The Effectiveness of CCTV in Public Places: Fear of Crime and Perceived Safety of Citizens

Dr. Sedat KULA
Emniyet Genel Müdürlüğü
sedatkula@yahoo.com

Abstract: This study examines the role of CCTV and police effectiveness in fear of crime. Using survey data collected from random sample of 392 respondents living in Ankara, Turkey, the linear regression model was conducted to predict the effects of CCTV, police effectiveness, and invasion of privacy by CCTV on the perceived safety level of citizens while controlling some demographic variables such as age, income, marital status, education level. The results of this study indicate that CCTV and effectiveness of police have positive impact on reducing fear of crime among citizens. This article first review the extant literature on fear of crime, effectiveness of police, and CCTV with using routine activity theory as a theoretical framework. Then data, methodology and findings are presented and their contribution to the literature is discussed with mentioning limitations of study.

Keywords: Fear of Crime, CCTV, MOBESE, Effectiveness of Police, Routine Activity Theory

Kamu Alanlarında Kullanılan Kapalı Devre Televizyon Sistemlerinin Etkinliği: Suç Korkusu ve Vatandaşların Güvenlik Algısı

Özet: Bu araştırma Ankara'da yaşamakta olan toplam 392 personelden rastlantısal yöntemle toplanan veriler ışığında kapalı devre televizyon sistemlerinin, polisin etkin bir şekilde görev yapmasının ve özel hayatın ihlal edilmesinin suç korkusu üzerindeki etkisini araştırmaya yönelik çoklu doğrusal regresyon analizi kullanılan bir çalışmadır. Eğitim, yaş, medeni durum ve gelir düzeyi gibi demografik değişkenler de analize dâhil edilmişlerdir. Çalışmanın sonuçları polisin etkin bir şekilde görev yapması ile kapalı devre televizyon sisteminin vatandaşların suç korkusunu azaltmada pozitif etkisi olduğunu ortaya koymaktadır. İlk olarak suç korkusu, kapalı devre televizyon sistemleri ve polisin etkinliğine dair kaynak taraması rutin aktiviteler teorisi çerçevesinde vurgulamış, sonra toplanan veriler, metodoloji, bulgular ve literatüre katkıları çalışmanın eksiklikleri ile birlikte detaylı bir şekilde tartışılmıştır.

Anahtar Kelimeler: Suç Korkusu, Kapalı Devre Televizyon Sistemleri, MOBESE, Polis Etkinliği, Rutin Aktiviteler Teorisi

Introduction

Crime is among the most important problems in modern societies. Criminal behavior does not only harm victims but also the social structure of society. Several researchers have brought the issues of fear of crime (Dolan and Peasgood, 2007; Gray et al., 2008; Hale, 1996; Rountree, 1998; Zhao et al, 2015) to pay attention the destructive effects of crime on social life. Even though individuals have not faced crime and have not become victimized in their life, they may fear of being victimized. This fear influences their social behaviors and daily routines (Biderman et al., 1967). Thus, criminal behavior and crime become the serious problem of modern societies due to its destructive influence on basic tenets of social life.

In order to deal with this problem, governments pay considerable amount of attention to prevent and reduce crime as well as develop criminal justice policies to curb fear of crime. Police departments implement new programs and novel strategies in order to prevent and combat against crime effectively. Studies (see Telep and Weisburd, 2012, for a comprehensive review) investigate what kinds of strategies and programs are effective in crime fighting to get sense of effective policing and to guide police departments in crime fighting strategies. In lieu with developments and advances in technology, police departments are in favor of using technological applications in fighting against crime. New technological applications and gadgets assist police departments to use their limited resources more effectively. Even though technological devices and systems bear significant amount of burden for police departments budgets, they are seen as effective and efficient ways of doing policing in the modern society. Thus, police departments follow up to date information systems and technological innovations to better prepared in crime prevention and crime fighting.

One of the recent IT applications in policing is Closed Circuit Television (CCTV). Police departments started to use CCTV systems in the early 1990s (Armitage, 2002). As surveillance technology, CCTV assist police in order to provide social control and maintain order, prevent and catch criminals (Goold, 2003; Kruegle, 2007). CCTV cameras have been commonly used in order to decrease crimes such as theft, crimes against personnel and assets and terrorism (Kruegle, 2007). Specifically, 9/11 terrorist attacks have forced governments to invest in surveillance technology in order to protect their citizens against such dreadful attacks. In order to prevent future similar attacks, law enforcement agencies have started to extensively use surveillance systems, especially CCTV, to monitor human activities at airports, seaports, borders, and crowded city streets (Goold, 2003).

Within this frame, Turkish Government has decided to benefit from the use of CCTV to prevent crime and disorder in the society at the beginning of the millennium. Turkish Ministry of Interior first started as a pilot project in Diyarbakir, a southeastern city of Turkey, in 2001. Named as Mobile Electronic System Integration (MOBESE), this system has the capability of street surveillance, license plate read, and command and control function in deploying police forces. After seeing its benefits in policing, the Ministry of Interior decided to expand the use of MOBESE all over the country, starting deployment from big cities such as Istanbul, Ankara, and Izmir (Coban, 2005). MOBESE has quickly gained support from the citizens due its assistance in fighting against crime.

Even though the MOBESE system has been widely used in all cities of Turkey more than a decade, there are limited studies about it. The usefulness of MOBESE is widely publicized in media, it needs scientific examination to understand the benefits of it. Thus, this study examines the relationship between fear of crime, effectiveness of police, and MOBESE with using demographic variables as control variables. In order to understand the relationship between these constructs, the Routine Activities Theory (RAT) is used as theoretical framework. Thus, the literature about fear of crime, effectiveness of police, and CCTV is reviewed to benefit for the current study.

1. Literature Review

1.1. Fear of Crime

Fear of crime is a critical and debatable issue discussed in the western countries since 1960s (Zaho et al., 2015) and there has been emergent international literature on fear of crime and its measures and consequences (Hale, 1996; Karakus et al, 2010). Scholars have paid great amount of attention to understand this phenomena because fear of crime is seen as a serious social problem (Pate et al., 1986; Gray et al 2008). Ferraro (1995) argue that even though crime is a social problem and have negative consequences for victims and society, fear of crime is more severe problem than crime itself. People become easily afraid of crime without the actual risk of victimization from any type of crime (Gray, Jackson, and Farrell, 2008).

