

PERCEIVED EFFECTIVENESS OF STREET MOUNTED CLOSED CIRCUIT TELEVISION (CCTV) SYSTEMS ON PROVISION AND MAINTENANCE OF PHYSICAL SECURITY IN THE NAIROBI CENTRAL BUSINESS DISTRICT (CBD)

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ABSTRACT

Cases of criminal related activities such as stealing, assault, theft from motor vehicles and burglary have been on a steady rise in Nairobi County and specifically within the CBD for the past decade. Following these incidences, the County Government of Nairobi took the initiative to beef up security by using technology through the installation of over 40 Closed Circuit Television (CCTV) surveillance cameras in many public areas within the Nairobi Central Business District (CBD). However, there is no documented literature and findings on the perceived effectiveness of these CCTV cameras in providing and maintaining physical security to the citizens accessing and residing or working in the Nairobi CBD. Nairobi and specifically the CBD, has in the past experienced the highest criminal offences among the big towns in Kenya. This study therefore sought to find out the perceived effectiveness of street mounted CCTV cameras in provision and maintenance of physical security in the Nairobi

(CBD). The study specifically looked at; whether CCTV cameras have reduced crime in the streets of Nairobi CBD, the current working conditions of the CCTV cameras, the manning capacity of the security personnel and how to enhance the effectiveness of CCTV cameras in improving physical security in Nairobi CBD. The study used descriptive research design with a sample population of 456 respondents for data collection. The data collection instruments used were questionnaires. Descriptive analysis was used to analyse the collected data. The study found that greater security surveillance has led to increased safety within the CBD since they have been able to deter criminals from engaging in criminal activities in the presence of CCTV cameras. The study also found out that, CCTV cameras were in good working conditions and strategically placed to provide proper surveillance. On the manning capacity of the personnel at the command centre, the study found out that, CCTV images are securely stored, with only a limited number of authorized persons having access to data. Regular checks were also found to be carried out by the management to ensure that the systems are working properly and produce high quality images. The study further found out that, CCTV cameras play a big role in charging and prosecuting present offenders hence deterring future criminals. CCTV cameras have also improved the deployment of police officers to crime hotspot areas in the Nairobi CBD. The study recommends that the government need to establish an independent authority for evaluation/assessment of CCTV utilities on crime prevention and reduction. Increase capacity building and training of personnel manning the command and control center including providing them with efficient and effective communication equipment's, good enumeration and proper welfare. The study also recommends for further studies in other cities in Kenya that may include Mombasa, Nakuru, Kisumu and Eldoret to establish the effectiveness of CCTV cameras in enhancing physical security of these towns and deterring crime.

Key Words: *perceived effectiveness, street mounted closed circuit television (CCTV), systems, provision and maintenance, physical security, Nairobi Central Business District (CBD)*

INTRODUCTION

Crime and criminal offences are the bastion of why Close Circuit Television (CCTV) Cameras are increasingly being put in use in many cities across the world which also includes Kenya. The increase in crime causes insecurity which affects a country and hence of a governments ability to effectively deliver services to its citizens. CCTV Cameras are gadgets which are widely installed in various strategic locations in cities public and private spaces to safeguard physical security and enhance the ability of security agencies including the police in the war against crimes. Security which covers many aspects transcending from physical security, economic security, social security, military security, and health security among others is very broad and requires huge investments that must be safeguarded at all costs. These investments must, therefore, be efficient and provide value for the monies used to come up with these systems (Kumar & Jakob, 2015).

The use of CCTV cameras began taking cognition in the early 1940s. The earliest recorded and documented use of CCTV technology was in Germany in 1942 during WW2

(Dornberger & Walter, 1952). This system was designed by one German engineer known as Walter Bruch, and it was primarily designed to monitor the Germans army “Vergeltungswaffe” (V-2) rockets. This was the world's first long-range ballistic missile aimed primarily at destroying allied cities across vast distances (Armstrong, 1999).

