Trust in government as a mediator in the relationship between AI implementation and citizen satisfaction: Evidence from UAE Policing

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Shamsah Rashid Saeed Ali Alhefaity[a] | Effendi Mohamad[b] ✉ | Mohamad Ridzuan Jamli[b] | Teruaki Ito[c] | Aisyah Larasati[d] | Nor Akramin Mohamad[b]

[a]Institute of Technology Management and Entrepreneurship, Universiti Teknikal Malaysia Melaka, Malaysia.
[b]Faculty of Industry and Manufacturing Technology and Engineering, Universiti Teknikal Malaysia Melaka, Malaysia.
[c]Faculty of Business Administration, Matsuyama University, Japan.
[d]Department of Industrial Engineering, University Negeri of Malang, Indonesia.

Abstract This study investigates the influence of Artificial Intelligence (AI) implementation on citizen satisfaction with police services in the United Arab Emirates (UAE), with a specific focus on the mediating role of trust in government. As smart policing initiatives expand under the UAE's digital governance agenda, understanding how AI technologies shape public trust and service perceptions becomes increasingly critical for sustainable public engagement. A quantitative research design was adopted using a cross-sectional survey method. Data were collected from 365 police personnel within the Abu Dhabi Police across AI-enhanced, operational, and administrative units. Structural Equation Modeling (PLS-SEM) was employed to assess both direct and indirect relationships among AI implementation, trust in government, and citizen satisfaction. Validated scales and reliability checkswere used to ensure measurement accuracy. The results demonstrate that AI implementation has a significant positive effect on citizen satisfaction ($\beta = 0.400$, $p < 0.001$) and trust in government ($\beta = 0.511$, $p < 0.001$). Trust in government, in turn, significantly influences citizen satisfaction ($\beta = 0.321$, $p < 0.001$) and mediates the relationship between AI implementation and satisfaction (indirect effect $\beta = 0.164$, $p < 0.001$). These findings support the conceptual framework grounded in Public Value Theory and Expectation-Confirmation Theory, highlighting the importance of trust as a critical mechanism through which AI influences public attitudes toward policing services. This study offers actionable guidance for policymakers and law enforcement agencies seeking to integrate AI responsibly. Emphasis should be placed on transparency, citizen-centric design, and ethical AI governance to reinforce trust and ensure positive service experiences. AI strategies must be aligned with public expectations to sustain long-term satisfaction. The study contributes to emerging literature on digital public service delivery by empirically validating the mediating role of trust in government in AI-supported law enforcement. It is among the first to explore this dynamic in the context of UAE policing, offering region-specific insights into the interplay between technology, institutional trust, and citizen satisfaction.

Keywords: artificial intelligence, citizen satisfaction, trust in government, United Arab Emirates

1. Introduction

In the era of digital governance, artificial intelligence (AI) rapidly transformed how public services are designed, delivered, and experienced, particularly in high-stakes sectors such as law enforcement (Alghafli, 2021). AI-driven technologies (including facial recognition, predictive analytics, and automated surveillance) are increasingly central to "smart policing" initiatives that promise enhanced efficiency, responsiveness, and crime prevention capabilities (McDaniel & Pease, 2021; Brayne & Christin, 2021). These tools enable law enforcement agencies to process large volumes of data in real time, facilitating proactive decision-making while streamlining public service delivery (Laufs & Borrion, 2022; Mantri, 2023). Within this technological evolution, citizen satisfaction has become a critical benchmark for assessing the effectiveness and public value of AI-supported policing services.

In the United Arab Emirates (UAE), AI adoption is a strategic national priority, reflected in initiatives such as the UAE Strategy for Artificial Intelligence 2031 and Vision 2031. These policy frameworks position the country as a global leader in AI-enabled governance, particularly in cities such as Abu Dhabi, where AI is actively embedded in policing systems (Radu, 2021; Almarzooqi, 2019). Through AI-enhanced patrols, predictive crime mapping, and automated traffic enforcement, the Abu Dhabi Police have made significant strides toward modernizing its services. However, the societal reception of such technology hinges not only on performance improvements but also on how they influence public trust and institutional legitimacy (Schilirò, 2021; Kreps et al., 2023).

Indeed, trust in the government emerges as a vital mechanism in the relationship between AI implementation and citizen satisfaction. While AI can streamline operations and improve responsiveness, its opaque algorithms and lack of explainability (often characterized as the "black box" problem) can provoke uncertainty and erode public confidence (Bagaric et al., 2022; Agrawal, 2024). Especially in surveillance-heavy environments such as policing, citizens may question the fairness, accountability, and ethical use of AI technologies unless they perceive the implementing institutions as transparent, competent, and aligned with public values (Kleizen et al., 2023; Ingrams et al., 2022). Thus, trust in the government plays a dual role: it is both an outcome of positive service delivery and a precondition for the successful adoption of AI in public administration.

The importance of institutional trust is further magnified in technologically progressive governance models such as that of the UAE. As digital systems increasingly mediate the citizen–government relationship, trust becomes central to sustaining public cooperation and satisfaction (Alsarraf et al., 2022; AlAwadhi et al., 2023). The literature underscores that trust in government fosters acceptance of new technologies, shapes public perceptions of fairness, and enhances satisfaction with public services (Li & Shang, 2023). However, research remains inconclusive regarding whether the mere implementation of AI tools translates into greater satisfaction, particularly in contexts where trust is uneven or unestablished. This theoretical ambiguity signals a critical gap: the mediating role of trust in government has not been sufficiently examined within AI-integrated policing environments, especially in the Gulf Cooperation Council (GCC) region.

