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ORIGINAL RESEARCH ARTICLE

Comparative Assessment of CCTV Implementation in Government and Private Places in the Province of Capiz, Philippines

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ABSTRACT

Guided by rational choice theory and deterrence theory, this study explored how Closed-Circuit Television (CCTV) systems are implemented in both government and private sectors in the Province of Capiz, Philippines. Using a descriptive-comparative approach, the study gathered data from 1,567 respondents—including police officers, barangay chairpersons, and security guards—from 17 municipalities and cities through stratified random sampling. A validated and reliable researcher-made questionnaire was used to collect the data. The results showed that CCTV systems were generally in place in government- owned establishments, while implementation in private establishments was only moderate. Differences in perceptions were also evident across respondent groups. Statistical analysis revealed that police officers and security guards consistently rated CCTV implementation higher than barangay chairpersons in both sectors. This suggests that professional roles and day-to-day exposure to security operations shape how CCTV effectiveness is viewed. When examined through the lenses of rational choice and deterrence theories, CCTV emerges as an important tool that discourages crime by increasing the perceived risk of being detected and punished. Overall, the findings emphasize the need for clearer policies, stronger coordination among agencies, and continued investment in surveillance infrastructure to improve public safety and promote more effective governance in both public and private spaces.

Keywords: *CCTV, Deterrence Theory, Government-Owned Place, Private Owned Place, Rational Choice Theory*

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INTRODUCTION

Crime remains one of the most enduring social challenges worldwide, continuously threatening the safety, order, and overall well-being of communities. As societies experience rapid urbanization and technological growth, there is an increasing need to adopt innovative approaches to crime prevention and investigation. As argued by Bowers and Johnson (2024), that technological growth creates new crime opportunities but also enables innovative policing tools, urging responsibilities adoption to enhance prevention and investigation. As supported by Acuña and Parojenog (2024a), CCTV implementation has very high impact on enhancing public safety and reducing crime, particularly when evaluating core functions like deterrence and evidence provision. Understanding why individuals commit crimes and how preventive measures influence behavior is essential in addressing this concern. In this regard, two criminological perspectives provide valuable insights: Rational choice theory and deterrence theory.

Rational choice theory, advanced by Cornish and Clarke (2010), suggests that individuals engage in criminal behavior after carefully weighing potential benefits against possible risks and costs, such as the likelihood of detection, arrest, and punishment. Complementing this view, deterrence theory rooted in the works of Cesare Beccaria in 1764 and Gary Becker in 1968, Nagin (2013) argues that crime can be discouraged when punishment is perceived as certain, swift, and severe. Together, these theories highlight the importance of interventions that increase the perceived risks of committing crime, thereby influencing individuals to choose lawful behavior over offending.

One widely adopted technological intervention consistent with these theoretical perspectives is the Closed-Circuit Television (CCTV) system. CCTV functions as a surveillance tool that deters potential offenders by increasing the perceived risk of being identified, while also aiding law enforcement through the provision of visual evidence. As found out by Ashby (2017), based on his analysis of over 250,000 crimes finds CCTV frequently useful for detection (e.g., direct recognition or indirect forensic links), complementing preventive deterrence by aiding post- offence apprehension. According to Priks (2015), based on his study using quais-experimental analysis shows CCTV reduces thefts by increasing perceived detection risks, consistent with deterrence offenders avoid monitored areas due to heightened subjective costs. In the Philippine context, Falangon (2022) reported that the Local government unit of Bontoc installed CCTV systems in key public areas to improve

monitoring and enhance public safety. Similarly, studies by Aballe et al. (2022) and Cuevas et al. (2016) emphasized that CCTV contributes to crime reduction, strengthens public security, and promotes discipline among citizens. Further supporting these findings, Benter et al. (2022) observed that the presence of CCTV cameras positively influences individual behavior and assists law enforcement agencies in maintaining public order an outcome consistent with rational choice theory's prediction that behavior changes when risks increase.

