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AN ASSESSMENT OF WHETHER GLOBAL SATELLITE TECHNOLOGIES HAVE CONTRIBUTED TO GLOBAL SECURITY: THE USE OF VEHICLE TRACKING SYSTEMS BY THE TURKISH NATIONAL POLICE IN THE FIGHT AGAINST INTERNATIONAL ORGANIZED CRIME AS A CASE STUDY

by

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ABSTRACT OF THE DISSERTATION

An Assessment of Whether Global Satellite Technologies Have Contributed to Global

Security: The Use of Vehicle Tracking Systems by the Turkish National Police in the

Fight against International Organized Crime as a Case Study

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Dissertation Director:

Dr. Leslie W. Kennedy

IOC is also considered as one of the major threats to global security, "impeding the social, economic, political and cultural development of societies worldwide".[1] IOC has manifested "itself in different activities, among others, drug trafficking, trafficking in human beings; trafficking in firearms; smuggling of migrants; money laundering; etc."[2] and criminals have expanded these activities thanks to globalization. In the same vein, Naim sees illegal trafficking of drugs, arms, intellectual property, people, and money as *the Five Wars of Globalization*.[3] Therefore, the fight against IOC is of high importance in terms of global security.

The use of the new technologies in combating IOC has caused tangible changes in the operations of law enforcement agencies. In an effort to demonstrate this change, this study intends to answer the question of "What is the impact of the use of new

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[1] UNODC. (2011). Unodc and Organized Crime. Retrieved September 13, 2011, from http://www.unodc.org/unodc/en/organized-crime/index.html
[2] Ibid.
[3] Naím, M. (2003). The Five Wars of Globalization. *Foreign Policy, January/February*29-37.

technologies and especially the use of GPS based vehicle tracking systems by law enforcement agencies in the fight against international organized crime"? The study proposed to answer this question by conducting interviews with 63 police officers working in the Ankara, Istanbul and Van districts of the Turkish National Police in Turkey.

The study emphasized the importance of the use of new policing technologies in LEAs' fight against crime and found that LEAs have been benefiting from the use of CCTV systems, modernized patrol cars, computer forensics, lawful interception and observation systems in both detection and seizure of suspects or criminals.

The study also found that GPS based vehicle tracking systems (VTS) have also contributed to global security by contributing LEAs' fight against IOC. Findings of the study showed that the TNP officers benefited from the use of VTS devices in their national and international operations in the fight against IOC.

Furthermore the study also analyzed whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe. According to the court decisions provided in the study it was found that there was no human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe.

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INTRODUCTION TO THE STUDY

INTRODUCTION

Traditional security paradigms have shifted from state centric security notions to global security notions. This is because today, the effects of conflicts, epidemics such as HIV and AIDS, and environmental problems, for example, are not limited to any state or region, but are considered global security problems.

In this context, international organized crime (IOC) is also considered as one of the major threats to global security, "impeding the social, economic, political and cultural development of societies worldwide".[1] IOC has manifested "itself in different activities, among others, drug trafficking, trafficking in human beings; trafficking in firearms; smuggling of migrants; money laundering; etc."[2] and criminals have expanded these activities thanks to globalization. In the same vein, Naim sees illegal trafficking of drugs, arms, intellectual property, people, and money as *the Five Wars of Globalization*.[3] Therefore, the fight against IOC is of high importance in terms of global security.

This study proposes that law enforcement agencies can benefit from the use of new technologies and especially Global Positioning System (GPS) in the fight against IOC. GPS tracking devices can be used in monitoring criminals because it can detect the

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[1] UNODC. (2011). Unodc and Organized Crime. Retrieved September 13, 2011, from http://www.unodc.org/unodc/en/organized-crime/index.html
[2] Ibid.
[3] Naím, M. (2003). The Five Wars of Globalization. *Foreign Policy, January/February*29-37.

exact location of a target in terms of its geographical coordinates (latitude and longitude). Apart from the many uses of GPS tracking devices, they can also be used in the tracking of vehicles, fleets, assets, persons and criminals globally.

The GPS is one of several global satellite services contributing to global security. There are also other satellite services such as satellite phone, satellite internet, satellite radio and television and satellite imagery contributing to global security.

This study is an exploratory one. In general, it addresses the contribution of global satellite network services to global security. In particular, it will focus on Global Positioning System (GPS), which is one of the global satellite network services, and GPS based vehicle tracking systems, which are designed to monitor the movements of a target vehicle. More specifically, this study's aim is to explore whether the use of new technologies and especially the use of VTSs by law enforcement forces have contributed to the fight against international organized crime, which is an important problem in terms of global security.

The study will first define globalization in the light of the recent technological revolutions describe earlier. After that, the study will examine global satellites in a historical perspective in terms of their contribution to globalization and will focus on global satellite network services and their contribution to global security. Third, organized crime and transnational crime will be defined and transnational organized crime will be assessed in terms of its threat to global security. Later, the changing structure of crime by globalization will be assessed and new policing technologies such

as CCTV systems, modernized police patrol cars and computer forensics to combat crime in the age of globalization will be mentioned. Fifth, the study will examine VTS in detail as a new tool in the fight against IOC.