Empirical investigations in Western democracies have explored AI's influence on citizen engagement, institutional performance, and service quality (Wirtz et al., 2019; Hooda et al., 2022). However, such findings cannot be easily generalized to the UAE because of its unique sociopolitical landscape and centralized governance structure. Notably, very few empirical studies in the Middle East have tested the indirect mechanisms (such as institutional trust) through which AI implementation affects public satisfaction. A recent regional review by Kulal et al. (2024) highlights the paucity of research investigating these relationships within law enforcement, a sector where the stakes of trust, ethics, and service legitimacy are particularly high.

Accordingly, this study aims to fill this important research gap by developing and empirically validating a mediation model in which trust in the government serves as a key mechanism linking AI implementation to citizen satisfaction in the context of UAE policing. By integrating public value theory (PVT) and expectation-confirmation theory (ECT), this study offers a multi theoretical lens to examine how digital governance technologies interact with psychological and institutional variables to shape citizen outcomes. The following research objectives were developed: 1) To examine the influence of AI implementation on citizen satisfaction during UAE policing. 2) To analyze the impact of trust in the government on citizen satisfaction. 3) To assess the mediating role of trust in the government in the relationship between AI implementation and citizen satisfaction. By addressing these objectives, the study contributes to both theory and practice, offering actionable insights for designing AI-enabled public services that are not only efficient but also trusted and citizen-centric.

2. Literature Review

2.1. Artificial Intelligence Implementation

Artificial intelligence (AI) has emerged as a cornerstone of contemporary public sector transformation, offering governments unprecedented capabilities to optimize service delivery, operational responsiveness, and administrative efficiency (Ahn & Chen, 2022; Chatterjee et al., 2022). Across global public administration contexts, AI tools (such as real-time surveillance systems, predictive analytics, automated traffic control, and intelligent chatbots) are being deployed to increase decision-making precision and citizen interaction (Al Shamsi & Safei, 2023; Kulal et al., 2024). In law enforcement, AI enables faster response times, proactive crime prevention, and greater transparency in service provision.

In the United Arab Emirates (UAE), the adoption of AI is not merely a technological shift but also a strategic imperative aligned with the nation's Vision 2031 and the UAE Artificial Intelligence Strategy. The Abu Dhabi Police has spearheaded AI-driven innovations in patrol automation, crime analytics, and smart surveillance to increase the quality and reliability of public safety services (Zhang et al., 2022; Qin & Li, 2024). These AI applications are designed to enhance citizen experiences by ensuring faster, more accurate, and consistent service delivery, which are key components of citizen satisfaction.

Nevertheless, the extent to which AI implementation translates into greater satisfaction is not determined by technology alone. The benefits of AI must be perceived as legitimate, fair, and aligned with societal values. Studies highlight that satisfaction outcomes are strongly influenced by whether AI systems are user friendly, transparent, and equitable in application (Liang et al., 2019; Guo, 2022). When AI tools are implemented with a citizen-centric design (ensuring access to real-time information, responsiveness, and accountability), they contribute positively to public approval and institutional image (Chatterjee et al., 2022). However, AI adoption in the public sector also introduces notable risks and ethical dilemmas. Algorithm opacity, often referred to as the "black box" phenomenon, along with data privacy concerns and potential algorithmic bias, can erode public trust, particularly in policing, where surveillance and discretionary decision-making are sensitive issues (Bagaric et al., 2022; Rudin, 2019). Without sufficient safeguards and transparency, citizens may perceive AI implementation as intrusive or unjust, undermining its intended benefits (Ingrams et al., 2022; Kleizen et al., 2023).

These concerns are especially salient in high-surveillance environments such as the UAE, where AI integration into policing must balance innovation with ethical governance. The UAE Strategy for Artificial Intelligence 2031 acknowledges this need, emphasizing that public trust, fairness, and human oversight are essential to legitimizing AI deployment in public institutions (Mogielnicki, 2023; Al-Shamsi & Ahmad, 2024). Despite significant progress in AI operationalization, gaps remain in understanding the mechanisms through which AI influences citizen attitudes, particularly whether its impact on satisfaction is mediated by institutional trust. Thus, this study posits that AI implementation can significantly increase citizen satisfaction with policing services. However, it also recognizes that this effect may not be direct; rather, it is likely shaped by how AI implementation affects trust in government, which in turn drives citizen satisfaction. This nuanced relationship forms the basis for the following hypothesis:

H1: AI implementation significantly affects citizen satisfaction.

2.2. Trust in the government

Trust in the government refers to the belief that public institutions act fairly, competently, and in the best interest of society (OECD, 2013; Kumagai & Ilorio, 2020). In the context of digital public services), particularly those involving artificial intelligence (AI) (this trust becomes indispensable. The absence of face-to-face interactions in AI-enabled service environments increases the salience of perceived institutional integrity, accountability, and technological competence (Chen et al., 2023; Fjaeran & Aven, 2021). As governments introduce increasingly complex and opaque technologies into public service delivery, trust serves as a stabilizing force that shapes public engagement, satisfaction, and cooperation.

Trust in the government is shaped by multiple factors, including perceptions of transparency, responsiveness, ethical governance, and the alignment of policies with societal values (Alzahrani et al., 2017; Hooda et al., 2022). In AI-governed settings, this trust also reflects citizen confidence in the government's ability to responsibly manage data, mitigate bias, and ensure fairness in algorithmic decision-making (Porumbescu, 2016; Ingrams et al., 2022). When citizens perceive digital initiatives as consistent with democratic values and personal safety, their trust in public institutions increases, ultimately increasing their satisfaction with government services (Alsarraf et al., 2022; Li & Shang, 2023).