Despite the growing use of CCTV systems, concerns persist regarding their implementation, management, and overall effectiveness. Meta-analyses and systematic reviews by Welsh and Farrington (2009) reported mixed but generally positive effects of CCTV on crime reduction in urban settings, noting an average decrease of about 7% in city centers. The impact, however, varied across countries and locations, such as parking facilities and public transport areas. Building on this, a more recent 40-year systematic review and meta-analysis by Piza et al. (2019) synthesized 80 evaluations and found CCTV associated with a significant but modest overall crime reduction (approximately 16% in some contexts), with the strongest and most consistent effects observed in car parks and when systems were actively monitored, further emphasizing perceptual deterrence mechanisms. Most existing studies have focused on CCTV surveillance in the Philippines predominantly focuses on urban centers (e.g., Metro Manila) or other rural provinces like Bohol and Mountain Province, leaving Capiz underrepresented. For instance: A 2024 study on CCTV's impact in rural Talibon, Bohol, found it "very effective" in reducing crime rates through deterrence and faster investigations (Acuña and Parojenog, 2024a). Similar research in Bontoc, Mountain Province, emphasized CCTV's role in monitoring public spaces and establishments, but noted limitations in rural coverage due to uneven implementation (Falangon, 2022). Another Bohol-based study in Trinidad assessed property crime deterrence, showing CCTV's influence on behavioral changes, yet it called for more comparative analyses between sector (Acuña and Parojenog, 2024b).

In the Philippines, while surveillance technology continues to expand, research examining the level of CCTV implementation in the province of Capiz remains scarce. To address this gap, the present study conducts a comparative assessment of the level of CCTV implementation in government and private sectors in the province of Capiz, Philippines, as perceived by different groups of stakeholders. Anchored on Rational Choice Theory and Deterrence Theory, the study assumes that surveillance systems such as CCTV influence individuals' cost–benefit calculations by increasing the perceived risk of detection, thereby discouraging criminal behavior and promoting safer environments. The findings are expected to generate empirical evidence that can guide policy formulation, local ordinances, and law enforcement strategies, ultimately strengthening the effective use of CCTV systems in both government and private settings.

MATERIALS AND METHODS

Description of the study area

The province of Capiz, located in the northeastern portion of Panay Island, Western Visayas region (Region VI), Philippines. It covers a land area of 2,594.64 km^2, bordered by Aklan (north), Antique (west), Iloilo (south) and the Sibuyan Sea (north). The province features diverse topography with coastal plains, river systems (e.g., Panay, Loctugan, Ivisan), and upland/mountainous areas (highest: Mount Nangtud at 2,074 m). Known as the "Seafood Capital of the Philippines", its economy centers on agriculture (rice, corn, coconut, sugarcane, banana) and aquaculture (prawns, milkfish, crabs, oysters, capiz shells. Geographical representation was ensured by proportionately distributing respondents across all 17 municipalities and cities in the province of Capiz.