Fear of crime also took considerable attention from governments and it has influenced the criminal justice policies. Mostly, policy makers think that fear of crime affects the quality of life, community and neighborhood cohesion, and social activities of people, (Gray et al., 2011; Jackson, 2006; Biderman et al., 1967). There is also assumption that fear of crime has defective effects on the vulnerable members of society such as elders, women, and other vulnerable individuals (Warr, 1984).

Crime and victimization surveys such as the National Crime Victimization Survey, the European Social Survey, the British Crime Survey, and the International Crime Victim Survey have questions to measure the respondents' level of fear of crime (Zaho et al 2015). In order to assess the level of fear of crime, surveys generally ask about how respondents feel when walking alone outside during a day or night (Gray et al 2008, Zaho et al 2015). Crime Victimization Surveys and other research questionnaires ask similar questions to measure individuals' fear of crime such as (Hale, 1996: 85): "*How safe do you feel being out alone in your neighborhood after dark?*", "*How safe would you feel being out alone in your neighborhood after dark?*" or "*Is there any place around here where you feel unsafe walking at night?*"

Even though fear of crime is a debatable concept in the criminal justice literature, there is no consensus about the definition and how to measure the construct. Studies on the link between crime and fear use unidimensional definitions of the concepts and generally do not differentiate between types of crime and also kinds of fear (Rountree, 1998). Surveys ask about any type of crime and do not differentiate between crime types. Thus, research assume no significant variations of fear between different types of crime. Moreover, there is another issue of measurement while assessing the concept of fear. In the literature, fear is characterized as a multidimensional concept and there are cognitive and emotional components of fear to be considered (Rountree, 1998). Fear of crime is defined as "*an emotional response of dread or anxiety to crime or symbols that a person associates with crime*" (Ferraro, 1995: 4). However, there are some other feelings such as anxiety, worry or concern about crime which are related to fear but the distinction between these feelings have not been resolved in the literature yet (Cordner, 2010; Gray et al 2011).

There is an extensive literature on fear of crime and the underlying theories of fear of crime can be grouped in three different camps (Karakus et al., 2010): the victimization model, disorder model, and community concern/social control model. According to the proponents of victimization model, fear of crime is caused by the actual crime rates in the community or individuals hearing about crime happening around them. Studies on disorder model argue that physical and spatial disorder and incivility in the neighborhood make people unsafe and they begin to think about being victim of crime. Individuals see the physical and structural decay in the neighborhood as the signals of crime and they become frightened. Related to the disorder model, community concern/social control model explains the fear of crime as a result of deterioration in the social fabric of community. When social control tools are eroded and members of community start to have loose neighborhood relationship among the community, they expect higher level of risk of victimization.

In order to reduce fear of crime in the society, police departments have implemented several strategies which are related to fear of crime models explained above (Cordner, 2010). First of all, as the traditional way of policing, police departments focus on crime reduction in order to reduce victimization and the spread of news about crime events. To reduce crime, police departments use professional policing strategies such as focused patrolling, increased police visibility, rapid response to incidents and effectiveness in solving crimes. Beside these tactics, police initiate environmental improvement programs such as broken windows approach, street lighting, and target hardening and community policing programs and problem oriented policing. All these efforts can be seen as the ways of policing to reduce fear of crime among public. While traditional ways of policing to reduce crime is directly related to victimization model of fear of crime, environmental improvement programs, community policing and problem oriented policing programs are related to the disorder model and community concern/social control model of fear of crime. However, the effectiveness of police in reducing crime and also fear of crime is debatable issue in the literature detailed below.

1.2. Effectiveness of Police in Crime

There is a contradictory view about the effectiveness of the police between public and academia. On the one hand, citizens and politicians state that if we deploy more officers on the street, we will be more effective in reducing crime and disorder. On the other hand, criminal justice researchers argue that the role of police in crime reduction is minimal when compared to other social factors such as family and job (Sherman, 1997). This paradoxical issue creates legitimacy problem for police departments in the public eye (Meyer and Rowan, 1977). Thus, police departments feel pressure to adopt effective and efficient crime prevention strategies to justify their *raison d'être.* They follow novel and publicized crime prevention and crime fighting programs and developments in order to represent themselves as a modern and professional police department which embraces new programs to increase the effectiveness of police in crime prevention and crime reduction (Duffee and Maguire, 2007). Most police departments adopt crime prevention strategies and programs with using three mechanisms of isomorphic change (DiMaggio and Powell, 1983): coercive isomorphism, mimetic isomorphism, and normative isomorphism. While coercive isomorphism is used by organizations as a result of political influence and legitimacy problem, mimetic isomorphism is adopted as a response to uncertainty stems from the environment of an organization. Moreover, normative isomorphism is a natural result of professionalization movement in organization.

The role of isomorphic change in law enforcement departments is emphasized by many studies in the world (see; Chan, Devery and Doran, 2003;

Yıldız and Unlu, 2011). Research about police effectiveness indicate that focused strategies and specific crime fighting programs bring success but general police tactics and routine enforcement practices are not effective in crime control. Telep and Weisburd (2012) review the police effectiveness literature to see what works for the police to perform effectively. They conclude that while hot spots policing, problem- oriented policing, focused deterrence approaches, directed petrol to reduce gun crime and using DNA in property crimes bring effective results in crime prevention and crime fighting, standard police tactics such as random preventive patrol, second responder programs, and Drug Abuse Resistance Education (D.A.R.E.) are not effective programs.