In the UAE, where AI is rapidly being institutionalized within governance frameworks, particularly in law enforcement, trust in the government has become a core requirement for successful public sector transformation. Citizens are more likely to express satisfaction with policing services when they believe that the government is competent and ethical in deploying technologies such as predictive analytics and smart surveillance systems (AlAwadhi et al., 2023; Qin & Li, 2024). Moreover, higher levels of trust are associated with greater receptiveness to AI tools, fewer concerns about data misuse, and more positive evaluations of service quality and responsiveness (Chan et al., 2023). Accordingly, trust in the government is not only a background condition for digital adoption but also a decisive variable in shaping how citizens interpret and respond to AI-driven public services. On the basis of these insights, the following hypothesis is proposed.

H2: Trust in the government significantly affects citizen satisfaction.

2.3. The Mediating Role of Trust in the Government between AI Implementation and Citizen Satisfaction

Beyond its direct effect on satisfaction, trust in the government may function as a mediating mechanism through which technological innovations, such as AI implementation, influence citizens' overall evaluations of public services. Prior studies have argued that the success of technology-driven initiatives in the public sector is contingent not only on technical performance but also to the degree to which they inspire public confidence and institutional trust (Kamarudin et al., 2021; Amosun et al., 2022). A growing body of literature affirms this mediating function. For example, Alkraiji and Ameen (2022) and Alsarraf et al. (2022) reported that trust in government mediates the relationship between technology adoption and user satisfaction, particularly in digital government environments. Similarly, research by Abdulkareem et al. (2022) indicates that perceptions of institutional competence and responsiveness increase e-participation, whereas Santa et al. (2019) and Kim et al. (2022) emphasize that sustained trust is critical for maximizing the impact of AI and other smart technologies in governance.

Empirical evidence shows that when citizens believe that the government is using AI tools ethically, transparently, and in a way that reflects public values, they are more likely to feel satisfied with the services delivered (Nawafleh, 2020). Conversely, low trust can undermine satisfaction, regardless of efficiency gains, due to concerns about surveillance, discrimination, and algorithmic opacity (Porumbescu et al., 2021). In the context of Abu Dhabi Police, AI implementation holds significant potential for improving service delivery and operational effectiveness. However, these technical gains must be accompanied by high levels of citizen trust for satisfaction to be fully realized. In this context, trust operates as a psychological and institutional bridge between technological innovation and citizen perception. Therefore, this study proposes that the relationship between AI implementation and citizen satisfaction is significantly mediated by trust in the government. The following hypotheses are thus advanced:

H3: AI implementation significantly affects trust in the government.

H4: Trust in the government significantly mediates the relationship between AI implementation and citizen satisfaction.

2.4. Citizen Satisfaction

Citizen satisfaction serves as a pivotal metric for evaluating the legitimacy, performance, and public value of government services. In public administration, it is broadly defined as the extent to which citizens' expectations regarding service quality, responsiveness, and fairness are met or exceeded (Mosimanegape, 2020). Satisfaction, however, is not solely rooted in service functionality; it encompasses both cognitive judgments and emotional responses to government performance, shaped by how citizens perceive their interactions with public institutions (Bastiaansen, 2019; Chan et al., 2021).

In the context of digital governance and AI-enhanced public services, citizen satisfaction takes on greater complexity. It reflects not only the usability, efficiency, and reliability of services but also broader sentiments of inclusion, accountability, and procedural justice (Kumagai & Ilorio, 2020; Alkraiji & Ameen, 2022). Particularly in technologically advanced environments such as the UAE, where AI is increasingly embedded in governance systems, satisfaction functions as a measure of both digital trust and systemic equity. Citizens are more likely to feel satisfied when AI-enabled services align with their values, demonstrate transparency, and uphold ethical standards in decision-making.

Within the policing sector, citizen satisfaction becomes an even more multidimensional construct. It is influenced by tangible aspects such as speed of service, crime response rates, and access to law enforcement, as well as intangible factors such as perceptions of fairness, safety, and respect for civil liberties (Merenda et al., 2021). AI technologies, such as predictive crime mapping, automated reporting, and real-time surveillance, have the potential to enhance these outcomes by improving timeliness and operational effectiveness (Chatterjee et al., 2022; Radwan et al., 2023). However, satisfaction is not guaranteed by technological advancement alone. If AI systems are perceived as intrusive, biased, or lacking transparency, they may lead to public disillusionment and diminished satisfaction, despite their efficiency gains (Bagaric et al., 2022; Song et al., 2022).

The link between citizen satisfaction and trust in government is well established in literature. Trust functions both as a driver and a consequence of satisfaction: when citizens believe that public institutions act competently and in good faith, they are more likely to interpret services positively and remain engaged with government initiatives (Garritzmann et al., 2023; Li & Shang, 2023). Conversely, dissatisfaction (particularly in AI-governed contexts) can foster skepticism, resistance, and a breakdown in citizen–state relations. This is especially relevant in the UAE, where AI integration is central to national development and where satisfaction metrics are closely tied to government performance targets (UAE Government, 2023). Therefore, in the context of AI-supported policing, citizen satisfaction should be conceptualized as a multifaceted outcome shaped not only by the technical performance of digital systems but also by institutional trust, ethical integrity, and emotional reassurance. For public authorities such as the Abu Dhabi Police, optimizing satisfaction is not merely a question of implementing smart technologies but of fostering sustainable, trust-based relationships with the community. Satisfaction, in this regard, is both the end goal of AI adoption and a meaningful gauge of public confidence in government innovation.