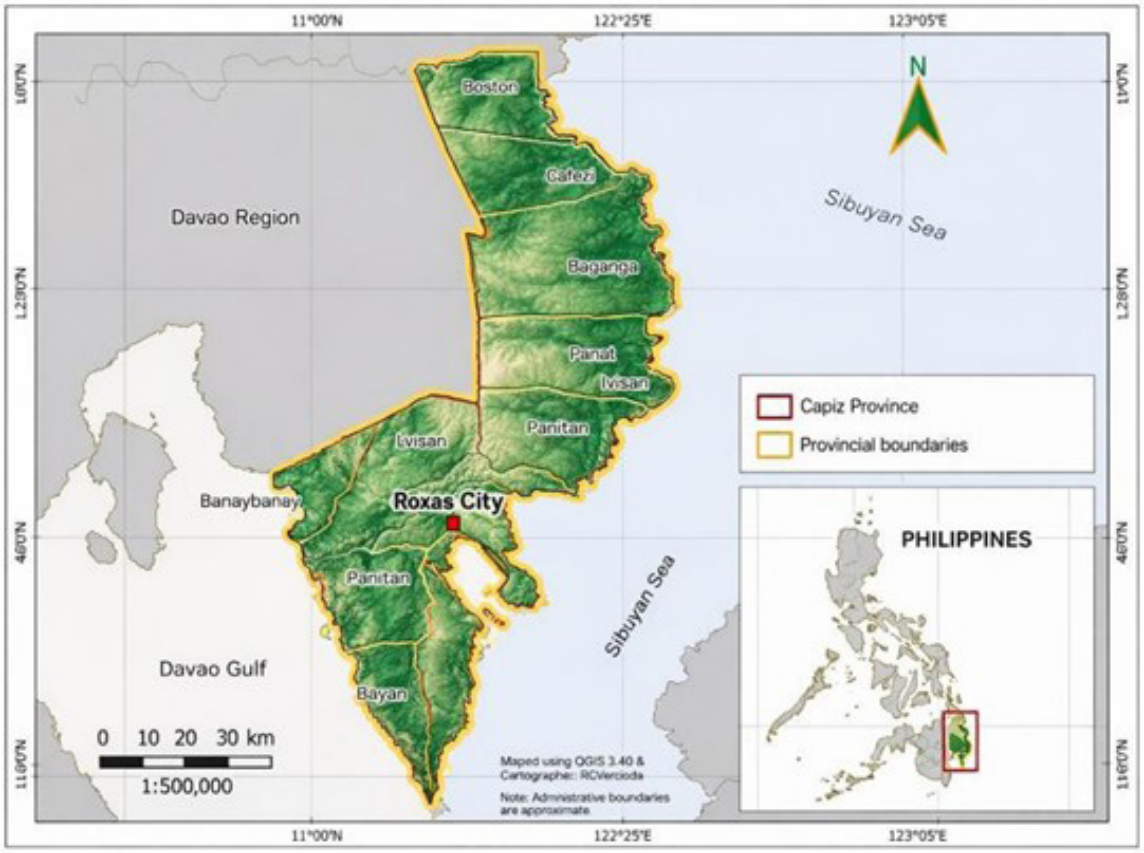

Figure 1. Map showing the province of Capiz, Philippines.

This study employed a descriptive-comparative research design to examine and compare the perceived level of CCTV implementation in government-owned and private-owned establishments, as assessed by three groups of respondents. A stratified random sampling technique was used to ensure adequate and balanced representation of key stakeholders involved in community safety and security across the Province of Capiz, Philippines. The population was divided into three occupational strata: (1) police officers, (2) barangay chairpersons, and (3) security guards. Stratification based on occupation was adopted to capture diverse perspectives from individuals directly engaged in law enforcement, local governance, and private security operations. Respondents were randomly selected from updated official rosters obtained from the Capiz Provincial Police Office, the Department of the Interior and Local Government (DILG), and licensed private security agencies accredited by the Philippine National Police–Supervisory Office for Security and Investigation Agencies (PNP–SOSIA).

A total of 1,567 respondents participated in the study, consisting of 611 police officers, 444 barangay chairpersons, and 512 security guards. The sample size was considered sufficient for inferential analysis and cross-group comparison, minimizing sampling variability within strata while maintaining heterogeneity across respondent groups.

Random selection was conducted using computer-generated random numbers through Microsoft Excel's RAND function to eliminate researcher bias. In cases of non-availability or withdrawal, replacements were allowed only within the same stratum and municipality. To ensure anonymity and accurate data management, each respondent was assigned a unique identification code. Overall, this sampling approach ensured comprehensive representation of the three occupational groups and enhanced the external validity and generalizability of the findings to the entire province of Capiz. Most respondents were middle-aged to older males and college graduates, with a majority being long-term residents of the province suggesting a strong familiarity with local community conditions and security concerns.

A researcher-made questionnaire was developed based on relevant literature and previous studies. The instrument assessed the level of CCTV implementation in government-owned and private-owned establishments as perceived by the three respondent groups. Responses were measured using a five-point Likert scale ranging from *Not Implemented* (1) to *Highly Implemented* (5). The questionnaire underwent content validation to ensure alignment with the study's objectives. A pilot test involving 50 respondents excluded from the actual study was conducted to determine reliability. Results showed excellent internal consistency, with Cronbach's alpha values of 0.97 for government-owned establishments and 0.95 for private-owned establishments, indicating that the instrument was both valid and reliable. Prior to data collection, the researchers secured clearance and informed consent from the heads of the respective agencies and offices. The face-to-face distribution of the questionnaire was conducted to accommodate respondents' questions and clarifications regarding the content. The survey questionnaire, originally developed in English, was translated into the Cebuano Visayan dialect (also known as *Binisaya*) to ensure accessibility and comprehension among the target respondents, many of whom are more proficient in their native regional language. Questionnaires were distributed through face- to-face administration to allow respondents to seek clarification when necessary. Data collection was conducted over a three-month period from January to March 2023, with strict confidentiality observed throughout the process. Basic and inferential statistical analyses were performed using jamovi software. Descriptive statistics were employed to summarize the ordinal data, while assumption checks including tests for normality (e.g., Shapiro-Wilk) and homogeneity of variances (e.g., Levene's test) were conducted. As the data satisfied these assumptions, a one-way analysis of variance (ANOVA) was performed using jamovi to test the study's hypotheses. The study complied with established ethical standards and received approval from the De La Salle University–Dasmariñas ethics review committee, under protocol code DERC_23-24_161M.

