

Perceptions of the Impact of Advanced Technological Tools on Crime Investigations in Abu Dhabi, UAE

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Received: Sep. 30, 2025 Accepted: Jan. 30, 2026 Published: Feb. 12, 2026

doi:10.5296/ijssr.v13i3.23577 URL: <https://doi.org/10.5296/ijssr.v13i3.23577>

Abstract

This study investigates police officers' perceptions of advanced technological tools in crime investigations within Abu Dhabi, United Arab Emirates. Drawing on a sample of 375 officers selected through simple random sampling, the research examines five core technologies: crime mapping, facial recognition, car-mounted cameras, body-worn cameras, and license plate readers. Descriptive statistical analysis was employed to evaluate perceptions across dimensions of effectiveness, challenges, and impact on investigative outcomes. The findings reveal generally positive attitudes toward technology adoption, with facial recognition, body-worn cameras, and car-mounted cameras perceived most favourably for their contributions to accountability, transparency, and investigative accuracy. Crime mapping and license plate readers were also valued, particularly for hotspot identification and traffic enforcement, though respondents highlighted challenges related to data accuracy, training adequacy, false positives, and privacy concerns. Overall, the results underscore the importance of organizational capacity, technical support, and ethical safeguards in ensuring that technological innovation enhances policing effectiveness. The study contributes to the discourse on law enforcement modernization in the UAE by providing empirical evidence that can inform policy, guide resource allocation, and strengthen the integration of technology into investigative practice.

Keywords: crime investigations, technology adoption, facial recognition, car-mounted cameras, body-worn cameras, license plate readers, police perceptions

1. Introduction

Technological innovation has become a cornerstone of modern policing, reshaping investigative practices and enabling law enforcement agencies to enhance efficiency, accuracy, and accountability. Proactive strategies and technology-assisted crime prevention methods are increasingly recognized as essential in addressing the growing complexity of criminal activities. Beyond conventional tactics, advanced tools provide new perspectives and innovations that strengthen investigative capacity and public safety (Wienroth, 2020).

Globally, police departments categorize crimes by type, magnitude, and frequency, employing criminal analysts with interdisciplinary expertise and IT skills to identify patterns and relationships (Hardyns et al., 2018; Jiang et al., 2019). Ideally, law enforcement agencies would fully integrate advanced technologies to ensure effective crime detection and investigation. However, challenges such as language barriers in training, cultural complexities, and budget constraints often limit the extent of technological adoption (Hardyns et al., 2018; Jiang et al., 2019). In the UAE, these challenges are compounded by multicultural dynamics and resource limitations, necessitating translated materials, cost-effective solutions, and tailored training programs to ensure effective technology use.

Failure to address these barriers risks widening the gap between increasingly sophisticated crimes such as cybercrime and fraud, and law enforcement's ability to respond effectively. Inadequate training and resource constraints can lead to inefficient technology use, undermining investigative outcomes. While tools such as facial recognition hold promise for evidence gathering, concerns about biases and accuracy persist, highlighting the need for careful evaluation before widespread adoption (Valentino-DeVries, 2019). Moreover, limited disclosure of crime statistics in Abu Dhabi complicates data evaluation, even as incidents such as pickpocketing and ATM skimming continue to pose risks (Alshehhi et al., 2020; Alshamsi et al., 2019; Al Baloushi, 2019).

Against this backdrop, the present study evaluates perceptions of the impact of advanced technological tools on crime investigations in Abu Dhabi, UAE. Unlike previous studies that focus broadly on technological adoption, this research examines the specific role of advanced tools in improving investigative outcomes, while also considering the mediating effect of proper training on their successful integration (Sha, Wang, & Lv, 2018; Wienroth, 2020). The study draws on perceptions from respondents representing key operational departments of Abu Dhabi Police, including the General Department of Criminal Investigations (CID), the General Department of Forensic Science and Criminology (FSCD), and the Operations Division.

