International Journal of Humanities and Social Science Invention (IJHSSI)
ISSN (Online): 2319 – 7722, ISSN (Print): 2319 – 7714
www.ijhssi.org ||Volume 10 Issue 3 Ser. I || March 2021 || PP 46-56

Assessment on the effectiveness of theClosed-Circuit Television(CCTV) cameras in Gauteng province: South Africa

Azwihangwisi Negota
Gauteng Department of Community Safety
Street Address: 64 Prichard Street, Johannesburg, 2000
Corresponding Author: Azwihangwisi Negota

ABSTRACT:*Law enforcement agencies (LEA's) are continually pursuing new technologies in a quest to enhance their public safety efforts. Among the latest generation of such public safety tools is the use of public surveillance cameras or what came to be known as Closed Circuit Television (CCTV) cameras. The theory behind the utility of CCTV cameras for crime control and prevention purposes is that potential offenders will refrain from a criminal activity if they know they are being watched and believe they are at greater risk of apprehension. Cameras may also increase perceptions of safety among law-abiding citizens, encouraging them to use public spaces and serve as informal guardians and potential witnesses.The purpose of this assessment is to establish whether the installation of CCTV cameras in the inner cities of the Johannesburg, Tshwane, the West Rand and Sedibeng regions has improved the feeling of safety among residents and visitors, as well as bolstered crime deterrence.* ***Method****: This was a qualitative and quantitative method (mixed method) study where 2745respondentsincluding community members and Law Enforcement Officers (LEOs) formed part of the data collection session. The respondents were all in theGauteng province of South Africa.*
KEYWORDS:*Effectiveness andClosed-Circuit Television*

Date of Submission: 21-02-2021 Date of Acceptance: 04-03-2021

---

1. INTRODUCTION

Nine major municipalities are home to 38% of South Africa's population but experience a disproportionate proportion of crimes reported nationally (South African Cities Network, 2017) which has prompted the Government to embark on various crime prevention strategies focusing primarily on reducing urban crime. The Gauteng Province is the economic hub of South Africa and in a context of increased economic urbanization, the province is home to 13 399 724 million citizens (an increase of around 4.5 million people from 2001), the highest provincial population in South Africa (Statistics South Africa, 2016a).

According to the South African Victims of Crime Survey (Statistics South Africa, 2017) and the State of Urban Safety report (South African Cities Network, 2017), crime rates in Gauteng on an individual and household level, have steadily decreased since 2013. This is positive, particularly because Johannesburg Central Business District, for example, has the third-lowest murder rate across nine major South African municipalities, with Ekurhuleni and Tshwane being the best performing all of which are in Gauteng (South African Cities Network, 2017, p.19). However, the global average murder rate is 7.6 (persons) per 100 000, which is substantially lower than the national murder rate in South Africa of 34 (persons) per 100 000 in 2014/15. Across nine major municipalities, the murder rate in Tshwane was the lowest at 19 (persons) per 100 000, followed by Ekurhuleni at 31 (persons) per 100 000 and the City of Johannesburg at 33 (persons) per 100 000. The highest murder rate was recorded in the City of Cape Town at 65 (persons) per 100 000 (South African Cities Network, 2017). In 2015, authorities reported a significant decrease of 80% in serious crime in the Johannesburg city centre where CCTV cameras were installed (Dipa, 2015).

The Gauteng province places an enormous emphasis on efficiency, effectiveness, and economy in the delivery of services to the populace(Dipa, 2015). Similarly, there is an acknowledgement that the promotion of accountability and transparency are basic tenants of democratic governance(Dipa, 2015). Therefore, on-going monitoring and evaluation of government programmes are being advanced as a mechanism to entrench the culture of performance in the public sector(Dipa, 2015).

Furthermore, it is worth noting that since 2005, the South African government (and by extension the Gauteng Provincial Government) adopted key policies and regulatory frameworks such as the Policy on Government-Wide Monitoring and Evaluation (Presidency, 2007) as well as the National Evaluation Plan of 2011 (Presidency, 2011), among others. The primary justification for these policy frameworks is to provide an overarching agenda in terms of how the evaluation of projects and programmes should unfold in the public sector(Presidency, 2011). The assessment of the effectiveness of CCTV cameras in crime control and prevention

will to a large extent be guided by the said policy frameworks on performance evaluation in the public sector. This study is a response to the argument presented herein in line with the dictates of the Provincial Evaluation Plan (PEP) of Gauteng Province for the 2017/18 financial year (Dipa, 2015).

1.1. AIM OF THE ARTICLE

The purpose of this article is to establish whether the installation of CCTV cameras in the inner cities of the Johannesburg, Tshwane, the West Rand and Sedibeng regions has improved the feeling of safety among residents and visitors, as well as bolstered crime deterrence.

1.2. Objectives of the assessment

The assessment intends to:

- Establish whether participants believed that the installation of CCTV cameras has ledto a reduction of crime in the inner city of the research areas
- Determine whether participants believed that the installation of CCTV cameras has improved police response rate in the inner city of the selected areas
- Gather information on whether the installation of CCTV cameras has led the participants to believe that it has bolstered crime detection and investigation
- Find out whether it is believed that the installation of CCTV cameras has enhanced conviction rates
- Determine whether CCTV cameras affect the feeling of safety in areas being studied and
- Establish factors that limit the efficacy of CCTV cameras in areas under review

II. LITERATURE REVIEW

1.3. INTRODUCTION

In order to understand the mechanisms by which public surveillance cameras may impact crime and disorder, as well as to examine relevant information that can help inform future public surveillance investments, it is necessary to review the literature on public surveillance technology in general, including its application to specific crime control measures(Goold, 2004). The following discussion describes public surveillance technology, the theories underpinning its use as a crime prevention tool and the results of previously selected impact evaluations.

Given the paucity of CCTV evaluations on the continent (Africa), South Africa as well as Gauteng province, this literature review relied on studies conducted in the United Kingdom (UK) and United States of America (USA). The evaluations reviewed covered the period between 1996 and 2011.

1.4. The history of CCTV cameras: The United Kingdom and the United States perspective.

Video surveillance can be traced back to the 1950s owing to the expansion of information and communication technology (Goold, 2004 cited in Carli, 2008). The utilisation of surveillance cameras was initially for traffic management, while banks as shops also opted for the technology (Goold, 2004 cited in Carli, 2008). During the 1960s that video technology began to expand in cities, especially in the United Kingdom (UK) and United States (US), although the UK became known as "the real father of CCTV implementation"(Goold, 2004 cited in Carli, 20080. This was because, since the 1980s, the UK government has installed cameras at a rate of 500 per week (Goold, 2004 cited in Carli, 2008).