RESULTS

Table 1. Level of implementation of closed-circuit television in a government-owned place.

Indicators	Mean	SD	VI	Rank
1. Government banks/ lending companies	4.48	0.95	Highly implemented	1
2. Police Stations	3.80	1.35	Implemented	2
3. City hall	3.75	1.36	Implemented	4
4. Airport	3.75	1.40	Implemented	4
5. Fire Stations	3.75	1.35	Implemented	4
6. Provincial and City Jails	3.74	1.35	Implemented	6
7. Municipal hall	3.71	1.35	Implemented	7.5
8. Hall of justice	3.71	1.38	Implemented	7.5
9. Provincial capitol	3.70	1.38	Implemented	9
10. Public hospitals	3.64	1.37	Implemented	10
11. Land Transportation Office	3.58	1.34	Implemented	11
12. National Food Authority	3.56	1.32	Implemented	12
13. Roads (i.e., national, provincial, city, and barangay)	3.43	1.33	Implemented	13
14. Public markets	3.41	1.75	Implemented	14
15. Barangay hall	3.35	1.54	Moderately implemented	15
16. Public schools	3.31	1.50	Moderately implemented	16
17. Public plaza or park	3.26	1.58	Moderately implemented	17
18. Resorts/beaches	3.23	1.39	Moderately implemented	18
19. Public parking areas	3.15	1.55	Moderately implemented	19
20. Public motor vehicle terminals	3.13	1.56	Moderately implemented	20
Overall mean and standard deviation	3.57	1.22	Implemented	–

Table 1 shows that the level of Closed-Circuit Television (CCTV) implementation in government-owned establishments in Capiz was highest in government banks and lending institutions, which recorded a mean score of 4.48 (SD = 0.95). This finding indicates that financial institutions have extensively adopted CCTV systems, reflecting a strong commitment to security in environments where monetary transactions and high-risk activities take place.

Other government-owned establishments including police stations, city and municipal halls, airports, fire stations, provincial and city jails, halls of justice, provincial capitols, public hospitals, Land Transportation Offices, National Food Authority facilities, and public markets posted mean scores ranging from 3.41 to 3.80. These results suggest that CCTV systems are generally in place across these facilities, although the level of implementation is slightly lower compared to financial institutions.

Meanwhile, barangay halls, public schools, plazas, resorts, public parking areas, and motor vehicle terminals exhibited moderate levels of CCTV implementation, with mean scores between 3.13 and 3.35. This indicates partial surveillance coverage in these areas, which may limit their effectiveness in deterring crime and enhancing public safety.

Overall, the aggregate mean score of 3.57 (SD = 1.22) suggests that CCTV systems in government-owned establishments in Capiz are generally implemented. However, the variation across facility types highlights differences in security priorities and perceived risk, underscoring the need for more consistent and strategic deployment of surveillance systems in public spaces.

Table 2. Level of implementation of closed-circuit television in a private-owned place.

Indicators	Mean	SD	VI	Rank
1. Private banks/ lending companies	4.44	.99	Highly implemented	1
2. Malls/boutiques/shoe stores	4.42	.96	Highly implemented	2
3. Pawnshops and jewelry stores	3.76	1.35	Implemented	3
4. Private hospitals/ medical clinics/ dental clinics	3.70	1.30	Implemented	4
5. Private schools	3.60	1.29	Implemented	5
6. Hotels/motels/lodging houses	3.57	1.41	Implemented	6
7. Gun stores/ gun clubs	3.51	1.44	Implemented	7
8. Gasoline stations	3.39	1.39	Moderately implemented	8
9. Lottery outlet	3.27	1.34	Moderately implemented	9
10. Internet shops/internet cafes	3.22	1.41	Moderately implemented	10
11. Amusement parks	3.14	1.57	Moderately implemented	12
12. Restaurants	3.14	1.52	Moderately implemented	12
13. Rice mills	3.14	1.30	Moderately implemented	12
14. Cockpit arenas	3.13	1.41	Moderately implemented	14
15. Churches	3.11	1.59	Moderately implemented	15
16. Private motor vehicle terminals	3.09	1.58	Moderately implemented	16
17. Review and training centers	3.07	1.54	Moderately implemented	17
18. Private parking areas	3.06	1.53	Moderately implemented	18.5
19. Boarding houses/apartments	3.06	1.49	Moderately implemented	18.5
20. Bars (KTV/ night club)	3.01	1.53	Moderately implemented	20
21. Pet shops/ agricultural stores	2.96	1.48	Moderately implemented	21
22. Waters refilling stations	2.91	1.47	Moderately implemented	22
23. Bakeshops	2.89	1.48	Moderately implemented	23
24. Salons/parlors/barbershops	2.88	1.47	Moderately implemented	24
25. Carwash shops	2.87	1.47	Moderately implemented	25
26. Laundry shops	2.86	1.49	Moderately implemented	26
Overall mean and standard deviation	3.28	1.22	Moderately implemented	--

