

# Utilization of CCTV Cameras in Bontoc, Mountain Province

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## Abstract

In order to combat crimes society over the past has formulated methods to safeguard humanity from harm. Numerous methods have been ranging from ancient methods to sophisticated methods of battling crimes. One of this sophisticated method is the utilization of CCTV cameras. This study portrays CCTV Camera as a tool in the investigation of crimes in Bontoc, Mountain Province. A quantitative design was used to describe the profile of establishments with CCTV cameras according to types of establishment and the number of CCTV cameras installed. It included the difference on the number and type of crimes committed before and after CCTV installation; and the problems/ issues encountered by the police officers and establishment owners/administrators in relation to the utilization of CCTV camera. The study revealed that more business establishments installed CCTV cameras as compared to other types of establishments. Further, private individuals, business entities and government officials or heads of offices consciously installed CCTV cameras for them to monitor those who enter and exit their respective vicinities. They are also aware that the CCTV cameras may deter crime. It was also revealed that there was no significant difference in the number of crimes committed before and after CCTV camera installation. As to the problems encountered by the respondents in the utilization of CCTV cameras it was found that most were on the technical aspects like poor quality image, poor CCTV quality, limited recording capacity and absence of a steady watcher.

**Keywords:** CCTV camera, crime detection, effectiveness, Bontoc, Mountain Province

## I. INTRODUCTION

### *Background of the Study*

Over the past, the government has formulated methods to safeguard society from crimes. Numerous techniques have been framed to combat crimes, starting from the early or ancient forms of crime prevention to the more sophisticated methods.

One of the modern technologies used to prevent and investigate crimes is the Closed Circuit Television Camera or CCTV. According to Ratcliffe, (2011) CCTV is a system in which many video cameras are connected in a closed circuit or loop, with the images produced being sent to a central television monitor or recorded. Many countries around the world are installing closed-circuit television surveillance camera

systems as an additional tool in fighting crime. Baoyan (2015) posited that the very presence of camera surveillance systems has not only discouraged criminals in committing crimes but has also aided police investigators solve various crimes because of the recorded data that identified the perpetrators of crimes committed within the vicinity of the business establishments. Additionally, home and business owners are also finding great value in using CCTV footage when their homes or businesses are compromised (Annke, 2017). One of the many countries that employ CCTV camera systems in both public and private spaces in Great Britain. Over the last 20 years, the use of CCTV has meant that getting caught on camera is part of everyday life. Hence, Great Britain was dubbed as a 'Surveillance Society'

where it is a norm to be watched when shopping in a supermarket or traveling on public transport (Crawley, 2012).

The popularity of surveillance cameras in the country is due to their effectiveness in solving crimes. Based on a recent study, many murders investigated by detectives from Scotland Yard have benefited by using camera footage as evidence. A 2009 report showed that of the 90 murder cases recorded during the year, CCTV footage was used in 86 of the cases. According to senior police officers, 65 of the cases were solved because the crimes were captured on camera, or the movements of the criminals were tracked before or after their attacks (Annke, 2017).

The following cases, in particular, are worth mentioning. One of which is the infamous "London Nail Bomber." Accordingly, a 13-day bombing campaign in London in April 1999 aimed at minority groups bringing terror to the city. Homemade nail bombs, each containing 1,500 four-inch nails, were left in public spaces around London, targeting areas with large minority groups. The bombs killed three people, including a pregnant woman, and injured 139, four of whom lost limbs. The bomber was identified as David Copeland from CCTV footage of the first bombing. The image was given wide publicity forcing Copeland to bring forward his third bombing. Copeland was arrested the night of the last bombing and charged with murder. He was sentenced to 6 life sentences, with his release being ruled out until 2049 at the earliest.

In 1993, two-year-old James Bulger was abducted from a shopping centre and was tortured and killed by two ten-year-old boys in Liverpool, England. Police found low-resolution images of the abduction by two unidentified boys from the shopping center's CCTV system. The breakthrough came when enhanced images were released on national television, and a woman recognized one of the boys, Jon Venables, and knew he had played truant with another boy, Robert Thompson, that weekend. The boys were arrested and charged with murder. After a high-profile trial, the boys

were sent to separate juvenile detention, centers making them the youngest murderers ever in British history.

