Perceived Impact of Information and Communication Technology Innovation on Job Performance in the Abu Dhabi Police Traffic Department

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Abstract

The Abu Dhabi Police Traffic Department has increasingly adopted innovative Information and Communication Technology (ICT) to enhance traffic management, operational efficiency, and public safety. However, empirical evidence on how officers' perceptions of specific ICT innovation characteristics influence individual job performance remains limited. This study investigates the perceived impact of ICT innovation on job performance using a hierarchical ranking approach grounded in the Diffusion of Innovation theory. Data were collected through structured questionnaires distributed to operational and executive staff, yielding 338 valid responses. Descriptive statistics and mean index-based hierarchical ranking were employed to evaluate the relative importance of five ICT innovation attributes: relative advantage, compatibility, trialability, observability, and complexity. The findings reveal consistently high perceptions across all attributes, indicating a strong positive relationship between ICT innovation and officers' job performance. Relative advantage emerged as the most influential factor, followed by compatibility and trialability, while observability and low complexity provided additional supportive effects. The narrow range of mean scores reflects strong consensus among respondents regarding the effectiveness of ICT systems in improving work efficiency, decision-making accuracy, and routine task performance. This study

contributes empirical evidence to the limited literature on ICT innovation in policing and highlights the critical role of officers' perceptions in shaping technology adoption. The findings provide practical guidance for the Abu Dhabi Police and other public sector law enforcement organizations seeking to optimize ICT investments to enhance employee performance, operational efficiency, and service delivery outcomes.

Keywords: ICT, job performance, diffusion of innovation, traffic policing

1. Introduction

The Abu Dhabi Police Traffic Department has made substantial investments in advanced Information and Communication Technology (ICT) to enhance operational efficiency, service quality, and road safety outcomes. These investments align with the strategic vision of Abu Dhabi Police, which emphasizes smart policing, digital transformation, and evidence-based decision-making as foundational pillars of public safety delivery (Abu Dhabi Police, 2018b; Abu Dhabi Digital Authority, 2021). Recent initiatives include automated traffic enforcement systems, real-time data analytics, integrated communication platforms, and AI-enabled monitoring tools, all of which have become central to contemporary traffic management operations (Abu Dhabi Police, 2024). Such developments reflect a broader global shift toward data-driven and technology-intensive policing models, particularly in high-capacity urban environments.

Despite widespread ICT deployment, empirical evidence assessing the direct impact of ICT innovation on individual job performance remains limited. This gap is particularly salient in policing environments, where technology use is embedded within highly structured workflows, time-sensitive decision-making, and heightened public accountability (Al Darmaki, 2015; Chan, 2001). Emerging research highlights that while advanced technologies such as artificial intelligence, automation, and decision-support systems are transforming police work, their performance implications depend heavily on how officers interact with these systems in operational contexts (Halford, 2026; Lee, Kim, & Kim, 2026).

Much of the existing ICT literature has focused on user acceptance, attitudes, and behavioral intentions toward technology adoption, drawing primarily on frameworks such as the Technology Acceptance Model and the Theory of Planned Behavior (Davis, 1989; Ajzen, 1991). While these models provide valuable insights into perceived usefulness and ease of use, they tend to emphasize psychological or organizational-level outcomes rather than measurable performance outcomes at the individual employee level (Davis et al., 1989; Aggarwal et al., 2015). In public sector institutions such as law enforcement agencies, ICT effectiveness cannot be fully understood without examining how technology integrates with task complexity, institutional routines, and professional responsibilities (Chan, 2001; Carter & Radelet, 1999).

Recent scholarship underscores that ICT adoption influences employee performance through mechanisms such as enhanced knowledge accessibility, workflow integration, and decision-making support (Abualoush et al., 2018; Ahmad, 2012). For instance, web-based case management systems have demonstrated improvements in efficiency, accuracy, and coordination in policing contexts, particularly in traffic-related and vehicle crime investigations (Fiarni, Yonata, & Saraswati, 2026). However, these performance outcomes are highly context-dependent and shaped by organizational culture, regulatory environments, and leadership practices (Al-Hannif et al., 2014; Alghalban, 2017). In policing institutions, where compliance with legal frameworks, interdepartmental coordination, and procedural integrity are critical, the performance implications of ICT innovation warrant focused and context-specific empirical investigation (Al Darmaki, 2015; Al Marar, 2021a).