2.5. Underpinning Theories

This study draws on two complementary theories (public value theory (PVT) and expectation-confirmation theory (ECT)) to explain how AI implementation influences citizen satisfaction directly through the mediating role of trust in government. PVT emphasizes that public institutions generate value not only through performance but also through legitimacy, transparency, and fairness (Moore, 1995). In AI-enabled policing, this means that technological tools must align with societal expectations and ethical standards. When citizens perceive AI systems (such as predictive analytics or surveillance) as being used responsibly and for public good, their trust in government is strengthened, which in turn enhances their satisfaction with public services. ECT offers a psychological perspective, suggesting that citizen satisfaction is shaped by the gap between expected and actual service experiences (Oliver, 1980; Bhattacherjee, 2001). In smart policing, if AI-enabled services meet or exceed expectations for responsiveness, fairness, and efficiency, satisfaction increases. Conversely, unmet expectations may trigger dissatisfaction or mistrust. Together, these theories explain how AI can drive satisfaction not only through functional benefits but also by influencing trust. The PVT highlights institutional legitimacy, whereas the ECT explains experiential perceptions, making trust in the government a critical link between AI implementation and citizen satisfaction. In the UAE's rapidly evolving digital governance landscape, this integrated framework provides a timely and contextually relevant foundation for evaluating the public acceptance of AI in policing.

2.6. Research Model

Figure 1 presents the conceptual framework developed for this study, illustrating the hypothesized relationships among three core constructs: AI implementation, trust in government, and citizen satisfaction. The model is grounded in public value theory (PVT) and expectation-confirmation theory (ECT), which together provide a multi theoretical lens to examine how digital transformation in law enforcement influences citizen outcomes in the UAE. The proposed framework positions AI implementation as the primary driver of institutional modernization, enabling improvements in service delivery, responsiveness, and operational transparency. However, rather than assuming a purely direct link to satisfaction, the model introduces trust in the government as a mediating variable. This reflects the premise that the public's evaluation of AI-enabled

services is significantly shaped by their confidence in the government's ethical use, competence, and accountability in deploying such technologies.
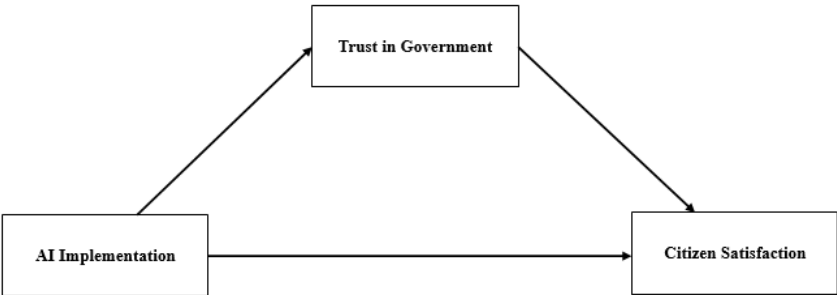

Figure 1 Research Framework.

3. Methodology

This study employed a quantitative research design with a cross-sectional survey approach to empirically examine the relationships among AI implementation, trust in government, and citizen satisfaction within the context of the Abu Dhabi Police. The objective was to test both the direct effects of AI implementation on citizen satisfaction and the indirect effect mediated by trust in government. Given the study's focus on AI-integrated public service delivery in law enforcement, the target population included police officers and administrative personnel actively involved in or impacted by AI-supported services. These individuals were selected based on their first-hand exposure to AI applications in daily operations (such as predictive surveillance, automated reporting, and digital traffic control) and their capacity to provide meaningful insights into institutional trust and satisfaction. The population was drawn from the Abu Dhabi Police, which employs over 35,000 staff members across various technical, operational, and administrative divisions (Alkaabi et al., 2024). Using Krejcie and Morgan's (1970) sample size determination method, a minimum of 380 responses were required for a population of this size at the 95% confidence level. To account for potential nonresponses and ensure adequate power for structural equation modeling, the final sample size was increased to 500 respondents. A purposive sampling technique was adopted to ensure representation from key units most directly exposed to AI: (1) AI-enhanced units, (2) operational units, and (3) administrative service departments. This targeted strategy ensured the inclusion of knowledgeable participants whose roles intersected with AI technologies in policing.

The data collection instrument was a structured, self-administered questionnaire consisting of 30 items divided into four main sections: demographic data, AI implementation, trust in government, and citizen satisfaction. The items measuring AI implementation (8 items) were adapted from Chatterjee et al. (2022), Li et al. (2017), and Liang et al. (2019), whereas trust in government (5 items) was based on validated scales from Radwan et al. (2023), and citizen satisfaction (7 items) was adapted from Chatterjee (2019), Chohan et al. (2021), and Zuiderwijk et al. (2021). All the items were measured via a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), a commonly accepted metric in the public sector and technology adoption research (Sekaran & Bougie, 2016; Taherdoost, 2019). The questionnaire underwent a multistep validation process to ensure clarity and reliability. Expert reviews were conducted to confirm content validity, followed by a pilot test involving 30 officers to assess clarity and coherence. Only items with acceptable reliability scores were retained. The final instrument demonstrated high internal consistency, as confirmed through Cronbach's alpha and composite reliability (CR) metrics during analysis.

Data was collected electronically via Abu Dhabi Police's internal communication infrastructure, including secure email and encrypted messaging channels. Participation was voluntary, and an introductory statement ensured confidentiality and compliance with ethical research standards. A four-week window was provided for responses, during which periodic reminders were issued to increase response rates. To analyze the data, the study employed partial least squares structural equation modeling (PLS-SEM) via SmartPLS version 3.3.9. PLS-SEM was chosen for its effectiveness in handling complex mediation models, suitability for predictive research, and flexibility with small to medium sample sizes (Hair et al., 2020). The analysis followed a two-step approach. First, the measurement model was assessed to evaluate construct reliability, convergent validity (via AVE), and discriminant validity (using Fornell–Larcker and HTMT criteria). Second, the structural model was tested to examine path coefficients and the mediating effect of the dependent variable. To assess the mediating effect of trust in government, a bootstrapping technique with 5,000 resamples was conducted to test the significance of the indirect effects. Specifically, the mediation analysis tested whether trust in the government significantly affects the influence of AI implementation on citizen satisfaction. Following Baron and Kenny's (1986) and Hair et al. (2020) guidelines, both the direct path (AI → Citizen Satisfaction) and the indirect path (AI → Trust → Satisfaction) were examined for statistical significance. A significant indirect effect, coupled with a reduction in the direct effect, was interpreted as evidence of partial or full mediation. This comprehensive methodology ensured that the study could produce statistically robust and contextually relevant insights into how AI-driven transformation in policing affects citizen satisfaction through the lens of public trust. The results from this

approach contribute meaningfully to both academic understanding and practical policy design in the context of AI adoption in law enforcement services within the UAE.