STATEMENT OF THE PROBLEM

IOC is of high importance in terms of global security, and its importance should be considered more carefully in today's globalized world. As Mandel states "[t]ransnational organized crime appears now to be both more damaging and more evasive than in the past".[4]

Based on its potential to pose a threat to the states all over the world, transnational crime was regarded as a global threat at the 1998 Birmingham, UK summit of G8 and member countries who described the situation as outlined below:

> "Globalization has been accompanied by a dramatic increase in transnational crime. This takes many forms, including trafficking in drugs and weapons; smuggling of human beings; the abuse of new technologies to steal, defraud and evade the law; and the laundering of the proceeds of crime.
>
> Such crimes pose a threat not only to our own citizens and their communities, through lives blighted by drugs and societies living in fear of organized crime; but also a global threat which can undermine the democratic and economic basis of societies through the investment of illegal money by international cartels, corruption, a weakening of institutions and a loss of confidence in the rule of law".[5]

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[4] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies. pp.21
[5] Shaw, Z. (2011). G8 Conclusions on Crime, 1975-2011. Retrieved from www.g8.utoronto.ca/conclusions/crime.pdf. pp.14

The process of globalization has "increased the opportunities for criminals" [6] and paved the way for the immensely growth of international criminal organizations.[7] Furthermore, criminals have been "among the major beneficiaries of globalization".[8]

Today international organized crime activities have become one of the most important threats for global security. In this respect, the fight against IOC becomes more crucial than ever.

THE PURPOSE AND THE SIGNIFICANCE OF THE STUDY

This study addresses the relationship between IOC and global security and asserts that any contribution to the fight against IOC contributes to global security. Therefore any contribution to the law enforcement agencies' fight against IOC is of high importance in terms of global security. For this purpose, this study examines whether a new method can be useful for law enforcement agencies in the fight against IOC.

The study assesses the use of new technologies and specifically the use of VTS in the operations of the law enforcement agencies. It accepts VTS as an important tool for combating crime and attempts to understand the impact of this new method in the fight against IOC. The significance of the research stems from the potential of VTSs in contributing to the fight against IOC, and thus global security.

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[6] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.3
[7] Williams, P. (1996). *Global Organized Crime*. Paper presented at the Hearing before the Committee on International Relations, House of Representatives, 104th Congress, 2nd Session, Washington D.C.
[8] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.3

If the use of VTS in the operations of the TNP is found to be an advantageous application in the fight against IOC, then, this application can be expanded to those law enforcement agencies of other countries, which currently do not use this technology in their operations. In this context, this study will be the first in this field.

RESEARCH QUESTION

In the context of the proposed problem statement, the present study examines the contribution of the use of new technologies and especially the use of GPS based vehicle tracking systems by law enforcement agencies to combat IOC.

The use of the new technologies in combating IOC has caused tangible changes in the operations of law enforcement agencies. In an effort to demonstrate this change, this study intends to answer the question of "What is the impact of the use of new technologies and especially the use of GPS based vehicle tracking systems by law enforcement agencies in the fight against international organized crime"? The study will propose to answer this question by conducting interviews with the TNP personnel working in the Ankara, Istanbul and Van districts of Turkey. In addition to the perspectives of experts from the field, which is the essential part of the study, annual reports, publicly available documents and official papers are also used as other data source in the present study. Furthermore the descriptive statistics regarding the numbers of operations of the Turkish National Police held in the Van and Istanbul districts of Turkey and in which vehicle tracking systems are used also strengthens the outcome of the study.

The supporting research questions can be enumerated as follows:

1. What are the reasons for the use of new technologies by law enforcement agencies in the fight against IOC?

2. What are the contributions of CCTV systems in combating IOC?

3. What are the contributions of modernized police patrol cars in combating IOC?

4. What are the contributions of the computer forensics in combating IOC?

5. What are the contributions of VTSs in IOC?

6. What are the advantages and the disadvantages of the use of VTSs in combating IOC?

7. Is there any operation where the TNP cooperated with any foreign law enforcement agencies regarding the sharing of GPS coordinates of the targets tracked by a VTS belonging to the foreign LEA or the TNP?

8. Is VTS helpful in identifying source countries and tracking offenders when they leave the country?

9. Is there any operation where VTS is used to monitor maritime trafficking of illegal products?

CHAPTER 2

LITERATURE REVIEW

GLOBALIZATION

The globalization process was significantly affected by the launching of the first satellite into the space by the USSR in 1957. Following this innovation, the "global village" concept was first articulated by the popular media theorist Marshall McLuhan. McLuhan correctly perceived the far-reaching potential of this new technology.[1]

According to Holton, the advent of explicit theories of globalization "is a comparatively recent development that dates from 1960s. Concepts such as "globalization" and "global village" are contemporary additional terms to the vocabulary".[2]

There are many definitions about globalization and some of them that regard technology as a driven force for globalization have discussed in here because many theorists of globalization "fail to observe the fundamental importance of scientific and technological revolution and the new technologies that help spawn globalization".[3]

Globalization is "the latest stage in a long accumulation of technological advance which has given human beings the ability to conduct their affairs across the world

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[1] Slotten, H. R. (2002). Satellite Communications, Globalization, and the Cold War. *Technology and Culture, 43*(2), 315-350.
[2] Holton, R. J. (1998). *Globalization and the Nation-State*. Hampshire, New York: Macmillan Press. pp. 21
[3] Kellner, D. (2002). Theorizing Globalization. *Sociological Theory, 20*(3), 285-305

without reference to nationality, government authority, and time of day or physical environment".[4]

Friedman argues that "globalization involves the inexorable integration of market, nation sates, and technologies to a degree never witnessed before".[5]

Langhorne proposes that technological advances are the main factors that cause globalization. According to him, "globalization has happened because technological advances have broken down many physical barriers to worldwide communication which used to limit how much connected or cooperative activity of any kind could happen over long distances".[6]

Keller claims that "it cannot be understood without comprehending the scientific and technological revolutions and global restructuring of capital that are the motor and matrix of globalization".[7]

From the aforementioned definitions of globalization, it can be readily deduced that globalization is a process that has been affected enormously by those technological advances that have enabled humans, groups and also nations located in different parts of the globe to come closer to each other.