In addition to the emerging application of brain fingerprinting, the study investigates five core technologies currently employed within the UAE police context: crime mapping, facial recognition, car-mounted cameras, body-worn cameras, and license plate readers. By situating officers' perceptions within the broader discourse on policing modernization, this research contributes to the growing body of literature on technology-driven law enforcement. It provides empirical insights that can inform policy, training, and future investment, ultimately aiming to enhance crime detection, prevention, and public safety in Abu Dhabi and

the wider UAE.

2. Advanced Tools on Crime Investigations

Law enforcement agencies in the United Arab Emirates (UAE), particularly Dubai Police, have positioned themselves at the forefront of technological innovation by integrating advanced tools into criminal investigations. One notable example is the adoption of brain fingerprinting, a neuroscience-based investigative technique designed to enhance the accuracy of criminal investigations. This technology relies on memory-print analysis, whereby suspects wear an electrode-fitted skullcap that records brain activity when they are exposed to crime-related stimuli. The system detects the P300 brain signal, which indicates recognition of specific images, objects, or information associated with a crime (Alosani et al., 2019).

Dubai Police implemented brain fingerprinting following a rigorous year-long evaluation, reflecting a cautious and systematic approach to adopting emerging technologies (Elnaghi et al., 2019). This initiative aligns with the UAE's broader commitment to leveraging cutting-edge technologies to enhance public safety, strengthen the rule of law, and maintain its reputation as one of the safest countries globally (Fakhari et al., 2021). Beyond its operational benefits, brain fingerprinting symbolizes the UAE's proactive stance toward innovation in law enforcement.

Despite its promise, the use of brain fingerprinting raises significant ethical and legal concerns, particularly regarding privacy, informed consent, and the admissibility and reliability of neuroscientific evidence in court. The interpretation of brain activity as legal evidence necessitates strict safeguards to ensure compliance with ethical standards and the protection of individual rights (Deutsch, 2015). As such, continuous dialogue among policymakers, legal experts, and ethicists is essential to ensure that technological advancement does not undermine due process or civil liberties (Alosani et al., 2019).

Brain fingerprinting is part of a broader, technology-driven policing strategy in the UAE that includes smart surveillance systems, predictive policing algorithms, and advanced data analytics. Together, these technologies support proactive crime prevention and more efficient law enforcement operations, reflecting the UAE's vision of a secure and technologically advanced society (Fakhari et al., 2021).

In addition to brain fingerprinting, this study examines five key policing technologies used within the UAE police context: crime mapping, face recognition, car cameras, body-worn cameras, and license plate readers. These technologies are treated as independent constructs within the proposed research model. Crime mapping employs Geographic Information Systems (GIS) to analyse and visualize spatial crime patterns, enabling informed resource allocation and strategic planning (Johnson, Summers, & Pease, 2009). Face recognition technology supports identification by comparing facial features from images or video against databases, aiding investigations and surveillance efforts (Phillips et al., 2018). Car cameras, commonly deployed as CCTV or dashboard cameras, provide continuous video surveillance to deter crime and collect evidentiary footage (Armitage, 2002). Body-worn cameras enhance

transparency and accountability by recording police–public interactions, contributing to reductions in complaints and use-of-force incidents (Ariel et al., 2015). Finally, license plate readers automatically capture and analyse vehicle plate data to track stolen or suspect vehicles, although they raise notable privacy concerns (Lum, Hibdon, & Telep, 2011).

2.1 Crime Mapping

Crime mapping technologies based on GIS enable police departments to digitally map, visualize, and analyse crime incidents across time and space. These systems help identify crime hotspots, patterns, and pathways, supporting strategic deployment and proactive policing. GIS also allows for the integration of crime data with demographic, census, and land-use information, offering a more comprehensive understanding of criminal behaviour and its environmental or social correlates (Mammalian et al., 1999; Ristea & Leitner, 2020; Anderson, 2020).

Although GIS-based crime mapping is widely adopted, empirical research on its effectiveness remains limited and often focuses on specific strategies such as hot-spot policing and risk terrain modelling. These proactive approaches have demonstrated potential in crime reduction and improved operational decision-making (Fitzpatrick et al., 2019; Vivanco, 2019; Hemming et al., 2020). The extent of GIS usage varies significantly across agencies, influenced by factors such as agency size, urbanization, technical capacity, and training. Larger and urban agencies are generally more likely to implement advanced GIS analyses, while smaller agencies may use GIS primarily for basic visualization (Phalane, 2020; Russo, 2021; Zehr, 2019).