4. Results

Data collection for this study involved the distribution of 500 structured questionnaires to personnel within the Abu Dhabi Police, which targeted individuals across three key divisions: AI-enhanced units, operational departments, and administrative/support services. Among the distributed questionnaires, 388 responses were received, yielding a response rate of 77.6%. After the initial screening, 23 responses were excluded because of incomplete or missing data, resulting in 365 usable questionnaires for the final statistical analysis.

Importantly, normality testing was not performed, as the use of partial least squares structural equation modeling (PLS-SEM) via SmartPLS does not require data to meet the assumption of a normal distribution (Hair et al., 2022). The survey administration period spanned from early January to the end of May 2024, during which continuous monitoring and validation procedures were applied to detect and minimize potential data entry errors or inconsistencies across all measurement constructs.

4.1. Demographics of the Respondents

The demographic characteristics of the respondents are presented in Table 1, which illustrates a diverse and representative sample from the Abu Dhabi Police. The majority of participants were male (67.9%), which aligns with the broader demographic composition of the police workforce. In terms of age distribution, the largest group fell within the 35–44 age range (50.4%), indicating a respondent pool with substantial professional maturity and experience. Educational attainment among participants was notably high, with 85.8% holding a bachelor's degree and an additional 11.5% possessing postgraduate qualifications (6.6% master's degrees and 4.9% doctoral degrees). This suggests a well-informed sample capable of offering critical perspectives on AI implementation and public service quality. The respondents represented a broad range of departments, with the majority working in traffic (35.1%) and patrol units (32.6%), followed by investigations (18.1%). These divisions are central to public-facing operations, providing valuable insights into citizen interaction and service delivery dynamics. A smaller proportion was drawn from special operations, administrative roles, and other units, ensuring comprehensive departmental coverage. In terms of service tenure, most respondents had between 7 and 10 years of experience (40%), further reinforcing the sample's operational depth and familiarity with institutional processes. With respect to technology usage, an overwhelming 83% reported using AI-driven platforms daily, underscoring the widespread integration of AI into routine police operations and highlighting the empirical relevance of the study's focus. Collectively, the demographic composition of the sample supports the validity and generalizability of the research findings. The respondents' extensive service backgrounds, educational qualifications, and routine engagement with AI systems provide a reliable foundation for analyzing the role of AI in shaping trust in government and citizen satisfaction within the context of UAE policing.

Table 1 Respondents' profiles.

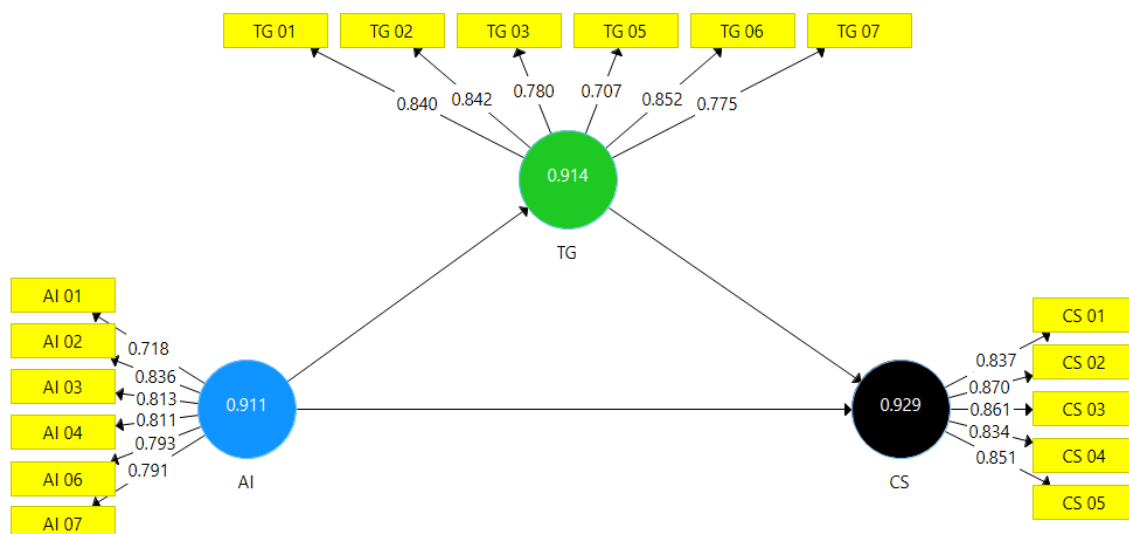| Characteristic		Frequency	Valid Percent
Gender	Male	248	67.9
	Female	117	32.1
Age group (year)	Under 25	6	1.6
	25–34	120	32.9
	35–44	184	50.4
	45–54	55	15.1
Years of Service	Less than 1 year	3	0.8
	1–3 years	62	17.0
	4–6 years	85	23.3
	7–10 years	146	40.0
	More than 10 years	69	18.9
Level of Education	Diploma	10	2.7
	Bachelor's degree	313	85.8
	Master's degree	24	6.6
	PhD Degree	18	4.9
Department/Division	Patrol	119	32.6
	Traffic	128	35.1
	Investigations	66	18.1
	Special Operations	15	4.1
	Administration	14	3.8
	Others	23	6.3
AI-Driven Platform Usage	Daily	303	83.0
	Weekly	62	17.0