These advances in satellite and communication technologies have improved the connectivity of individuals and organizations and flow of information all around the

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[4] Langhorne, R. (2001). *The Coming of Globalization : Its Evolution and Contemporary Consequences.* New York: Palgrave. pp.2

[5] Friedman, T. L. (2000). *The Lexus and the Olive Tree.* New York: Farrar.

[6] Langhorne, R. (2006). *The Essentials of Global Politics.* London: Hodder Arnold. pp.2

[7] Kellner, D. (2002). Theorizing Globalization. *Sociological Theory, 20*(3), 285-305

world. For more than 50 years, satellite and communication networks have linked countries and have helped to provide global links for them. In this context, global satellite technologies have been one of the primary driving forces of globalization.

GLOBAL SATELLITE TECHNOLOGIES AND GLOBAL SECURITY

In terms of globalization, satellites are of high importance. But what about global security? Global satellites have contributed to globalization, but have they also contributed to global security? To be able to answer this question, this study will first describe the evolution of global satellite systems, and then it will examine global satellite services and their contribution to global security as outlined in the next two sections.

A Brief History of Satellites

The history of satellites dates back to the middle of the 20th century. It was during the first articulation of satellites in 1945, when Arthur C. Clarke "published his paper "Extra Terrestrial Relays" detailing a world where geo-stationary satellites would function as the primary linkages for a global telecommunications network."[8]

After World War II or in other words at the beginning of the cold war, technological innovations developed at an accelerating pace. For example, after the discovery of the transistor in 1947, electronics and computer technology developed rapidly to serve multiple purposes. Launching the first satellite followed and coincided with the time periods of 1957 and 1969, the year of the first steps of the man on the Moon program.

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[8] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.

The cold war was an epoch in which superpowers competed not only for military purposes, but also to demonstrate their superiority in science and technology. Technological innovations were thus especially crucial at this time for demonstrating a nation's power and independence.

From this perspective, the Soviet Union launched Sputnik1 and successfully orbited it in 1957. The launching of Sputnik1 pointed to the "the beginning of the use of artificial Earth Satellites to extend and enhance the horizon for radio communications, navigation, weather monitoring and remote sensing and signified the announcement of the great space race and the development of satellite communications".[9]

Sputnik1 was the first man made satellite in the history of technology. On the other hand the launching of Sputnik1 played an important role as far as demonstrating the Soviet Union's national competence and that country gained prestige relative to the US.

After Sputnik1, the US speeded up its space program and some private companies worked on commercial communication satellites[10] because "this Sputnik transmitted radio signals but perhaps the next one would carry a nuclear bomb! And America had no answer to it"[11]. As a means of counter attack, the United States started to work on space programs at NASA and after only 4 months, they launched their first satellite. The US' first satellite, Explorer 1 was launched on 31 January 1958, and this was the starting point of the space race between the two superpowers.

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[9] Ilčev, S. c. D. (2005). Global Mobile Satellite Communication for Maritime, Land, and Aeronautical Applications. pp.6
[10] Slotten, H. R. (2002). Satellite Communications, Globalization, and the Cold War. *Technology and Culture, 43*(2), 315-350.
[11] Norris, P. (2008). *Spies in the Sky : Surveillance Satellites in War and Peace*. New York: Springer. pp.1

The Telstar1 designed by Bell Telephone Laboratories was launched by NASA at 1963 and this was a Geosynchronous Earth Orbit (GEO) satellite with 2.5 hour orbit duration. The first GEO satellite that could be seen 24 hour a day, Syncom 1, was launched on 14 February 1963, but it could not be orbited because of the failure that occurred during its launch. After successfully orbiting the planet on 26 July 1963, the GEO Satellite Syncom 2 was used in August 1964 to transmit TV signals from the Tokyo Olympic Games and these covered approximately 40% of the earth's surface[12].

Thus by employing selected groups of GEO satellites in space, the entire surface of the earth could be covered by microwave data transmissions. As confirmed by Langhorne "Once there were enough satellites continuously orbiting the earth, a global telephone relay service could be created."[13] Later on this would in fact be implemented and with this new space-based global satellite network, communication as a whole would move into a new age.

The early satellites were used primarily for purposes of providing Fixed Satellites Service (FSS) and relaying signals from different Fixed Earth Stations all around the world. Intelsat was the first commercial global FSS operator and was founded in August 1964. Its first commercial satellite Intelsat 1 (formerly Early Bird) employed 2 x 25MHz transponder bands which meant it used 2 TX-RX microwave links. It was noted that with Early Bird "routing operations between US and Europe began on 28 June 1965 a date should be recognized as the birthday of commercial FSS" and "this GEO system used

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[12] Ilčev, S. c. D. (2005). Global Mobile Satellite Communication for Maritime, Land, and Aeronautical Applications.
[13] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.

several LES (Land Earth Stations) located within the USA and Europe and so, the modern era of satellite had begun"[14].

After Intelsat, global satellite operators such as Inmarsat, Intersputnik, ESA and Eutelsat were established. Inmarsat was established in 1979 "to provide communications service to ships, especially those from poor countries"[15]. Mostly supported by maritime nations, the Inmarsat satellite network provided telephone, telex, facsimile, data, image and video transfer, videoconferencing, LAN and IP and other services.[16]

The Intersputnik communications satellite network was established in 1971 by the Soviet Union. Because the Soviet Union was not a member of Intelsat, the Intersputnik network provided service to only 14 member states.

A convention consisting of six European countries Belgium, France, Germany, Italy, the Netherlands and the UK, created the European Space Agency (ESA) in 1975 to establish an independent satellite network. On the other hand the European Telecommunications Satellite (Eutelsat) was founded by 17 members who attended the European Conference of PTT in 1977. Eutelsat has since become the one of the world's leading operators with 23 satellites that are mostly responsible for TV and digital broadcasting services[17].

