-making power across hierarchical lines by possibly favoring managers and central offices and risking disruptions to the existing accountability structures. Critically, these concerns become even more pressing when AI is applied in citizen-facing contexts. Frontline workers serving marginalized communities may themselves lack adequate access to AI tools or training, while working with residents who face digital exclusion and low AI literacy. This dual-layered inequality compounds governance gaps, distancing underserved

populations from both high-quality public services and meaningful opportunities for participation or oversight.

To address these challenges, public agencies must invest in comprehensive, tailored training programs and ensure equitable access to AI resources across all levels of the organization. Initiatives aimed at enhancing AI literacy and fostering a deep understanding of data interpretation and the inherent limitations of AI systems are essential for enabling every employee to effectively integrate AI insights into their decision-making processes (Allen et al., 2023; Chen et al., 2023; Williams et al., 2024). Moreover, establishing mentoring or peer-support mechanisms can help bridge skill gaps and support a uniformly accountable governance framework. Such a shift toward tech-based capacity-building is crucial for reinforcing managerial control and public oversight (Engstrom and Haim, 2023). A uniformly trained and equipped workforce will not only enhance work efficiency but also uphold rigorous accountability standards, thereby reinforcing democratic oversight and sustaining public trust in AI-enhanced urban governance.

4.2.   Adaptive Administrative Frameworks for AI Integration

Principle 2: Civil service frameworks and union agreements must be reformed to enable flexible, innovative, and adaptive administrative structures that can effectively integrate AI technologies, ensuring that public organizations remain agile and responsive in a rapidly evolving technological landscape.

Traditional civil service job classifications and strict union agreements have long provided stability and fairness in public employment. However, as AI and other digital technologies

reshape urban governance, these rigid structures can hinder the necessary flexibility and cross-functional collaboration. For example, specific job roles may not include responsibilities related to AI oversight or data analysis, preventing public officials from engaging fully with AI tools. Furthermore, collective bargaining work rules can restrict the redefinition of job roles and the incorporation of new tasks related to AI, slowing down the implementation process. To overcome these barriers, it is essential to ease job restrictions and make job classes more permeable. Approaches could involve revising job descriptions to allow more public servant latitude, including AI-related responsibilities, creating new roles focused on AI management, and negotiating with unions to allow for greater flexibility in job functions. By addressing these structural issues, city-level governments can better leverage AI's potential to enhance public administration.

Moreover, additional reforms should facilitate inter-departmental collaboration and incentivize continuous upskilling. For instance, integrating performance-based measures that reward adaptive capacity and innovative practices can encourage public officials to embrace emerging technologies. It is equally important that these structural changes are implemented in close dialogue with union representatives, ensuring that the necessary flexibility does not undermine job security or the foundational fairness of public employment (Engstrom et al., 2020). Transitional support mechanisms, such as targeted training programs and pilot projects, can also help mitigate resistance and allow for a gradual shift toward more adaptive administrative structures.

4.3. Robust Data Governance: The Backbone of Accountability in AI-Assisted Urban Governance

Principle 3: Reliable and ethically governed data is essential for ensuring accountability in AI-enhanced urban governance. Robust data management practices underpin transparent, fair, and traceable decision-making processes, thereby reinforcing public trust and supporting accountable discretion.

First, data governance must address growing concerns over privacy, surveillance, and consent. AI applications in public services often require extensive data collection, raising ethical risks when lines between service delivery and oversight become blurred. This creates concerns around whether individuals are aware that AI is being used, whether data collection is proportional to the task, and whether people can understand or contest the decisions affecting them. These issues are especially acute in contexts where digital systems expand under the justification of efficiency, potentially leading to "surveillance creep" (Eubanks, 2018). To safeguard against such outcomes, public agencies must adopt stringent privacy protections, including encryption, anonymization, and regulated access (Hacker et al., 2023). These technical safeguards are essential to preserving individual rights and maintaining public trust in the legitimacy of AI-assisted governance.

Second, the quality and structure of public sector data must be improved to prevent biased or unreliable decision-making. Poor data quality can result in significant adverse outcomes, including discrimination, political polarization, and the erosion of public trust in AI-driven processes (see Angwin et al., 2016; Simons, 2023). To ensure data is fit for AI applications, agencies must begin with comprehensive data inventories and audits, particularly when

working within fragmented legacy systems (Engstrom et al., 2020). Understanding the origin, format, and gaps in available datasets allows institutions to evaluate the relevance and reliability of inputs, reducing the risk of hidden bias or misuse. In the long run, this consistent practice of inventorying data assets will provide the evidence necessary for monitoring and accountability checks, which are essential for maintaining public trust, effective governance, and accountable behaviors (Janssen et al., 2020; Engstrom et al., 2020; Agostino et al., 2022).