Furthermore, the increasing use of ICT in governance and law enforcement raises important legal and ethical considerations. Studies examining ICT use in high-stakes public sector applications, such as elections and national security, demonstrate that technological innovation must be carefully aligned with legal safeguards, transparency, and accountability mechanisms (Akinola, 2026). In policing, similar concerns apply, particularly as advanced analytics, AI systems, and large-scale data collection become embedded in routine operations (Joyce & Laverick, 2026). These factors further highlight the need to assess not only technology adoption but also its implications for individual performance within legally and ethically bounded environments.

Within the UAE government sector, and policing organizations in particular, scholarly research examining the relationship between ICT innovation and job performance remains relatively scarce, despite the rapid pace of digital transformation (Abu Dhabi Digital Authority, 2021; Abu Dhabi Police, 2021). The Abu Dhabi Police Traffic Department has adopted advanced ICT systems to support enforcement, monitoring, and public engagement; however, their impact on officers' efficiency, accuracy, and overall job performance has not been systematically evaluated (Al Darmaki, 2015; Al Marar, 2021b). This lack of empirical evidence limits policymakers' and administrators' ability to assess the effectiveness of ICT investments and to optimize technology-enabled performance outcomes.

To address this gap, the present study investigates the perceived impact of ICT innovation on job performance within the Abu Dhabi Police Traffic Department. Drawing on Diffusion of Innovation theory, the study examines key innovation characteristics, including relative advantage, compatibility, complexity, observability, and trialability, and evaluates their influence on individual job performance using a hierarchical ranking approach (Damanpour, 1996; Davis, 1993). By focusing on officers' perceptions within the operational context of traffic policing, this research contributes to the literature on ICT innovation in public sector organizations and provides practical insights for policymakers and police administrators seeking to enhance performance through effective and user-centered technology implementation.

2. Key ICT Innovation Attributes

The assessment of ICT innovation within the Abu Dhabi Police Traffic Department is grounded in the Diffusion of Innovation (DOI) theory, which explains how new technologies are perceived, adopted, and integrated into organizational practices (Damanpour, 1996; Davis, 1989). DOI identifies five key innovation attributes—relative advantage, compatibility, complexity, observability, and trialability—that shape users' perceptions of innovation and influence performance outcomes. In law enforcement environments, where officers operate under time pressure, legal constraints, and public scrutiny, these perceived attributes play a decisive role in determining whether ICT innovations enhance or hinder job performance (Chan, 2001; Al Marar, 2021a).

Recent policing research highlights that the growing use of advanced ICT, including artificial intelligence, automation, and decision-support systems, has intensified the importance of understanding how officers perceive technological innovation and its operational value

(Halford, 2026; Lee, Kim, & Kim, 2026). In traffic policing, where ICT systems support enforcement, monitoring, and decision-making, officers' perceptions of innovation attributes directly influence efficiency, accuracy, and service effectiveness. Accordingly, this section examines the five DOI attributes in relation to perceived job performance within the Abu Dhabi Police Traffic Department.

2.1 Relative Advantage

Relative advantage refers to the degree to which an ICT innovation is perceived as providing superior benefits compared to existing systems or traditional work practices (Davis, 1989; Damanpour, 1996). In policing contexts, technologies perceived to enhance speed, accuracy, situational awareness, and decision quality are more likely to be embraced and used effectively (Chan, 2001). Within the Abu Dhabi Police Traffic Department, ICT innovations such as automated traffic surveillance, AI-enabled incident detection, digital citation platforms, and integrated enforcement databases offer clear performance advantages over manual and fragmented processes.

From a perceptual perspective, officers are more likely to associate ICT systems with improved job performance when these technologies demonstrably reduce workload, minimize human error, and support real-time coordination (Abu Dhabi Digital Authority, 2021; Abu Dhabi Police, 2021). Recent studies on digital policing systems, including web-based case management platforms, show that perceived performance gains in speed, accuracy, and task coordination significantly enhance officers' productivity and confidence in technology use (Fiarni, Yonata, & Saraswati, 2026). In traffic policing, such perceived advantages translate into faster incident resolution, more accurate enforcement actions, and improved traffic flow management, reinforcing Abu Dhabi Police's strategic objectives for smart and proactive policing (Al Marar, 2021b).