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[14] Ilčev, S. c. D. (2005). Global Mobile Satellite Communication for Maritime, Land, and Aeronautical Applications.
[15] Sassen, S. (1998). *Globalization and Its Discontents*. New York: New Press.
[16] Ilčev, S. c. D. (2005). Global Mobile Satellite Communication for Maritime, Land, and Aeronautical Applications.
[17] Ibid.

Starting with the launching of the first satellite into outer space, the coverage of global satellite networks was increased gradually and satellite networks offered a wide variety of services globally such as data and voice communications, radio and TV broadcasting, global positioning system and global imagery service. These services will be addressed in detail in the next section.

Satellite Network Services and Global Security

What made satellites a cornerstone of the globalization process was their ability to form global communications networks via microwave links. By way of these networks anyone was able to transmit or receive data from anywhere on the earth's surface without sticking to a pair of cables. Before satellites, global communications between nations were made by submarine cables. After the invention of the telegraph in 1830, the first communication cable between Washington and Baltimore was built in 1843, and this process grew rapidly after 1870 by submarine cable industry firms.[18] Early telephone conversations were also made via copper submarine cables, but this communication medium had limitations in terms of quality and the speed of the transmitted data.

With the arrival of the first orbited GEO satellite into space, data transmission could be carried out by means of using an air interface, which is known as wireless microwave communication. These microwave links of satellites "greatly expanded the capacity to transmit information across large distances in a flexible and cost-efficient way

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[18] Thompson, J. B. (2003). The Globalization of Communication. In D. Held & A. G. McGrew (Eds.), *The Global Transformations Reader : An Introduction to the Globalization Debate* (2nd ed., pp. 246-259). Oxford: Blackwell Pub.

dispensing with the need to lay fixed cables over land or under sea"[19] and "the old limitations on the quantity of traffic which land lines had imposed were almost dissolved"[20]. People could call their relatives over far distances that had no telephone networks and sound as though they were next door. More importantly, there was no longer a need for submarine communication cables for global telephone communications.

Langhorne states that "what rapidly increased the usefulness of the telephone was the divorce from land or undersea lines which radio had not been able to achieve satisfactorily, but which the combination of the computer and orbiting satellite made possible".[21] Today, global satellite telephone services are given by many service providers such as Iridium, Thuraya, Globalstar, and Inmarsat.

Satellite communication services are very important in terms of natural or man-made disasters, because in the case of natural or man-made disasters both PSTN (landline telephone network) and GSM telephone networks can collapse, especially when they are needed most. In this situation, satellite communication services can provide an important telecommunications infrastructure for disaster centers, rescue squads (first responders) and survivors with their expanded capacity and increased speed. For this purpose, satellite phones have been used as the fundamental mitigation tool in the aftermath of most disasters.[22]

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[19] Ibid.
[20] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.
[21] Ibid.
[22] GlobaFone. (2007). Satellite Phone Usage in Disaster Mitigation. Retrieved August 25, 2011, from http://www.globafoneiridiumphones.com/pdfs/Why%20you%20need%20satellite%20phones%20040207.pdf

The United Nations also addresses the fact that satellite telephone is an important factor in rescue operations. Yoshio Utsumi, Secretary-General the UN International Telecommunication Union (ITU) indicated the importance of satellite telephony in disaster mitigation and relief by saying that "the tsunami that wreaked havoc in south East Asia, the Kashmir earthquake, the Suriname floods, and the Indonesia earthquake have demonstrated the power of emergency telecommunications in saving lives and coordinating efforts during rescue operations such as the setting up of telemedicine links".[23]

In the beginning, satellite networks were used for voice and data transmitting and later they provided service for the global distribution of television[24]. "From the outset, telecommunications satellites were also used as relay stations and distribution points for television broadcasting".[25]

In 1964, Satellite Television Broadcasting of the Tokyo Olympics around the world was the first application which was close to the Marshall McLuhan's definition[26]. "In recent years, however, the development of more sophisticated satellites, capable of transmitting stronger, well targeted signals, has made possible the introduction of direct

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[23] UN.org. (2006). Un Mobilizes Portable Satellite Phones for Disaster Relief. Retrieved August 25, 2011, from http://www.un.org/apps/news/story.asp?NewsID=19145&Cr=disaster&Cr1=
[24] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.
[25] Thompson, J. B. (2003). The Globalization of Communication. In D. Held & A. G. McGrew (Eds.), *The Global Transformations Reader : An Introduction to the Globalization Debate* (2nd ed., pp. 246-259). Oxford: Blackwell Pub.
[26] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.

broadcasting by satellite (DBS)"[27]. Direct to home (DTH) digital satellite TV service began in 1979, but after 1994 it gained more attention and started to be used widely. DTH service involved a change from analog to digital TV services and it offered more quality, more channels and interactive applications.[28] Today this service has also been used widely all over the world.

Satellite radio service is another service provided by satellite networks. The first satellite radio service began "as an effort to stop the spread of AIDS in Africa through satellite delivered education efforts" by WorldSpace.[29] After launching Afristar in 1998 and Asiastar in 2000, WorldSpace started to offer multimedia broadcasting to a large region of the world. Following WorldSpace, Sirius radio and XM radio companies provided more than hundred channels with different kind of programs to mobile customers in the North America[30].

Satellite TV and Radio services can inform people about programs that promote food security and good health, which are important in terms of global security. For example HIV and AIDS epidemic are a global security problem because they cannot be limited to where they occurred. Other states can easily be affected by these epidemics thanks to the advances and ease of global transportation.

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[27] Thompson, J. B. (2003). The Globalization of Communication. In D. Held & A. G. McGrew (Eds.), *The Global Transformations Reader : An Introduction to the Globalization Debate* (2nd ed., pp. 246-259). Oxford: Blackwell Pub.