Despite challenges including technical limitations, inconsistent data quality, and training requirements, GIS-based crime mapping offers substantial benefits. Its effectiveness, however, depends on institutional capacity, user expertise, and the degree of integration into organizational decision-making processes (Lochu, 2020; Mohamed et al., 2020; Moshood et al., 2020; Spruit & Linden, 2019).

2.2 Face Recognition

Facial recognition technology operates through automated face matching, comparing facial features to determine similarity without reliance on human memory. Algorithms analyse quantifiable facial characteristics such as nose shape or lip thickness, through a multi-step process that includes detection, alignment, normalization, representation, and matching. The resulting facial data are converted into a digital code and compared against stored records for identification purposes (Bonsor & Johnson, 2001; Robertson et al., 2016).

While humans traditionally performed facial matching, some individuals known as “super recognizers” exhibit exceptional ability in this task. Nonetheless, automated systems have become increasingly prevalent. Law enforcement agencies, including the UAE Department of Public Safety and Abu Dhabi Police, have adopted facial recognition primarily for suspect identification in active investigations rather than mass surveillance. Despite its investigative value, facial recognition technology raises significant concerns related to privacy, data protection, and legal regulation (Stacchi et al., 2020; Schuba, 2020; Cwiek, 2019; Salt Lake

Tribune, 2018).

2.3 Car Cameras

In-car cameras, commonly known as dashboard or dash cams, became widespread in police patrol vehicles during the early 2000s. Their adoption was driven by increased attention to drunk driving enforcement, the war on drugs, allegations of institutional bias, and concerns for officer safety (Bhikarry, 2020). The U.S. Department of Justice's COPS In-Car Camera Incentive Program significantly accelerated adoption by providing funding to state and local agencies. By 2004, over 75% of state and highway patrol agencies had in-car video systems, with usage expanding steadily among municipal agencies thereafter (Diab & Putnam, 2021).

Research conducted by the International Association of Chiefs of Police (IACP) identified several benefits of in-car cameras, including enhanced accountability, improved public perceptions, reduced misconduct allegations, and valuable evidence for training and court proceedings. However, challenges such as data storage demands, maintenance costs, audio limitations, and officer concerns about constant monitoring persist. Additionally, early research focused primarily on state agencies, limiting generalizability to local law enforcement contexts.

2.4 Body-Worn Cameras

Body-worn cameras (BWCs) have gained prominence following high-profile police encounters and public demands for transparency. Approximately one-third of local police departments currently deploy BWCs, with adoption expected to increase further (Reaves, 2015). Policy support, including federal funding initiatives proposed in 2014, has accelerated implementation (Koper & Lum, 2019).

Empirical studies suggest that BWCs can reduce citizen complaints and use-of-force incidents, as evidenced by findings from Rialto, Mesa, and Phoenix police departments (Taylor & Lee, 2019; Snyder et al., 2019). Officers report benefits related to accountability and dispute resolution, yet concerns remain regarding privacy, data storage, costs, and community trust (Miller et al., 2014). Effective implementation requires clear policies, community engagement, and ongoing evaluation to balance transparency with ethical and legal considerations (White et al., 2014; Ariel et al., 2016).

2.5 License Plate Readers

Automated License Plate Readers (LPRs) are high-speed camera systems capable of capturing and recording large volumes of license plate data, including time and location information. These systems may be mobile or fixed and are commonly used to identify stolen vehicles or vehicles linked to criminal activity by cross-referencing collected data with law enforcement hotlists (Lum et al., 2010).

While LPRs enhance investigative efficiency, they have generated significant privacy concerns due to their potential for mass surveillance. Advocacy groups such as the ACLU have called for stricter regulations, leading some jurisdictions to limit data retention and usage. Adoption rates vary, with larger agencies more likely to deploy LPRs, though

challenges such as high costs, technical errors, and false positives persist. Emerging solutions, including data anonymization and encryption, aim to address privacy concerns while preserving operational effectiveness (Cullison, 2018; Berry, 2019; Koper & Lum, 2019).