2.2 Compatibility

Compatibility refers to the extent to which ICT innovations are perceived as consistent with existing work practices, professional roles, organizational values, and legal frameworks (Davis et al., 1989). In law enforcement agencies, compatibility is particularly critical because policing activities are governed by strict procedural, ethical, and legal standards (Carter & Radelet, 1999). ICT systems that align with officers' established routines and regulatory obligations are more likely to be perceived as supportive rather than disruptive.

Within the Abu Dhabi Police Traffic Department, compatibility is reflected in how ICT systems integrate with national traffic laws, enforcement protocols, and inter-agency coordination mechanisms (Abu Dhabi Police, 2018b; 2024). Research indicates that when officers perceive ICT innovations as compatible with their professional identity and operational responsibilities, resistance to change decreases and job performance improves (Aggarwal et al., 2015; Al-Hannif et al., 2014). Furthermore, as ICT increasingly supports governance, accountability, and legal compliance, perceived alignment with regulatory frameworks becomes a key determinant of performance outcomes (Akinola, 2026). Abu Dhabi's strong institutional emphasis on smart government and digital transformation has

fostered a culture that promotes technological alignment, thereby enhancing officers perceived performance benefits from ICT use (Alghalban, 2017; Abu Dhabi Digital Authority, 2021).

2.3 Complexity

Complexity refers to the degree to which ICT innovations are perceived as difficult to understand, learn, or use (Davis, 1993). In high-pressure operational environments such as traffic policing, systems perceived as overly complex can increase cognitive load, slow response times, and negatively affect decision-making quality. Officers' perceptions of complexity therefore have a direct influence on both technology acceptance and job performance.

Empirical evidence consistently demonstrates that perceived ease of use is a strong predictor of positive performance outcomes (Davis, 1989; Ahmad, 2012). Recent research on AI-enabled policing systems further indicates that complex technologies may undermine performance if officers lack confidence in system logic or outputs (Lee et al., 2026; Halford, 2026). Within the Abu Dhabi Police Traffic Department, efforts to reduce perceived complexity through intuitive interfaces, standardized workflows, and continuous training are essential. When officers perceive ICT systems as easy to use and supportive of routine tasks, they are better able to focus on core policing responsibilities, resulting in improved efficiency, accuracy, and service quality (Abualoush et al., 2018; Al Marar, 2021a).

2.4 Observability

Observability refers to the extent to which the outcomes and benefits of ICT innovations are visible and recognizable to users and stakeholders (Damanpour, 1996). In policing, observable results such as reduced congestion, improved compliance rates, faster response times, and enhanced public satisfaction reinforce officers' confidence in ICT systems and strengthen perceptions of performance improvement (Chan, 2001).

Within the Abu Dhabi Police Traffic Department, ICT innovation outcomes are reflected in measurable indicators such as improved road safety statistics, enhanced incident management, and positive public feedback (Abu Dhabi Police, 2021; Al Darmaki, 2015). When officers can clearly observe the positive effects of ICT on operational outcomes, their motivation to use technology increases, reinforcing positive perceptions of job performance (Ajzen, 1991; Davis et al., 1989). In an era where data-driven policing and performance transparency are increasingly emphasized, high observability plays a critical role in sustaining officer engagement with ICT systems (Joyce & Laverick, 2026).

2.5 Trialability

Trialability refers to the extent to which ICT innovations can be tested on a limited or pilot basis before full-scale implementation (Damanpour, 1996). In policing organizations, trialability is especially important because operational disruptions can have immediate public safety implications. Pilot testing allows officers to experiment with new systems, develop familiarity, and provide feedback, shaping positive perceptions before widespread

deployment.