[28] Dulac, S. P., & Godwin, J. P. (2009). Television Via Satelite. In D. Gerbarg (Ed.), *Television Goes Digital* (pp. 79-97). New York: Springer.

[29] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.

[30] Rangarajan, S. (2002). Satellite Radio. *Resonance, 7*(1), 47-52.

As it is mentioned above, WorldSpace satellite radio was founded to stop the spread of AIDS in Africa. Moreover, the Arid Lands Information Network - Eastern Africa (ALIN-EA) operating in Kenya, Uganda, Tanzania and Ethiopia has joined up with the WorldSpace to inform people living in these countries by WorldSpace's satellite radio broadcasting. According to James Nguo, ALIN-EA regional coordinator, "people living far away from major towns and cities can't cope in this era of technology because of the lack of appropriate information". He also explained that the African Learning Channel (ALC) of WorldSpace satellite radio focuses on issues like "health, HIV/Aids, environment, agriculture, micro-enterprise and conflict resolution"[31].

Similarly, the cooperation between WorldSpace Foundation and Operation Lifeline Sudan (OLS) can serve as another example of how satellite radio service has contributed to global security. The OLS was established in April 1989 "as a consortium of UN agencies - UNICEF and the World Food Programme - and more than 35 NGOs following a severe famine in Southern Sudan that killed 250,000 people, mostly children".[32] It focuses on good health (HIV/AIDS prevention), food security (clean water and sanitation), peace education and environment in Southern Sudan.[33] Following this cooperation, WorldSpace started to provide "with cost-effective and reliable mechanisms

[31] Ayieko, F. (2001). Internet Radios Aid Africa. Retrieved August 25, 2011, from http://news.bbc.co.uk/2/hi/science/nature/1608394.stm
[32] WorldSpace. (n.d.). Special Projects. Retrieved August 25, 2011, from http://www.worldspace.org/projects.html
[33] UNICEF. (2004). Southern Sudan (Ols) Retrieved August 25, 2011, from http://www.unicef.org/lifeskills/index_8400.html

for the distribution of audio and print material to schools, learning centers and communities throughout the region"[34].

WorldSpace indicates what the partnership between WorldSpace and OLS will enable as outlined below:

- "Teachers to receive training and classroom support material transmitted by UNICEF-OLS via the WSF Multi-Media Service.

- Farmers to get early warnings of potentially disastrous weather, and be able to plan crop cycles based on accurate, up-to-the-minute climate information.

- Community members to hear vital and relevant programs on topics such as HIV/AIDS, conflict resolution, and child survival, among others, from the Africa Learning Channel.

- Communities to access to the latest regional and country-specific news for the first time in over three decades."[35]

ASTRO, the satellite television and radio service provider for Malaysia, Brunei and Indonesia, supports UNICEF in Malaysia for HIV/AIDS prevention and marginalized and vulnerable children protection "by providing free airtime on both its TV and radio channels for the Unite for Children, Unite Against AIDS campaign public service announcements".[36]

Satellite radio and television services can also be used for delivering up-to-date disaster assistance information when natural or man-made disasters occur. For example,

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[34] WorldSpace. (n.d.). Special Projects. Retrieved August 25, 2011, from http://www.worldspace.org/projects.html
[35] Ibid.
[36] UNICEF. (n.d.). Challenging Hiv and Aids: Partners. Retrieved August 26, 2011, from http://www.unicef.org/malaysia/hiv_aids_4188.html

the Department of Homeland Security's Federal Emergency Management Agency (FEMA) cooperated with DISH Satellite TV Network and XM Satellite Radio "to deliver up-to-date disaster assistance information to Hurricane Katrina evacuees in shelters and other locations across the country" in 2005.[37] R. David Paulison, FEMA Director, said that Katrina disaster assistance information provided by DISH Satellite TV Network and XM Satellite Radio beginning on September 14, 2005 will "offer the thousands of victims of this unprecedented natural disaster an instant avenue for getting the necessary disaster assistance information they need to begin the recovery process".[38]

Satellites have also been used for military purpose and some of them have orbited as spy satellites in the space. Langhorne indicates that "during the three decades between 1960 and 1990, approximately 3000 satellites were launched into the space, 60 percent by the super powers for military reasons including conducting photographic reconnaissance on each other"[39].

There are also satellite imagery services provided by commercial companies such as DigitalGlobe and GeoEye. The DigitalGlobe company addresses its satellite imagery process as a collection of satellite and aerial imagery and creation of quality images and products for high quality viewing, imagery storing and making all imagery available for accessing through online platform.[40]

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[37] FEMA. (2005). Dish Satellite Tv Network and Xm Satellite Radio Deliver Fema Information to Shelters. Retrieved August 26, 2011, from http://www.fema.gov/news/newsrelease.fema?id=18980
[38] Ibid.
[39] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold.
[40] DigitalGlobe.com. (2011). Digitalglobe Products. Retrieved August 20, 2011, from http://www.digitalglobe.com/index.php/6/DigitalGlobe+Products

GeoEye and DigitalGlobe supply satellite photos for Google[41] whose Google Earth computer software and Google Maps, are a world-wide web application that is very popular globally. Google Earth and Google Maps applications match photos taken by satellites with the appropriate geographical coordinates on the digital world map.

According to DigitalGlobe, its satellite imagery products are used to

- "Identify the world's natural resources, monitor pipelines and facilities
- Understand the earth's environmental condition
- Protect homelands and borders
- Respond to emergencies and natural disasters; then recover
- Plan investments in multi-million dollar infrastructure development".[42]

The above mentioned uses of satellite imagery are of high importance in terms of global security.

From a global environmental security perspective, monitoring the world's natural resources by satellite imagery can help global institutions in taking needed precautions to cope with food and water scarcities in failed and fragile states in order to prevent probable conflicts arising from these scarcities.