Given the growth of urban areas and consumer society in the 1970s, mass video surveillance was adopted as a tool for monitoring shoplifting, mass events, private property, public urban transport, hospitals, and schools (Goold, 2004 cited in Carli, 2008). In the UK, CCTV cameras were installed simultaneously in four major underground train stations (Goold, 2004 cited in Carli, 2008). On the other hand, in the US, the application of video surveillance in public spaces was not very prevalent until the 1980s (Goold, 2004 cited in Carli, 2008). However, entrepreneurs and banks came to have an appreciation for the value of CCTV cameras (Goold, 2004 cited in Carli, 2008).

A remarkable development in the evaluation of the utilisation of CCTV cameras was witnessed in the mid-1980s (Goold, 2004 cited in Carli, 2008). This period was characterised by a move away from the local authority (municipality) control over crime issues towards a more state-led approach (Goold, 2004 cited in Carli, 2008). Fay (1998: 316) cited in Carli (2008) elucidates that CCTV diffusion was due to "its promotion as a panacea for a wide range of social and economic problems by a variety of state agencies and commercial organizations". Newburn and Hayman (2002) in Carli (2008), deliberate on how a spike in the number of urban areas led to increased pressure on the national government in the UK to act on rising crime rates.

Literature indicates that during the 1990s, CCTV technology advanced at alarming rates. Newburn and Hayman (2002) cited in Carli (2008) mention the 'rush' to install video surveillance systems in public spaces, whereby politicians, as well as local authorities, became more inclined to adopt CCTV. These authors relate this

phenomenon to declining faith in the criminal justice system, a response to the rising local crime rates and a political emphasis on Inter-Agency/Partnership (Carli, 2008).

As far as the mid-1990s are concerned, the literature points out that it was during this period when a more affordable system, namely, "Digital Multiplexing" was developed (Carli, 2008). It is argued that this invention transformed the video surveillance sector. Some of the key features of Digital multiplexer units are that they enable simultaneous recording on several cameras and have a time-lapse and motion-only recording (Carli, 2008). These features improved the efficiency of recording. One of the milestones in the evolution of CCTV is that video cameras were installed in ATMs to record all transactions in the US (Carli, 2008).

The installation of surveillance cameras was intensified in the US immediately post the first attack on the World Trade Centre in 1993 (CNN, 2018; Lambert, 2018). Key law enforcement agencies such as the New York Police Department, FBI (Federal Bureau of Investigation) and the CIA (Central Intelligence Agency) installed CCTV cameras surrounding the area. It is worth noting that sinceSeptember 11, 2001, attacks, software developers have been relentlessly refining programs that would enhance video surveillance, including facial recognition (Carli, 2008).

1.5. South African perspective of CCTV cameras

The initiative to install and link CCTV surveillance systems in the Central Business Districts to local police services was taken in the mid-1990s by Business Against Crime South Africa (Minnaar, 2007). It was a component of "the Safety Lung Project", which was an initiative run jointly by the Gauteng Department for Community Safety and the City Council's Safer Cities Programme and was intended to be a major anti-crime initiative to improve personal and property safety using technology.

More specifically, the CCTV system was designed to:

- Monitor theft or any other criminal acts
- Record offences and transgressions, i.e. allowing for the visual verification of events in and around properties and premises and in the case of public space CCTV activity in the streets and on sidewalks
- Assist officers on the ground not only to respond but to respond quicker to incidences (thereby cutting down response times)
- Assist in the identification of suspected perpetrators to improve arrest and conviction rates of offenders and to be of use as visual evidence in court
- Act as a 'visible' deterrent in preventing the commission of these crimes, and
- Reduce crime(Minnaar, 2007)

A supplementary aim was to reduce labour costs (to police and security companies) and improve crime prevention efficiencies (Minnaar, 2007). A study conducted in 1996 evaluated the Benoni CCTV pilot project. Findings were largely inconclusive with researchers unable to link conclusively, the presence of CCTV as contributing to reduced crime rates and or higher conviction rates in the sampled area (Glanz, Nacerodien, Mokotedi, Koitsioe, & Ntuli, 1996).

A paper was written by Anthony Minnaar as far back as 2007 where the author reports that "in the first year of its operation the Johannesburg Central Business District CCTV system had reported a 90% drop in muggings in the area while all reported crime decreased by 48%" (Minnaar, 2007, p.193). He concludes, however, that though large reductions in crime are consistently claimed, "other influencing variables in reductions in crime cannot always be ascribed solely to the implementation and/or presence of CCTV" (Minnaar, 2007: 201).

Globally, between the years 2001-2004 CCTV surveillance research conducted across several European countries, found that "no broad generalisations or assumptions should be made regarding the extent, nature, and impact of CCTV on crime reduction merely based on its presence at any location"(Minnaar, 2007). The study also found general support for the use of CCTV even though the public was often uninformed of its workings or even its implementation (Minnaar, 2007). In 2009, the Scottish government concluded that "there was minimal evidence to suggest that CCTV effectively deters crime, and in cases where crime does appear to be deterred, this effect is generally short-lived" (McKinley, 2016: 10).

Local and international research notwithstanding, CCTV camera surveillance systems continue to be a common feature in public spaces all over South Africa with local authorities in all of the major metropolitan areas having rolled out extensive systems inJohannesburg, Tshwane, Ekurhuleni, Cape Town, eThekwini and Nelson Mandela Bay(McKinley, 2016: 10).

Municipalities are the primary beneficiaries of CCTV systems, with stationary cameras featuring in areas like public streets, government buildings, tourist hot spots, travel nodes such as bus routes and train stations, as well as national key points(City of Johannesburg, 2008). In Johannesburg, the cameras were installed in response to the high levels of crime that plagued the inner city for many years(City of Johannesburg, 2008). Given that the system is believed to contribute to a decrease in all kinds of crime, its ultimate purpose is

to reduce threats of harm and to improve the quality of life of the people in the city(City of Johannesburg, 2008). In addition to serving as a crime deterrent, the cameras also aid in monitoring traffic(City of Johannesburg, 2008). The camera system has created a sense of security in the inner city for people who own businesses (City of Johannesburg, 2008). Similar reasoning followed in the installation of the cameras in the City of Tshwane (Hlahla, 2005), Sedibeng (Sedibeng District Municipality, 2012) and the West Rand (None, 2015). In Tshwane, since the marked decline in crime in Pretoria CBD, the City of Tshwane collaborated with businesses in Sunnyside, Hatfield, and Brooklyn to expand the reach of the CCTV system (Hlahla, 2005).