The Abu Dhabi Police have increasingly adopted phased rollouts and pilot programs for smart traffic initiatives, enabling officers to build confidence and competence with ICT innovations prior to organization-wide adoption (Abu Dhabi Digital Authority, 2021; Al Marar, 2021b). Research indicates that high trialability reduces uncertainty, improves perceived usefulness, and strengthens the positive relationship between ICT innovation and job performance (Aggarwal et al., 2015; Abualoush et al., 2018). In the context of emerging technologies such as AI-driven analytics and automated enforcement, trialability is particularly critical in ensuring that officers trust and effectively integrate ICT systems into daily policing activities (Halford, 2026).

3. Data Collection and Analysis Method

Out of 400 distributed structured questionnaires, 338 were returned fully completed, representing employees from the operational and executive staff of the Abu Dhabi Police Traffic Department. Most respondents were between 25–40 years of age, with 28.5% aged 25–35 and 25.2% aged 36–40. Most held a Bachelor's degree (65.3%), followed by Master's degree holders (27.9%), while smaller proportions reported a PhD (4.9%) or other certificates (1.9%). In terms of work experience, the largest group (27.3%) had 4–7 years of service, with notable representation across both early-career (1–3 years, 19%) and long-tenured staff (≥ 20 years, 15.6%). This distribution reflects a balanced sample across age, education, and professional experience, providing a robust basis for interpreting the study's findings. Data analysis employed descriptive statistics combined with hierarchical ranking procedures to evaluate the relative importance of parameters. Specifically, mean index scores were calculated for each factor, providing the primary basis for ranking. Where mean values were identical, the standard deviation served as a secondary criterion, with parameters showing lower variability ranked higher (Blaikie, 2003). This hierarchical approach offers a systematic means of identifying key factors and their relative weight within the dataset, thereby clarifying the structure of relationships among variables (Hair et al., 2014; Tabachnick & Fidell, 2007; Kline, 2012). The resulting rankings are subsequently integrated into the discussion and compared with prior studies to enhance interpretive validity.

4. Results and Discussions

This section presents the descriptive and hierarchical analysis of innovation features influencing ICT adoption. Data were analysed using mean index scores and standard deviations to establish the relative importance of each construct.

4.1 Relative Advantage (RAT)

There are five relative advantage-related factors of ICT innovation features that influence technology adoption and subsequently affect job performance. The results of the analysis are presented in Table 1.

Table 1. Relative advantage factors

Factor	Description	Mean	Std. Deviation
RAT1	Enhancements in new IT system compared to older versions	4.91	0.299
RAT2	Usefulness of current IT system in daily tasks	4.86	0.355
RAT3	Impact of IT system on work behaviours	4.83	0.386
RAT4	Usefulness of IT tools provided	4.82	0.415
RAT5	Frequency of IT system use in daily activities	4.82	0.419

Table 1 indicates that respondents strongly perceive the new IT system as offering significant enhancements compared to older versions, with RAT1 (Mean = 4.91, SD = 0.299) ranked highest. This suggests that improvements in system functionality are the most influential driver of adoption. The second-ranked factor, RAT2 (Mean = 4.86), highlights the system's usefulness in supporting daily tasks, while RAT3 (Mean = 4.83) reflects its impact on work behaviours. Both RAT4 and RAT5 (Mean = 4.82) emphasize the usefulness of IT tools and their frequent use in daily activities, though they scored slightly lower.

The findings related to the Relative Advantage (RAT) construct are consistent with a substantial body of prior research on ICT innovation adoption and performance outcomes. Relative advantage has long been recognized as a critical determinant of users' perceptions of technology value, closely associated with perceived usefulness and actual system utilization. Wang and Wang (2008) demonstrate that technologies perceived as offering superior benefits over existing systems are more likely to be adopted and integrated into routine work practices. This relationship is particularly relevant in operational environments such as policing, where perceived improvements in efficiency, accuracy, and task effectiveness directly influence job performance.

Similarly, AbuAkel and Ibrahim (2023) highlight that relative advantage plays a significant role in shaping positive perceptions toward new ICT systems, thereby facilitating adoption and sustained use. Their findings suggest that when users perceive tangible performance benefits, such as time savings or improved task execution, resistance to technological change is reduced. Damanpour's (1996) meta-analysis further reinforces this perspective by demonstrating that organizational innovations, including ICT systems, have a measurable impact on work behaviour and individual performance, particularly when the innovation offers clear operational advantages.