Satellite images help scientists monitor the earth's environmental condition. The monitoring of global warming, climate change, air pollution, drought, erosion, deforestation and etc. by way of satellite imagery paves the way for proactive problem solving methods for environment related global security problems. For example

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[41] Eisler, P. (2008, Nov, 9). Commercial Satellites Altering Global Security, *USA Today*. Retrieved from http://www.usatoday.com/tech/news/surveillance/2008-11-06-googleearth_N.htm?AID=4992781&PID=4172469&SID=1dr0w4f8pxktr
[42] DigitalGlobe.com. (2011). Digitalglobe Products. Retrieved August 20, 2011, from http://www.digitalglobe.com/index.php/6/DigitalGlobe+Products

deforestation and erosion are regarded as the prominent factors that cause food insecurity because of the decrease in arable lands arising from erosion and deforestation.

Satellite imagery, which can be used in responding to natural disasters, is thus highly important in terms of global security. This is because natural disasters "do not occur within strict national boundaries, their effects can be felt across the world".[43] In this context, satellite imagery was used "to guide emergency response and inform the public during natural disasters" in the US' Hurricane Ike disaster in 2008.[44] Similarly Hurricane Irene of 2011 that threatened the east cost of the US was also monitored by satellite images[45] and the public was informed to take needed precautions.

High-definition satellite photos can also provide powerful intelligence in the fight against terrorist groups. For instance, the US military has used satellite photos in its operations in Afghanistan's tangled terrain.[46]

In parallel, global satellite imagery has been used for the monitoring of undeclared nuclear reactors. For example, satellite images provided by GeoEye and Digital Globe showed the situation of the building of an alleged nuclear reactor at Al Kibar which is "in the desert about 750 yards from the Euphrates River, near the town of

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[43] Munro, E. (2006). Gcsp Policy Brief No. 17: Natural Disasters, Globalization, and the Implications for Global Security. Retrieved from
http://www.gcsp.ch/content/download/1257/9804/file/GCSP%20Policy%20Brief%2017.pdf
[44]Eisler, P. (2008, Nov, 9). Commercial Satellites Altering Global Security, *USA Today*. Retrieved from http://www.usatoday.com/tech/news/surveillance/2008-11-06-googleearth_N.htm?AID=4992781&PID=4172469&SID=1dr0w4f8pxktr
[45] NASA.gov. (2011a). August 27, 2011 - Hurricane Irene (09l) over the Bahamas. Retrieved August 27, 2011, from http://modis.gsfc.nasa.gov/gallery/individual.php?db_date=2011-08-27
[46]Eisler, P. (2008, Nov, 9). Commercial Satellites Altering Global Security, *USA Today*. Retrieved from http://www.usatoday.com/tech/news/surveillance/2008-11-06-googleearth_N.htm?AID=4992781&PID=4172469&SID=1dr0w4f8pxktr

Deir Al Zour" in Syria.[47] This suspected nuclear facility was destroyed by the Israeli army on September 5, 2007 in an operation named "operation orchard".[48] The International Atomic Energy Agency reports proved that "the bombed building was similar in type and size to a reactor and samples taken from the site indicated a connection with nuclear activities".[49] After the destruction of this undeclared nuclear reactor by the Israeli bombs, the satellite photos of GeoEye[50] and DigitalGlobe[51] showed rapid reconstruction of this destroyed facility.

Apart from the above mentioned satellite network services, the Global Positioning System (GPS) has been another service that has facilitated global security. This GPS technology started in 1970s and its first four satellites of NAVSTAR were launched at 1978 to transmit positioning signals to the earth surface. Today NAVSTAR has 24 satellites and its positioning ability has become more accurate.[52] GPS technology is more important in nowadays, because there many applications relating to it. For example if any person wants to go abroad for a holiday he or she doesn't need to fear about how to walk around and find his/her way. The only thing that has to be done is to have a navigation device, or a GPS aided mobile phone. This technology will be examined in detail in next section.

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[47] Ragheb, M. (2011). Safeguards, Non-Proliferation and Peaceful Nuclear Energy.
[48] Follath, E., & Stark, H. (2009). How Israel Destroyed Syria's Al Kibar Nuclear Reactor. Retrieved August 22, 2011, from http://www.spiegel.de/international/world/0,1518,658663-4,00.html
[49] BBC. (2011). Iaea: Syria Site Bombed by Israel 'Was Likely Nuclear'. Retrieved August 22, 2011, from http://www.bbc.co.uk/news/world-middle-east-13530945
[50] Aftergood, S. (2008, August 18, 2011). Commercial Satellite Imagery Sheds Light Here and There. from http://www.fas.org/blog/secrecy/2008/11/satellite_imagery.html
[51] BBC. (2008). Images of the Alleged Syrian Nuclear Site Retrieved August 20, 2011, from http://news.bbc.co.uk/2/hi/middle_east/7366615.stm
[52] Aber, J., Harvey, J., & Inmon, J. (2003). Gps and Its Emerging Role in Cellular Phones and Car Navigation Systems. Retrieved from http://www.emporia.edu/earthsci/student/aber1/index.htm

TRANSNATIONAL ORGANIZED CRIME: A GROWING THREAT TO GLOBAL SECURITY

Organized Crime

According to Interpol, organized crime is defined as "any enterprise or group of persons engaged in a continuing illegal activity which has as its primary purpose the generation of profits irrespective of national boundaries".[53]

The United Nations Convention against Transnational Organized Crime adopted the definition of organized crime on 15 November 2000 as "a structured group of three or more persons, existing for a period of time and acting in concert with the aim of committing one or more serious crimes or offences established in accordance with this Convention, in order to obtain, directly or indirectly, a financial or other material benefit".[54]

Transnational Organized Crime

If any organized crime has been coordinated across borders then it is described as a transnational organized crime. In a broader definition, transnational organized crime is defined as "systematic illegal activity for power or profit across national boundaries".[55] According to National Institute of Justice, it involves "the planning and execution of

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[53] DeVito, C. (2005). *The Encyclopedia of International Organized Crime*. New York, NY: Facts on File. pp. xi

[54] United Nations Office on Drugs and Crime. (2004). *United Nations Convention against Transnational Organized Crime and the Protocols Thereto*. New York: United Nations.