Table 2 indicates that the highest levels of CCTV implementation were found in private banks and lending institutions (M = 4.44) and in malls, boutiques, and shoe stores (M = 4.42). These establishments demonstrate a strong commitment to security and surveillance, as reflected in their relatively low standard deviations, which suggest consistent implementation practices across these business types.

Other private-owned establishments including pawnshops and jewelry stores, hospitals and medical or dental clinics, private schools, hotels, motels, lodging houses, and gun stores or clubs recorded mean scores ranging from 3.51 to 3.76. These findings indicate that CCTV systems are generally well implemented in these establishments, although to a slightly lesser extent compared to banks and large retail centers.

In contrast, gasoline stations, lottery outlets, internet cafés, restaurants, cockpit arenas, and boarding houses exhibited moderate levels of CCTV implementation, with mean scores between 2.86 and 3.39. This suggests partial or selective use of surveillance systems in these establishments, which may affect their capacity to deter crime and ensure customer safety. Overall, the aggregate mean score of 3.28 (SD = 1.22) reflects a moderate level of CCTV implementation across private-owned establishments in Capiz. The observed variations across business categories highlight differences in perceived security risks, financial capacity, and regulatory priorities, pointing to the need for more uniform security standards in the private sector.

Table 3. Test of Significant Difference in the Level of Implementation of Closed-Circuity Television when grouped according to the Category of Respondents.

		Df	Mean square	F	*p*-value	Effect size
Government- owned CCTV	Between groups	2	203.07	165.05	.001	0.23
	Within groups	1.56	1.23			
	Total	1.57				
Private-owned CCTV	Between groups	2	201.58	164.08	.001	0.27
	Within groups	1.56	1.23			
	Total	1.57				

**Significant if the *p*-value is ≤0.05

Table 3 presents the results of the one-way Analysis of Variance (ANOVA) conducted to determine whether significant differences exist in the perceived level of Closed-Circuit Television (CCTV) implementation in government-owned and private-owned establishments when respondents are grouped according to their occupational roles.

For government-owned establishments, the analysis revealed a statistically significant difference among police officers, barangay chairpersons, and security guards, Df = 1.57, $p < .001$, $\eta^2 = 0.23$. Since the p-value is well below the 0.05 level of significance, the null hypothesis was rejected. This finding indicates that respondents differed meaningfully in their assessments of CCTV implementation in government facilities. The large effect size ($\eta^2 = 0.23$) further suggests that occupational differences accounted for a substantial proportion of the variation in these assessments.

Similarly, for private-owned establishments, the one-way ANOVA showed a statistically significant difference among respondent groups, Df =1.57, $p < .001$, $\eta^2 = 0.27$. The rejection of the null hypothesis confirms that perceptions of CCTV implementation in private establishments varied significantly across occupational categories. The large effect size ($\eta^2 = 0.27$) indicates that respondents' professional roles strongly influenced how CCTV deployment was perceived in private settings. Post hoc comparisons using Tukey's Honestly Significant Difference (HSD) test identified specific group differences in both sectors. In government-owned establishments, significant mean differences were observed between police officers and barangay chairpersons (MD = 1.05, $p < .001$) and between police officers and security guards (MD = 1.04, $p < .001$), showing that police officers and security guards consistently rated CCTV implementation higher than barangay chairpersons. A similar pattern emerged in private-owned establishments, where significant differences were found between police officers and barangay chairpersons (MD = 1.06, $p < .001$) and between police officers and security guards (MD = 1.02, $p < .001$).

Overall, these findings suggest that occupational experience and exposure to security operations play a critical role in shaping perceptions of CCTV implementation across both government and private establishments.