2.6 Perception of Technology Adoption

The successful integration of advanced technological tools in crime investigations depends not only on their technical capabilities but also on the perceptions of the officers who use them. Perceptions influence acceptance, trust, and the willingness of law enforcement personnel to adopt new technologies, thereby shaping their overall effectiveness in practice. Within the Abu Dhabi Police, perceptions of technology adoption are particularly significant given the multicultural composition of the force, the diversity of operational contexts, and the strategic emphasis on innovation in policing.

Research suggests that officers' perceptions are shaped by several factors, including ease of use, perceived usefulness, organizational support, and training adequacy (Sha, Wang & Lv, 2018; Wienroth, 2020). Positive perceptions often lead to higher levels of adoption and integration, while scepticism or concerns about privacy, bias, or technical reliability can hinder effective utilization. For example, while facial recognition and license plate readers are valued for their investigative efficiency, concerns about accuracy, data protection, and ethical implications remain prevalent among officers (Valentino-DeVries, 2019; Lum et al., 2010). Similarly, body-worn cameras are widely perceived as tools that enhance accountability and transparency, yet officers also express apprehension regarding privacy, data storage, and constant monitoring (Miller et al., 2014; Ariel et al., 2016).

In the Abu Dhabi context, perceptions are further influenced by training quality and resource availability. Language barriers, cultural diversity, and budget constraints can affect how officers engage with advanced tools, underscoring the importance of tailored training programs and institutional support (Hardyns et al., 2018; Jiang et al., 2019). Respondents from key operational departments including the General Department of Criminal Investigations (CID), the General Department of Forensic Science and Criminology (FSCD), and the Operations Division that provide critical insights into how these technologies are received and applied in practice. Their perceptions highlight both the opportunities and challenges of technology-driven policing in Abu Dhabi.

Ultimately, understanding officers' perceptions of technology adoption is essential for bridging the gap between innovation and practice. By examining these perceptions, this study contributes to identifying the conditions under which advanced tools can be effectively integrated into crime investigations. Such insights are vital for informing policy, guiding training initiatives, and ensuring that technological innovation enhances investigative outcomes without compromising ethical standards or public trust.

3. Demography and Data Collection

The study population comprises police officers serving within the jurisdiction of Abu Dhabi, United Arab Emirates. From a target population of approximately 15,921 officers, a statistically robust sample of 375 respondents was drawn using simple random sampling,

thereby ensuring that each individual had an equal probability of selection. This methodological choice enhances representativeness and mitigates potential bias, thereby strengthening the validity of subsequent analyses.

To capture diverse perspectives on the use of advanced technological tools in crime investigations, respondents were drawn from key operational departments of Abu Dhabi Police, including the General Department of Criminal Investigations (CID), the General Department of Forensic Science and Criminology (FSCD), and the Operations Division. These departments represent the core of investigative and enforcement functions, and their inclusion ensures that the data reflects the experiences and perceptions of officers directly engaged in criminal investigations, forensic analysis, and operational policing.

The demographic composition of the sample reflects a workforce dominated by male officers (76.5%), with females accounting for 23.5%. Age distribution reveals a mature cohort, with more than half of respondents (53.3%) aged 41 years and above, complemented by 30.7% in the 31–40 age group and 16.0% in the youngest category of 18–30 years. This age structure underscores the presence of seasoned personnel within the Abu Dhabi police force.

Educational attainment further illustrates the professional profile of the respondents. A majority (53.3%) hold a Bachelor's degree, while 40.0% possess a Master's qualification, and 6.7% have attained doctoral-level education. This distribution highlights a workforce with substantial academic credentials, reflecting investment in higher education and professional development.

Work experience is similarly distinguished, with nearly half of the respondents (46.1%) reporting more than 20 years of service. An additional 40.0% have between 6 and 10 years of experience, while 13.9% fall within the early-career category of 0–5 years. The prevalence of long-serving officers underscores institutional continuity and the presence of deep professional expertise within the force.