In the United States, the 9/11 attacks led many municipalities to install CCTV. Software developers have constantly refined programs that would enhance video surveillance, including facial recognition. Today, CCTV systems are top-rated due to their effectiveness in deterring crime.

To cite one, on April 15, 2015, two men set off bombs at the finish line of the Boston Marathon, killing three people and maiming and injuring many more. The two had conspired for many months to use improvised explosive devices (IEDs) to harm and kill people in the crowds of spectators who were cheering the runners on toward the marathon finish line.

After carefully poring over footage from surveillance cameras and other sources, the FBI released photographs to the media identifying the suspects in the marathon bombing. One was arrested while the other died during the encounter with the authorities (Siegel, 2016).

In Australia, CCTV Systems have become an increasingly fixture in urban centres, I shopping centres and malls, individual shops and banks, on public transports and in car parks. The Australian Government has funded 18 local councils the use of CCTV cameras as police are becoming reliant on local government CCTV (Hulme, Morgan & Brown (2015).

In Korea public CCTV has also began to become more popular in 2011. Koreas Public Ministry of Public Administration and Security has recommended that local governments set up integrated CCTV control center in each district. Currently, these centers are playing a very positive role in in fighting crimes in the districts through its liaison with the district police (Chung, 2017).

In the Philippines, the Philippine National Police (PNP) acknowledges the usefulness of closed-circuit television (CCTV) cameras in the premises of commercial establishments to deter crime and assist them in their criminal investigations. According to the PNP, their

efficiency rating in solving crimes has improved with CCTV cameras (SBN 3339).

The highly sensational case of Vhong Navarro, who businessman Cedric Lee and his friends mauled for allegedly raping 22-year-old Denise Cornejo at a plush condominium in Bonifacio Global City, is but just a classic example of the usefulness of CCTV. The CCTV footage released by the National Bureau of Investigation showed that Navarro and Cornejo were not in the condo unit at the same time. The footage showed Cornejo entering her building's elevator and then exiting the building shortly after Navarro arrived. She did not appear as she had just escaped from a rape attempt and, instead, casually examined herself in the elevator mirror.

Another incident was a frat mauling incident involving Guillo Cesar Servando, a sophomore student of De La Salle-College of St. Benilde, details of which were also caught on CCTV. The release of the footage triggered the surrender of some participants in the fraternity hazing and the eventual resolution of the crime by the Manila Police Department (Lim, 2014).

In the City of Baguio, the Baguio City Police Office uses CCTV System to observe traffic flows, deter traffic violators, thieves and vandals. The system can observe dangerous situations from a distance, provide a constant eye over routine activity, and is an excellent tool to fight crime. Areas equipped with CCTV showed that it could help policemen respond to the site within three minutes, thus saving more lives and preventing crimes (Faroden, 2010).

In the same reference, many business establishments in the city are already equipped with CCTV. Owners of establishments adopt the system to protect their establishments from the commission of property crimes. This is also to ensure that the employees are working hand in hand with management and not committing an act that is against the company. CCTV System now plays a more important role, assisting police and security organizations in their investigation.

In Mountain Province, two persons tried to rob the Sagada Rural Bank Branch in Sabangan,

Mt. Province in November 2010. Through images captured by the CCTV camera installed inside the bank, the police were able to identify the suspects that led to the issuance of warrants for their arrest (Dogaong, 2011).

In Bontoc, Mountain Province, Close circuit television (CCTV) cameras are also becoming an effective tool in identifying criminals in the Municipality. In 2011, police officers arrested three robbery suspects who robbed a drug store at night. One of the suspects was identified through the footage recorded in the CCTV camera installed inside the establishment (Doga-ong, 2011)

Another more recent case where the CCTV camera played an important role in a criminal investigation was the case of a police officer who was shot point-blank right at the doorstep of his very own home. Although the crime was not directly caught on CCTV, the investigators were able to identify the suspects from nearby establishments.