However, according to National Police Service Commission Report (NPSC), 2015 there was 72,490 as compared to 69,376 cases in 2014. Kenya National Bureau of Statistics, in its 2017 edition of the Economic Survey, also reported that the number of crimes reported to police in 2016 increased by 6.2 percent to 76,986, from 720,490 in 2015. When the Jubilee government came to power in March 2013, it laid down a proposal in its manifesto to install CCTV cameras in the City as one way of fighting crime and terrorism. It is in this context, and in the advent of increased security challenges in Kenya and especially the city of Nairobi; the government decided to install CCTV cameras to deter crime and also installed Number plate recognition cameras along the major highways to catch traffic offenders and to prevent traffic offences. By and large, the County government of Nairobi invested close to Kshs 500 million in a project to install CCTV cameras in Nairobi in February 2015 (Okuttah, 2016).

There were, therefore, CCTV cameras mounted on the roundabout where the MP for Kabete, the late Hon Muchai was killed on 7 February 2015. During this time, it was indicated that the CCTV cameras were not properly working hence failed to identify the perpetrators of the heinous act. In June 2015, following a spate of security lapses in the city of Nairobi and the country, Safaricom won a single sourced tender to install 1,800 CCTV cameras in Nairobi and Mombasa at the cost of USD 169.6 million about 14.9 billion Kenya Shillings. The cost was expected to go up to 18.8 billion shillings (USD 214 million) after taxes and completion of payment (Semaj, 2013).

In turn, the Nairobi County government followed suit and installed over 40 CCTV surveillance cameras in strategic locations the CBD. They hence opened a Command and Control center in late 2014 located at the City Hall Annex to monitor the over 40 surveillance cameras installed in the city. The contract to install these cameras was awarded to Nanjing Les Information Technologies, who won the tender for the installation of CCTV cameras among 27 companies who had interest on the same contract. The CCTV project was initiated by Nairobi Metropolitan Ministry and funded by the World Bank before the current county government took over (Semaj, 2013 November). This study therefore focuses on finding out the effectiveness and efficiency of the 40 or so CCTV surveillance cameras installed in the Nairobi CBD on enhancing the physical security of the city even after the colossal amount of money was spend on the project.

STATEMENT OF THE PROBLEM

Kenya has invested billions of shillings in installation and running of the CCTV cameras in Nairobi (Semaj, 2013). Close to Kshs 500 million donated by the World Bank was spent in installing the CCTV cameras in Nairobi CBD and Safaricom in addition invested close to Kshs 15 billion to install 1,800 surveillance cameras including coming up with a surveillance system for Nairobi and Mombasa in 2015 (Okuttah, 2016). This initiative was aimed at

curbing the criminal acts which are at times violent and fatal, grenade or IED (Improvised Explosives Devices) attacks, robbery, carjacking, house break-ins kidnapping, murder, rape, fraud, violence against women and children among others within these towns. These cameras were expected to have been installed and in perfect working conditions. It is therefore, expected that these cameras have the capacity to provide physical security, prevent and control crime in the CBD where a big number of crimes occur daily and serve the purpose for which they were intended to achieve (Walsh & Farrington, 2009). To ascertain whether the installed CCTV cameras have reduced the insecurity that has been witnessed in Nairobi CBD with documented cases of robbing and killing of Mpesa shop attendants, carjacking and killings of civilians such as the case of Muchai in 2013 within the CBD and that of Jacob Juma along Ngong Road near the Southern by pass in the full glare of CCTV cameras; the study sought to find out the effectiveness of CCTV surveillance cameras installed in the Nairobi CBD by specifically establishing whether CCTV cameras have reduced crime rates in the streets of Nairobi CBD, current working conditions of the CCTV cameras in providing and maintaining the physical security, manning capacity of the security personnel at the command center and how to enhance the effectiveness of CCTV cameras in improving physical security in Nairobi CBD.

GENERAL OBJECTIVE

To assess the effect of CCTV cameras on the crime rates, crime control and prevention in the streets of Nairobi CBD.