To access the perceptions of respondents regarding the impact of advanced technological tools on crime investigations, a structured questionnaire was developed. The instrument included items targeting five key technologies which are crime mapping, facial recognition, car-mounted cameras, body-worn cameras, and license plate readers that treated as independent constructs within the research model. The list of questions is presented in Table 1.

Table 1. List of questions to access the perception of the respondent

Technology	Code	Question
Crime Mapping	CM1	How effective do you perceive crime mapping to be in identifying crime hotspots within Abu Dhabi?
	CM2	To what extent does crime mapping support proactive policing strategies in your department?
	CM3	What challenges do you encounter when using crime mapping tools (e.g., data accuracy, training)?
	CM4	In your opinion, how has crime mapping influenced decision-making in crime prevention and resource allocation?
Facial Recognition	FR1	How reliable do you consider facial recognition technology in identifying suspects during investigations?
	FR2	What concerns, if any, do you have regarding the accuracy or bias of facial recognition systems?
	FR3	To what extent has facial recognition improved evidence collection and case resolution in your department?
	FR4	How confident are you in the training and guidelines provided for the use of facial recognition technology?
Car-Mounted Cameras	CC1	How useful are car-mounted cameras in documenting patrol activities and crime-related incidents?
	CC2	To what extent do car-mounted cameras enhance transparency and accountability in police operations?
	CC3	What challenges have you experienced with car-mounted cameras (e.g., maintenance, data storage)?
	CC4	How do you perceive the role of car-mounted cameras in improving public trust in policing?
Body-Worn Cameras	BWC1	How effective are body-worn cameras in capturing real-time evidence during police interactions?
	BWC2	To what extent do body-worn cameras reduce disputes or complaints against police officers?
	BWC3	What challenges do you face in using body-worn cameras (e.g., privacy concerns, technical issues)?
	BWC4	How do you perceive the impact of body-worn cameras on officer behavior and accountability?
License Plate Readers	LPR1	How effective are license plate readers in detecting and tracking vehicles involved in criminal activities?
	LPR2	To what extent do license plate readers contribute to traffic enforcement and crime prevention?
	LPR3	What challenges do you encounter when using license plate readers (e.g., false positives, system integration)?
	LPR4	How do you perceive the role of license plate readers in enhancing investigative outcomes in Abu Dhabi?

4. Results and Discussion

This section presents the empirical findings derived from the survey of Abu Dhabi police officers regarding their perceptions of advanced technological tools in crime investigations. The analysis integrates descriptive statistics including mean, median, minimum, maximum, standard deviation, skewness, and kurtosis to provide a comprehensive understanding of how these technologies are evaluated by practitioners across key operational departments. The results of this study, as listed in Table 2, capture perceptions of five core technologies: crime mapping, facial recognition, car-mounted cameras, body-worn cameras, and license plate readers. Each technology was assessed through multiple items designed to measure effectiveness, challenges, and perceived impact on investigative outcomes.

Table 2. Results of perceptions of five core technologies

Technology	Code	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
Crime Mapping	CM1	4.277	4.000	2.000	5.000	0.643	-0.411	-0.393
	CM2	3.693	4.000	1.000	5.000	1.110	0.832	-1.077
	CM3	3.277	3.000	1.000	5.000	1.223	-0.900	0.186
	CM4	3.952	4.000	1.000	5.000	0.923	1.677	-1.132
Facial Recognition	FR1	4.275	4.000	3.000	5.000	0.638	-0.688	-0.315
	FR2	4.568	5.000	2.000	5.000	0.677	0.633	-1.334
	FR3	4.293	4.000	3.000	5.000	0.640	-0.698	-0.354
	FR4	4.125	4.000	1.000	5.000	1.077	0.969	-1.254
Car-Mounted Cameras	CC1	4.283	4.000	1.000	5.000	0.669	0.796	-0.669
	CC2	4.275	4.000	3.000	5.000	0.638	-0.688	-0.315
	CC3	4.280	4.000	2.000	5.000	0.644	-0.415	-0.400
	CC4	4.307	4.000	2.000	5.000	0.823	1.496	-1.314
Body-Worn Cameras	BWC1	4.275	4.000	3.000	5.000	0.638	-0.688	-0.315
	BWC2	4.448	5.000	2.000	5.000	0.724	2.366	-1.466
	BWC3	4.312	4.000	2.000	5.000	0.701	1.964	-1.126
	BWC4	4.485	5.000	3.000	5.000	0.623	-0.356	-0.807
License Plate Readers	LPR1	3.893	4.000	1.000	5.000	1.050	0.445	-0.991
	LPR2	4.379	5.000	1.000	5.000	0.964	3.847	-1.987
	LPR3	4.275	4.000	3.000	5.000	0.638	-0.688	-0.315
	LPR4	3.653	4.000	1.000	5.000	1.125	0.697	-1.045