Rogers' (2003) Diffusion of Innovations theory provides the foundational explanation for this relationship, emphasizing that technologies perceived as superior to existing practices are more likely to be used frequently and embedded within organizational routines. In contemporary policing contexts, recent studies extend this understanding by showing that advanced ICT systems, including AI-enabled decision-support tools and digital case management platforms, enhance job performance when officers perceive them as improving decision quality, speed, and coordination (Halford, 2026; Lee, Kim, & Kim, 2026; Fiarni, Yonata, & Saraswati, 2026).

Within the Abu Dhabi Police Traffic Department, the perceived relative advantage of ICT innovations such as automated enforcement systems, real-time analytics, and integrated databases appears to reinforce officers' confidence in technology-supported policing. These systems are perceived as reducing manual workload, improving enforcement accuracy, and enabling faster response to traffic incidents. Consistent with prior literature, such positive perceptions strengthen technology utilization and translate into improved individual job performance, supporting the strategic objectives of smart and data-driven policing. Collectively, these findings affirm that perceived relative advantage remains a central driver of successful ICT innovation adoption and performance enhancement in modern law enforcement organizations.

4.2 Compatibility (COM)

There are four compatibility-related factors of ICT innovation features that influence technology adoption and subsequently affect job performance. The results of the analysis are presented in Table 2.

Table 2. Compatibility factors

Factor	Description	Mean	Std. Deviation
COM1	Fit of IT system into daily routines	4.83	0.392
COM2	Compatibility with past experiences	4.82	0.398
COM3	Impact of compatibility on willingness to adopt	4.84	0.390
COM4	Satisfaction with system's ability to meet job needs	4.85	0.390

Table 2 indicates that respondents perceive the IT system as highly compatible with their work routines, past experiences, and job requirements. The highest-rated factor was COM4 (Mean = 4.85, SD = 0.390), suggesting strong satisfaction with the system's ability to meet job-related needs. Close behind, COM3 (Mean = 4.84) highlights that compatibility significantly influences users' willingness to adopt the system. COM1 (Mean = 4.83) shows that the system fits well into daily routines, while COM2 (Mean = 4.82) reflects favourable alignment with users' prior technological experiences.

The findings related to the Compatibility construct are strongly supported by prior research on ICT innovation adoption and performance. Compatibility, defined as the degree to which a technology aligns with users' existing work practices, professional values, and prior experiences, has been consistently identified as a critical determinant of successful technology integration. Karahanna et al. (2006) emphasize that compatibility with preferred work styles and established routines significantly influences users' acceptance of new systems. This aligns closely with the high ratings observed for COM4, indicating that officers perceive the ICT system as compatible with their operational work methods.

Similarly, Bunker, Kautz, and Nguyen (2007) highlight the role of value compatibility in shaping positive attitudes toward IT adoption. Their findings correspond with the high mean

score recorded for COM3, suggesting that officers' willingness to use the ICT system is reinforced when the technology aligns with their professional values and organizational expectations. In policing environments, where adherence to procedural standards and institutional norms is essential, perceived value compatibility plays a particularly important role in supporting effective system use and performance outcomes.

Orlikowski's (1992) concept of the duality of technology further explains how ICT systems become embedded within everyday work practices, shaping and being shaped by user behavior. This perspective is consistent with the favorable responses for COM1, which indicate that officers perceive the ICT system as well-suited to their daily traffic policing routines. When technology complements rather than disrupts existing workflows, it is more likely to enhance efficiency, coordination, and task execution.

In addition, Tornatzky and Klein's (1982) meta-analysis demonstrates that compatibility with users' past experiences significantly influences innovation adoption decisions. This finding aligns with the positive perceptions reflected in COM2, where respondents reported favourable prior experiences with technology, reinforcing confidence in adopting new ICT systems. In contemporary policing contexts, recent research suggests that compatibility is increasingly important as advanced digital and AI-enabled systems are introduced, requiring alignment with legal frameworks, operational protocols, and officer expertise to positively affect job performance (Halford, 2026; Lee, Kim, & Kim, 2026).

Overall, the consistently high mean scores and low standard deviations across the compatibility indicators suggest strong consensus among respondents regarding the alignment of the ICT system with their work practices and values. These findings reinforce the central role of perceived compatibility in facilitating ICT adoption and in translating technological innovation into improved individual job performance within the Abu Dhabi Police Traffic Department.