The majority of state CCTV camera systems form part of integrated systems that are networked to central control rooms located across these major municipalities(Dipa, 2015). The control rooms house trained personnel who constantly monitor CCTV video feeds, with members of the Johannesburg Metro Police Department (Dipa, 2015). The footage is stored on digital servers with most hardware and software operated and managed through private/public partnerships (McKinley, 2016).

1.6. Uses and targets of CCTV cameras

It is argued that a major setback of CCTV technology is the lack of a standard and clear outline on the usage of CCTV and the targeted population. Muller and Boos (2004) in Carli (2008) are among the few authors who attempt to clarify the application of this technology. Founded on their investigation, these authors established that CCTV is commonly used for information on access control, conduct control, registering evidence, flow control and the planning of deployment of law enforcement officers (Muller & Boos, 2004: 7 cited in Carli, 2008).

In relation to the selection of targeted individuals or groups, Norris and Armstrong (1999) cited in Carli (2008) generated categories of suspicion targeted by video surveillance operators. These include:

- Behavioursuspicion based on recognizing abnormal behaviour
- Suspicion based on personal characteristics
- Suspicion based on the location of a suspect
- Personalized suspicion, which suggests prior knowledge of the person
- Protection, which infers monitoring a vulnerable person (e.g. single women, children and the elderly)
- Routine, which is based on a set surveillance path, and
- Transmitted, that is, a suspicion based on an outside source.

1.7. The benefits of CCTV cameras in crime prevention and control

In the past few years, there has been an increase in closed-circuit television installations, particularly in city centres, shopping centres, banks, parking facilities, schools, colleges, hospitals, transport facilities, industrial estates, business centres, football grounds, and rehabilitation centres (Phillips, 1999: 123).

The CCTV cameras are also in most instances used as a prevention and crime reduction measure. The cameras are intended to reduce crime by utilising mechanisms such as deterrence, efficient deployment of resources and personnel, providing the presence of a capable guardian as well as detection of criminal activity (Armitage, 2002: 2).

2.6 CCTV cameras as a crime deterrent

Advocates of CCTV cameras claim that the system deters criminal activity because potential criminals know that they are being monitored(Caplan, Kennedy &Petrossian 2011: 256). It is therefore expected that crime will be deterred because cameras increase the risk of apprehension(Caplan, Kennedy &Petrossian 2011: 256).This is also consistent with other traditional policies like increasing the visibility of police in the communities where the high risk of apprehension is used to deter criminal activity (Caplan, Kennedy &Petrossian 2011: 256). The assumption in this instance is that wherever CCTV systems are installed, there will be a crime reduction.

2.7 The role of CCTV cameras in enhancing the efficiency of the criminal justice system

Campaigners of the installation of CCTV cameras in public spaces also postulate that their surveillance capabilities can enhance the efficiency of the criminal justice system(Goold, 2004). It is argued that camera monitors can alert the police of crimes as well as potentially dangerous situations as they occur (Goold, 2004). This, they further argue, can provide vital information that can help law enforcement agencies to determine the most tactical effective response, including how many officers to deploy on the scene (Goold, 2004).

Furthermore, video footage documenting crimes that transpired, identifying perpetrators and witnesses may benefit investigations and prosecutions, thus increasing both police and prosecutorial efficiency to the benefit of victims of crimes whose cases can be closed through the utilization of video evidence (Chainey, 2000).This could, in turn, incapacitate potential offenders from committing future crimes (Chainey, 2000).

2.8 The effect of using CCTV cameras in the prevention of specific crimes

2.8.1 Property Crimes

The study by Brown (1995) cited in Phillips (1999: 129) found that for all property crime types examined, there was a reduction in the number of incidents in the CCTV areas compared with the non-CCTV areas. This was also the case even in areas whereas little as two cameras were installed(Phillips, 1999: 129). In addition, incident and arrest data proved that there was deterrence of crime, especially when the cameras were first installed and fully operational(Phillips, 1999: 129). This effect was sustained for burglary and criminal damage, but for offences such as thefts of and from motor vehicles, the positive spin-offs seemed to fade over time (Phillips, 1999: 129).

Furthermore, an evaluation by Short and Ditton (1996) cited in Phillips (1999: 131) also found a significant reduction in crimes of dishonesty (that is, housebreaking, theft from and of motor vehicles, fraud, shoplifting, etc.) dropped by 48%, while fire-raising and malicious mischief fell by 19%. In a study by Caplan *et al.* (2011: 267), it was reported that CCTV significantly deters vehicle theft in the whole city. There was also a significant decrease in shootings. It is nonetheless worth noting that this was only achieved by cameras that had a perfect view of the whole area of installation (Caplan *et al.*, 2011: 267). This implies that in areas where CCTV cameras have been installed, the effect on crime detection and deterrence is sizeable (Caplan *et al.*, 2011: 267).

In some areas, it was reported that there was a significant 13% decrease in the number of overall crime events due to the installation of the cameras (Ratcliffe, Taniguchi & Taylor, 2009: 764-765). This effect was mostly due to a decline in disorder offences (Ratcliffe *et al* 2009: 764-765). There was also a significant decrease in serious crimes as well as evidence of a positive diffusion of benefits to surrounding areas (Ratcliffe *et al.*, 2009: 764-765).

2.8.2 Personal crime and public order offences

Brown (1995) cited in Phillips (1999: 136) established that there was a small increase in robbery, theft from the person and criminal damage, although the increase in these offences was realized in the rest of the police division. However, in an evaluation conducted by Phillips (1999: 136), decreases in assaults were witnessed post CCTV cameras installation.

In contrast, a UK-based organisation, the National Association for the Care and Resettlement of Offenders (NACRO) conducted a review of CCTV studies and found that public video surveillance had no impact on personal crimes such as assault and drunkenness (Carli, 2008: 8). On the other hand, Helten and Fischers (2004) cited in Carli (2008: 8) reveal that CCTV cameras had little or no effect on reducing crimes such as public drunkenness and acts of rage. Despite the potential benefits of the CCTV camera systems cited above, the introduction of this policing technology has a number of limitations as discussed below.

2.9 Limitations of installing CCTV cameras in public spaces

2.9.1 A potential to create political tensions in communities

Detractors of public surveillance systems are typically most concerned by the potential threat to civil liberties that the technology presents(Glanz, Nacerodien, Mokotedi, Koitsioe, & Ntuli, 1996). On the other hand, some citizens tend to be concerned about government agencies conducting extensive and potentially inappropriate surveillance activities as well as abuse of the system by individual civilian or sworn personnel(Glanz *et al.*, 1996). In addition, there are also concerns about the adequacy of public surveillance regulations and guidelines in preventing such potential misuse (Glanz *et al*, 1996).