THEORETICAL REVIEW OF THE LITERATURE

Securitization theory was developed by Ole Weaver and Buzan in 1995. The theory was originally developed to facilitate practical security analysis. The theorist argued that security is an illocutionary speech act that solely by uttering ‘security’ something is being done. “It is by labelling something a security issue that it becomes one” (Ole, 2004). When a particular referent object is threatened in its existence, a securitizing actor claims a right to extraordinary measures to ensure the referent object’s survival (Buzan et al., 1998). The Securitization theorists have been emphatic on the matters of security with a doctrine stressing on the concept that “Successfully securitized subjects receive disproportionate amount of attention and resource compared to unsuccessfully securitized subjects who they believe cause more damage to humanity” (Buzan et al., 1998). It hence looks at securitizing actors, threats, referent object and the audient or the targeted group.

It is therefore important to note that, Nairobi CBD has experienced quite a number of physical security threats associated with criminal acts ranging from drug trafficking, robbery, child trafficking, traffic offences, terrorist attacks just to mention but a few. These security challenges have put the city in disorder hence the need for installation of CCTV cameras in the Nairobi CBD. This theory is relevant to this study that seeks to analyse the effectiveness of CCTV in enhancing practical analysis of physical security of the Nairobi CBD by identifying the security actors, the referent objects and the threats that are considered as the reason for installation of CCTV cameras (Ole, 2004). The state of insecurity in Nairobi CBD

has raised concerns on physical security issues of the Nairobi CBD that has been prone to crime and insecurity. On the same note, Nairobi CBD has remained remote for reasons of continued criminal acts that have left investors and other Kenyan citizens anxious in investing and doing business in Nairobi CBD. Indeed, nations have installed CCTV cameras in most of their cities and towns as they try to enhance their physical security to deal with various threats and ensure that culprits are easily captured and arrested. This linked well with the study which is aimed at analysing how the CCTV cameras are used in the prevention of crime in the Nairobi CBD.

Akin to this, it is key to avert “everything” from becoming a security issue. It is necessary to follow the securitization steps that will result to success at the end of it all. This comprises of three steps that are: identification of existing threats; emergency action; and effects on inter-unit relations by breaking free of rules (Buzan et al., 1998). It is therefore fundamental to say that, CCTV cameras will help handle criminal acts as they will help in improving the physical security of Nairobi CBD. It is from this that CCTV cameras have been installed along the streets as a strategy to counter insecurity. Buzan puts it that, because we will not be here or will not be free to deal with it in our own way (Buzan et al., 1998). This is of relevance to that study as its concerns is also to evaluate the factors that affect CCTV cameras in enhancing the physical security in Nairobi CBD.

The theorists of the securitization theory also argue that, in practice, securitization is far from being open to all units and their respective subjective threats. Rather, it is largely based on power and capability, and with the means to socially and politically construct a threat. These threats have indeed affected the security situations in the CBD. In this way, the question of security remains wide, but with restrictions pertaining to ‘who’ can securitize, it is neither unmanageable nor incoherent. In addition to that, CCTV cameras are the physical security strategy used to carry out cases where the threat is proving to be powerful with varied strategies to attack.

However, critiques of this theory posits that security threats are only associated with criminal acts that are of high level ignoring the minor aspects of security that undergo metamorphosis and become world threats. It is important for securitization theorist to understand security from all levels. This theory has been critiqued on basis that it does not enable the analyst to say what security should be or not be. Securitization theory thus seeks to answer the question what does security do? and little beyond this (Ole, 2004).

Accordingly, the securitization theory as understood from an International Relations (IR) school of thought has received critiques that it is a theory that does not demonstrate its effects in a practical way. It is viewed as being unable to provide the basis to which one can understand how the aspects of IR are demonstrated. For instance, securitization does not show how security aspects can be diplomatically dealt with in reference to security. More has also been said concerning this theory that it is only responsive to empirical and observable realities thus lacking the use of practical ways. It is emphasized that, due to its irrationality of successfully securitized issue, the changes it brings are minimal to political dynamics because politicians in most cases will want the securitized issue be done their preferred way. For

instance in the Nairobi CBD, criminal acts such as IED (Improvised Explosives Devices) attacks, robbery, carjacking, house break-ins kidnapping, homicide, rape, murder fraud and conning, violence against women, are a threat that for a long time has pushed the security forces to employ different securitization tactics that are politically influenced depending on who is in charge of the security docket.