1.3. The Use of CCTV

In our world today, it is widely accepted that policing is all about gathering and using information (Roberg, Novak and Cordner, 2009). In order to provide social control and to maintain order, police departments in developed countries started to benefit from surveillance technology in 1990s (Goold, 2003; Kruegle, 2007). Closed Circuit Television (CCTV) cameras have been commonly used in order to decrease crimes such as theft, crimes against personnel and assets and terrorism (Kruegle, 2007). Specifically, 9/11 terrorist attacks have forced governments to invest in surveillance technology in order to protect their citizens against such dreadful attacks. In order to prevent future similar attacks, law enforcement agencies have started to extensively use surveillance systems, especially CCTV, to monitor human activities at airports, seaports, borders, and crowded city streets (Goold, 2003).

Although CCTV is widely discussed in the recent literature, it is difficult to make a single definition of CCTV. Simply, we can define CCTV as a system that has a stationary camera, a monitor, and a recorder (Goold, 2004). However, current CCTV systems have different features and technical capabilities. New features and applications are added to the system with the innovations in surveillance technology. Thus, there are varieties of surveillance systems in cities. As a comprehensive definition, *CCTV refers to electronic monitoring systems, which make use of video cameras, connected by means of a 'closed'(or non-broadcast) circuit, to capture, collect, record, and/or relay visual information about the event-status of a given space over time* (Deisman, 2003; Gill and Spriggs, 2005)

1.4. The use of Mobile Electronic System Integration (MOBESE)

In Turkey, police and gendarmerie forces are responsible for public order maintenance. Police generally serves in urban areas whereas the gendarmerie serves in rural areas. These two security forces are centrally structured as General Directorate of Turkish National Police (TNP) and General Command of

Gendarmerie. General Directors of these organizations are affiliated with the Minister of Interior. Governors and the District Governors are responsible for the duties performed by the officials in cities and towns respectively. The use of closed circuit television (CCTV), for crime and disorder prevention purposes through deterrence for watching crowds in town centers, was announced and deployed in Turkey in the first decade of the 21st century. Surveillance capability and opportunity provided by the CCTV systems help public reassurance and therefore reduces fear of crime perceived in the society.

Another important aspect of CCTV is that law enforcement officials are quickly deployed to the incident scene and investigations are conducted according to the data recorded by the system (Brown, 1995). MOBESE (Mobile Electronic System Integration) in Turkey, has received pertinence from the public as a top-notch application. Open street surveillance of MOBESE cameras has been widespread in Turkey in the first decade of 2000s. MOBESE was first established by the Intelligence Department of Police in Diyarbakır City in 2001 with the support of the General Directorate of TNP and then it has become widespread in Mersin, Ankara, and Istanbul. In 2008, with the support and declaration of the Ministry of Interior,

TNP started to deploy MOBESE system in all the cities of Turkey and in some big towns (Coban, 2005). Coleman (2004) and Lyon (2001) state that cameras around us do not only function as a crime preventing tool by law enforcement officials. In addition, they are used as social ordering strategy or social orchestration metaphor tool to adjust and to control the behaviors of people. They argue that being watched by the cameras constantly create a perception that citizens have to control and adjust their behaviors. In this context, media has a key role in legitimizing the widespread functioning of CCTV cameras accepted by the public by stating that cameras are vital to provide secure and safe society without questioning them (Kurt, 2010). Another argument raised by the opponents of MOBESE is that there are no options left to citizens without surveillance. This situation, being assumed as potential criminals, ruins the authenticity of the public space life of people. Being watched and recorded by cameras result in loss of privacy and self-correction of behaviors of citizens. Moreover, being always gazed creates the feeling of guiltiness, even though they are doing nothing wrong (Özden, 2008).

In order to prevent the abuse of the MOBESE system in the command and control center, the employees monitoring are also being monitored, and if anyone is detected monitoring the things other than public order maintenance issues, employees face punishment (Özden, 2008). Schwartz (1968) claims that surveillance itself has the potential to create disorder rather than prevention. Under the surveillance of public spaces, the unwanted people may choose to attempt to be isolated from the society and to communicate with the ones who

resemble themselves, which may result a new life far from the public space for them. Great amount of power granted to officials using the system is another criticism to MOBESE. The question raised by the critics (Franklin, 2008; Mohammed, 1999) is: who can guarantee that recorded images of people cannot be used later as a threat for some reason? An important response by the officials to the criticism that the cameras being used have a potential to intervene to the private life of the citizens is that the software of the system is designed in such a way that private areas of the buildings are dimmed by means of black frame. Therefore, private places are never recorded (Özden, 2008).

The application of MOBESE cameras, like other CCTV cameras, is based on the assumptions of Deterrence Theory (Armitage, 2002). Presence of capable guardian, MOBESE cameras, has a potential of deterring crime since presence of MOBESE cameras at the important hotspots of the city centers makes the potential criminals calculate the costs and benefits of committing a crime; and the risk of being watched can prevent the potential offenders from committing a crime. Although some researchers (Carli, 2009; Squires, 2003; Phillips, 1999) state that the use of CCTV cameras is considered a necessary policing strategy for the police forces to prevent crime, to maintain order and to provide social control, other researchers (Armitage, 2002; Gill and Springs, 2005) argue that there is no significant data available indicating the benefits of CCTV in crime fighting.

Even though the MOBESE system has been in practice since 2005 rhyming with the arguments made by Armitage (2002) and Deisman (2003), no empirical research has been conducted about the benefits of MOBESE system in crime-fighting and fear of crime. It is inevitable to conduct a research for measuring the efficiency and effectiveness of MOBESE system. As stated by Armitage (2002), pre and post-test studies are not adequately conducted to evaluate to what extent surveillance decrease crime rates considering seasonal variations, control areas for comparison and displacement effects. Moreover, the perceptions of citizens and the officials using the system about the benefits of MOBESE system should be studied so as to evaluate the views of public and users about the system.