With the recorded incidence of crimes in the locality, business establishments started to install CCTV cameras within their business premises with the aim of securing the same against crime. The LGU also of Bontoc began installing the system in certain public areas with the aim of monitoring the public and aid in criminal prevention and control. This study aims to explore the profile of establishments who installed CCTV cameras, its impact to crime commission and the challenges faced by them and the law enforcers in the utilization of the system.

### ***Theoretical Framework***

CCTV surveillance is grounded on the rational choice theory. According to Crawley (2012) and Santos (2017), the rational choice theory looks at how offenders make decisions based on anticipated risks and rewards. A potential offender may rationally think about committing a crime and weigh up the risks involved. A CCTV camera can dramatically affect an offender's decision as the risk of getting caught is higher. It is irrelevant that it may or may not be being monitored; it is the possibility that they are being watched that is the deterrent,

which produces self-discipline. As Faroden (2010) stated, CCTV is one of the technologies that aid in crime prevention and detection. With such a device installed in an establishment, one can be deterred from committing crimes because of his fear of being caught. The result is that would-be offenders may not pursue crimes because of the fear of being caught.

### ***Statement of the Problems***

1. What is the profile of establishments with CCTV cameras according to:
  - a. Type of establishment? (public – plaza, school, residential, business, others)
  - b. The number of CCTV cameras installed?
2. Is there a significant difference in the number and type of crimes committed before and after installing CCTV?
3. What are the problems/issues encountered by the police officers and establishment owners/administrators about using CCTV cameras?

## **II. METHODOLOGY**

### ***Research Design***

A quantitative design and ranking were used in this research since it employed frequency counting on available/existing records. The study used the descriptive-survey method to describe the contributions of CCTV cameras in the criminal investigation.

### ***Locale and Time of the Study***

Bontoc, the capital town of Mountain Province, was the study's setting and establishments installed with CCTV cameras from 2014 to 2018 and located at the four central barangays of Bontoc were identified for the profile.

On the other hand, the records present at the Bontoc Municipal Police Station were reviewed as the source of data needed in this study. These establishments were composed of business establishments, government institutions, religious institutions, and private residences, all situated near main thoroughfares.

### ***Respondents***

Two groups of respondents were included in this study. The first group comprised of 21 PNP

Personnel Investigation Section and Patrol Division from the Bontoc Municipal Police Station five of whom were interviewed to validate the results. The second group included 47 owners or caretakers of establishments equipped with CCTV cameras. Only establishment owners who were willing to answer the questionnaire were considered respondents.

The participants were selected using purposive sampling. The researcher selected respondents who could provide primary data to attain specific objectives. The study deals with the utilization of CCTV Cameras in crime investigation. Hence, establishments with CCTV cameras were chosen, and police investigators and patrol officers with first-hand knowledge or information on the matter were purposely chosen.

### ***Instrumentation***

The primary data gathering tool is frequency counting. The documents showing the CCTV profile and the number and types of crimes committed were gathered. The determined profiles and cases were tallied after the frequency counting was analyzed. A

checklist was also administered to answer the problems encountered by the establishment owners and the PNP personnel in the utilization of CCTV cameras. The results were then ranked after they had been tallied and tabulated. An interview was also conducted to support and validate the results and findings of the study.

### ***Data Collection***

The researcher requested a letter to the Chief of Police of the Bontoc Municipal Police Station for the document analysis and interviews. The same letter was addressed to the owners who installed CCTV cameras to ask permission to conduct interviews. After the approval of the letter, the researcher proceeded to the gathering of data. All gathered data were then analyzed. Results of the interviews were used to validate the results.

### ***Treatment of Data***

Document analysis through frequency counting was used to analyze data gathered from the

records at the BMPS, which is on the CCTV profile, and the number and types of crimes committed before and after the CCTV cameras were installed. To determine the significant difference in the number and type of crimes committed to frequency of monitoring, the t-test was used.

### **Results and Discussion**

This section presents the results and discussions of the study.

### **Profile of establishment owners**

This section of the study presents the data relative to the profiles of establishments installed with CCTV cameras, the number of CCTV installed in each establishment, their frequency of monitoring, length of activation, and the distance of crime location to the installed CCTV.