2.9.2 Creation of a false sense of security

Critics of the installation of CCTV cameras in public spaces argue that these systems create a false sense of security, leading potential victims to let their guard down, thereby turning them into "softer" targets by criminals (Welsh & Farrington, 2002). This, it is argued, may, in turn, diminish citizen guardianship and natural surveillance because citizens may feel that there is less need for them to monitor public spaces if cameras are present. Alternatively, some detractors of public surveillance cameras contend that a well-publicized camera system may increase people's fear and elicit other negative public responses by highlighting the crime problems in an area (Glanz *et al*, 1996; Phillips, 1999: 128).

2.9.3 Displacement of crime

Another concern surrounding the utilization of public surveillance is the threat of crime displacement(Welsh & Farrington, 2002). That is, whereby efforts to reduce opportunities for crime do not truly lower crime, but merely change where, when or how it is committed (Welsh & Farrington, 2002). Thus, the introduction of cameras in one area or neighbourhood could result in increased crime elsewhere (Armitage, 2002: 3). However, Dickson (2012: 5) found that the implementation of CCTV was not associated with an increase in crime in the surrounding areas where cameras were installed. Furthermore, a study by Caplan *et al.*

(2011: 269) found no evidence of displacement of crime, especially for theft of vehicles and shootings. Nonetheless, it must be acknowledged that the findings on the displacement of crime might be due to a lack of research techniques to reliably determine the effects of CCTV on crime (Caplan et al. 2011: 257).

2.9.4 Costs of operating and maintaining CCTV

CCTV projects require certain equipment before they could be operational (Glanz *et al*, 1996 & Armitage, 2002: 2). These include cameras, links between cameras and monitors, video equipment as well as a control room or a command centre(Glanz *et al*, 1996 & Armitage, 2002: 2). In addition, these projects need the installation of systems such as control room monitoring systems, response or reaction systems, video footage storage and record systems, as well as evidence control systems (Glanz *et al*, 1996 & Armitage, 2002: 2). This implies that CCTV projects are costly endeavours given the seemingly exorbitant installation and maintenance costs associated with these projects (Glanz *et al*, 1996 & Armitage, 2002: 2).

2.10 Conclusion

While there are different opinions on the effectiveness of CCTV cameras in crime prevention, most studies that were conducted suggest that it is an effective tool. Studies suggest that CCTV cameras help in crime prevention and detection by recording images of crime scenes and thus increasing the risk of getting caught by potential perpetrators. The literature review also indicated that CCTV has a better effect on reducing property crimes rather than personal crimes.

III. METHODOLOGY

Mixed method: The mixed research method was adopted, that is, a combination of the qualitative and quantitative research approaches, while the type of study in question was an impact assessment. For the purposes of this article, the qualitative research design will be discussed first, followed by the quantitative research design.

Sampling method: Purposive sampling entails the selection of specific respondents within the population to use for a particular study or research project and the sampling of 2745 respondents.

Data collection: Data was collected using a questionnaire and an interview guide amongst community members and law enforcement agencies of Gauteng province.

IV. FINDINGS

Types of crimes that are mostly captured by the CCTV cameras

The types of crimes mostly captured by CCTV cameras in the City of Tshwane include vehicle crimes such as "smash and grab" as well as robberies. In the City of Johannesburg, it was found that crime mostly captured by CCTV cameras includes contact crimes such as street robberies and assaults.

Effect of CCTV cameras on police response rates

The respondents from the City of Tshwane indicated police response times "vary from incident to incident". It was also indicated that police reaction is sometimes slow due to challenges with radio communication between the command centre and police officers on patrol. On the other hand, the JMPD respondent indicated that CCTV cameras have improved their response time.The respondent argued that by being a little bit innovative in the utilisation of the CCTV system, LEAs might prevent more crime thus increase the feeling of safety among residents or visitors in the city.

The effect of CCTV cameras on crime prevention

The respondents argued that CCTV cameras do help to prevent crime where they have been installed. However, it was mentioned that crime increased by 50% between May and July 2017 when the CCTV cameras were not operational in the City of Tshwane. In contrast, the City of Johannesburg (COJ) respondent argued that CCTV cameras do not reduce crime in the areas where they have been installed. He further contended that according to the 2015/16 crime statistics published by the SAPS, Johannesburg Central experienced the highest cases of murder. On the other hand, Hillbrow police station had the highest cases of murder based on the 2016/17 crime statistics. The study established that over the years, most police stations in the COJ have not succeeded in dealing with crime.

The COJ respondent further posited that by virtue of the cameras just being there does not necessarily deter an individual from committing the crime and running away. The implication is that by the time the LEAs respond to an incident the suspect might already be gone. This suggests that the CCTV cameras are not effective in crime prevention if they are not supplemented by the deployment of officers on foot patrol or any other form of non-motorised patrols such as bicycles as is the case in Hatfield in the City of Tshwane.

The effect of CCTV cameras on detection rates

Regarding the effect of CCTV on detection rates, the SAPS respondents indicated that the footage assists a lot to resolve cases. However, TMPD respondents complained that SAPS detectives seldom come to the command centre to view the footage. This was a clear disjuncture in the responses of the said LEAs.

The effect of CCTV cameras on conviction rates

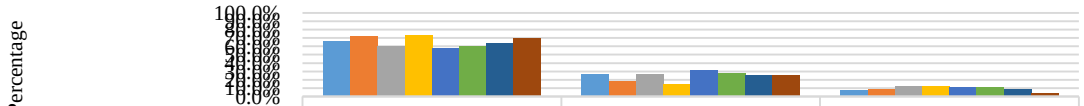
When asked about the effect of CCTV cameras on the conviction rates, the COJ respondent argued that they have been unable to secure convictions in some cases due to the "poor quality of the footage". The official indicated that the city is still operating analogue CCTV cameras in their Intelligence Operating Centre. These are fixed cameras that are not able to rotate, especially those installed in front of the Johannesburg Arts Gallery in the inner city. Given that the city is still operating analogue CCTV cameras, the quality of footage tends to be compromised especially in instances where lighting is poor. It was therefore established that the more there is advancement in terms of technology, the more improvement there is in terms of counter-arguments in court.

Feeling of safety in public spaces

The respondent from the City of Johannesburg posited that the installation of CCTV cameras does not improve the feeling of safety among residents in the city. The reason advanced for this position was that Johannesburg is quite complex as compared to other South African cities such as Cape Town or Durban. It was argued that there is a general feeling of being unsafe given the high crime statistics across police stations in the city, hence Johannesburg is perceived to be a dangerous city. The official nonetheless argued that the crime picture in Johannesburg is not as bad as compared to other cities globally. It was argued that the city is a safer city compared to other cities abroad.