DISCUSSION

The high level of CCTV implementation in government banks and lending institutions reflects a strong institutional commitment to safeguarding financial transactions and preventing financial crimes. This finding implies that the government banks and lending institutions were compliant with the Bangko Sentral ng Pilipinas (BSP) Manual of Regulations for Banks (MORB), Section 147: Bank Protection. This mandates that all banks adopt a comprehensive security program, explicitly including closed-circuit television (CCTV) and video recording systems as essential devices "appropriate to deter the commission of bank crimes and assist the identification and apprehension of the culprit/s." Furthermore, this finding was also aligned closely with Rational Choice Theory, which posits that individuals engage in criminal behavior only after weighing potential rewards against possible risks. In highly monitored environments, the visible presence of CCTV cameras increases the perceived cost of offending by heightening the likelihood of detection, identification, and punishment. Consequently, potential offenders are discouraged from engaging in unlawful activities.

This result also supports Deterrence Theory, as exemplified by the Cebu City ordinance proposed by Councilor Sisinio Andales, which mandates the installation of CCTV cameras in both business and residential areas to aid in crime prevention and resolution ("Subdivisions, establishments required to install cameras," 2011). Such policies operationalize deterrence principles by emphasizing surveillance visibility, accountability, and preventive monitoring as mechanisms for reducing crime. Similarly, Ranjan (2024) noted that the installation of CCTV systems in police stations enhances operational efficiency and strengthens internal accountability. This finding is consistent with the Philippine National Police Memorandum Circular No. 2015-005, which mandates the use of CCTV systems in all PNP offices. Together, these initiatives demonstrate institutional recognition of surveillance technology as a tool for promoting transparency, accountability, and public trust. Mascardo (2021) documented the Bureau of Fire Protection's use of a 360-degree "Firewatcher" camera for real-time fire monitoring. These examples illustrate that CCTV systems serve not only as crime deterrents but also as tools for public safety and disaster management, highlighting their multifunctional role in governance.

Additional evidence is provided by the Jails and Prisons Monitoring Act of 2023 (Abasola, 2023), which mandates the installation of CCTV cameras and motion sensors in correctional facilities to protect Persons Deprived of Liberty (PDLs). Likewise, local ordinances in Batanes (Elica, 2021) and Cebu Province (Braga, 2014) institutionalize CCTV installation in public offices and hospitals to enhance safety and transparency. Collectively, these policies reflect a rational governance approach that integrates technology to maximize deterrence and minimize opportunities for crime.

However, the moderate level of CCTV implementation observed in smaller government facilities—such as barangay halls and public schools may be attributed to budgetary constraints, technical limitations, or varying perceptions of security risks. As supported by Maroma, Maroma, and Pangilinan (2024), in their study in Bulacan barangays (San Miguel, Calumpit, Tibig, and Bulakan) notes that smaller local government units (LGUs) often lack funds for independent CCTV deployment, relying on university partnerships or external aid to install systems. Furthermore, as emphasized by Olipas (2024), the importance of strategic CCTV planning but implied underlying constraints through recommendations for follow-up external support, highlighting how smaller LGUs struggle with independent implementation due to limited budgets and expertise. Matanguihan (2017) reported similar findings in Los Baños, where CCTV installations in schools and barangay halls improved community safety but remained limited in coverage. Partial surveillance may weaken the certainty of detection, thereby reducing the deterrent effect emphasized by Deterrence Theory.

International experiences further reinforce these observations. Between 1997 and 1999, more than 200 French cities installed CCTV systems in high-risk locations such as town halls and public spaces (Hempel and Töpfer, 2002, as cited in Baoyan, 2023). Similarly, countries such as Israel and South Africa have implemented extensive CCTV coverage in strategic areas, including airports and government buildings (Baoyan, 2023). These global practices suggest a shared recognition of CCTV as an essential component of rational governance and proactive crime deterrence.

In the Philippine context, the Department of the Interior and Local Government (DILG) Memorandum Circular No. 2022-060 further reinforces the importance of CCTV systems in areas with high human traffic. The policy supports the "no CCTV, no business permit" rule, thereby strengthening the institutionalization of surveillance as a crime prevention and public protection strategy. The high level of CCTV

implementation in private banks and commercial establishments, such as malls, also underscores the recognition of surveillance systems as essential tools for business security. This finding supports Okere's (2012) study, which revealed that most banking and commercial institutions rely on CCTV to reduce crime and enhance operational safety. Similarly, Cuevas et al. (2016) found that increased CCTV presence in commercial areas contributes significantly to security and business growth. Cameron et al. (2008) likewise observed that privately owned CCTV systems have long been used to deter criminal activity in shopping centers, reinforcing the preventive role of surveillance technology. These findings are consistent with Rational Choice Theory (Cornish and Clarke, 2010), which suggests that offenders are less likely to commit crimes in environments where the perceived risks outweigh potential rewards. In establishments such as banks and malls, the visible presence of CCTV cameras elevates the perceived certainty of detection and punishment. Complementing this, Deterrence Theory (Nagin, 2014) emphasizes that crime is less likely when punishment is perceived as certain. CCTV systems therefore function as effective deterrents by increasing the probability of apprehension through visual evidence.