Although the theory has received these kind of criticism, to this study, the theory still remain relevant as the study is more concerned with the practical security analysis which the theory advocates for. This theory however is not likely to address all forms of crime as it only considers the major crimes as those that should be securitised. All crimes determine measures to be put in place to prevent and control them. Therefore all crimes are significant as they are likely to result in insecurity. With regard to this study, the theory provides an insight on the impact that CCTV camera in reducing crime within the CBD and how it has affected Nairobi CBD policing. As pointed out by Buzan et al. (1998) that CCTV camera will help handle criminal acts as well as help in improving the physical security of Nairobi CBD in this theory, the findings in the study revealed that the presence of CCTV cameras within Nairobi CBD have greatly reduced the rate of criminal activities in town.

EMPIRICAL REVIEW OF THE LITERATURE

Effect of CCTV cameras in reducing crimes in the streets of Nairobi CBD

CCTV is more effective in preventing some crimes, being more effective in some types more than others. Property crimes are more likely to be prevented than personal crimes. Theft cases and destruction of property are more likely to be affected by the installation of CCTV cameras. Personal crimes such as assault are not influenced by the presence of cameras. CCTV has a lot of effects on deterring crimes and violence. The location of cameras in particular areas such as a car park influences and drastically reduces the rate of car theft significantly (Walsh & Farrington, 2009).

According to Baram and Marcus (2007), the presence of cameras makes the citizens feel safer than they were before the installation of cameras. This shows that the members of the public have a positive attitude towards CCTV cameras, with their installation making those citizens who felt safe before their installation reporting that with the installation of CCTV cameras made them feel even safer than they previously felt. All this, however, rests of the people noticing the cameras as they go about their daily activities.

It is very important to note that in some cases where CCTV cameras have been installed, offenders felt even less determined to commit crimes, with some even opting not to commit crimes, while others resorted to committing less serious offenses. It is even more positive to note that offenders who were caught on camera view their presence as a threat. This is a clear indication that if more and more offenders get caught on camera then the threat posed by cameras will increase, thereby reducing crime rate significantly in the Nairobi region. What is even more positive to note is that the presence of CCTV cameras in a particular region has been well accepted by the police. There was an initial fear that CCTV will become a

substitute for police officers. This belief has been dispelled by members of the public who favour the presence of police in a particular location when given a choice between the two. It has been argued that inadequate security measures and limited awareness of risk increase the probability of victimisation (Sutton, A & White, R 1995). Thus the use of CCTV is very important to help minimize criminal cases that are as a result of insecurity.

The effectiveness of CCTV cameras in improving the physical security

It is essential for all to understand how the CCTV can be effective in improving security and crime prevention, and how they work (Welsh et al., 2015). CCTV cameras act as deterrent measures when visible and the images got from CCTV cameras can be used for successful prosecution of court cases. They can also cause displacement. However, the effect of CCTV's cameras can either be positive or negative. They can improve the deployment of police officers to crime hotspot areas, thereby ensuring that there is a reduction of the levels of crime. CCTV cameras are likely to reduce crime levels by increasing the likelihood of capturing, charging and prosecuting present offenders, therefore and deterring future criminals (Welsh et al., 2015).

CCTV cameras also deter potential offenders who would not want to be observed by CCTV cameras or have evidence against them when they are captured on camera. Noisy parker-Areas with more concentration of CCTV cameras are likely to be very busy. This increases the potential of having natural surveillance. This surge of locals will definitely reduce the potential of criminals acting out due to the fear of being apprehended by members of the public. CCTV cameras can also influence the effective deployment of police officers or other security officers to areas with constant suspicious behaviour. The presence of increased security will deter criminals thus reducing the levels of crime (Newburn & Hayman, 2001).