4.3 Trialability (TRI)

There are four trialability -related factors of ICT innovation features that influence technology adoption and subsequently affect job performance. The results of the analysis are presented in Table 3.

Table 3. Trialability factors

Factor	Description	Mean	Std. Deviation
TRL1	Benefit of small-scale trials before adoption	4.81	0.410
TRL2	Trialability's influence on likelihood of adoption	4.87	0.369
TRL3	Interconnectedness of utility, ease of use, and intention	4.88	0.341
TRL4	ICT tools improving job performance increase future use	4.84	0.388

Table 3 indicates that respondents perceive trialability as an important factor in ICT adoption.

The highest-rated item was TRL3 (Mean = 4.88, SD = 0.341), showing strong agreement that utility, ease of use, and intention to adopt ICT solutions are interconnected. This was closely followed by TRL2 (Mean = 4.87), which highlights that the ability to experiment with ICT tools positively influences adoption decisions. TRL4 (Mean = 4.84) further emphasizes that ICT tools improving job performance increase the likelihood of future use. Although TRL1 (Mean = 4.81) ranked lowest, it still reflects a positive perception of the benefits of small-scale trials before full adoption.

The findings related to the Trialability construct are consistent with prior research emphasizing the importance of experiential learning and phased implementation in ICT innovation adoption. Trialability allows users to experiment with new technologies on a limited basis, reducing uncertainty and shaping positive perceptions regarding usefulness and ease of use. Duan et al. (2023), in their study on digital work and job performance, highlight the interdependence between perceived utility, ease of use, and intention to continue using digital technologies. This relationship aligns closely with the results for TRL3, where respondents indicated that hands-on experience with the ICT system enhanced their understanding of its operational value and contribution to job performance.

Similarly, Hafizah Mohamad Hsbollah and Kamil Md. Idris (2009) emphasize that trialability plays a significant role in facilitating technology adoption by allowing users to assess system benefits before full-scale implementation. This finding corresponds with the positive responses observed for TRL2, suggesting that officers' willingness to engage with the ICT system increased when they were able to test its functionality in a controlled or pilot setting. Such opportunities are particularly important in policing environments, where operational reliability and procedural accuracy are critical.

Furthermore, Duan et al. (2023) demonstrate that ICT tools perceived as improving job performance are more likely to be used continuously in the future, supporting the findings related to TRL4. When officers observe tangible improvements in efficiency and task execution during trial phases, their confidence in the technology strengthens, reinforcing sustained use. In addition, Hafizah Mohamad Hsbollah and Kamil Md. Idris (2009) highlight the effectiveness of small-scale trials in reducing resistance to change and encouraging gradual adaptation, which aligns with the favorable perceptions reflected in TRL1.

Overall, these findings underscore the importance of trialability in shaping positive perceptions of ICT innovation and translating early user experiences into improved job performance. In the context of the Abu Dhabi Police Traffic Department, structured pilot programs and phased ICT implementation appear to play a crucial role in enhancing officers' confidence, acceptance, and performance outcomes associated with new technological systems.

4.4 Observability (OBS)

There are four observability-related factors of ICT innovation features that influence technology adoption and subsequently affect job performance. The results of the analysis are presented in Table 4.

Table 4. Observability factors

Factor	Description	Mean	Std. Deviation
OBS1	Visibility of innovations within the organization	4.83	0.398
OBS2	Ease of observing innovation benefits	4.81	0.408
OBS3	Sharing observations and experiences with others	4.81	0.406
OBS4	Positive attitude from constant ICT exposure	4.87	0.349

Table 4 indicates that respondents generally perceive observability as a strong enabler of ICT adoption. The highest-rated factor was OBS4 (Mean = 4.87, SD = 0.349), suggesting that constant exposure to ICT fosters a positive attitude toward its use. OBS1 (Mean = 4.83) highlights that innovations are clearly visible within the organization, reinforcing transparency and accessibility. Both OBS2 and OBS3 (Mean = 4.81) emphasize that users find it easy to observe innovation benefits and frequently share their experiences with others, though these factors scored slightly lower.

