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Role of Closed-Circuit Television Surveillance in Maintaining Law and Order in Rural Areas

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Abstract

In the past, closed circuit television systems (CCTVs) were used primarily for private spaces like banks or shopping centers to deter crime. The past three decades have seen increased use of it to improve public safety and prevent crime in many areas, such as parks, transit hubs, and shopping areas. Nowadays, virtually every major city in the world has installed an extensive system of CCTV cameras that are linked to control rooms with video monitors for monitoring public spaces for preventing criminal activity and raising public safety perceptions. In recent years, both hardware and software in this field have advanced exponentially, with facial recognition and license plate recognition capabilities becoming standards in the industry. Also in India and other countries, there are state-of-the-art CCTV systems that use thermal imaging and artificial intelligence to aid in anticipating certain crimes (such as robberies and assaults) before they happen. The aim of this study is to find out the role of CCTV surveillance in rural areas in maintaining law and order and its impact in controlling crime in rural areas. The study will also cover the privacy issues that arise from the use of CCTV. This study used a descriptive research design. Data were collected from 200 villagers selected on the basis of simple random sampling (probability sampling) in the rural area of Balasore through a questionnaire. From the collected data, findings were calculated using statistical tools.

Keywords: CCTV, law and order, rural area, privacy issues, crime.

Introduction

Despite its necessity for security, Closed Circuit Television (CCTV) surveillance raises privacy concerns because of the nature of how it is used and installed. Farrington, et. al. (2007). Technology for security and its applications were still fairly new when World War II began. As a result of CCTV technology, weapons were originally studied rather than humans. CCTV could view only live streams at that time, not recorded footage. Over the past two decades, CCTV has spread throughout the world. CCTV can now be found in a variety of settings, watching over people's lives. Blitz, M.J., (2003). Individuals can monitor everything from their homes to their workplaces to restaurants and shops. Crime reduction has been linked to CCTV use on both a large and small scale. Situational Crime Prevention (SCP) is a type of policing strategy that utilizes CCTV to improve formal surveillance in target areas. Rather than targeting the criminal itself, situational crime prevention focuses on the area where the crime occurs. In addition to reducing crime, CCTV might make it easier to identify and punish perpetrators. Ashby, Matthew PJ (2017). If criminals do not want to be caught, the system may deter them. Detecting suspicious activity can reduce crime by alerting police and security personnel. CCTV's effectiveness varies considerably based on specific circumstances. Clarke, et. al. (2017). When it comes to vehicle offenses, CCTV reduces 16 crimes per 100, according to the College of Policing's Crime Reduction Toolkit. The toolkit determined that CCTV's viability depends on how and where it is used based on the studies it reviewed.

The use of CCTV in public spaces has grown tremendously in recent years. It has been proven that CCTV surveillance in the public space is an important tool for both preventing and solving crimes. Xu, et. al. (2016). As a result of formal surveillance, crimes decrease in areas where they are present because of enhanced guardianship, according to the rational choice theory and routine activity theory. Rather than mapping crime to see where crime is prevalent, a more focused

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approach involves targeting specific areas where crime is likely to occur. The detection of high crime-density areas constitutes an important part of crime mapping. Hot Spot Analysis can help police identify crime hot spots, crime types, and best practices for response. Increased CCTV surveillance near hotspots suggests that both crime declines as well as crime is being displaced. Lee, et. al. (2016). Several studies have explored the effectiveness of CCTV in deterring crime, improving public perception and combating crime. CCTVs should be installed and managed according to scientific principles that reflect the local crime situation and are appropriate for the location.

Law and order maintenance through CCTV

In order to use CCTV as a crime prevention tool, the public must be made aware that they are being observed and are at higher risk of being apprehended by the law enforcement authorities if they commit a crime. O'Sullivan, S., (2005). CCTV cameras are assumed to be aware of criminal activity and rational, meaning criminals will refrain from committing crimes in areas covered by CCTV cameras. Criminals and potential criminals, however, are implicitly assumed to be rational and aware of the risks they are facing. These systems may also increase public awareness of the possibility of becoming a victim of crime. Iqbal, et. al. (2016). In addition to improving perceptions of safety, installing CCTV cameras in these areas may increase natural surveillance because a greater number of people will access these areas. Thus, CCTVs are widely believed to have a "diffusion effect," meaning that they may reduce crime in nearby areas (where CCTVs are not present).