4.2. The Measurement Model

The evaluation of the measurement model (also referred to as the outer model) focused on establishing the reliability and validity of the constructs through three key indicators: factor loadings, composite reliability (CR), and average variance extracted (AVE). This assessment was conducted following the methodological recommendations of Hair et al. (2022) to ensure the robustness of the reflective measurement model. To assess indicator reliability, outer loading values were examined. According to the accepted thresholds, items with loadings of 0.708 or higher were considered strong and retained. Items with loadings below 0.4 were eliminated because of insufficient contribution to the underlying construct, whereas those with loadings between 0.4 and 0.708 were evaluated for retention based on their theoretical contribution and impact on CR and AVE. As shown in Table 2 and Figure 2, most indicators met the required threshold. Items with suboptimal loadings (such as AI05, AI08, and TG04) were removed to enhance model clarity and reliability.

Table 2 Results of the Measurement Model.

Constructs	Items	Loading	AVE	Composite Reliability
AI	AI 01	0.718	0.631	0.911
	AI 02	0.836		
	AI 03	0.813		
	AI 04	0.811		
	AI 05	0.542*		
	AI 06	0.793		
	AI 07	0.791		
	AI 08	0.401*		
TG	TG 01	0.840	0.641	0.914
	TG 02	0.842		
	TG 03	0.780		
	TG04	0.511*		
	TG 05	0.707		
	TG 06	0.852		
	TG 07	0.775		
CS	CS 01	0.837	0.724	0.929
	CS 02	0.870		
	CS 03	0.861		
	CS 04	0.834		
	CS 05	0.851		

Notes: AI= AI implementation, TG= trust in government, CS= citizen satisfaction.
*Items were deleted because of poor loading.

Figure 2 Measurement Model.

After refinement, six items remained for AI implementation, six for trust in government, and five for citizen satisfaction. All the constructs demonstrated strong composite reliability (CR > 0.70) and acceptable Cronbach's alpha values, confirming their internal consistency. Additionally, the AVE values ranged from 0.631 to 0.724, exceeding the 0.50 minimum and establishing convergent validity.

Discriminant validity was evaluated via the Fornell–Larcker criterion, where the square root of each construct's AVE was greater than its correlations with other constructs. As presented in Table 3, this confirms that each construct was conceptually and statistically distinct from the others in the model.

Table 3 Discriminant validity.

	AI implementation	Trust in Government	Citizen Satisfaction
AI implementation	0.795		
Trust in Government	0.511	0.801	
Citizen Satisfaction	0.563	0.525	0.851

Together, these results affirm that the measurement model demonstrates acceptable reliability, convergent validity, and discriminant validity, providing a strong foundation for subsequent structural model testing. To assess discriminant validity, the Fornell–Larcker criterion was applied by comparing the square root of the AVE for each construct against its correlations with other constructs. As presented in Table 3, the diagonal values (representing the square root of the AVE) were all greater than the corresponding off-diagonal correlation values. Specifically, the square roots of the AVE for AI implementation (0.795), trust in government (0.801), and citizen satisfaction (0.851) all exceeded their respective inter construct correlations. These findings confirm that each construct is empirically distinct from the others, thus establishing adequate discriminant validity in accordance with the standards proposed by Hair et al. (2020) and Fornell and Larcker (1981).

In summary, the results presented in Tables 2 and 3 confirm that the measurement model has strong reliability, convergent validity, and discriminant validity. These findings provide robust empirical support for the conceptual framework linking AI implementation, trust in government, and citizen satisfaction within the context of AI-enabled policing services in the UAE.

4.3. Evaluation of the Structural

Following the assessment of the measurement model, the structural model (also referred to as the inner model) was evaluated to test the hypothesized relationships among the constructs. The analysis examined path coefficients and mediation analysis via partial least squares structural equation modeling (PLS-SEM) with SmartPLS 3.3.9. A bootstrapping procedure with 5,000 resamples was conducted to determine the statistical significance of the hypothesized paths.

4.3.1. Assessing the Predictive Power of the Research Model

To test the proposed hypotheses, path coefficients were calculated to evaluate the strength and direction of the relationships between the constructs within the structural model. The significance of each path was determined by bootstrapping with 5,000 resamples, and both t values and p values were assessed to determine statistical relevance. As presented in Table 4 and Figure 3, all the hypothesized relationships were found to be statistically significant at $p < 0.001$, confirming the robustness of the proposed model.

Table 4 Structural path coefficient results.

Hypothesis	Relationship	Std. Beta	Std. Error	T value	P value
H1	AI –> CS	0.400	0.059	6.815	0.000
H2	AI –> TG	0.511	0.058	8.849	0.000
H3	TG –> CS	0.321	0.065	4.916	0.000

Notes: Significance at P= <0.01. AI= AI implementation, TG= trust in the government, CS= citizen satisfaction.

The analysis reveals that AI implementation has a strong positive effect on citizen satisfaction (β = 0.400, t = 6.815, p = 0.000), supporting H1. This finding indicates that the integration of AI technologies in policing significantly enhances public satisfaction with service quality, efficiency, and responsiveness. Furthermore, AI implementation significantly influences trust in government (β = 0.511, t = 8.849, p = 0.000), validating H2. This suggests that citizens are more likely to trust public institutions when AI is deployed transparently and effectively within law enforcement services. Finally, the model confirms that trust in government significantly contributes to citizen satisfaction (β = 0.321, t = 4.916, p = 0.000), confirming H3. This finding supports the theoretical argument that citizens' confidence in governmental integrity, fairness, and competence plays a central role in shaping their satisfaction with public services. Overall, the results underscore that both technological implementation and institutional trust are key drivers of citizen satisfaction in the context of AI-enabled public service delivery.