[55] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies.

illicit business ventures by groups or networks of individuals working in more than one country".[56] Brown gives some examples of transnational organized crime as below:

- "heroin sold on the streets of western Europe is cultivated in Afghanistan;
- cocaine snorted in Milan is grown in Colombia;
- seven per cent of world trade is in counterfeit products, two-thirds of which are manufactured in China;
- dirty money is laundered through the world's financial markets in New York, London, Frankfurt, Hong Kong and Tokyo;
- pills popped in the night clubs of Sydney were probably made in the Netherlands;
- a credit card scanned surreptitiously behind a bar in Cape Town can be cloned within 24 hours and used to purchase luxury items in Manhattan;
- the mobile phone slipped from the coat pocket on the Metro in Paris maybe reprogrammed and sold on a market stall in East Africa;
- a luxury car may be stolen from the streets of Spain and sold in the Balkans;
- paedophiles travel to the developing world on sex tours or sit at home and log on to websites with servers located in distant lands."[57]

Globalization And The Rise Of Transnational Organized Crime

Madsen sees transnational organized crime as part of globalization and he summarizes transnational organized crime as illicit trafficking in both illicit and licit product.[58] Shelley claims that globalization "has increased the opportunities for criminals, and criminals have been among the major beneficiaries of globalization." [59]

Globalization is enhancing the integration of societies and economies throughout

[56] NIJ. (2007). Transnational Organized Crime. Retrieved October 25, 2011, from http://nij.gov/topics/crime/transnational-organized-crime/welcome.htm
[57] Brown, S. D. (2008). The Longer Arm of the Law: An Introduction. In S. D. Brown (Ed.), *Combating International Crime : The Longer Arm of the Law* (pp. 3-7). New York, NY: Routledge. pp.6
[58] Madsen, F. G. (2009). *Transnational Organized Crime*. London ; New York: Routledge.
[59] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.3

the world and there is thus a decline of state intervention in the areas of free trade and free markets. This means that people, money and capital move more easily across borders.

This increasing movement of people, money and capital across borders and the advances in the communication technology has also facilitated the expansion of the illicit trafficking of people and goods across the borders.[60]

The period between 1820 and 1990 has witnessed profound changes in the international economic realm. International economic integration expanded between 1820 and 1914 when there were relatively no major wars in Europe. The consecutive World Wars retarded the advances of economic integration, but the post War era garnered a rapid reintegration amongst the major markets in the Western Bloc.[61] More importantly, this process of economic integration has intensified during the unprecedented growth of interconnected free market economies during the last two decades. The interactions between the states, firms, MNCs, and NGOs have facilitated this growth of the global economic system.

What paved the way for today's globalization was the desire of the Western states to build and strengthen an interconnected economic system after the World War II. As a result, national borders became porous, protectionist barriers diminished and capital moved freely between continents and states.

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[60] Ibid.
[61] O'Rourke, K. (2002). Europe and the Causes of Globalization, 1790 to 2000. In H. Kierzkowski (Ed.), *Europe and Globalization* (pp. 64-86). New York: Palgrave Macmillan.

Technological developments in transportation facilitated the international integration of markets for labor, capital and commodities in the 19th century. Following the formation of modern MNCs, an unprecedented increase in FDIs was also seen in these times.[62] Moreover, technological advances in communications, especially the internet and satellite networks and fiber optic networks, have been amongst the driving force of this rapid "expansion of business and labor opportunities in both wealthy and poor nations". [63]

Economic globalization means the economic integration between markets by way of international trade, capital flows and international flow of knowledge[64]. In other words, it is the growing integration of the national economies into a single worldwide market through cross border processes and transactions[65]. Economic globalization refers to a shift toward a global economic system based on a consolidated global marketplace for production, distribution, and consumption rather than relying on autonomous national economies[66].

The rise in the increasing internationalization of production, the influence of multinational corporations, and the volume and scope of international transactions and

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[62] Ibid.

[63] Albanese, J. S. (2011). *Transnational Crime and the 21st Century: Criminal Enterprise, Corruption, and Opportunity*. New York: Oxford University Press.

[64] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold. p.138

[65] Hirst, P., & Thompson, G. (1992). The Problem of 'Globalization': International Economic Relations, National Economic Management and the Formation of Trading Blocs. *Polity and Society, 21*(4).

[66] Holm, H. H., & Sørensen, G. (1995). Introduction: What Has Changed. In H. H. Holm & G. Sørensen (Eds.), *Whose World Order? : Uneven Globalization and the End of the Cold War* (pp. x, 246 p.). Boulder: Westview Press. pp.5

the advances in the communications and the transportation technologies catalyzed economic globalization.[67]

According to Mandel the reasons for the booming growth of transnational organized crime are threefold: "(1) intensified economic globalization, (2) proliferating politically fragile or failing states, and (3) accelerating technological transformation".[68]

Considering crime as a special form of business activity, Aguilar-Millan, Foltz, and Oberg assert that crime is "affected by the same trends as other business activities". In other words, "[j]ust as the business world has benefited from globalization, so has organized crime".[69] In the same vein, Shelley asserts that "the illegitimate business follows the patterns of the legitimate business".[70]

Similarly, Albanese claims that "changes in crime have paralleled these changes in the conduct of business" on the way to economic globalization.[71] He groups transnational crimes into three broad categories: Provision of illicit goods (drug trafficking, stolen property and counterfeiting), Provision of illicit services (human trafficking, cybercrime and fraud and commercial vices) and Infiltration of business or government (extortion and racketeering, money laundering and corruption). [72]

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[67] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold. p.138
[68] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies. pp.21
[69] Aguilar-Millan, S., Foltz, J. E., Jackson, J., & Oberg, A. (2008). The Globalization of Crime. *The Futurist, November-December*. pp. 42.
[70] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.7
[71] Albanese, J. S. (2011). *Transnational Crime and the 21st Century: Criminal Enterprise, Corruption, and Opportunity*. New York: Oxford University Press. pp.2
[72] Ibid.