The findings related to the Observability construct are consistent with prior research highlighting the role of visible outcomes in shaping ICT usage and performance. Observability reflects the extent to which the benefits and results of an innovation are apparent to users and stakeholders, thereby reinforcing positive perceptions and sustained use. Badda and Rahmouni (2023) found that higher levels of observability in information systems significantly influence both frequency of use and overall work performance. This finding supports the results associated with OBS4, where regular exposure to ICT systems appears to foster favorable attitudes and stronger perceptions of their contribution to job performance.

Similarly, Baughan et al. (2020) demonstrated that when technological innovations are clearly visible within an organization, user engagement, satisfaction, and confidence in system effectiveness increase. This aligns with the positive responses observed for OBS1, indicating that officers perceive ICT innovations as clearly visible and recognizable within the organizational environment. In policing contexts, where performance outcomes such as faster response times, improved enforcement accuracy, and enhanced public safety are measurable, visible results strengthen officers' belief in the value of ICT systems.

Overall, these findings suggest that high observability enhances officers' perceptions of ICT effectiveness by making performance improvements tangible and easily identifiable. Within the Abu Dhabi Police Traffic Department, the visibility of ICT-driven outcomes appears to reinforce technology acceptance and contributes positively to individual job performance, supporting the broader objectives of smart and performance-oriented policing.

4.5 Complexity (LEX)

There are four complexity-related factors of ICT innovation features that influence technology adoption and subsequently affect job performance. The results of the analysis are presented in Table 5.

Table 5. Complexity factors

Factor	Description	Mean	Std. Deviation
LEX1	Time-consuming vs. straightforward use	4.83	0.388
LEX2	User-friendliness of IT system	4.83	0.388
LEX3	Simplicity contributing to ease of use	4.81	0.402
LEX4	Simplicity encouraging regular use	4.84	0.377

Table 5 indicates that respondents generally perceive the IT system as simple and easy to use, with consistently high mean scores across all items. The highest-rated factor was LEX4 (Mean = 4.84, SD = 0.377), suggesting that users believe the system's simplicity encourages regular use. Both LEX1 and LEX2 (Mean = 4.83) highlight that the system is regarded as straightforward and user-friendly, reinforcing the perception of low complexity. LEX3 received a slightly lower mean score (4.81), but still reflects a positive view of simplicity as a contributor to ease of use.

The findings related to the perception of ICT system complexity are consistent with prior research examining the relationship between system design, user experience, and performance outcomes. Perceived complexity reflects the extent to which users view an ICT system as difficult to understand or operate, which can directly influence both frequency of use and job performance. Badda and Rahmouni (2023) demonstrate that higher levels of system complexity significantly reduce usage frequency and negatively affect overall work performance. This finding supports the results associated with LEX4, indicating that system simplicity encourages regular and sustained use.

Furthermore, Baughan et al. (2020) show that visual and functional complexity negatively impacts search efficiency and information recall, reinforcing the preference for intuitive and user-friendly system interfaces. This aligns with the positive perceptions reflected in LEX1 and LEX2, where respondents reported that the ICT system is straightforward and easy to use. In operational policing environments, such as traffic enforcement, where officers must process information quickly and accurately, reduced system complexity plays a critical role in supporting effective decision-making.

Overall, these findings suggest that low perceived complexity enhances officers' confidence in ICT systems, facilitates consistent use, and contributes positively to individual job performance. Within the Abu Dhabi Police Traffic Department, user-friendly system design appears to be a key factor in ensuring that ICT innovations support, rather than hinder, operational efficiency and service quality.

4.6 Overall Hierarchy of Traits

The overall hierarchy of traits for improving ICT use, based on respondents' perceptions, is illustrated in Figure 1. Mean scores across all constructs ranged from 4.76 to 4.92, reflecting consistently high ratings and generally positive perceptions of the ICT system. Among the traits, Relative Advantage (RAT1) was ranked highest (Mean = 4.91), indicating that