Perceptions of CCTV cameras from community members

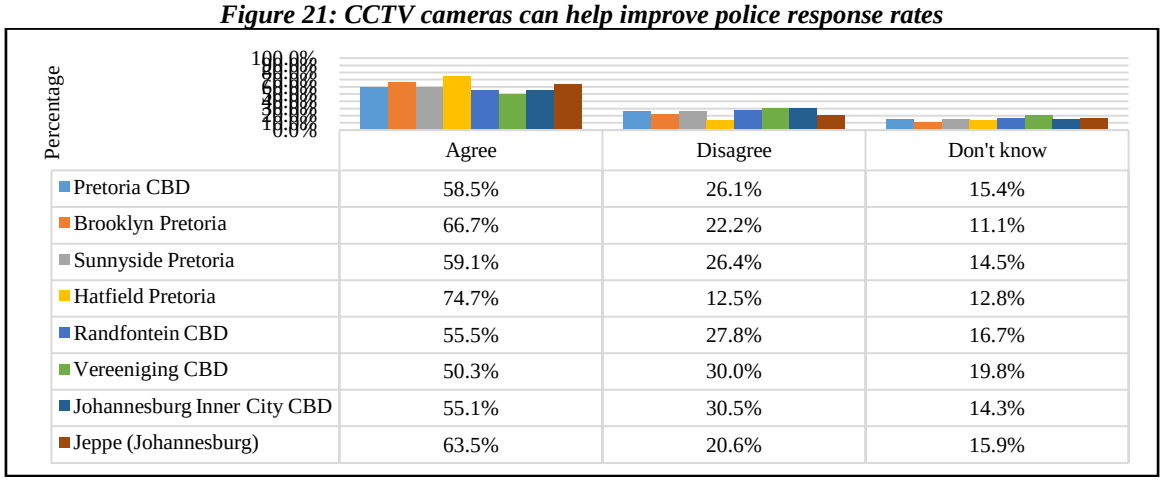
Figure 1: CCTV cameras can help to lower the crime rate



	Agree	Disagree	Don't know
Pretoria CBD	65.8%	26.4%	7.8%
Brooklyn Pretoria	72.5%	18.7%	8.8%
Sunnyside Pretoria	60.9%	26.4%	12.7%
Hatfield Pretoria	73.0%	14.5%	12.5%
Randfontein CBD	57.3%	31.4%	11.3%
Vereeniging CBD	60.3%	28.3%	11.5%
Johannesburg Inner City CBD	64.5%	26.2%	9.3%
Jeppe (Johannesburg)	69.8%	25.4%	4.8%

Additional questions were then asked directly linking to respondent's perceptions of the impact of the CCTV cameras on crime rates, police response rates and feelings of safety for instance. Again, the majority held positive views of the cameras provincially. For instance, 65% of the overall respondents believed that CCTV cameras were useful in lowering the crime rate (see Figure 1 above).

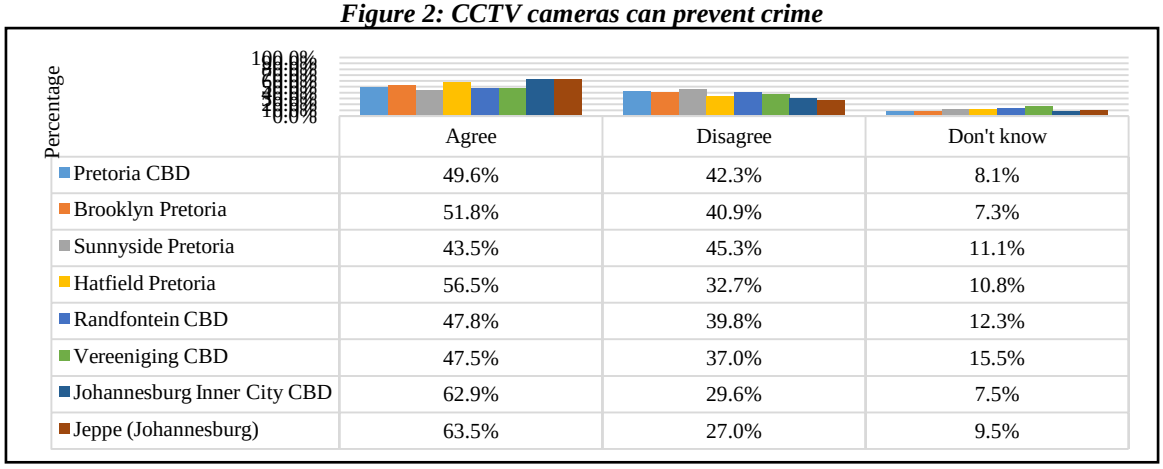
Figure 21: CCTV cameras can help improve police response rates



	Agree	Disagree	Don't know
Pretoria CBD	58.5%	26.1%	15.4%
Brooklyn Pretoria	66.7%	22.2%	11.1%
Sunnyside Pretoria	59.1%	26.4%	14.5%
Hatfield Pretoria	74.7%	12.5%	12.8%
Randfontein CBD	55.5%	27.8%	16.7%
Vereeniging CBD	50.3%	30.0%	19.8%
Johannesburg Inner City CBD	55.1%	30.5%	14.3%
Jeppe (Johannesburg)	63.5%	20.6%	15.9%

An additional belief, held by 65% of the overall sample, was that CCTV cameras can improve police response rates (see Figure 2 above).

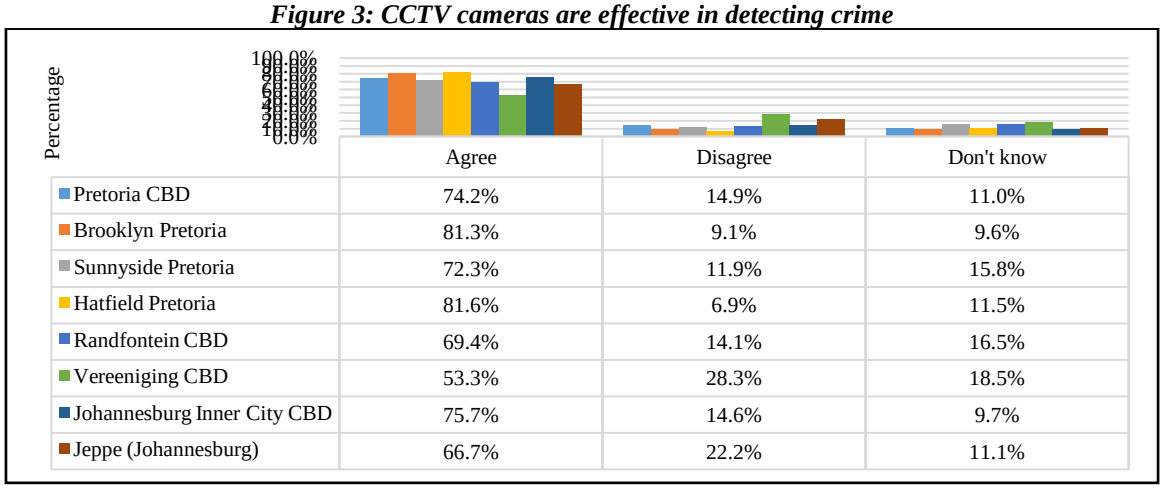
Figure 2: CCTV cameras can prevent crime