**Table 1.** Number and type of establishments installed with CCTV cameras:

Type of Establishment	Frequency	Percentage
School	2	4.26
Office	2	4.26
Business	38	80.85
Residential	4	8.51
Church	1	2.14
<b>Total</b>	<b>47</b>	<b>100</b>

The installation of CCTV has gained a wide range of acceptance. Though the purpose of each owner or caretaker on why they installed CCTV may vary, it is not surprising that almost a majority recognizes the importance of CCTV cameras.

In Bontoc, business establishments obtained the highest percentage of CCTV installation, which is 80.85% of the total respondents. Being the capital town and center of trade and commerce in Mountain Province, Bontoc is now swarming with business establishments. To safeguard their establishment, goods and property owners installed CCTV cameras in their establishment area to help monitor their business. Interview with respondents disclosed that their primary aim in installing CCTV is for business monitoring purposes.

Residential houses ranked second, obtaining a percentage of 8.51. These houses are located just beside Bontoc's main thoroughfare. One respondent in an interview claimed that he installed CCTV cameras to deter robbers, considering that their location is just beside the busy street. The statement was concurred by the other respondents.

School and office establishments ranked third, and both obtained 4.26%. Both are public establishments, and any person comes in and out at any time. Data and survey showed that not all offices were equipped with CCTV when the study commenced, and there were only two schools equipped with CCTV. Schools and offices of security guards no longer installed CCTV cameras. People always staff offices and schools. And unlike business establishments, there are fewer items that could be carted without being easily noticed.

Some churches came in last with a percentage of 2.13. According to the caretaker, the CCTV cameras were installed to protect the church from robbery incidents at the same time as an aid to criminal investigation and traffic accident investigations that happened or occurred within the church vicinity.

### Number of CCTV Installed

**Table 2: Number of CCTV Cameras Installed**

Number of CCTV Installed	Frequency	Percentage
a. 1-2	5	10.638
b. 3-4	15	31.915
c. 5-6	8	17.021
d. 7-8	12	25.532
e. 9-10	7	14.894
<b>Total</b>	<b>47</b>	<b>100</b>

Establishments with 3-4 installed CCTV cameras ranked first, obtaining 31.915% of the total respondents. The survey conducted by the researcher revealed that these establishments are not that large enough to warrant the installation of more cameras. Their CCTV cameras focus mainly on the establishment's entrance, cashier, and other areas that are not within reach of the owner's/ caretaker's watchful eye. Though they installed CCTV cameras outside the establishment, it only covered the establishment's main entrance and exit points but not on its perimeter.

Establishments with 7-8 and 5-6 came second and third, respectively, with 25.532% and 17.021%. These are establishments that are larger in scope. Schools and government offices have 7-8 installed CCTV cameras to monitor areas their security personnel and staff cannot see. Establishments under this category installed cameras on areas beyond the owners' eye or areas where there were no employees on guard.

Fourth in rank are seven establishments with 9-10 CCTV cameras installed. Most of these establishments are larger than the others, frequented mainly by customers or those with two or more stalls/extensions. They installed more cameras as more areas to cover, including the outside of the establishment.

The last are establishments with only 1-2 installed CCTV cameras. There were five establishments, and almost all mini-stores installed CCTV cameras focused on the entrance and the cashier.

Overall, the findings imply that private individuals, business entities, and government officials or heads of offices consciously installed CCTV cameras for them to monitor those who enter and exit their respective vicinities. They are also aware that CCTV cameras may deter crime.

### *The difference on Crimes Committed Before and After CCTV Installation*

Table 3 presents the t-test result on the difference of the number and types of crimes committed before and after the installation of CCTV. The computation yielded more than the standard significance level of .05, hence, interpreted as not significant (NS). This means that the hypothesis that there is no significant difference in the number and types of crimes committed before and after the installation is accepted. Further, this implies that whether there is or there is no CCTV installed, the number and types of crimes may bring about the same occurrence. Nevertheless, when the types of crimes committed are analyzed individually, the crimes against property (theft, shoplifting, Robbery) were lesser after installing the CCTV. This implies that the offenders or would-be offenders may have been conscious already of the presence of CCTV in the vicinity. Thus, they shun away from committing the felonies as mentioned above.