CCTV cameras have been demonstrated to reduce crimes and bylaw violations in numerous studies, but most of them have been conducted in high- to middle-income countries. The results of a rigorous analysis of studies conducted in the United States and the United Kingdom on the impact of CCTV on crime prevention concluded in 2009 that it reduced some types of crimes, such as robbery and theft. Hollis-Peel, et. al. (2011). "Researchers found that the program was most effective in car parks (a 50 percent decrease) and public transportation schemes (a 23 percent decrease)", while crime reductions in city/town centers were negligible (a 7 percent decline). In a recent study in South Korea, robberies and theft had been reduced by 47% in localities that had CCTV cameras installed, "along with a decrease in the fear of crime. Lim, H. and Wilcox, P., (2017). In contrast, control areas without CCTV cameras did not experience the same reductions". There was a "marginal but noteworthy influence" of CCTV on crime reports throughout. Taiwan. Seil, D.M., (2020). In Medellin, Colombia, crime reported in areas targeted by CCTV decreased by 23.5%. A study conducted in Mexico City found that CCTV systems are associated with decreased non-violent crime. CCTV systems can significantly contribute to policing if they are closely paired with proactive surveillance systems.

CCTV cameras have not been studied systematic and rigorously in public spaces in South Africa. In South African urban areas, there has been a substantial increase in the amount of resources that have been invested into the installation of CCTV over the last several years. Kabudula, et. al. (2017). CCTV systems have contributed to lowering crime levels in targeted areas in South Africa, according to descriptive research and opinion surveys on CCTV and crime. The case is even more compelling if these systems are integrated with dedicated police responses.

Several local law enforcement officials have also argued that CCTV systems have reduced crime in their respective cities. However, these claims haven't been independently substantiated.

Factors influencing CCTV in maintaining law and order

In order to determine the best location for CCTV cameras, city authorities should conduct comprehensive audits regarding crime rates and crime patterns before installing or upgrading the cameras. Piza, et. al. (2014). Further, durable and comprehensive partnerships with local law enforcement agencies are needed, and they may even include neighborhood watch programs, improvement districts, and private security contractors.

It is also crucial that those who manage CCTV systems analyze the data related to crime incidents frequently and apply this knowledge to improve the system and police response in the medium- and long-term. Brookman, F. and Jones, H., (2022).

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Location of the camera	The cameras should cover the target area comprehensively and unobstructed
Capability of cameras	Cameras need to be able to record continuously both during the daytime and the nighttime, as well as be capable of multiplexing (linking recordings from multiple camera sources from a specific incident). Caputo, A.C., (2014). As well as recording high-quality images, the cameras need to have pan, tilt, and zoom capabilities. Today's cameras are equipped with both license plate and facial recognition technologies.
Robustness of cameras	As well as being able to stand up to adverse weather conditions, camera systems should be installed and housed in a manner which can prevent damage and/or disabling (including damage caused by gunshots).
Capability of control rooms	Among the monitors in CCTV control rooms, there should be at least a few that display high resolution footage captured by CCTV cameras in real time. CCTV cameras should be controlled at will by trained operators, and software should be able to identify threats and dangers and track suspects and suspicious vehicles by using algorithms and/or artificial intelligence as necessary. Also, at any one time, there should be enough operators in the control room. Additionally, police and other relevant authorities should be able to communicate easily with the control room.
Response by law enforcement	CCTV systems/operators should be able to identify relevant incidents that law enforcement/police will be able to respond to timeously and professionally.
Effectiveness as perceived by the public	The CCTV focus areas should be perceived by members of the public as improving public safety in those areas.
Perceptions of offenders	The offender should feel at risk of being caught if he or she commits a crime in one of the CCTV focus areas.
Provision for budgeting	The city's budget should contain provisions for maintaining, upgrading, and expanding the CCTV system (which includes law enforcement and analysis of the data).
Managing relationships	CCTV's crime prevention aspect should be managed by the city authorities in order to maintain good working relationships.