2. Theoretical Framework

The theory behind using CCTV in crime fighting by the police is precisely summarized by Armitage (2002). These are deterrence, efficient deployment, self-discipline, presence of a capable guardian, and detection. For the deterrence, if there is a camera in a place, a potential offender calculates the cost and benefit of committing a crime and decides not to commit or go to other suitable places. Secondly, CCTV system helps the police to deploy their human

resources and other resources wisely by paying adequate attention on the right time to a spot when police assistance is needed. CCTV system also brings self-discipline not only to offenders, but also to victims. In the presence of CCTV cameras in place, victims become alert against crimes. Therefore, they try to reduce the risk of being a prey of a criminal by taking personal precautions against crimes. For the offenders, CCTV cameras give the sense of being watched all the time and they try to control their own behavior in order not to be caught in misbehavior. According to Routine Activity Theory presented by Cohen and Felson (1979), there should be convergence in space and time of likely offenders, suitable targets, and the absence of capable guardians. CCTV cameras prevent the convergence of these three elements by providing a capable guardian all the time. Last but not least, CCTV cameras help the police to detect offenders by recording images of offences taking place. These records play important role in arresting, sentencing and incarcerating of the criminals. Thus, criminals are caught and cannot commit new crimes and the justice is served for the society.

Routine Activity Theory (RAT) is a framework for this study to observe that whether CCTV can be seen as a capable guardian in crime prevention and its effect on the fear of crime among citizens. In their influential study, Cohen and Felson (1979) analyzed macro-economic and social factors of US since 1950s to understand what causes crime. At the end of their analysis, they realized that even though macro-economic and social factors were going better since the Second World War in the US, crime rates did not decrease, even increased.

CCTV is also seen as a fear reduction strategy (Lee, 2007) and offered as a capable guardian (Oc and Tiesdell, 1997; Caputo, 2014). Nevertheless, the role of CCTV in reducing fear of crime is questionable (Smith, 2002). Sarno, Hough and Bulos (1999) found that CCTV had a significant impact on reducing fear of crime in the boroughs of London. In addition, some researchers did pre/post surveys to evaluate the level of fear of crime among public; they noted positive effect of CCTV on the reduction of fear of crime (Phillips, 1999). Furthermore, Brown (1995) indicated that CCTV is an effective tool in reducing fear of crime among public in the case study of Birmingham, UK. On the other hand, Gill and Spriggs (2005) surveyed people to see the effect of CCTV on fear of crime. They found that even though there was a decrease in fear of crime in public when compared to before and after CCTV installation, this reduction could not be attributed to CCTV. Regarding our study, some scholars (Armitage, 2002; Fletcher, 2011) used RAT theory to explain the relationship between fear of crime and CCTV.

The research about the benefit of CCTV systems in crime-fighting is incomplete, confusing, and inconsistent (Dempsey and Forst, 2012). A group of

researchers (Carli, 2009; Squires, 2003; Phillips, 1999) argue that CCTV systems are necessary tool for the police in decreasing crime rates, responding crimes in a timely manner and maintaining order and providing social control. On the contrary another group of researchers (Armitage, 2002; Deisman, 2003; Gill and Spriggs, 2005) claim that there is no significant data proving the benefit of CCTV in crime fighting. According to Deisman (2003), the effect of CCTV on crime is variable and unpredictable. The deterrence effects of CCTV also change according to type of a crime, location of a crime, and time of a crime. Similarly, Welsh and Farrington (2008) did an extensive systematic review to assess the effects of closed circuit television surveillance on crime. They concluded that CCTV has a modest but significant desirable effect on reducing crime in car parks, especially vehicle crimes and it is more effective in reducing crime in the U.K. than in other countries.

Besides, there is limited research about the role of CCTV in preventing ongoing criminal activity and arresting the suspects (Bekkers and Moody, 2011). However, there is a majority support from public regarding deployment of CCTV cameras in the public places because CCTV increases safety feelings of citizens, and decreases fear of crime and victimization. Even though there are some concerns about profiling and the breach of privacy (Greenhalgh, 2003), people generally support the use of security cameras in crime fighting. Armitage (2002) reviews the studies about the evaluation of CCTV systems in the literature and concludes that there is a number of methodological problems in the studies due to several reasons. These are: inadequate pre and post CCTV time periods in which data are collected, no account taken of seasonal variations, no control areas for comparison, little discussion of displacement or diffusion of benefits, unspecified sample size, and lack of independent evaluation. Thus, there should be methodically sound empirical studies in the literature in order to know to what extent the surveillance plays role in crime prevention and crime reduction.

On the other hand, using security cameras to watch streets, roads and other public places in the cities raises critical discussion about the '*panopticon*' in the literature (Goold, 2003; Simon, 2005). The idea of panopticon was first projected by the utilitarian philosopher, Jeremy Benthem in 1787 by designing a prison while requiring minimum supervision and providing maximum control over prisoners. According his design, the prison building is constructed as a circular shaped building which all cells are located at the periphery of the circle floor by floor with facing towards the guard tower placed in the center. Only a single guard can watch all prison inmates behind the mesh screen of the watch tower, prisoners cannot see whether they are watched or not all the time. All prisoners should assume that they are observed by the guards and they have to show appropriate behavior according to discipline rules in the prison. If they

behave well, they can be rewarded by relocating their cells to better places in the prison or they can be punished if they do not follow the rules as ordered. This design is recognized as cost effective and highly efficient way of controlling prisons (Kietzmann and Angell, 2010). It is argued that there are several prisons all over the world established with the influence of panopticon idea.

There is a hot debate about using CCTV as a surveillance system in the cities to fight against crime and other disorders. Some scholars argue that camera surveillance is a way to transfer our democratic society to a surveillance society like in a panopticon prison idea, proponents of CCTV say that privacy is a matter of private places such as our homes, not a public place (Weckert, 2005). The critical question about the CCTV is "who watches the watchers?" (Franklin, 2008) and opponents of CCTV are cautious about how we know that CCTV cameras are not used for profiling, spying, or inquiring private lives of innocent people (Mohammed, 1999).

3. Methodology

3.1. Research Questions and Hypotheses

The main research question this study sought to answer is to evaluate the impacts of CCTV and the way of job of policing on the safety perception of citizens.

Based on the findings in the related literature mentioned and the theoretical framework of the study, following hypotheses were developed to be tested;

1) The more the effectiveness of CCTV cameras for security purposes, the safer the people perceive themselves.
2) The better the police do their job, the safer the people perceive themselves.
3) The more the people think that the use of CCTV cameras invades their privacy, the lower their safety level perceived.