It is worth noting that crimes against persons (physical injuries, homicide) have increased despite the presence of CCTV. According to some establishment owners and investigators, other factors had influenced the offenders in committing these felonies. Some of these are

being under the influence of liquor and previous grudges. More than this, one interviewee mentioned that some crimes are reported much later after being committed, just like on

physical injuries. He posited that victims only report when they receive recent threats again from their culprits.

**Table 3.** *T-test on the Number and Types of Crimes Committed Before and After CCTV Installation*

Type of Crime	No of crimes (before)	No of Crimes (after)	t-value	Interpretation
a. Theft	13	10	1.000	NS
b. Shoplifting	8	4	0.754	NS
c. Robbery	6	5	0.626	NS
d. Physical injuries	15	21	0.608	NS
e. Homicide	3	5	0.184	NS
f. Carnapping	2	2	0.293	NS
	47	47	0.578	NS

p<0.05 – Significant

p<0.01 – Highly Significant

p>0.05 – Not Significant

Still, physical injuries had the highest occurrence in central Bontoc because the Municipality hosts a lot of bars that attract people from other places. People, including minors and students meet for drinking sprees in these bars where they commonly engage in fights resulting in physical injuries when they were already drunk.

Ratcliffe (2011) also asserts that potential offenders under the influence of alcohol or drugs may not care or remember that they may be under surveillance. This may be a factor in CCTV appears to be more effective in combating property crime than disorder and violent offense. This coincides with Piza (2018), who quoted that the implementation of actively monitored CCTV did not reduce assaults in nightlife areas.

In Baoyan (2015), it was stated that violent crimes and crimes of passion such as murder, shooting incidents, physical injuries, and CCTV does not usually deter brawling incidents. As Crawley (2011) believes, violence appears less susceptible to suppression. The impulsive behavior associated with some crimes makes no room for rational decision-making. The reckless, opportunistic, and ill-considered nature of such criminality related to young offenders make it difficult to deter these types

of crimes. A Respondent Hydra claimed, fights and injuries still occurred even in the presence of CCTV cameras. Those involved did not care that a CCTV camera was there (Personal Communication, January 9, 2019).

Theft was the second most committed crime before CCTV installation, totaling almost 27.7% of all crimes committed within establishment premises as recalled by respondent owners or caretakers. In an interview with respondents assigned at Provincial Security Office, they mentioned that theft was rampant at the provincial plaza for a variety of reasons. First, since many people use the place for relaxation or enjoyment, it is also a hotspot for thieves. Thieves prey on the belongings of people who were not guarded or taken care of. Another reason why most of the thefts occurred in the areas was that CCTV cameras did not cover them. Hence, the absence of the watchful eye of security guards and CCTV cameras opened the gates of opportunity to commit crimes.

According to Florendo (2012), crime occurs only when the opportunity exists for the crime. For example, theft cannot happen if there is nothing to steal. This supports the Rational Choice Theory, which states that offenders commit crime based on anticipated risks and

rewards. The theory suggests that any person will commit a crime if given a chance or the right opportunity.

Respondent Achilles stated in an interview, "In my unguarded moment, I was victimized by a long-handed person. My valuable things suddenly disappeared without me knowing it. My own client victimized me (Personal Communication, February 9, 2019). While Respondent Paris shared that due to the crowding of customers in their bar, they were not aware sometimes that customers took items from their stocks (liquor) without paying for them. They only realized the discrepancy when they inventory (Personal Communication, February 9, 2019).

Other respondents who answered that thefts have occurred in their establishment maintained that the customers themselves were the ones who victimized their fellow customers. This was particularly true in bars or establishments which offer liquor to the public. As other customers were busy having their own conversations and were already under the influence of alcohol, they were no longer aware of suspicious individuals.

A caretaker of a local church, shared that theft was rampant in their compound. There had been thefts committed against the church's rectory, the parish office, and the school's treasury office. According to him, the compound is always open for believers who wish to attend masses or pray. The church left the gates open and did not employ guards. Thieves saw this as an opportunity to steal. (Personal Communication, February 26, 2019). As explained by the rational choice theory, offenders commit crimes when the window of opportunity is open as the risk of getting caught is lower.