Laws governing CCTV in rural areas

While India's information technology rules have changed significantly since its inception, there are still plenty of improvements that can be made. Webster, C.W.R., (2004). Under the IT Act of 2000, electronic surveillance is regulated by law. A camera that takes or transmits a photo of a male or female's private parts without their consent may be charged under Section 66E of the Criminal Code. The Right to Privacy and Data Protection Bill, 2019, also addresses surveillance. India, however, lacks specific guidelines or legislation on CCTV surveillance.

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Objective

- To know the role of CCTV in maintaining law and order in rural areas.
- To study the impact of CCTV on crime in rural areas.
- To study the privacy issues arising from CCTV.

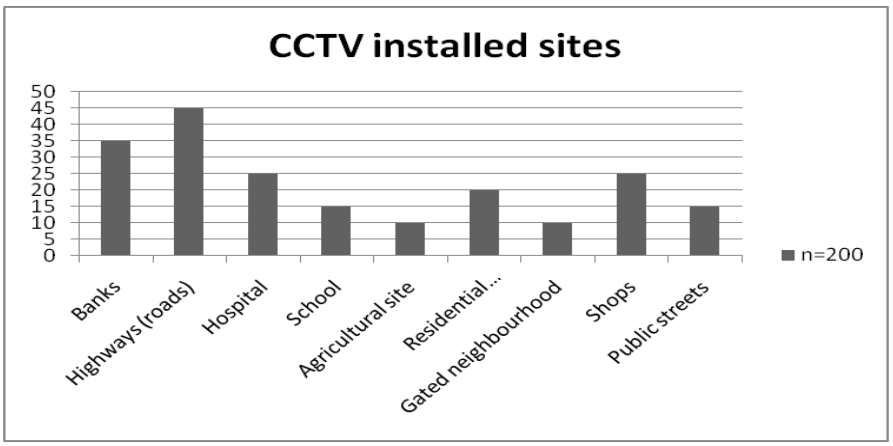
Methodology

The study has been carried out using both primary and secondary data. The secondary data has been gathered using books, journals, newspapers, magazines and various websites. Descriptive research was the research design used in this study. With the use of a questionnaire, the necessary data were collected from the villagers in the rural area of Balasore from a sampling of 200 chosen on the basis of simple random sampling (probability sampling). Statistical tools were used to calculate the findings from the collected data.

Table 1. CCTV installed in rural areas

CCTV installed site	n=200
Banks	35
Highways (roads)	45
Hospital	25
School	15
Agricultural site	10
Residential Neighbourhood entrance	20
Gated neighborhood	10
Shops	25
Public streets	15

Graph 1. CCTV installed in rural areas



The above mentioned table1. Exhibits the CCTV installed in rural areas. It can be found from table 1. Highways have a large number of CCTV installed as per the responses received from the respondents whereas gated neighborhoods and agricultural sites have least number of CCTV's.

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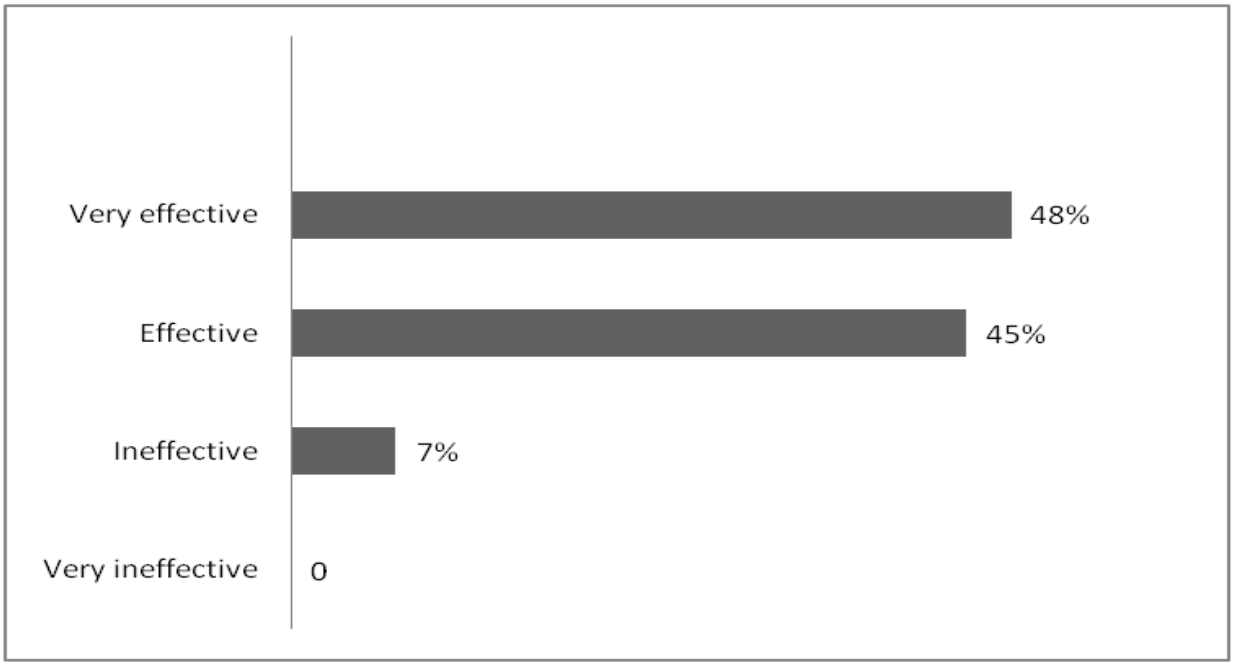
Table 2. Effectiveness of CCTV