Furthermore the presence of CCTV cameras is a clear message to would-be offenders that the locals are taking their security seriously. This is effective in deterring crime. Consequently, CCTV cameras may not be as effective on crimes that can be done quickly but is significant to crimes that can take longer to accomplish. This is because offenders would take less time to commit these crimes in order to avoid the cameras and CCTV is important to third-party participants such as shop owners since it gives them the confidence to challenge offenders. Lastly, CCTV cameras give the police a clear perception of areas that may need more deployment of officers (Okuttah, 2016). This will in turn remove criminal agents from these areas, effectively reducing the levels of crime.

RESEARCH METHODOLOGY

Research Design

The research design is viewed as the blueprint upon which the researcher builds on in solving the research problem. It offers a comprehensive approach that guides the research solution process (Kothari, 2011). The study used descriptive research design, which was the most applicable for the study, as the study focused on describing independent variables. This scientific method of investigation involved collection and analysis of data in order to describe

a phenomenal in its current condition or status. Kothari (2004) continues to indicate that this design is preferred because it is time saving, it is possible and easy for the researcher to obtain current factual information from the employees in the organization. Also it is a cheaper method of studying the organization and coming up with accurate and deeper findings. The method allowed for the collection of quantitative data questionnaires.

Research Site

This study focused on Nairobi CBD. This location was chosen because this area provides high income generating activities. These areas also have the largest numbers of people, and with low spending on law enforcement, there is an increased likelihood that criminals won't be captured easily (Mkutu et al., 2014). With increase in poor morale of security forces and lack of cooperation with citizens, the likelihood of a criminal being caught is increasingly lower. Another factor why Nairobi CBD was chosen is because it is a good representation of nearly all crimes in major urban cities of Kenya. In the morning most vehicle and human traffic flow towards the city. Private and government businesses are run in the Nairobi CBD. The economic machine of the country is partly based in the CBD. Commuters connecting or seeking transport from Nairobi to other destinations locally and internationally most probably start and terminate their travels here. It is therefore a goldmine for criminals and crime. CCTV cameras were installed in the Nairobi CBD following a spate of criminal activities that needed to be checked and had affected the economic growth of the county.

Target Population

Mugenda and Mugenda (2003) define target population as the set of individuals, cases or objects with some common observable characteristics with which a researcher generalizes the results of the study. However, the population of study refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Helen, 2009). The main target groups are security officers manning the CCTV county government command center at city hall annex and business people operating within the CBD. According to the Nairobi County Service Board (2017) the centre has a total number of 103 personnel. The Nairobi County Register also showed over 10000 people doing business within the CBD. The study expected the employees to give their perception on how their manning capacity of the CCTV cameras has affected the physical security of the public in the CBD. The public also gave their perception on whether CCTV cameras have reduced cases of crime since they are the victims of criminal activities being perpetrated in town.

Determination of Study Sample

A sampling frame is a representation of the different members of a population that the researcher seeks for their study. From this sampling frame the researchers is able to select the best sample size to be representative of the entire sample (Cooper, Schindler, & Sun, 2006). Adopting an appropriate sampling frame allowed for generalization of the study findings. For the purposes of this study, the researcher categorised the population into two units of analysis (the County government employees manning the control room and the business people

operating within the CBD). The researcher used Krejcie and Morgan-sample-size determination method to come up with the desired sample size. Based on krejcie and Morgan-sample-size determination, the study sampled 86 employees and 370 business people for the study (Krejcie & Morgan, 1970). A sample is a group of units selected from a larger group (Cooper & Schindler, 2008). Furthermore, sampling is a process or technique of choosing a sub-group from a population to participate in the study; it is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected (Ogula, 2005). The researcher used simple random sampling to select 456 respondents. According to Cooper and Schindler (2003), simple random sampling frequently minimizes the sampling error in the population. This in turn increases the precision of any estimation methods used.