	Agree	Disagree	Don't know
Pretoria CBD	49.6%	42.3%	8.1%
Brooklyn Pretoria	51.8%	40.9%	7.3%
Sunnyside Pretoria	43.5%	45.3%	11.1%
Hatfield Pretoria	56.5%	32.7%	10.8%
Randfontein CBD	47.8%	39.8%	12.3%
Vereeniging CBD	47.5%	37.0%	15.5%
Johannesburg Inner City CBD	62.9%	29.6%	7.5%
Jeppe (Johannesburg)	63.5%	27.0%	9.5%

Except for respondents in Sunnyside, the majority of the participants believed that the CCTV cameras were effective in preventing crime (See Figure 3 above).

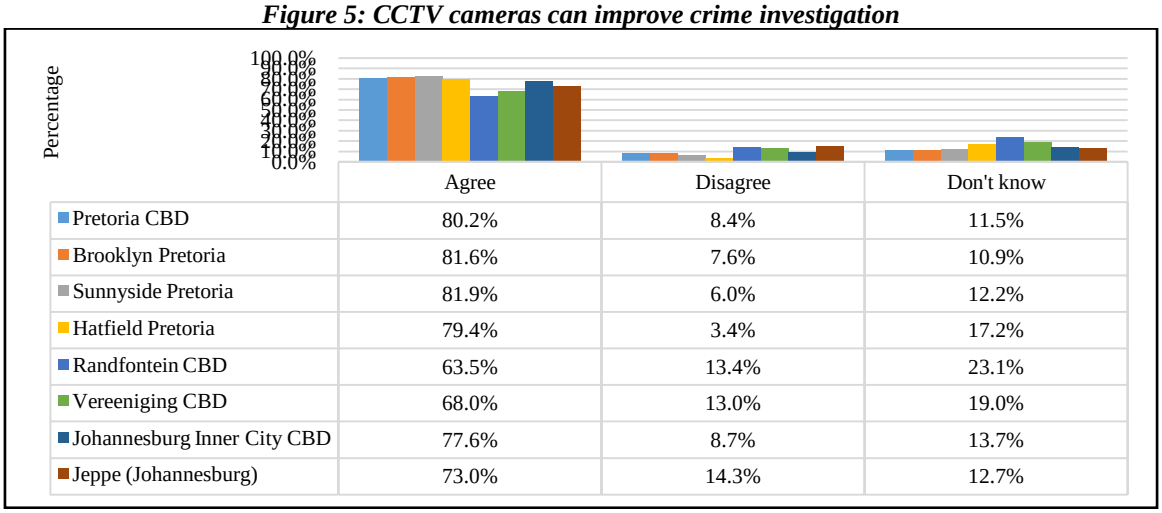
Figure 3: CCTV cameras are effective in detecting crime



	Agree	Disagree	Don't know
Pretoria CBD	74.2%	14.9%	11.0%
Brooklyn Pretoria	81.3%	9.1%	9.6%
Sunnyside Pretoria	72.3%	11.9%	15.8%
Hatfield Pretoria	81.6%	6.9%	11.5%
Randfontein CBD	69.4%	14.1%	16.5%
Vereeniging CBD	53.3%	28.3%	18.5%
Johannesburg Inner City CBD	75.7%	14.6%	9.7%
Jeppe (Johannesburg)	66.7%	22.2%	11.1%

However, more responses that are positive were yielded when asked about detecting crime, with an overall 72% agreeing that cameras are effective in crime detection provincially (see Figure 4 above).

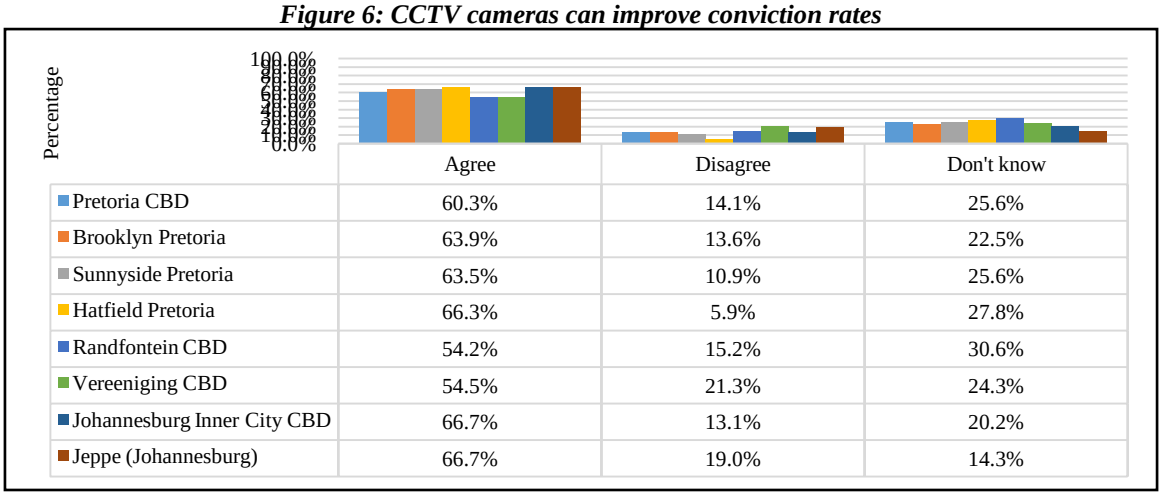
Figure 5: CCTV cameras can improve crime investigation



	Agree	Disagree	Don't know
Pretoria CBD	80.2%	8.4%	11.5%
Brooklyn Pretoria	81.6%	7.6%	10.9%
Sunnyside Pretoria	81.9%	6.0%	12.2%
Hatfield Pretoria	79.4%	3.4%	17.2%
Randfontein CBD	63.5%	13.4%	23.1%
Vereeniging CBD	68.0%	13.0%	19.0%
Johannesburg Inner City CBD	77.6%	8.7%	13.7%
Jeppe (Johannesburg)	73.0%	14.3%	12.7%

When evaluating how CCTV cameras can improve criminal investigations, the majority of the participants (76%) agreed that the cameras can improve criminal investigations (see Figure 5).