Third, robust data governance requires institutional mechanisms that embed accountable oversight into day-to-day operations. This includes establishing dedicated data management teams, standardizing protocols for data cleaning and real-time monitoring, and ensuring that staff are trained to detect bias and uphold ethical standards. Particularly in time-sensitive environments such as emergency response, consistent and transparent data practices are vital for enabling responsible discretion. In addition, public agencies should also build collaborations with external stakeholders, such as academic institutions, civil organizations, and non-profit technical experts, to supplement public data infrastructure (Hawken et al., 2020). These collaborations can also facilitate knowledge exchange and capacity-building, which might be particularly relevant in response to the rapid development of AI technologies. Together, these priorities form the foundation for trustworthy and responsible AI use in city governance. Without robust data governance, even well-intentioned AI applications risk entrenching existing inequalities or introducing new forms of opacity.

4.4. Proactive Human Judgment and Institutional Mechanisms for Accountability

Principle 4: Effective human–AI collaboration requires proactive accountability mechanisms that center human oversight in AI-assisted decision-making. While AI can support data processing and analysis, human judgment must remain the final authority to mitigate algorithmic opacity, uphold ethical standards, and prevent over-reliance on automation.

The evolving integration of AI into urban governance is reshaping the traditional roles of public officials, transforming the relationship between human agents and automated systems into a dynamic, colleague-like partnership (Meijer et al., 2021; Engstrom and Haim, 2023). This partnership would require two essential components. First, public authorities must have clearly defined guidelines that establish the boundaries of AI's role. This involves ensuring that human judgment remains paramount, particularly in decisions where nuance and ethical considerations are crucial. Given AI's inherent technical opacity, ensuring that human judgment remains the final arbiter in decision-making provides a critical opportunity to build a moral compass that guides ethical, fair, and lawful conduct even amid technological complexity.

Second, beyond the role of individual judgment, there must be institutional mechanisms that enable AI systems to be reviewed, questioned, and course-corrected over time. Some notable examples include Algorithmic Impact Assessments (AIAs), standardized documentation tools, such as model cards and datasheets, and public algorithm registers, all of which exemplify institutional responses that aim to improve AI interpretability, data transparency, and expose potential risks. However, they may still risk becoming symbolic

practices if exercised alone. For instance, without regulatory backing or supportive organizational culture, AIAs often rely on voluntary cooperation from firms, which may be undercut by liability concerns and profit motives (Selbst, 2021); standardized algorithmic documentation could foster "false assurance" if audits lack independence or rigorous methodology (Goodman and Trehu, 2023); public algorithm registers are typically voluntary, often omit high-stakes use cases (like policing or fraud detection), and rarely incorporate concrete channels for citizen input or contestation (Cath and Jansen, 2021; Goelzer, 2023). Consequently, citizens may overestimate the scope of oversight or remain unsure how to challenge decisions.

Ultimately, these mechanisms are dependent on context. Their success hinges on who has access to this information and how they can act on it. Barriers such as low digital literacy, political resistance, or weak enforcement can easily negate the intended benefits. While these institutional measures may bolster accountability at the organizational level, meaningful citizen engagement, as discussed next in Section 4.5, remains essential for further ensuring AI systems serve the public interest.

4.5. Engaging Citizens in Oversight of AI-Assisted Urban Governance

Principle 5: City governments should leverage their close connection to local communities to actively engage citizens in the oversight of AI systems, fostering transparent communication, building trust, and ensuring that AI implementations align with community interests and public values.

City-level governments occupy a unique position in urban governance, given their continuous and direct engagement with local communities. This proximity advantage provides a stronger public preference for local over national AI applications, which can be harnessed to build trust (Schiff et al., 2023). By capitalizing on this trust, local governments can serve as effective mediators, not only clarifying the benefits and limitations of AI applications but also addressing some widespread concerns related to privacy breaches, biased predictions, and the impacts on human judgement (Lee, 2018; Araujo et al., 2020).