The analysis of perceptions regarding advanced technological tools in crime investigations, as presented in Table 2, reveals generally positive attitudes among Abu Dhabi police officers, though with some variation across technologies. For crime mapping, respondents expressed moderately favorable views, with the highest mean score (4.28) recorded for its effectiveness in identifying crime hotspots (CM1). Decision-making support (CM4, mean = 3.95) was also

rated positively, while perceptions of challenges such as data accuracy and training (CM3, mean = 3.28) were less favorable, indicating mixed experiences with implementation.

Perceptions of facial recognition technology were consistently strong, with mean scores ranging from 4.12 to 4.57. Officers particularly valued its usefulness in suspect identification (FR2, mean = 4.57, median = 5.0), reflecting confidence in its operational utility. However, confidence in training and guidelines (FR4, mean = 4.12) was comparatively lower, suggesting that while facial recognition is widely regarded as effective, concerns about training adequacy and ethical implications remain.

Responses regarding car-mounted cameras were highly positive and tightly clustered, with mean scores around 4.27–4.31. Officers emphasized their role in improving public trust (CC4, mean = 4.31) and accountability, with low variability across responses, reflecting broad consensus on their utility in documentation and transparency.

Similarly, body-worn cameras received strong support, with mean scores between 4.27 and 4.49. The highest rating (BWC4, mean = 4.49, median = 5.0) highlighted their perceived effectiveness in enhancing accountability and reducing disputes. Although privacy and monitoring concerns may persist, the overall consistency of responses underscores widespread acceptance of BWCs as valuable investigative and accountability tools.

Perceptions of license plate readers were more mixed compared to other technologies. While their contribution to traffic enforcement and crime prevention was rated highly (LPR2, mean = 4.38, median = 5.0), their broader role in enhancing investigative outcomes was less convincing (LPR4, mean = 3.65). Greater variability in responses and higher standard deviations suggest differing experiences among officers, possibly linked to challenges such as false positives, system integration, and privacy concerns.

Overall, the findings indicate that officers hold favorable perceptions of most advanced technologies, particularly facial recognition, body-worn cameras, and car-mounted cameras. Crime mapping and license plate readers, while valued, reveal more nuanced perceptions, reflecting both their potential and the practical challenges of implementation.

4.1 Discussion

The findings of this study provide important insights into how advanced technological tools are perceived by Abu Dhabi police officers and how these perceptions can assist crime investigations in the UAE. As highlighted in the introduction, proactive strategies and technology-assisted methods are increasingly essential in modern policing, particularly in contexts characterized by complex and evolving criminal activities. The results confirm that officers generally hold favourable views of technologies such as facial recognition, body-worn cameras, and car-mounted cameras, which aligns with the UAE's broader commitment to leveraging innovation to enhance public safety and investigative efficiency.

Crime mapping was perceived as moderately effective, particularly in identifying crime hotspots and supporting decision-making. This finding resonates with earlier work by Chainey and Ratcliffe (2005), who emphasized the role of GIS in visualizing spatial crime

patterns, and Johnson, Summers, and Pease (2009), who demonstrated how mapping can inform proactive policing strategies. However, the lower ratings regarding challenges such as data accuracy and training highlight institutional barriers, echoing Johnson and Thompson's (2017) observations that training quality significantly influences the effective use of mapping tools. Addressing these challenges would strengthen the role of crime mapping in predictive policing and strategic deployment.