Other respondents also claimed that there had been thefts near their establishment. The neighboring establishments were where the thefts have occurred. They had CCTV cameras installed before their establishment got burglarized as a precautionary measure.

This form of prevention refers to tertiary prevention. According to Peckley and Eduardo

(2010), tertiary prevention is a term from medicine to prescribe procedures to be taken after a disease or threat is manifest. Such procedures typically serve as deterrence or minimizing harmful purposes and are almost characterized by being reactive or after. Hence, before they got victimized again or became the next target, establishment owners employed means and methods to prevent the same occurrence or incident.

Similarly, even after installing CCTV cameras, theft was still considered second to the most committed crimes, with a percentage of 19.7%. It could be gleaned, however, that there was a slight difference. It could be seen that there was a decrease in theft after establishment owners installed CCTV cameras.

Undeniably, there was a deterring effect of CCTV cameras on the crime commission. Also, according to the survey, these thefts recorded were committed outside the respondent's establishment. This finding is supported by Cuevas et al. (2016), who stated that CCTV cameras in a place such as streets, residential areas, and commercial establishments serve to deter crime. Moreover, people who knew that a CCTV camera was installed refrained from committing such acts for fear of being caught and punished. As Faroden (2010) further states, CCTV is one of the technologies that aid in crime prevention and detection. With such a device installed in an establishment, one can be deterred from committing crimes because of fear of being caught. The result is that would-be offenders may not pursue crimes because of the fear of being caught.

Shoplifting and Robbery placed third and fourth among the crimes committed before CCTV installation, both having a percentage of 17% and 12.8%, respectively. After CCTV installation, both crimes switched places, and both decreased in number. Robbery recorded 9.8%, while shoplifting recorded 7.8%.

Respondents Horus, Hydra, Hamlet, Artemis, and Hades disclosed that shoplifters had victimized them. Their establishments were grocery stores with a limited staff to help man the area. They claimed that customers come and

go in the establishment. Shoplifters take this as an opportunity to steal items once the owner or watcher is distracted or attended to another customer. They maintained that their establishment was constantly being victimized by shoplifters, especially during hours when customers flock. During these times, he could not monitor those who left without paying for the items taken (Personal Interview, February 9, 2019.)

Shoplifting came fourth. Shoplifting still occurred despite the presence of CCTV cameras, although there was a reduction as opposed to pre-CCTV time. There were several reasons why the crime was still committed. Respondent Hamlet and Halley maintained that shoplifting still occurred as there was no steady watcher to monitor the camera. The shoplifters took the chance while owners were busy attending to other customers.

On the other hand, Robbery was committed during the night when most establishments were closed for the day. Since owners or caretakers had already retired for the night, culprits took this opportunity to rob or steal from the establishment. One establishment in the Municipality was a victim of the infamous Termite/Acetylene Gang. The culprits used the sewerage, where the establishment was also connected. They created an opening on the floor, utilizing it as entry and exit. From the outside of the establishment, everything looked normal. Inside, however, the burglars were ransacking the area. The establishment, however, did not install CCTV cameras until now despite the incident. It was the neighboring establishment that did as a form of deterrence. The establishment opted not to install a CCTV camera as the entrance of their establishment is covered by the CCTV camera installed by the establishment's owner just above their floor.

Even after installing CCTV cameras, shoplifting and Robbery were still committed. However, there was a noted decrease in these crimes. In the data gathering, the interviewees manifested that Robbery was still committed even with CCTV cameras. The notable improvement was that the crime was done

outside of establishments where the cameras could not record the crime.

CCTV is, therefore, more effective if someone is operating the monitor on a real-time basis. To maximize the effectiveness of CCTV, it would be better for the business establishment so long as they can afford it, to attain the service of a guard or anybody whose job is to monitor the CCTV and to react as soon as he saw something which requires immediate action (Baoyan, 2015).