Conversely, the moderate implementation of CCTV systems in smaller establishments such as gasoline stations, internet cafés, and boarding houses reflects uneven adoption patterns, often influenced by financial limitations and weaker regulatory enforcement. Cuevas et al. (2016) observed similar trends among small-scale businesses in the Philippines, where the cost of installation limits surveillance coverage. Perolina (2014) further reported that theft incidents frequently occur in establishments without CCTV systems, reinforcing the deterrence argument that weak surveillance lowers the perceived cost of offending.

Local and national policies further contextualize these findings. DILG Memorandum Circular No. 2022-060 mandates CCTV installation in commercial and financial establishments, while Davao City's amended CCTV ordinance (Trozo, 2023) requires surveillance systems as a prerequisite for business permits. These policies demonstrate the growing institutionalization of deterrence-based strategies at both national and local levels.

In general, the findings confirm that CCTV implementation in private establishments in Capiz serves both preventive and investigative functions. As supported by Falangon (2022), private business entities and establishments installed CCTV primarily to deter crime (awareness of monitoring and assist in criminal investigation) e.g., identifying suspects in theft/robbery). Similarly, based on the study of Cuevas et al. (2017), in Batangas City commercial areas, CCTV was highly effective in preventing property crimes (deterring suspects) and investigative processes (recording scenes for solving theft/robbery via suspect location and evidence). By increasing the certainty of detection and punishment, CCTV systems align with Rational Choice and Deterrence Theories, influencing offender decision-making and promoting safer business environments.

The results also indicate that perceptions of CCTV implementation vary significantly across occupational groups in both government and private establishments. These findings are consistent with Szakolczai et al. (2023), who identified CCTV as a core component of municipal governance and police operations. Their study highlighted how local authorities manage extensive surveillance networks, particularly in urban and residential areas.

Similarly, Ghimire and Rana (2022) have found out that administrators and teachers perceived CCTV as highly valuable for security, discipline, non-compliance control, and enhancing academic performance. While students viewed it negatively as oppressive, depriving them of autonomy, playfulness, and a child-friendly environment. Comparable patterns were observed by Hempel and Töpfer (2004) in the United Kingdom and Hungary, where professional experience shaped views on CCTV effectiveness. Manalo et al. (2015) likewise found that police officers in Batangas City were the strongest proponents of CCTV deployment, particularly in commercial areas.

From a theoretical standpoint, these differences can be explained through Rational Choice Theory and Deterrence Theory. Police officers and security personnel, who have direct experience with surveillance operations, are more likely to view CCTV systems as effective deterrents that increase the perceived cost of offending. As noted by Piza, Welsh, Farrington and Thomas (2019), that actively monitored CCTV (often by police or security) enhances deterrence by increasing perceived apprehension risk. In contrast, barangay chairpersons whose roles are more administrative than enforcement-oriented may have limited exposure to surveillance technology, influencing their lower assessments of implementation levels.

Deterrence Theory further supports these findings by emphasizing the role of certainty in crime prevention. CCTV systems enhance this certainty by providing continuous monitoring and reliable evidence for investigation and prosecution. The significant differences across respondent groups suggest that those directly involved in law enforcement more strongly recognize CCTV's deterrent value.

The findings demonstrate that occupational background significantly shapes perceptions of CCTV implementation. The large effect sizes observed in both government and private sectors underscore the importance of professional exposure and functional responsibilities in influencing attitudes toward surveillance technology. Donald et al. (2015), have said that specialists with surveillance backgrounds maintained or improved detection performance over time, unlike novices or generalists who showed vigilance decrements. In the Philippine context, existing studies by Cuevas et al., (2017) and Aballe et al., (2022) consistently show police and security personnel rating CCTV as highly effective for deterrence and evidence, attributing this to operational reliance-contrasting with more mixed public perceptions focused on privacy. This underscores how professional exposure and functional responsibilities (e.g., monitoring tasks) positively influences attitudes toward CCTV efficacy. Consistent with Rational Choice and Deterrence Theories, CCTV systems function as both preventive and investigative tools raising the perceived risks of criminal behavior and reinforcing compliance with laws and institutional regulations across public and private domains. CCTV primarily deters via perceptual mechanisms- increasing offenders' subjective risk of apprehension-aligning with Rational Choice (cost-benefit shifts) and Deterrence Theories. Effects are strongest when actively monitored, supporting multifunctional use across domains (Piza et al., 2019).