Effectiveness of CCTV	%
Very ineffective	-
Ineffective	7%
Effective	45%
Very effective	48%

Graph 2. Effectiveness of CCTV



The above mentioned table 2. Exhibits the effectiveness of CCTV in rural areas showing that 93% of the respondents found it effective and very effective whereas 7% of the respondents did not find it effective because of its installation cost and visibility of cameras or they were unaware about its use.

Table 3. Impact on crime

Impact on crime	%
Moderate increase	5%
Drastic decrease	2%
No change	28%
Moderate decrease	65%

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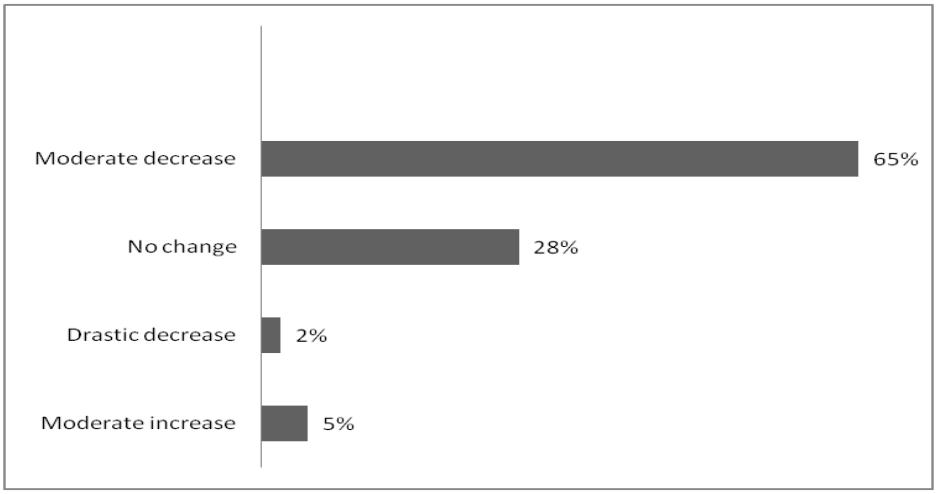
Graph 3. Impact on crime