Accordingly, the Swedish National Council for Crime Prevention (2018), actively monitored CCTV systems generated significant reductions in crime while passive systems had no significant effect. CCTV as a stand-alone tactic may not create a deterrent effect. Hence, to get the maximum desired impact of CCTV in crime prevention, it is necessary to monitor the system in real-time. It gives a more deterrent effect as a would-be offender would think twice to commit a crime when a CCTV is present and at the same time monitored. Crawley (2012) further stated that CCTV had been a successful tool in helping authorities tackle crime. However, there is also evidence to show it does not succeed in every way. The device is only effective if used properly. The systems do work; however, it could be a disadvantage if somebody doesn't monitor properly or listen to their radio. The incident could be missed and cause the system to be ineffective.

Respondent Horus shared that shoplifting was always committed when we were yet to install CCTV cameras. It was, however, deterred when we installed and constantly monitored the system. However, a shoplifter was caught since he was not aware of the presence of the CCTV camera (Personal Communication, February 9, 2019).

According to Radcliffe (2011), using CCTV cameras as a crime prevention mechanism requires that potential offenders know they are being watched. As stated by Cuevas et al. (2016), people with the knowledge that a CCTV was installed refrained from committing such an act for fear of being caught and punished. CCTV cameras may also encourage people to

be more security conscious. These cameras drive offenders away from committing offenses that take time, as they run a greater risk of capture.

Therefore, it must be noted that people tend to police their behavior when they know that CCTV exists. The desired effect of CCTV cameras can be realized when people realize they are being watched. Would-be offenders would think twice before committing a crime when they see a CCTV.

The Robbery was noted to have increased after the installation of CCTV cameras. It shows that despite the method, those who committed the crime were not deterred by the CCTV's presence. As mentioned earlier, CCTV cameras might effectively prevent property crimes like theft or shoplifting, but they may not effectively deter crimes against persons like assaults and homicide. At best, the use of CCTV cameras in these particular crimes is for the investigation to determine who was involved and how the crime was committed.

As could be gleaned from the above data, there was a connection between the type of crime committed to the level of effectiveness of CCTV cameras to crime prevention and investigation. Moreover, CCTV cameras were practical tools in combating property crimes but not personal or other forms of crime. As Crawley (2012) stated, CCTV does not always

cause people to police their behavior. It is not a crime prevention method that involves the rational choice theory. The rational model does not consider the impulsive behavior associated with crimes where there is no time for rational decision-making. Therefore, CCTV is not on their minds regarding offenses such as assault.

As for the number of crimes committed, there was an increase in crimes committed in the locality after installing surveillance cameras. One reason that could be attributed to it was that CCTV cameras were able to record incidents that were not seen by the human eye. This is supported by Ratcliffe (2011) when he cited that CCTV is designed to see crimes. As a result, the camera may detect offenses that police would not otherwise notice. This may inadvertently increase the crime rate, especially for violations that have low reporting rates. However, this does not mean that there was an actual increase in crimes.

#### ***Problems Encountered by Police Officers and Establishment Owners in the Utilization of CCTV Cameras and their Recommendations.***

The following problems were identified during the study, particularly during interviews with respondents. The respondents were able to recommend solutions to the identified issues or concerns.

**Table 4.** *Problems Encountered by Police Officers and Establishment Owners in the Utilization of CCTV Cameras and their Recommendations.*

<b>Problems encountered</b>	<b>Frequency</b>	<b>Recommendations of Respondents</b>
a. Poor quality image	23	CCTV upgrade
b. Poor quality of CCTV	18	CCTV upgrade
c. Defective CCTV cameras	4	Change or install new CCTV camera
d. Limited recording capacity	15	Upgrade with a longer recording capacity
e. Not useful during power outage	9	Provide emergency power source
f. Installed in poor lighted area	12	Install CCTV cameras within perimeter lights
g. Limited coverage	14	Install additional CCTV camera or install CCTV camera with 360° angle
h. Limited knowledge in operating the system	4	Training/or hiring of a competent staff
i. Needs a steady watcher	5	Provide a staff whose primary function is to monitor the system
j. Lack of monitoring room	12	Provide for a room to monitor the system in real-time

The table above presents the problems encountered by police officers and establishment owners regarding their use of CCTV cameras. They were also able to provide recommendations to address these identified problems. Most of the respondents stated that the footage that was recorded contained blurry or distorted images. Therefore, the image is of poor quality. When images are blurry or poor, investigators are hard to identify someone or something caught by the CCTV camera. It was then recommended by the respondents themselves that CCTV cameras with good resolution be installed, or an upgrade of those existing be made.