CONCLUSION

The study highlights that CCTV implementation in government and private establishments in Capiz goes beyond the mere use of technology, reflecting broader institutional practices and approaches to social control. Differences in perceptions across respondent groups show that views on CCTV are shaped by professional roles, risk exposure, and levels of accountability, making its effectiveness context-dependent. Occupational background emerged as a powerful moderator of perception. Law enforcement and security personnel consistently rated CCTV implementation higher and recognized

its deterrent value more strongly than barangay officials and ordinary citizens, reflecting greater professional exposure to surveillance operations. This perceptual divergence underscores that familiarity with the technology significantly shapes belief in its effectiveness. Anchored on Rational Choice and Deterrence theories, the findings affirm that CCTV discourages crime by increasing the perceived risk of detection and punishment. Higher implementation in financial and commercial establishments reflects rational responses to greater security risks, while moderate adoption in community-level spaces reveals gaps in security prioritization and governance capacity. In short, CCTV is most effective when supported by coherent policies, institutional accountability, and sustained public commitment. Strengthening CCTV systems is therefore not only a technological effort but a broader social responsibility aimed at promoting lawful behavior and community safety. The findings of this study point to the necessity of developing a more strategic, theory- informed framework for CCTV implementation that transcends mere installation and focuses on functionality, deterrence, and governance integration. Drawing from Rational Choice Theory and Deterrence Theory, CCTV systems must be designed not only to record incidents but to create an environment where the perception of risk outweighs the incentive to offend. (1) local government units (LGUs) should institutionalize standardized guidelines for CCTV operation, maintenance, and data management. These guidelines must ensure that surveillance systems in both government and private establishments function continuously, are properly monitored, and are strategically placed in high-risk zones identified through crime mapping. Doing so enhances the certainty of surveillance, a core element of deterrence. (2) inter-agency collaboration among the police, barangay officials, and private security stakeholders should be strengthened to establish a unified surveillance network. Such integration will promote efficient information sharing and real-time monitoring transforming CCTV from a reactive investigative tool into a proactive crime- prevention mechanism. (3) capacity-building initiatives for system operators, law enforcement personnel, and barangay leaders are essential. Continuous training ensures not only technical competence but also ethical handling of surveillance data, protecting citizens' privacy rights while maintaining security effectiveness. (4) policymakers should allocate sustainable funding and technical support to expand CCTV coverage in marginalized or high-crime areas. This addresses the observed inequality between private and public security systems and reinforces the rational allocation of resources where deterrence potential is greatest. Lastly, future research should explore the longitudinal effects of CCTV implementation on actual crime rates, public perception of safety, and offender adaptation behaviors. Integrating criminological theory with empirical outcomes will further clarify how surveillance influences both rational decision-making among potential offenders and collective community security.

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AUTHOR CONTRIBUTIONS

J. D. and W. D: Conceptualization. J. D. and W. D: Methodology. J. D. and W. D: Software. J. D. and W. D: Validation. J. D. and W. D: formal analysis. J. D. and W. D: Resources. J. D. and W. D: Data curation. J. D. and W. D: Writing-original draft preparation. J. D. and W. D: Writing-review editing. J. D. and W. D: Visualization. J. D. and W. D: Supervision, project administration. J. D. and W. D: Fundings acquisition.

DECLARATION

Informed consent statement

The researchers ensured that all ethical standards were strictly observed in the conduct of this study. A formal letter of permission and consent was secured from the respective heads or supervisors of the police officers, barangay chairmen, and security guard respondents. Upon approval, the researchers commenced the face-to-face distribution of the questionnaire to the target respondents, which lasted for approximately three months. The researchers assured all participants that their identities would remain confidential and that the information gathered would be used solely for academic purposes.

Conflict of interest

The researchers declare that there is no conflict of interest related to the conduct, findings, or publication of this study. All activities were carried out independently and solely for academic purposes.

AI Desclosure

The authors declare that no Artificial Intelligence (AI) or AI-assisted technologies were used in the preparatin of this manuscript.

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