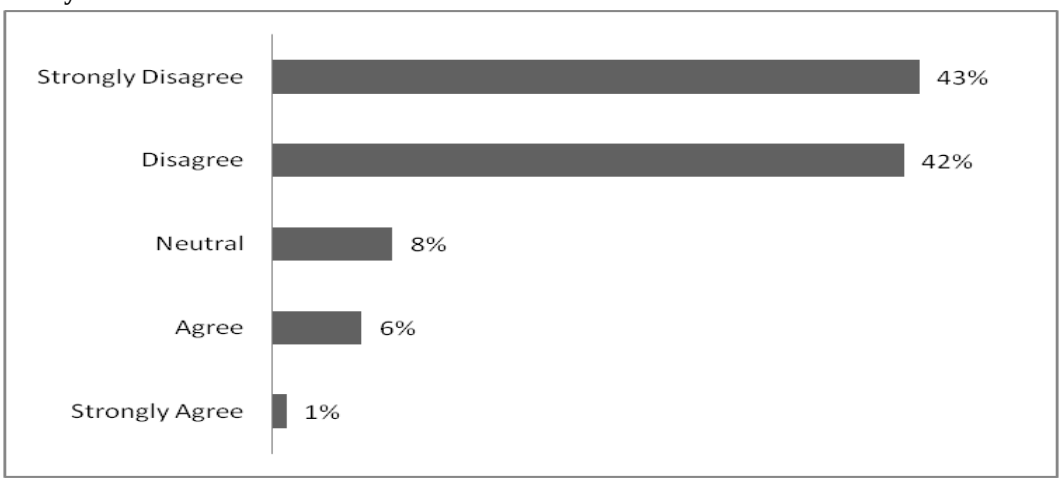


The above table 3. Exhibits the impact of CCTV on crime in rural areas. It can be found that 65% of the respondents say that they have seen a moderate decrease. However 5% says there has been a moderate increase while 2% were those who have seen a drastic decrease in crime and 28% felt no change in crime rate between before and after setting of CCTV's.

Table 4. Privacy issues

Privacy issues in Rural Area	%
Strongly Agree	1%
Agree	6%
Neutral	8%
Disagree	42%
Strongly Disagree	43%

Graph 4. Privacy issues



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The table 4. Exhibits that by installing CCTV in rural areas there is infringement of the privacy of the villages. However 85% of the respondents disagreed with this statement while the rest of the respondents either agreed or remained neutral.

Result and Discussion

The above mentioned table1. Exhibits the CCTV installed in rural areas. It can be found from table 1. Highways have a large number of CCTV installed as per the responses received from the respondents whereas gated neighborhoods and agricultural sites have least number of CCTV's. The respondents found that using cameras in agricultural areas is not beneficial as agricultural sites are usually open areas and fixing CCTV on the branches of trees has no use as it gets hidden by the tree leaves. Moreover the people in the rural area fear from the installation costs therefore they don't prefer it and even they don't know how to operate it. The above mentioned table 2. Exhibits the effectiveness of CCTV in rural areas showing that 93% of the respondents found it effective and very effective whereas 7% of the respondents did not find it effective because of its installation cost and visibility of cameras or they were unaware about its use. The storage of CCTV is very less as the data vanishes after a point of time. It does not store data for a long period of time. The above table 3. Exhibits the impact of CCTV on crime in rural areas. It can be found that 65% of the respondents say that they have seen a moderate decrease. However 5% says there has been a moderate increase while 2% were those who have seen a drastic decrease in crime and 28% felt no change in crime rate between before and after setting of CCTV's. The table 4. Exhibits that by installing CCTV in rural areas there is infringement of the privacy of the villages. However 85% of the respondents disagreed with this statement while the rest of the respondents either agreed or remained neutral. It was found from the study that the respondents who agreed that there are privacy issues from CCTV was because of the fact that placing CCTV in public places near the residential area and workplaces of the respondents would also capture their movement details. Therefore it is violating their privacy. In some circumstances, it is possible to conclude that public CCTV reduces crime. The mixed results of the CCTV programs and potential social costs suggest that future CCTV programs should be carefully implemented in a variety of settings, and their evaluations should be high quality with a long follow-up period.

Conclusion

A CCTV surveillance system with the proper set-up and selective operation is one of the most valuable security instruments available; however, a poorly configured system intrudes upon our privacy and infringes upon other fundamental rights at the same time. It is imperative to implement comprehensive data protection and privacy legislation to address the loopholes in current surveillance frameworks as surveillance technologies continue to advance. A balance must be struck between, among other things, an individual's privacy and the safety of the public. Moreover, enhancements can be made to improve the efficiency of CCTV systems and the organizations involved by working on risk management and mitigation plans. CCTV implementation will succeed or fail based on the study undertaken to ensure future success. There is no reason for any organization to invest in something without a guarantee of success. Although studies are being performed, criminals are also becoming smarter nowadays. They will try to avoid having their faces photographed if they are aware the area is being watched by CCTV cameras, especially if they can see the cameras. A few of the criminals were also wearing masks to conceal their identity from CCTV images.

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