These hypotheses are tested for three different situations respectively; perceived safety level of people in general, in daytime, and at nighttime. Besides these hypotheses, some demographic factors are inserted into the model to evaluate whether people' perceptions regarding their safety are changed based on these factors. Marital status, age, education level and income levels are selected demographic factors that are inserted into the model based on the findings in the literature (See Fattah, 1993; Ferraro and LeGrange, 1992; Greve, 1998; Skogan, 1984; Fisher and Sloan, 2003; Warr, 2000; Will and Mcgrath, 1995).

3.2. Sampling

The unit of analysis of this study is the individuals live in Ankara, the capital city of Turkey. Having more than 5 million population, Ankara is the city where people coming from different cultures, different ethnic groups, and socio-economic classes reside in a harmony. Since the targeted population of this study is over 5 million residents of the city of Ankara, a sample of 384 is necessary with .95 confidence level and .5 margin of error.

3.3. Data Collection

The survey was sent to 768 people based on the snow-ball method. In general, web-based survey (surveymonkey.com) was used to collect the data. The reason of selecting web-based survey is twofold stated by Birnbaum (2004) and Bartlett (2005); first one is that web-based survey does not have time limitations for participants' access of the survey and secondly, its convenient nature for data coding and entry respectively. For people who had e-mail addresses, the survey was uploaded to the survey monkey web site, and the survey link was sent to them and asked them to send their known people's email addresses living in Ankara. For people who said that a hardcopy was the most convenient way to complete the survey, hardcopies of the questionnaire were sent to them to complete. Many of the participants were reached by e-mail.

3.4. Survey Instrument

The questionnaire consists of five sections. First section was developed to measure the perceptions of the people about the effectiveness of CCTV cameras. To measure the perceived effectiveness of CCTV cameras (MOBESE), the survey of this study used five items that were derived from the relevant literature. The reliability coefficient (Cronbach's Alpha) of survey items was found to be 0.867, which is quite adequate. The items used to measure the effectiveness of CCTV are as follows;

    a) MOBESE cameras in public places are effective for preventing crime
    b) MOBESE cameras in public places are effective for catching criminals
    c) MOBESE cameras in public places provides police handle the crimes promptly
    d) MOBESE cameras in public places provides police get the important evidences to investigate the crime effectively
    e) MOBESE cameras in public places provides effective use of resources for crime fighting

Second section was created to measure the perceptions of the people regarding their perceived safety levels. Single item was used to measure the perceived safety level of citizens. Participants were asked to what extent they are agree or disagree with the question by using five point Likert scale; in general, MOBESE cameras make me feel safer. The question was asked for day and night situations separately as well.

People's perceptions about how good the police do its job is the third section of the study. Participants were asked to what extent they are agree or disagree with the question by using five point Likert scale; in general, how good police do its job? To measure the people's perception regarding the invasion of their privacy of life, the survey of this study used single item. The question "MOBESE cameras invades the privacy of life" was asked by using five point Likert scale. Lastly, demographic questions regarding the education and income levels along with age, and marital status were inserted to the questionnaire.

3.5. Statistical Analysis

Statistical analysis of the study was conducted in twofold; descriptive statistics, and linear regression.

4. Findings

This section consists of two subsections; descriptive of the study variables to identify the distributional characteristics of the demographic variables and multiple linear regression model to evaluate the effects of the independent variables on the dependent variable of the study, which is perceived safety of citizens.

4.1. Descriptive Statistics

The survey was sent to 768 people based on the snow-ball method. Web-based survey (surveymonkey.com) was used to collect the data. Except for 123 people to whom the hardcopy of the questionnaire was sent, e-mail with the survey link was sent to 645 people by the researchers. From the initial estimate of 768 people, a total of 412 people responded to the questionnaire. 20 people's responses were excluded from the data due to the fact that they did not complete more than 50% of the survey questions. The final dataset of the study consists of 392 responses. The following table indicates the descriptive statistics of the variables.

Table 1: Frequency Distributions for Control Variables

Variable	Attributes	Frequency	Percent	Cumulative Percent
Education Level	Primary School	9	2,3	2,3
	Middle School	10	2,6	4,8
	High School	127	32,4	37,2
	Two Year College	46	11,7	49,0
	University	180	45,9	94,9
	Master	14	3,6	98,5
	PhD	6	1,5	100,0
	0-500 Turkish Liras	97	24,7	24,7
	501-850	136	34,7	59,4
	851-1250	24	6,1	65,6
	1251-2000	35	8,9	74,5
	2001-3000	64	16,3	90,8
	3001-5000	31	7,9	98,7
	5001 and more	5	1,3	100,0
Status	Worker	52	13,3	13,3
	Government Emply	136	34,7	48,0
	Student	121	30,9	78,8
	Housewife	21	5,4	84,2
	Retired	43	11,0	95,2
	Self-employment	13	3,3	98,5
	Tradesman	4	1,0	99,5
	Unemployed	2	0,5	100,0
Age	15-18 years old	83	21,2	21,2
	19-25 years old	58	14,8	36,0
	26-35 years old	156	39,8	75,8
	36-45 years old	66	16,8	92,6
	46-55 years old	13	3,3	95,9
	56 years old or older	16	4,1	100,0
Marital Status	Single	180	45,9	45,9
	Married	212	54,1	100,0

Of the 392 respondents, 180 people had bachelor degrees and 127 people are high school graduates. In terms of their age, 156 of the total 392 respondents account for 39.8 % of study participants. For the distribution of the respondents in terms of marital status, 180 people reported themselves as single and 121 people as married. One interesting finding is that approximately 35 % of the respondents were under the income level of 851 Turkish Liras.