The following commonly encountered problem is the poor quality of the CCTV camera. If the system is of low quality, the footage or image it would provide is also low in quality or does not have a good resolution.

The same recommendation was offered here, a new CCTV with good quality be installed to replace the old or poor one.

The third problem commonly encountered is that the system has a minimum capacity that, when already occupied, automatically deletes itself. This is considered a problem because even if a crime occurred within the range of CCTV cameras, the footage or evidence is already lost if the system no longer saves it. The recommendation is to provide additional storage devices by the owners or operators themselves.

The fourth problem is that CCTV cameras installed have limited coverage. It cannot cover all areas of the establishment and its immediate surroundings. Hence, as stated above, even if a crime occurs, the system's possibility of it being recorded is nil. According to the respondents interviewed, a CCTV camera with 360-degree angle view be installed, or additional CCTV cameras be installed to supplement existing ones.

The fifth problems encountered by respondents were the lack of a monitoring room to monitor the system on a real-time basis and that the CCTV cameras were installed in areas with poor lighting or dark areas. Absent a steady

watcher; offenders still commit crimes as the opportunity and risk of apprehension is low. Even if there is a CCTV camera, but there is no one monitoring the same, it is as if no one is watching or guarding the place.

Similarly, if the CCTV camera is installed in an area with no light or in a dark place, its ability to record and provide a clear picture is compromised. To solve these problems, the respondents recommended that staff be commissioned to monitor the system and install CCTV cameras in the perimeter with sufficient light. If none, CCTV cameras with good resolution be installed to produce a good quality image even during night time.

The sixth problem identified was that CCTV cameras are not helpful during a power outage. CCTV cameras derive their life from electricity. Hence, when electricity is cut, so with CCTV camera's life. During power interruptions, CCTV cameras do not also function. To remedy the problem, it was recommended that a power-saving device be readied at all times to counter the problem.

The seventh problem was CCTV cameras need a steady watcher who would continuously monitor the system. As stated above, unattended CCTV systems would open the window of opportunity for would-be criminals.

The last problem encountered was the CCTV cameras installed were defective, and the owner or operator had limited knowledge in handling the system. Most installed CCTV cameras of respondents are hard to maintain as the installer is from another locality. The person who installed the CCTV does not have the luxury of maintaining the system regularly. Hence, when they get damaged, they remain like that. So even if a crime occurs, considering that the CCTV camera is defective, it cannot record the incident. Also, as the system is a new emerging technology, not everybody knows how to manipulate it. The problem arises during the review and retrieval of the footage. One wrong move by the operator could put the footage at risk of being deleted.

### III. CONCLUSIONS AND RECOMMENDATIONS

#### CONCLUSIONS

The majority of establishments installed with CCTV cameras are business establishments. This is not surprising as the Municipality is considered a major business site. The number of CCTV cameras installed per establishment depends on the extent or size of the establishment itself. Hence the wider or bigger it is, the more CCTV it has. The research also revealed no significant difference in the number and type of crimes committed before and after the installation of CCTV cameras and that most problems encountered by the respondents in the utilization of CCTV cameras were technical aspects like poor quality image, poor CCTV quality, and limited recording capacity.

#### RECOMMENDATIONS

The business establishments should consider maintaining their CCTV cameras and conducting continuous monitoring and regular inspection of their installed units. They may also consider installing more units, preferably following the size of the establishment and in strategic locations.

As to the technical aspects of CCTV cameras, installing quality CCTV cameras, if not upgraded, is recommended to maximize the potential of CCTV cameras. Expense should not be sacrificed over security or deterrence. Further, a good lighting system and upgrading of the CCTV units may be considered by the establishment owners and LGU. The LGU may also partner with other agencies in supplementing more CCTV cameras in crowded and other public areas. It may also consider allotting funds for the installation of units in strategic locations in the locale, especially when small establishments and residents cannot afford the purchase of units.

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