4.3.2. Indirect Effect (Mediation of Trust in Government)

To assess the mediating role of trust in government in the relationship between AI implementation and citizen satisfaction, an indirect effects analysis was conducted via the bootstrapping method with 5,000 subsamples. The mediation hypothesis (H4) posits that AI influences satisfaction not only directly but also indirectly through its impact on trust in government. As shown in Table 5, the indirect effect of AI implementation → Trust in Government → Citizen Satisfaction was

found to be statistically significant (β = 0.164, t = 3.723, p < 0.001). This finding indicates that trust in the government partially mediates the effect of AI implementation on citizen satisfaction. In other words, while AI directly enhances satisfaction, it also exerts additional influence indirectly by strengthening citizens' trust in government institutions.
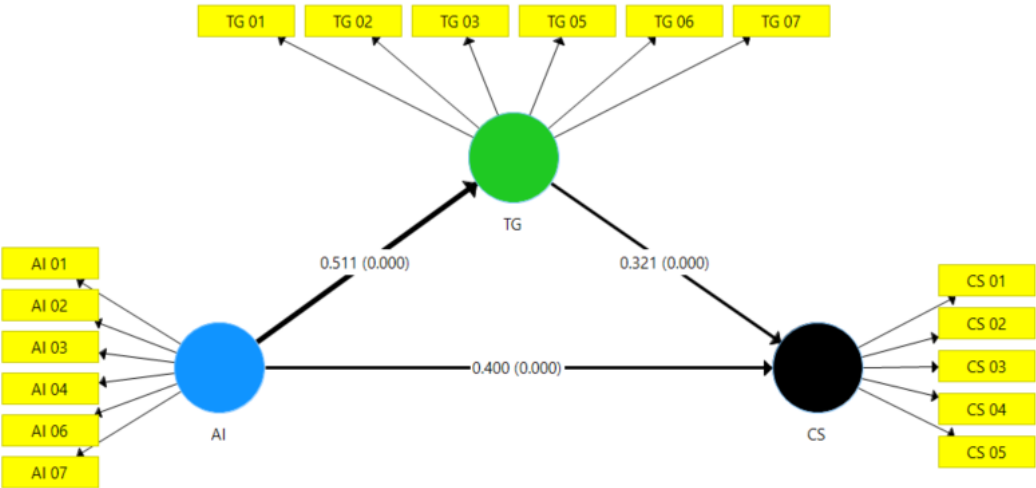

Figure 3 Structural Model.

Table 5 Mediation Effect of Trust in Government.

Hypothesis	Relationship	Std. Beta	Std. Error	T value	P value
H4	AI → TG → CS	0.164	0.044	3.723	0.000

Note: Significant at P= <0.01. AI= AI implementation, TG= trust in government, CS= citizen satisfaction.

These findings support H4 and reinforce the importance of institutional trust as a psychological mechanism that enables the successful adoption of AI in public service settings. When citizens perceive AI tools as fair, transparent, and effective (particularly in law enforcement), they are more likely to trust governing bodies, which in turn amplifies their overall satisfaction with public services. This result further validates the partial mediation model, as both the direct (AI → CS) and indirect (AI → TG → CS) paths are significant. This highlights that building institutional trust is not merely a complementary goal but also a strategic necessity for maximizing the societal value of AI-driven public innovations, particularly within sensitive domains such as policing.

5. Discussion

The findings of this study offer compelling empirical evidence for the significant role of AI implementation in shaping citizen satisfaction within Abu Dhabi's policing sector. AI technologies (such as predictive analytics, real-time surveillance, and automated service platforms) were found to significantly enhance public service delivery by improving efficiency, accuracy, and responsiveness. This aligns with previous studies that highlight AI's capacity to reduce operational delays, promote transparency, and increase citizen confidence in public services (Zhang et al., 2022; Chatterjee et al., 2022; Kulal et al., 2024). Notably, the analysis confirmed that trust in the government plays a central mediating role in the relationship between AI implementation and citizen satisfaction. This result demonstrates that the successful deployment of AI depends not only on technical excellence but also on how citizens perceive institutional integrity, ethical behavior, and transparency. The presence of trust amplifies the positive effects of AI, validating prior research that positions public trust as a crucial enabler of satisfaction in digital governance (Alzahrani et al., 2018). Furthermore, citizen satisfaction is significantly influenced by perceptions of public service quality, including fairness, accessibility, and reliability, all of which are enhanced through responsible AI deployment. These findings affirm Expectation-Confirmation Theory (ECT), which posits that satisfaction is determined by the degree to which public services meet or exceed expectations (He & Ma, 2021). Citizens who perceive that services are not only fast and responsive but also fair and consistent are more likely to report higher satisfaction levels. This interaction is particularly important in policing, where public perceptions of justice, ethical conduct, and data privacy are paramount (McDaniel & Pease, 2021; Bagaric et al., 2022).

Theoretically, this research contributes to the advancement of public value theory (PVT) and expectation-confirmation theory (ECT) by validating their applicability in AI-integrated law enforcement contexts. Through PVT, studies underscore that AI technologies create public value only when they are aligned with citizen expectations for transparency, equity, and institutional legitimacy (Bryson et al., 2014; Torfing et al., 2021). By demonstrating that trust in government significantly mediates AI's effect on satisfaction, this study enriches current models that often overlook the relational dimensions between technology and citizen perceptions. Simultaneously, the study reinforces ECT by showing that satisfaction with AI-driven policing services is strongly influenced by how well these services align with prior expectations regarding service delivery and

ethical standards. This dual-theoretical lens enhances our understanding of how technological, institutional, and perceptual factors jointly shape citizen satisfaction, particularly in smart governance ecosystems such as the UAE.