4.2. Multiple Linear Regression

Linear Regression was used as statistical analysis method to evaluate whether people's perceived safety levels can be predicted based on our independent variables; the effectiveness of the CCTV cameras, invasion of privacy by CCTV cameras, how good police doing its job, age, marital status,

income and education levels of respondents. Multiple linear regression enables us to determine the overall fit of the model developed and the relative contribution of each of the predictor variables to the total variance in the dependent variable explained. All assumptions of multiple linear regression are met for this study. The skewness and kurtosis values for all independent variables are found to be between +2 and -2, indicating that variables are normally distributed. Variance inflation factor (VIF) is one of the important method to detect multicollinearity if any among the independent variables. Following table (Table 2) indicates the VIF scores for independent variables.

Table 2: VIF Scores for Independent Variables

Model		Tolerans	VIF
MOBESE Effectiveness	Police Job	0,886	1,128
	Invasion of Privacy	0,886	1,126
Police Job	Invasion of Privacy	0,927	1,079
	MOBESE Effectiveness	0,927	1,079
Invasion of Privacy	MOBESE Effectiveness	0,883	1,132
	Police Job	0,883	1,132

As seen on the table 2, based on the VIF scores between variables, it seems that there is no multicollinearity issue for the model.

Table 3 illustrates the regression model results.

Table 3: Linear Regression Results of the Study

D. Variable	R^2	Independent Variables	F/Sig.	B	β	t	Sig.
Perceived Safety in General	.288	**Efectiveness of MOBESE**	23,548 / ,000	**0,622**	**0,396**	**8,538**	**.000**
		Police Job		**0,248**	**0,197**	**4,029**	**.000**
		Invasion of privacy		**-0,109**	**-0,09**	**-1,945**	**.052**
		Marital Status		-0,065	-0,029	0,52	.603
		Age		0,059	0,068	1,185	.237
		Education Level		0,017	0,044	0,372	.710
		Income Level		-0,026	-0,04	-0,803	.423
Perceived Safety in Day	.328	**Efectiveness of MOBESE**	28,308 / ,000	**0,684**	**0,424**	**9,418**	**.000**
		Police Job		**0,206**	**0,16**	**3,367**	**.001**
		Invasion of privacy		**-0,187**	**-0,151**	**-3,35**	**.001**
		Marital Status		0,113	0,048	0,908	.364
		Age		0,017	0,019	0,335	.738
		Education Level		-0,068	-0,068	-1,532	.126
		Income Level		-0,031	-0,047	-0,958	.339
Perceived Safety at Night	.264	**Efectiveness of MOBESE**	21,075 / ,000	**0,729**	**0,438**	**9,278**	**.000**
		Police Job		**0,155**	**0,116**	**2,338**	**.020**
		Invasion of privacy		-0,102	-0,08	-1,689	.092
		Marital Status		0,035	0,015	0,26	.795
		Age		0,08	0,009	0,152	.879
		Education Level		-0,046	-0,044	-0,951	.342
		Income Level		-0,102	-0,08	-1,689	.275

Table 3 indicates that our three models fit to the data collected with a corresponding F values of 23,548, 28,308, and 21,075 respectively at p <.005. Adjusted R Square value (Coefficient of Determination) of. 288 indicates that 28, 8 % of the variability of our dependent variable (perceived safety in general) are explained by the independent variables as a whole. Unstandardized coefficients of independent variable indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. Except for the invasion of privacy, age, marital status, income and education levels, all other independent variables' coefficients are statistically significant in explaining the variation in our dependent variable. The most important predictor is the effectiveness of the CCTV cameras with an unstandardized coefficient value of, 622. Positive and significant correlation tell us that the higher the effectiveness of the CCTV cameras, the higher the people perceive themselves safe in general. The usage of CCTV cameras effectively is more important than how good police doing their job. Even though the invasion of privacy is not found to be a significant indicator with a corresponding t value of .052, practically, it plays an important role in determining people's safety after effectiveness of MOBESE and police job.

For the second regression model, perceived safety in day, Adjusted R Square value (Coefficient of Determination) of. 328 indicates that 32, 8 % of the variability of our dependent variable (perceived safety in day) are explained by the independent variables as a whole. Although how good police doing their job is found to be significant predictor for perceived safety in daytime with a corresponding unstandardized coefficient value of. 176, the most important predictor is again the effectiveness of the CCTV cameras with an unstandardized coefficient value of, 686. Invasion of privacy by CCTV cameras is found to be a significant predictor for our second model. The more people think that CCTV cameras invade their privacy, the lower their perceived safety in day.

For the third regression model, % 26.4 of the variability of our dependent variable (perceived safety at night) are explained by the set of our independent variables. Perceived effectiveness of the CCTV cameras is found to be most important predictor with a corresponding unstandardized coefficient value of. 729. Invasion of privacy is not found to be a significant predictor for our third model.

First and second hypotheses of the study were supported. Third hypothesis indicating the invasion of privacy lower the safety perceptions was supported except for the night situation. Overall, for three models, perceived effectiveness is the most important predictor in explaining the perceived safety level of people.

Discussion and Conclusion

It is mentioned the destructive effects of fear of crime on social life by many scholars (Dolan and Peasgood, 2007; Gray et al., 2008; Zhao et al, 2015). The fear of crime influences the social behaviors and daily routines of people although people have not become victimized in their life. It is a fact that people fear of being victimized.

Governments and specifically law enforcement departments pay considerable amount of attention to prevent and reduce crime along with developing effective criminal justice policies to deal with fear of crime. In the name of creating and developing strategies and programs that are effective in crime fighting, law enforcement departments started to use CCTV systems in the early 1990s (Armitage, 2002) to provide social control and maintain order, prevent and catch criminals (Goold, 2003; Kruegle, 2007).

Within this frame, Turkish National Police has decided to use the CCTV to prevent crime and disorder in the society. First pilot project of CCTV named Mobile Electronic System Integration (MOBESE) was carried out in Diyarbakir, a southeastern city of Turkey, in 2001. Then, it became widespread all around the Turkey after seeing its benefits in crime fighting.