respondents strongly perceived significant enhancements in the new IT system compared to older versions. Conversely, Observability (OBS2) received the lowest mean score (Mean = 4.76), suggesting that while visibility of innovations was acknowledged, it was relatively less influential compared to other traits. Overall, the narrow range of mean scores demonstrates strong consensus among respondents, underscoring the importance of all five traits which are Relative Advantage, Compatibility, Trialability, Observability, and Complexity in shaping ICT adoption.
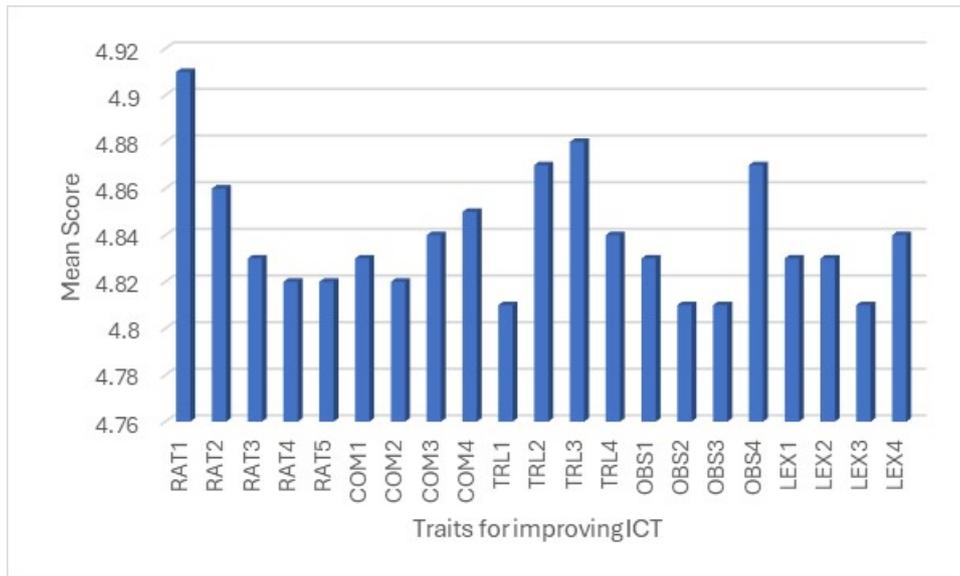
Figure 1. Hierarchical bar chart of ICT traits

5. Conclusion

This study examined the perceived impact of ICT innovation on job performance in the Abu Dhabi Police Traffic Department, using a hierarchical ranking methodology to evaluate five key innovation attributes: relative advantage, compatibility, trialability, observability, and complexity. The findings indicate that officers' perceptions of these ICT features play a substantial role in enhancing individual job performance within traffic policing operations. Consistently high mean scores across all constructs reflect strong acceptance of ICT systems and highlight the perceived effectiveness of these technologies in supporting daily operational tasks.

Relative advantage emerged as the most influential attribute, demonstrating that officers perceive ICT systems as providing clear improvements over previous technologies, particularly in terms of functionality, efficiency, and contribution to task effectiveness. Compatibility was also highly ranked, emphasizing that alignment with existing work routines, professional experience, and organizational practices significantly influences officers' willingness to adopt and use ICT tools. Trialability reinforced positive perceptions by allowing officers to test new systems, reduce uncertainty, and build confidence prior to

full-scale implementation. While observability was ranked lower than other attributes, it still positively influenced perceptions by making performance improvements visible, fostering transparency, and reinforcing favorable attitudes toward ICT use. Complexity was perceived as low, indicating that user-friendly system design and intuitive interfaces support regular usage and seamless integration into officers' daily workflows.

The relatively narrow range of mean scores across all five attributes underscores a strong consensus among officers that each dimension of ICT innovation contributes to enhanced job performance. These findings suggest that perceptions of ICT usefulness, ease of integration, and tangible benefits are central to maximizing its impact on employee performance. Practically, the study provides actionable insights for the Abu Dhabi Police Traffic Department and other public sector organizations: prioritizing ICT features that are perceived as advantageous, compatible, testable, observable, and simple can enhance acceptance, increase operational efficiency, and improve service delivery outcomes.

Hence, the study highlights that officers' perceptions of ICT innovation are a critical determinant of its effectiveness in traffic policing. By understanding and addressing these perceptions, law enforcement agencies can optimize technology adoption strategies, ensure meaningful improvements in individual job performance, and strengthen the overall impact of ICT on organizational outcomes.

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