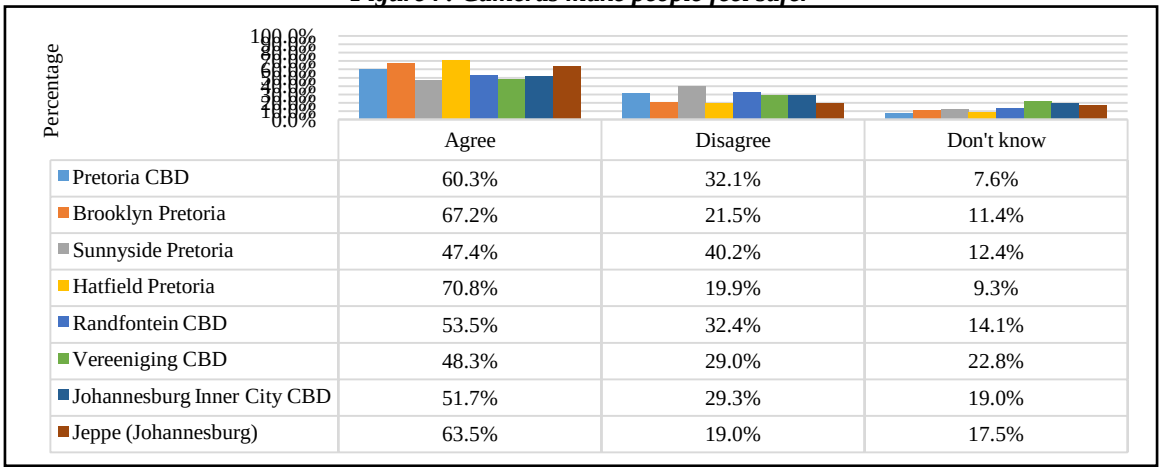
Figure 6: CCTV cameras can improve conviction rates



	Agree	Disagree	Don't know
Pretoria CBD	60.3%	14.1%	25.6%
Brooklyn Pretoria	63.9%	13.6%	22.5%
Sunnyside Pretoria	63.5%	10.9%	25.6%
Hatfield Pretoria	66.3%	5.9%	27.8%
Randfontein CBD	54.2%	15.2%	30.6%
Vereeniging CBD	54.5%	21.3%	24.3%
Johannesburg Inner City CBD	66.7%	13.1%	20.2%
Jeppe (Johannesburg)	66.7%	19.0%	14.3%

The majority of respondents (61%) also believed that the surveillance system could assist in improving the conviction rates (see Figure 6 above).

Figure 7: Cameras make people feel safer

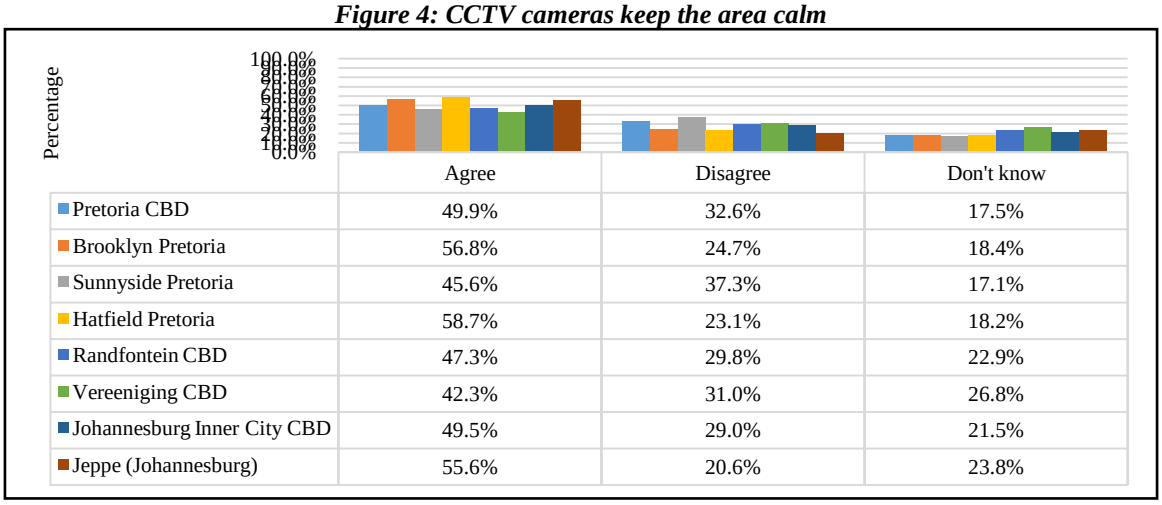


	Agree	Disagree	Don't know
Pretoria CBD	60.3%	32.1%	7.6%
Brooklyn Pretoria	67.2%	21.5%	11.4%
Sunnyside Pretoria	47.4%	40.2%	12.4%
Hatfield Pretoria	70.8%	19.9%	9.3%
Randfontein CBD	53.5%	32.4%	14.1%
Vereeniging CBD	48.3%	29.0%	22.8%
Johannesburg Inner City CBD	51.7%	29.3%	19.0%
Jeppe (Johannesburg)	63.5%	19.0%	17.5%

The majority of respondents, however, believed that the cameras made people feel safe (57%) (see Figure 7 above) or contributed to keeping the areas calm (50%) (see Figure 8 below). These statistics on feelings

of safety due to CCTV cameras in this study are higher than feelings of safety recorded in the 2016/17 Victims of Crime Survey (Statistics South Africa, 2017), where 54% of respondents nationally felt very safe in the area of residence during the day and 10% indicated feeling very safe in the area at night.

Figure 4: CCTV cameras keep the area calm



	Agree	Disagree	Don't know
Pretoria CBD	49.9%	32.6%	17.5%
Brooklyn Pretoria	56.8%	24.7%	18.4%
Sunnyside Pretoria	45.6%	37.3%	17.1%
Hatfield Pretoria	58.7%	23.1%	18.2%
Randfontein CBD	47.3%	29.8%	22.9%
Vereeniging CBD	42.3%	31.0%	26.8%
Johannesburg Inner City CBD	49.5%	29.0%	21.5%
Jeppe (Johannesburg)	55.6%	20.6%	23.8%

V. CONCLUSION

The current study sought to establish whether the installation of CCTV cameras in the central business districts (CBDs) of Johannesburg, Tshwane, West Rand and Sedibeng regions has improved the feeling of safety among residents and visitors, as well as bolstering crime deterrence. The qualitative phase found that CCTV cameras are useful, but they are not being utilised optimally. The study also discovered that there are still challenges confronting the LEAs and this makes it difficult for them to derive maximum benefit from the CCTV infrastructure at their disposal. These challenges include poor maintenance, non-strategic deployment of police officers, lack of integration of the cameras among public sector entities, as well as apparent fragmentation among different agencies.