From a practical standpoint, the findings offer several actionable insights for public administrators, law enforcement leaders, and AI technology developers: for policymakers, strategic AI implementation must be accompanied by trust-building initiatives, including transparency protocols, ethical oversight, and citizen feedback mechanisms. Trust cannot be assumed; it must be actively cultivated through continuous engagement and accountability. For law enforcement agencies, AI systems should not only aim to enhance performance metrics but also reinforce legitimacy. Departments such as Abu Dhabi Police should prioritize explainable AI models, transparent communication strategies, and officer training in ethical AI use to foster public confidence. For AI developers and technologists, system design must incorporate principles of ethical AI, ensuring that tools are inclusive, fair, and understandable to nontechnical stakeholders. The development of explainable, user-friendly AI interfaces that respect privacy and fairness can increase citizen trust and engagement. These implications are particularly salient for the UAE, where AI integration is central to Vision 2031. As the government pursues digital transformation, these findings highlight the importance of aligning innovation with public values, ethical standards, and institutional trust to achieve long-term policy success.

This research is especially relevant to the UAE's strategic goal of becoming a global leader in AI-powered governance and public security. The insights underscore that citizen satisfaction (one of the pillars of UAE Vision 2031) is not merely a function of technological innovation but also of trust, inclusion, and transparent governance. The UAE's smart policing initiatives must, therefore, emphasize not only operational advancements but also public trustworthiness, equity, and responsiveness to sustain high satisfaction levels in an increasingly digital civic environment. These results are consistent with recent global and regional studies (e.g., Santa et al., 2019; Porumbescu et al., 2022; Almesafri & Habes, 2022) that stress the need to go beyond performance-based metrics when evaluating digital governance success. While prior research has emphasized efficiency and accessibility, this study uniquely highlights the psychological and institutional dimensions (trust, expectation alignment, and perceived fairness) as critical mediators of satisfaction in AI-driven service models.

6. Conclusions

Despite offering valuable empirical insights into the relationships among AI implementation, trust in government, and citizen satisfaction in the context of Abu Dhabi policing, this study is not without its limitations. First, the use of a cross-sectional design means that the data were collected at a single point in time, which limits the ability to infer causal relationships. As public trust and satisfaction may evolve alongside changes in AI technology and service delivery mechanisms, future studies employing longitudinal research designs would be better positioned to observe these dynamics over time. Second, the study relied on self-reported data collected through structured questionnaires, which may introduce potential biases such as social desirability bias or common method variance. While steps were taken to ensure the validity and reliability of the instrument, future research could benefit from incorporating multiple data sources, including objective system performance metrics, administrative data, or citizen complaint records, to triangulate the findings. Third, the study sample was drawn exclusively from Abu Dhabi Police employees, specifically those working in AI-enhanced, operational, and administrative units. While these participants are well positioned to provide insights into AI implementation and institutional performance, the absence of citizen perspectives represents a critical limitation. As the primary beneficiaries of police services, citizens' views on service quality, fairness, and digital trust are essential for a more holistic understanding of the impact of AI. Future studies should therefore incorporate external stakeholders, especially the public, to validate and enrich the findings.

Moreover, the study was geographically limited to a single emirate (Abu Dhabi) despite the broader relevance of AI integration in policing across the UAE and the wider Gulf region. Given variations in technological maturity, governance models, and institutional readiness, cross-emirating or cross-country comparisons within the Gulf Cooperation Council (GCC) would enhance the generalizability of findings and provide context-specific insights. Additionally, the current study focused on three main constructs: AI implementation, trust in government, and citizen satisfaction. While these are central to the research objectives, other important variables (such as data privacy concerns, algorithmic transparency, digital literacy, and perceived fairness) were not included. These factors could significantly shape how AI systems are perceived and should be considered in future conceptual models.

In light of these limitations, several directions are recommended for future research. Scholars should consider adopting longitudinal designs to capture how trust and satisfaction evolve as AI adoption deepens within the public sector. The inclusion of both internal stakeholders (such as public servants) and external users (such as citizens) would provide a more balanced and comprehensive understanding of the societal impact of AI. Broadening the geographical scope to include multiple emirates or other GCC countries would allow for regional comparisons and better contextualization of findings. Furthermore, expanding the model to include mediating and moderating variables (such as perceived ethical use of AI, transparency, and public engagement mechanisms) would yield more robust and nuanced insights. Finally, there is a need to empirically assess the effectiveness of AI governance frameworks. Understanding how institutional transparency, accountability, and participatory design affect citizen trust could guide the development of more ethical and inclusive AI policies. Combining qualitative insights with quantitative measures or integrating subjective perceptions with objective usage data would also

enhance the methodological rigor of future studies. By addressing these areas, future research can contribute more effectively to building citizen-centric, transparent, and ethically grounded AI-driven public services in the UAE and beyond.

Ethical considerations

This study was conducted in accordance with internationally recognised ethical standards for research involving human participants. Prior approval to administer the survey was granted by the Abu Dhabi Police, and informed consent was obtained from all respondents before data collection. Participation was entirely voluntary, with the option to withdraw at any stage without consequence. To ensure participant protection, strict measures were taken to preserve confidentiality and anonymity; no personally identifiable information was recorded, and all data were securely stored and used exclusively for academic purposes. In addition, the research adhered to the ethical principles of Universiti Teknikal Malaysia Melaka (UTeM) and received formal approval from the university's institutional ethics committee.

Conflict of interest

The authors declare that they have no conflicts of interest.

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