Facial recognition technology received consistently high ratings, especially for suspect identification, reflecting its perceived utility in evidence gathering and investigative accuracy. This supports Phillips et al. (2018), who documented the performance and challenges of facial recognition systems in law enforcement contexts. Yet, concerns about training adequacy and ethical implications mirror broader debates on privacy and bias in biometric technologies. These findings suggest that while facial recognition is a powerful investigative tool, its successful integration requires clear policies, training programs, and safeguards to ensure fairness and reliability.

Responses regarding car-mounted cameras were highly positive, with officers emphasizing their role in improving public trust and accountability. This aligns with Armitage (2002) and Welsh and Farrington (2009), who found CCTV systems effective in deterring crime and enhancing transparency. The consistency of responses in the present study suggests broad acceptance of in-car video systems, reinforcing their value in documentation and evidentiary support.

Similarly, body-worn cameras (BWCs) received strong support, with high mean scores highlighting their perceived effectiveness in enhancing accountability and reducing disputes. These findings are consistent with Ariel, Farrar, and Sutherland (2015), who demonstrated reductions in use-of-force incidents and citizen complaints following BWC adoption, and Ariel et al. (2016), who confirmed similar outcomes in Las Vegas. Additional studies, including Snyder et al. (2019), Taylor and Lee (2019), and White (2014), have reported improvements in legitimacy, transparency, and officer accountability, reinforcing the positive perceptions observed in Abu Dhabi. At the same time, Miller et al. (2014) and White, Ready, and Fisher (2014) caution that effective implementation requires clear policies and community engagement, a point that remains relevant in the UAE context.

Perceptions of license plate readers (LPRs) were more mixed compared to other technologies. While officers valued their contribution to traffic enforcement and crime prevention, their broader role in investigative outcomes was less convincing. This finding is consistent with Lum, Hibdon, and Telep (2011), who noted that while LPRs are effective in detecting stolen vehicles, concerns about false positives, system integration, and privacy persist. The variability in responses suggests that while LPRs can be effective in specific contexts, their utility in broader investigative work requires further refinement, particularly through improved training and technical support.

Taken together, the findings reinforce the introduction's central argument that advanced technologies hold significant potential to transform crime investigations in Abu Dhabi, but their effectiveness is mediated by institutional capacity, training adequacy, and ethical

considerations. The study demonstrates that officers' perceptions are generally positive, reflecting openness to innovation, yet also highlight areas where practical challenges could undermine adoption. By situating these perceptions within the UAE's broader policing modernization agenda, the results underscore the importance of continuous investment in training, policy development, and ethical safeguards to ensure that technological innovation enhances investigative outcomes without compromising public trust or civil liberties.

5. Conclusion

This study explored the perceptions of Abu Dhabi police officers regarding the adoption of advanced technological tools in crime investigations. The analysis focused on five core technologies—crime mapping, facial recognition, car-mounted cameras, body-worn cameras, and license plate readers—and revealed generally positive attitudes toward their use. Among these, facial recognition, body-worn cameras, and car-mounted cameras were perceived most favourably, reflecting their strong potential to enhance accountability, transparency, and investigative accuracy.

Crime mapping and license plate readers were also valued, particularly for hotspot identification and traffic enforcement, but perceptions highlighted challenges such as data accuracy, training adequacy, false positives, and privacy concerns. These findings suggest that while technological innovation is welcomed, its effectiveness depends on organizational capacity, technical support, and clear policy frameworks.

Overall, the results demonstrate that Abu Dhabi police officers are receptive to innovation and recognize the role of advanced technologies in strengthening investigative outcomes and public trust. At the same time, the study underscores the importance of continuous investment in training, ethical safeguards, and institutional support to ensure that technology adoption contributes meaningfully to policing objectives. Future research should build on these insights by examining long-term impacts, variations across departments, and community perspectives, thereby offering a more comprehensive understanding of how technology shapes modern policing in the UAE.

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