Data Collection Measures

The study used primary sources of data for subsequent analysis. The data was collected using structured questionnaires that were distributed to those individuals that the researcher was not able to interview them face to face. The questionnaires had both open and close-ended questions (Kothari, 2011). The choice of a questionnaire for the data collection was founded on the practicality of the instrument in collecting large data from a large group of respondents within a short period of time. Further, through the collection of quantitative data, it allowed easy testing of the study hypotheses. The respondents to the questionnaire were Personnel in charge of the CCTV monitoring and Command and Control centre, Security Officers and Ordinary people/business persons/citizens in Nairobi CBD. On the same note, the key informant interview also was carried out with a different questionnaire used but responding to the same objectives of the study. Further the study collected secondary data from the library, books, journals, the internet, government reports and other publications.

Data Processing and Analysis

At the end of data collection, completed questionnaires were edited for completeness and consistency. Quantitative data analysis techniques were used to analyse the data and included descriptive statistical techniques with the help of SPSS software version 20. The data was run through the SPSS computer programme to get an accurate analysis of the data collected. Descriptive analysis of both quantitative and qualitative data involved the use of frequencies in their absolute and relative forms (percentage). Mean and standard deviations was also used as measures of central tendencies and dispersion respectively. Descriptive data was presented using Tables, charts and graphs as deemed appropriate. Inferential statistics were presented using Tables and other info graphics. The process of analysis involved editing of the collected raw data to detect errors, omissions that gave direction for correct where necessary as accuracy; consistency and uniformity were looked at. The researcher also formulated categories of responses for all open-ended questionnaires and interview schedule so as to attain qualitative data, after which the statistics were used by the researcher to analyze the data qualitatively interpreting the figures.

RESEARCH RESULTS

Effect of CCTV in Reducing Crime in Nairobi CBD

On whether the presence of CCTV cameras has led to increased safety within the CBD, the majority retreated that CCTV cameras have increased physical security within the CBD. The study also found that surveillance cameras would help in solving crimes in the CBD. These findings bode with Clinard (2014) argument that increased CCTV surveillance has a huge potential in decreasing occurrence of crime in major cities challenged by runaway crime.

The study further established that surveillance cameras have had an effect on decreasing crime in the Nairobi CBD by a great extent. This shows that the majority felt CCTV cameras have contributed in crime reduction in the Nairobi CBD.

The study also found that the recorded CCTV cameras footages have been a valuable tool for police when investigating incidents, an indication that a good number of people feel those CCTV footages can be used as a lead by police officers to curb crime within the CBD. The findings are in tandem with Clinard (2014) who established that when CCTV surveillance is well installed, they play a major role in decreasing the number of crimes reported in specific areas in an urban set up. From this perspective, it can be deduced from the study that it is imperative to have increased surveillance in the Nairobi CBD to achieve better physical security in the city. However, the study established that by 2013, CCTV cameras installed in Nairobi's city centre were said to be of very low and poor quality and are ineffective and unreliable. They are broken down, and a number of them are completely out of service. Out of the forty initially installed cameras, only thirty-three are in working condition. The cameras produce such low-quality images that they cannot be relied upon by security agencies. They also do not work at night due to lack of sufficient lighting as a result of not having working street lights in most streets in Nairobi CBD (Okuttah, 2016). This is a clear indication that these cameras are not able to fully provide the required physical security to the CBD.

On the same note the scholars have also note the need to establish mechanisms to continually reassess the risk from new and emerging technologies such as CCTV; increasing awareness among both individuals and businesses through education and the development of appropriate resources of the risks posed by technology enabled crime and to embrace those developments in technology that provide a new medium through which crime prevention strategies can be implemented, and opportunities for the development and utilisation of new crime prevention technologies (Sutton & Bleeker, 2013). The study can deduce that CCTV cameras to some extent have reduced crime rate in areas such as along the Tom Mboya Street and bus terminal which were very prone to crimes such as theft and assault.

Effectiveness of CCTV Cameras in Enhancing the Physical Security of the CBD

It is essential for all to understand how the CCTV can be effective in improving security and crime prevention, and how they work (Welsh et al., 2015). The study found that CCTV cameras have improved the deployment of police officers to crime hotspot areas in Nairobi

CBD. This indicates that CCTV cameras have improved the police officers response to both criminal activities in town but also emergency services that may be required by the public.