To foster participatory accountability, urban governments must develop comprehensive communication strategies that simplify complex policy details and facilitate informed public discourse. Such strategies should include hosting public forums, maintaining open feedback channels, and providing accessible information about AI systems and should be augmented by periodic surveys and focus groups to gauge public opinion. Moreover, empowering citizens with AI tools that provide data-driven insights and analysis can create an additional layer of citizen-driven oversight. This approach not only democratizes access to information but also enables community members to independently monitor, evaluate, and contribute to the oversight of governance decisions.

Early experiments underscore how local governments have already leveraged GenAI to promote participatory oversight. For instance, Boston community members used GenAI tools to summarize lengthy urban planning documents during public meetings, allowing them to engage in real-time scrutiny and informed feedback; visual GenAI tools also allowed residents without design training to generate alternative visions for their

neighborhoods and critique existing plans. More importantly, through the engagement processes, while GenAI tools have generated outputs with mistranslations, bias, and missing data, participants also actively pointed out these shortcomings and thus demonstrated a growing public capacity to interrogate AI-generated content. These practices illustrate the potential for GenAI to support citizen-driven monitoring and evaluation, though they also underscore the need for guidance, training, and safeguards to ensure equitable and safe engagement (Williams et al., 2024).

5. Conclusion

This paper has examined how the rise of AI, especially interactive and generative systems, reshapes the relationship between bureaucratic discretion and accountability in urban governance. Building on public administration theory and emerging literature on AI in public sectors, we argue that AI does not simply constrain discretion, but rather redistributes and reconfigures it across institutional levels, professional roles, and citizen interactions. Our conceptual framework clarifies how political, professional, and participatory forms of accountability are each uniquely impacted by AI deployment. These shifts expand the relationship between discretion and accountability—allowing, in many cases, both to increase simultaneously. For example, AI can empower frontline officials to exercise more informed and context-sensitive judgment, while also equipping supervisors with tools for monitoring behavior and ensuring compliance. Rather than reinforcing a zero-sum trade-off, AI introduces a new dynamic in which discretion and accountability can be mutually reinforced, though not without risks. In response, we propose four guiding principles to support responsible and adaptive AI integration in government, emphasizing

equitable deployment, adaptive administration structures, robust data management, human-led judgment, and participatory oversight. Together, these contributions offer a novel lens for understanding AI not merely as a technical tool, but as a governance project that demands new forms of institutional design and ethical responsibility. While the paper emphasizes AI's potential, it also identifies persistent risks across all three accountability forms, including managerial overreach, professional resistance, digital inequity, and implementation gaps.

However, realizing these goals is far from straightforward. As discussed in Section 3.5, integrating ethical principles directly into AI systems presents unresolved technical challenges. Moreover, at the macro-level, AI development in public sectors is likely to unfold within a fragmented and opaque supply chain, which spans private vendors, public sector IT units, and open-source contributors (Cen et al., 2023; Cobbe et al., 2023). In this context, the concentration of innovation power among a few leading technology corporations further complicates governance and intensifies risks to regulation and oversight (Hacker et al., 2023; Widder and Nafus, 2023; Narechania and Sitaraman, 2023). At the city-level, when governments treat AI adoption as a purely technical procurement rather than a policymaking endeavor, they risk ceding value-laden decisions to algorithm designers who operate beyond the reach of public scrutiny (Mulligan and Bamberger, 2019). To mitigate these risks, one of the first key measures is to establish mandatory institutional procedures to ensure that AI adoption remains justifiable, explainable, and aligned with public values (Busuioc, 2021; Novelli et al., 2023)

Moving forward, empirical research is essential to validate and refine the framework and guiding principles proposed in this paper. While most existing quantitative studies rely on survey data to examine perceptions of algorithmic decision-making (for example, Aoki, 2020; de Boer and Raaphorst, 2021; Nagtegaal, 2021; Wang et al., 2022), further work could leverage experimental designs and administrative data analysis to test correlations, track behavioral outcomes, and measure disparities in AI-assisted service delivery. In parallel, qualitative studies, including in-depth interviews and ethnographic case studies, are critical for understanding how AI transforms discretionary practices and accountability structures across departments and levels within municipal governments, which are often shaped by unquantified factors such as administrative cultures, local bureaucratic structures, and norms of citizen engagement. Such research works provide valuable insights for how the principles outlined in Section 4 translate into policy design, implementation, and civic trust-building when tested in diverse governance environments. Understanding these dynamics will be crucial for advancing more inclusive, transparent, and adaptive models of city-level AI governance.

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