The results of the study indicate that the most important predictor for people' perceived safety is the effectiveness of the CCTV cameras. MOBESE plays an important role in determining how safe people feel themselves. Regardless of the time, positive and significant correlation between the effectiveness of CCTV cameras and people' perceived safety feelings emphasize the importance of using CCTV as one of the important policing strategies in preventing crime and in making people safe themselves in society. As stated by Ferraro (1995) that although crime is a social problem for society, fear of crime is more severe problem than crime itself. Therefore, the result of this study that MOBESE is the most important predictor of people's perceived safety should be taken into consideration by law enforcement high officials to make people felt themselves safer than before since people are easily afraid of crime without the actual risk of victimization from any type of crime (Gray, Jackson, and Farrell, 2008).

The result is consistent with the findings of some researchers (Brown 1995; Oc and Tiesdell, 1997; Hough and Bulos, 1999; Phillips, 1999; Squires, 2003; Lee, 2007; Carli, 2009; Caputo, 2014) stating that the use of CCTV cameras is considered a necessary policing strategy for the police forces to prevent crime, to maintain order, to provide social control, to decrease fear of crime.

Another important finding of the study is that how good police doing their job is found to be significant predictor for perceived safety of people even though it is less important than the effectiveness of MOBESE. This finding is worth discussing since there is a contradictory view about the effectiveness of the police between public and academia. On the one hand, some criminal justice researchers state that the role of police in crime reduction is not as effective as other social factors such as family and job (Sherman, 1997). On the other hand, deploying more police on the street is considered as effective in reducing crime and disorder.

Invasion of privacy is also found to be important predictor for people's perceived safety. The more people think that CCTV cameras invade their privacy, the lower their perceived safety in day. This situation is not true for night. One explanation would be that people might think that crime is more likely to be occurred at night and CCTV plays an important role to deter people committing crime. People might think that not being a victim of any crime is more important than their privacy invasion at night.

As stated by Telep and Weisburd (2012) after reviewing the police effectiveness literature to see what works for the police to perform effectively, specific crime fighting programs bring success but general police tactics and routine enforcement practices are not effective in crime control. Therefore, the findings of the study illustrate a need for TNP high officials to revise the job description of TNP in the name of making TNP more effective and efficient in crime fighting as well as increasing public perception regarding their safety levels. Comprehensive research about what really works for TNP to perform effectively in crime fighting should be conducted by group of experts including academicians, field experts, and sociologists. This comprehensive research results in deploying right amount of people to required areas.

One limitation of the study is its research design. Cross-sectional research, collecting data at one point in time, has been raised the question of temporal precedence to infer causation. One of the important directions for future researchers is to use other qualitative and mixed methods to address this issue in greater depth.

REFERENCES

ARMITAGE, Rachel (2002), To CCTV or not to CCTV. *A review of current research into the effectiveness of CCTV systems in reducing crime.* Londen: Nacro.

BARTLETT, Kenneth R (2005), Survey research in organizations. Research in organizations: *Foundations and methods of inquiry*, 97-113.

BEKKERS, Victor; R. Moody (2011), Visual events and electronic government: What do pictures mean in digital government for citizen relations? *Government Information Quarterly*, 28,4: 457-465.

BIDERMAN, A. D, A.L. Johnson, J. McIntyre, and A.W. Weir (1967), *Report on a pilot study in the District of Columbia on victimization and attitudes toward law enforcement. President's Commission on Law Enforcement and Administration of Justice, Field Surveys I*. Washington, DC: US Government Printing Office.

BIRNBAUM, Michael H (2004), Human research and data collection via the Internet. *Annu. Rev. Psychol*, 55: 803-832.

BROWN, Ben (1995), *CCTV in town centres: Three case studies. Crime Detection:* Police Research Group,

CARLI, Vivien (2009), *Assessing CCTV as an effective safety and management tool for crime- solving, prevention and reduction*. International Centre for the Prevention of Crime Report.

CAPUTO, Anthony C (2014), *Digital video surveillance and security*. Butterworth-Heinemann,

CHAN, J. B, C. Devery, and S. Doran (2003), *Fair cop: Learning the art of policing*. University of Toronto Press.

COHEN, Lawrence E. and M. Felson. (1979), Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 588-608.

FYFE, N. and R Coleman, (2004), Reclaiming the Streets: Surveillance, social control and the city. *Journal of Social Policy*, 515-516.

CORDNER, Garry. W (2010), *Reducing fear of crime: Strategies for police. Washington, DC*: US Department of Justice, Office of Community Oriented Policing Services.

ÇOBAN, Erin (2005), Ülkemizin yeni bilgi ve güvenlik konsepti MOBESE. *Polis Bilimleri Dergisi*, 45: 21-28.

DEISMAN, Wade (2003), *CCTV: Literature review and bibliography*. Research and Evaluation Branch, Community, Contract and Aboriginal Policing Services Directorate, Royal Canadian Mounted Police.

DUFFEE, D. and E. R. Maguire (Eds.). (2007), *Criminal justice theory: Explaining the nature and behavior of criminal justice*. Routledge.

DOLAN, Paul and T. Peasgood (2007), Estimating the economic and social costs of the fear of crime. *British Journal of Criminology*, 47,1: 121-132.

FATTAH, Ezzat A (1993), Research on fear of crime: Some common conceptual and measurement problems. *Fear of crime and criminal victimization*, 131-140.

FERRARO, Kenneth F (1995). *Fear of crime: Interpreting victimization risk*. SUNY press.

FISHER, Bonnie S and J. J. Sloan III (2003), Unraveling the fear of victimization among college women: Is the "shadow of sexual assault hypothesis" supported? *Justice Quarterly*, 20,3: 633-659.

FLETCHER, Philippa (2011), Is cctv effectıve in reducing anti-socıal behaviour? *Internet Journal of Criminology*.

FRANKLIN, Sharon. B (2008), *Watching the watchers: Establishing limits on public video surveillance*. National Association of Criminal Defense Lawyers White Paper.

GILL, Martin and Angela Spriggs (2005), *Assessing the impact of CCTV*. London: Home Office Research, Development and Statistics Directorate.

GRAY, Emily; J. Jackson, and S. Farrall (2008), Reassessing the fear of crime. *European Journal of Criminology*, 5,3: 363-380.