The study also established that CCTV cameras have largely assisted the police in charging and prosecuting present offenders hence deterring future criminals. This is in accordance with Newburn, Tim and Hayman (2001) assertion that CCTV cameras act as deterrent measures when visible and the images got from CCTV cameras can be used for successful prosecution of court cases. This suggests that CCTV cameras play a big role in charging and prosecuting present offenders hence deterring future criminals.

The study further revealed that positioning of cameras in a manner that they can provide proper surveillance have improved the deployment of police officers to crime hotspot areas, thereby ensuring that there is a reduction of the levels of crime. CCTV cameras have reduced crime levels by increasing the likelihood of capturing, charging and prosecuting present offenders, therefore, deterring future criminals. This is because they were caught in the act.

CCTV cameras have also deterred potential offenders who would not want to be observed by CCTV cameras or have evidence against them when they are captured on camera. Noisy parker- Areas with more concentration of CCTV cameras are likely to be very busy. This increases the potential of having natural surveillance. This surge of locals will definitely reduce the potential of criminals acting out due to the fear of being apprehended by members of the public. CCTV cameras can also influence the effective deployment of police officers or other security officers to areas with constant suspicious behaviour. The presence of increased security will deter criminals thus reducing the levels of crime.

Furthermore the presence of CCTV cameras is a clear message to would-be offenders that the locals are taking their security seriously. This is effective in deterring crime. The study deduces that CCTV cameras may not be as effective on crimes that can be done quickly but is significant to crimes that can take longer to accomplish. This is because offenders would take less time to commit these crimes in order to avoid the cameras and CCTV is important to third-party participants such as shop owners since it gives them the confidence to challenge offenders. Lastly, CCTV cameras give the police a clear perception of areas that may need more deployment of officers (Okuttah, 2016).

INFERENCE ANALYSIS

From the study findings, the following relationships were drawn through correlation analysis. Pearson's' Product moment correlation statistical technique was used to test the significance of the relationship between independent variables and levels of physical security attained.

Table 1: Relationship between Role of CCTV cameras and Physical Security

| | Pearson correlation coefficient |
|--|---------------------------------|
| Relationship between role of CCTV cameras and achievement of physical security | 0.760 |

P < 0.01

The Pearson's Product Moment Correlation co-efficient for awareness factors showed a strong positive relationship with physical security ($r = .760$, $P < 0.01$). This relationship confirms other findings of similar studies by Beyer (2010) on importance of public awareness on success of surveillance systems in the USA where he argued that public awareness has positive impact on enhancement of physical security in the Nairobi CBD.

CONCLUSIONS

The obtained results show that CCTV surveillance is in fact an essential crime prevention tool that every institution should acquire. If such crime prevention measure is well planned, continuously updated and integrated with other crime prevention measures, which are all properly maintained and upgraded, crime prevention success will prevail. These conclusions form the foundation for a series of practical recommendations on the use of CCTV and other crime prevention measures. Such recommendations would help policy makers in deciding the most appropriate crime prevention measures according to their institutional needs. They also suggest ways on how to enhance criminology studies in the field of crime prevention and security studies.

RECOMMENDATIONS

The government needs to establish an independent authority for evaluation/assessment of CCTV cameras on crime prevention and reduction. Parliament should legislate the use of CCTV cameras clearly stating laws and regulations governing the use and storage of data in persecution of crime and at the same time taking into consideration the privacy of citizen. Reformulate the use of CCTV away from crime reduction. Use it for other purposes including municipal emergency responses, fire fighting and emergency medical responses to be able map out and access areas with emergencies.

These recommendations suggest that there remains much work on assessing the true effectiveness of CCTV technology as crime-solving, prevention and reduction, and management tool within each county. Despite the universal application of these policy recommendations, they intend to promote discussion at all levels, since CCTV technology is globally utilized and debated.

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