The quantitative phase of the study found that the overall perception was that cameras are a good idea (94%) and that they should be placed in public areas (88%). In addition, respondents did not hold the view that the cameras were an invasion of privacy. Questions on perceptions of crime revealed that an overwhelming 79% of respondents believed that at least one kind of crime had increased. These views were held irrespective of the respondents having prior knowledge of the CCTV cameras. In fact, 82% of those who knew about the cameras before the research held perceptions of an increased crime rate. Those who were victims of crime had revealed that most crimes occurred between 4pm-8pm and more crime was experienced by residents in the different areas.

In responding to crime, public perceptions were that CCTV cameras can improve police response rates (65%). However, response rates in two areas specifically give rise to concern. The fact that victims of crime reported that police in the Pretoria CBD and Vereeniging were most likely to *never* arrive needs to be addressed. Despite reports that CCTV cameras can aid police, 90% of respondents also revealed that they would like to see police work harder. These views were expressed despite police visibility being reported as high provincially (76%). In addition, respondents who reported seeing police on duty daily were less likely to be victims of crime.

Regarding crime detection, an overwhelming 72% of respondents were of the perception that CCTV can bolster crime detection. Yet, for those who were victims of crime, only 1% revealed that the cameras were used to solve crimes. A large percentage of crime victims were not aware whether arrests had been made in relation to their crimes or whether the cameras were used in an attempt to solve crimes.

Yet, concerning feelings of safety, the visibility of police daily did not report higher feelings of safety, 66% of respondents reported feeling safer after learning about the cameras. Interestingly, feelings of safety becauseone's knowledge of the cameras was more prevalent in those who were not victims of crime in the areas (79%) and in those who did not live in the areas (56%). Also counterintuitive was that police visibility did not contribute to heightened feelings of safety.

REFERENCE

[1]. Armitage, R. (2002). *To CCTV or not to CCTV?* Retrieved June 2017, from NACRO: https://epic.org/privacy/surveillance/spotlight/0505/nacro02.pdf.

[2]. Caplan, J. M., Kennedy, L. W., & Petrossian, G. (2011). Police-monitored CCTV cameras in Newark, NJ: A quasi-experimental test of crime deterrence. *Journal of Experimental Criminology, 7*(3), 255-274.

[3]. Carli, V. (2008). *Assessing CCTV as an effective safety and management tool for crime-solving, prevention and reduction.* Montreal: International Centre for the Prevention of Crime.

[4]. Chainey, S. (2000). Optimizing closed-circuit television use. In N. LaVigne, & J. Wartell (Eds.), *Crime Mapping Case Studies: Successes In the Field* (Vol. 2, pp. 91-100). Washington, DC: Police Executive Research Forum.

[5]. City of Johannesburg. (2008). *Making the Inner City Safer - A city of Joburg Initiative*. Retrieved April 2018, from City of Johannesburg: http://www.gautengfilm.org.za/news/news-archive/2008/december-2008/360-making-the-inner-city-safer-a-city-of-joburg-initiative

[6]. Dickson, D. (2012). *The impact of CCTV on crime.* Retrieved June 2017, from https://www.aclu-mo.org/files/3714/1341/4138/114__The_Impact_of_CCTV_Cameras_on_Crime_Tim_Dickerson.pdf

[7]. Dipa, K. (2015). *Crime in Joburg CBD drops by 80%*. Retrieved from IOL News: Retrieved from https://www.iol.co.za/news/crime-in-joburg-cbd-drops-by-80-1816463

[8]. Glanz, L., Nacerodien, F., Mokotedi, P., Koitsioe, G., & Ntuli, T. (1996). *An assessment of closed circuit television surveillance with reference to the Benoni project*. Pretoria: Directorate: Monitoring and Policy, National Secretariat for Safety and Security.

[9]. Goold, B. J. (2004). *CCTV and policing: Public area surveillance and police practices in Britain.* New York, NY: Oxford University Press.

[10]. Hlahla, P. (2005). *Tshwane Suburbs Wired for Security*. Retrieved from IOL News: https://www.iol.co.za/news/south-africa/tshwane-suburbs-wired-for-security-262518

[11]. McKinley, D. T. (2016). *New Terrains of Privacy in South Africa.* The Media Policy and Democracy Project.

[12]. Minnaar, A. (2007). The implementation and impact of crime prevention/crime control open street Closed-Circuit Television surveillance in South African Central Business Districts. *Surveillance & Society*, 174–207.

[13]. None, S. (2015). *West Rand municipalities tighten grip on crime.* Dikang Tsa Mogale.

[14]. Phillips, C. (1999). A review of CCTV evaluations: Crime reduction effects and attitudes towards its use. *Crime prevention studies, 10*(1), 123-155.

[15]. Presidency. (2007). *Policy on Government Wide Monitoring and Evaluation*. Retrieved June 2017, from The Presidency: http://www.dpme.gov.za/publications/Policy%20Framework/Policy%20Framework%20for%20the%20GWME%20system.pdf

[16]. Presidency. (2011). *National Evaluation Policy Framework.* Retrieved May 2017, from The Presidency: http://www.thepresidency.gov.za/MediaLib/Downloads/Home/Ministries/National_Evaluation_Policy_Framework.pdf

[17]. Ratcliffe, J. H., Taniguchi, T., & Taylor, R. B. (2009). The crime reduction effects of public CCTV cameras: A multi- method spatial approach. *Justice Quarterly, 26*(4), 746-770.

[18]. Sedibeng District Municipality. (2012). *Sedibeng under CCTV Surveillance*. Retrieved from Sedibeng District Municipality: http://www.sedibeng.gov.za/a_readmores/20120810_cctv.php

[19]. South African Cities Network. (2017). *The State of Urban Safety in South Africa Report 2017: A report of the Urban Safety Reference Group.* Johannesburg: South African Cities Network.

[20]. Statistics South Africa. (2016a). *Community Survey 2016.* Pretoria: Statistics South Africa.

[21]. Statistics South Africa. (2017). *Victims of Crime Survey 2016/17.* Pretoria: Statistics South Africa.

[22]. Welsh, B. C., & Farrington, D. P. (2004). Surveillance for crime prevention in public space: Results and policy choices in Britain and America. *Criminology & Public Policy, 3*(3), 497-526.

Azwihangwisi Negota. "Assessment on the effectiveness of the Closed-Circuit Television (CCTV) cameras in Gauteng province: South Africa." *International Journal of Humanities and Social Science Invention (IJHSSI),* vol. 10(03), 2021, pp 46-56 Journal DOI- 10.35629/7722