GRAY, Emily; J. Jackson, and S. Farrall (2011), Feelings and functions in the fear of crime: Applying a new approach to victimisation insecurity. *British Journal of Criminology*, 51,1: 75-94.

GREENHALGH, Suzie (2003), *Literature review on issues of privacy and surveillance affecting social behaviour*. Edmonton, Alta: Office of the Information and Privacy Commissioner of Alberta.

GREVE, Werner (1998), Fear of crime among the elderly: Foresight, not fright. *International Review of Victimology*, 5,3-4: 277-309.

GROFF, Ruth (ed.). (2008), *Revitalizing causality: Realism about causality in philosophy and social science*. Routledge,

GOOLD, Benjamin J (2003), Public area surveillance and police work: the impact of CCTV on police behaviour and autonomy. *Journal of Surveillance and Society*, 1,2: 191-203.

GOOLD, Benjamin J (2004), *CCTV and policing: Public area surveillance and police practices in Britain*. Oxford University Press.

HALE, Chris (1996), Fear of crime: A review of the literature. *International Review of Victimology*, 4,2: 79-150.

JACKSON, Jonathan (2006), Introducing fear of crime to risk research. *Risk Analysis*, 26,1: 253-264.

KARAKUS, Onder, E. F. McGarrell, and O. Basıbuyuk (2010), Fear of crime among citizens of Turkey. *Journal of Criminal Justice*, 38,2: 174-184.

KIETZMANN, Jan, and I. Angel (2010), Panopticon revisited. *Communications of the ACM*, 53,6: 135-138.

KRUEGLE, Herman (2007), *CCTV surveillance analog and digital video practices and technology*. Burlington: Elsevier Butterworth Heinemann.

KURT, Evren (2010), Surveıllance and control ın the age of ınformatıon: a crıtıcal analysıs of the technology-power relatıonshıp. Phd thesis. Middle East Technical University.

LYON, David (2011), *Surveillance society: Monitoring everyday life*. McGraw-Hill Education (UK).

LAGRANGE, Randy L. K, F. Ferraro, and M.Supancic (1992), Perceived risk and fear of crime: Role of social and physical incivilities. *Journal of Research in Crime and Delinquency*, 29,3: 311-334.

LEE, Murray (2007), *Inventing fear of crime: Criminology and the politics of fear*. Cullompton: Willan.

MEYER, John W, and B. Rowan (1977), Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 340-363.

MOHAMMED, E. A (1999), An Examination of Surveillance Technology and Their Implications for Privacy and Related Issues-The Philosophical Legal Perspective', The Journal of Information*, Law and Technology (JILT),* 99-2.

OC, Turner, and S. Tiesdell (1997). The death and life of city centres. Safer city centres: Reviving the public realm, 1-20.

ÖZDEN, Özge (2008), Istanbul: an urban panopticon. Master Thesis. Middle East Technical University.

PATE, A, M. A Wycoff, W. G. Skogan, and L. W. Sherman (1986). *Reducing fear of crime in Houston and Newark*. Washington, DC: Police Foundation.

PHILLIPS, Coretta (1999), A review of CCTV evaluations: Crime reduction effects and attitudes towards its use. *Crime Prevention Studies*, 10,1: 123-155.

ROBERG, R. R, K. J. Novak, and G. W. Cordner (2009), *Police & society*. New York: Oxford University Press.

ROUNTREE, Pamela W (1998), A reexamination of the crime-fear linkage. *Journal of Research in Crime and Delinquency*, 35,3: 341-372.

SARNO, Christopher, M. Hough, and M. Bulos (1999), *Developing a picture of CCTV in Southwark town centres*: Final report. London: Criminal Policy Research Unit, South Bank University.

SHERMAN, Lawrence. W (1997), Policing for prevention. In Preventing crime: What works, what doesn't, what's promising. A report to the attorney general of the United States, edited by Lawrence W. Sherman, Denise Gottfredson, Doris MacKenzie, John Eck, Peter Reuter, and Shawn Bushway. Washington, DC: United States Department of Justice, Office of Justice Programs.

SIMON, Bart (2002), The return of panopticism: Supervision, subjection and the new surveillance. *Surveillance & Society*, 3,1.

SKOGAN, Wesley G (1984), Reporting crimes to the police: The status of world research. *Journal of Research in Crime and Delinquency*, 21,2: 113-137.

SMITH, Gavin J.D (2002), Behind the screens: Examining constructions of deviance and informal practices among CCTV control room operators in the UK. *Surveillance & Society*, 2.2/3.

SQUIRES, Peter (2003), *An independent evaluation of the installation of CCTV cameras for crime prevention on the Whitehawk estate, Brighton*. Health and Socail Policy Research Centre; University of Brrighton.

TELEP, Cody W, and D. Weisburd (2012), What is known about the effectiveness of police practices in reducing crime and disorder? *Police Quarterly*, 1098611112447611.

WARR, Mark (1984). Fear of victimization: Why are women and the elderly more afraid? *Social Science Quarterly*, 65;681.

WARR, Mark (2000), Fear of crime in the United States: Avenues for research and policy. *Criminal Justice*, 4,4: 451-489.

WECKERT, John (ed.). (2004), *Electronic Monitoring in the Workplace: Controversies and Solutions*. IGI Global.

WELSH, Brandon, and D. Farrington (2008), Effects of Closed Circuit Television Surveillance on Crime: A Systematic Review. *Campbell Systematic Reviews*, 4.17.

WILL, Jeffry A, and J. H. Mcgrath (1995), Crime, neighborhood perceptions, and the underclass: The relationship between fear of crime and class position. *Journal of Criminal Justice*, 23,2: 163-176.

YILDIZ, Serdar, and A. Ünlü (2011), Kurumsal Teori bağlamında AB Üyelik Sürecinde Türk polisinde Değişim. Çanakkale On sekiz Mart Üniversitesi Yönetim Bilimleri Dergisi, 9(1), 217.

ZHAO, Jihong S, B. Lawton, and D. Longmire (2015), An examination of the micro-level crime–fear of crime link. *Crime & Delinquency*, 61,1: 19-44.