Ratcliffe claims that transnational organized crimes have boomed since the end of the Cold War because of "the growth of criminal opportunities resulting from globalization".[73] According to Ratcliffe, drug and human trafficking have paved the way for the globalization of organized crime and their explosion has propelled "transnational organized crime into a problem that has been taken seriously into consideration only since the 1990s".[74] Moreover, the breakdown of national boundaries and the complications of the end of Cold War have also accelerated the pace of transnational organized crime.

Transnational Organized Crime And Global Security

According to Raine and Cilluffo, in today's world "the dimensions of global organized crime present a greater international security challenge than anything Western democracies had to cope with during the Cold War".[75]

The ending of the Cold War has thus altered the importance of internal security planning, necessitating a shift towards external security threats. In this regard, organized crime has become "a suitable substitute for the old external security threat" [76]

Based on its potential to pose a threat to the states all over the world, transnational crime was consequently regarded as a global threat at the 1998 Birmingham, UK summit of G8 and member countries who described the situation as outlined below:

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[73] Ratcliffe, J. (2008). *Intelligence-Led Policing*. Cullompton, Devon: Willan. pp.22
[74] Ibid. pp.22
[75] Raine, L. P., & Cilluffo, F. J. (1994). *Global Organized Crime : The New Empire of Evil*. Washington, DC: Center for Strategic and International Studies. pp.ix
[76] Viano, E. (1999). *Global Organized Crime and International Security*. Aldershot, Hants, England ; Brookfield, Vt., USA: Ashgate. pp.17

"Globalization has been accompanied by a dramatic increase in transnational crime. This takes many forms, including trafficking in drugs and weapons; smuggling of human beings; the abuse of new technologies to steal, defraud and evade the law; and the laundering of the proceeds of crime.

Such crimes pose a threat not only to our own citizens and their communities, through lives blighted by drugs and societies living in fear of organized crime; but also a global threat which can undermine the democratic and economic basis of societies through the investment of illegal money by international cartels, corruption, a weakening of institutions and a loss of confidence in the rule of law".[77]

Transnational organized crime activities have also played an important role in the regional conflicts by providing economic support for the manpower and arms needed to fuel these conflicts.[78]

All these arguments proposed that international organized crime is of high importance in terms of global security. Therefore its importance should be considered more carefully in today's globalized world.

As Mandel states "[t]ransnational organized crime appears to be both more damaging and more evasive now than in the past".[79] In this context, Robinson assesses transnational organized crime more dramatically and states that;

"As long as we live in a world where a seventeenth-century philosophy of sovereignty is reinforced with an eighteenth-century judicial model, defended by a nineteenth-century concept of law enforcement that is still

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[77] Shaw, Z. (2011). G8 Conclusions on Crime, 1975-2011. Retrieved from www.g8.utoronto.ca/conclusions/crime.pdf. pp.14
[78] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press.
[79] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies. pp.21

trying to come to terms with twentieth-century technology, the twenty-first century will belong to the transnational criminals". [80]

NEW METHODS FOR THE FIGHT AGAINST CRIME IN THE AGE OF GLOBALIZATION

The Globalization Of Crime

In the age of globalization, national borders have become porous, protectionist barriers have diminished and capital has moved freely between continents and states thanks to the advances in transportation and technology. These advances in transportation have "lowered the cost of freight and increased the number of routes available"[81]. Travelling has become easier and more affordable than the past. People can access a wide range of products and services virtually anywhere in the world over internet.

However, crime groups "have exploited the enormous decline in regulations, the lessened border controls, and the greater freedom to expand their activities across borders and into new regions of the world".[82] The increasing movement of people, money and capital across borders and the advances in the communication technology has facilitated the expansion of the illicit trafficking of people and goods across borders and criminals have been "among the major beneficiaries of globalization".[83]

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[80] Robinson, J. (2000). *The Merger : The Conglomeration of International Organized Crime* (1st ed.). Woodstock, NY: Overlook Press. pp.9
[81] Aguilar-Millan, S., Foltz, J. E., Jackson, J., & Oberg, A. (2008). The Globalization of Crime. *The Futurist, November-December.* pp.44
[82] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.4
[83] Ibid. pp.3

Richard Langhorne states that technological advances are the main driving forces of globalization because they "have broken down many physical barriers to worldwide communication which used to limit how much connected or cooperative activity of any kind could happen over long distances".[84] This era starting from the launching of the first satellite Sputnik1 has witnessed many advances in available types of communication systems that have contributed to the process of globalization.

The arrival of the internet specifically provided an unimaginable pace for advancing the process of globalization. It has linked people all around the world who have never seen one another. People communicate with each other daily without any restrictions imposed by state sovereignty issued. Citizens now have the opportunity for carrying out "cheap and reliable communications with distant relatives"[85]. Ethnic, religious and linguistic groups can all employ internet to maintain and strengthen their communities.

Langhorne indicates, however, that this new era has opened the door to a host of dangers. According to Langhorne, "[j]ust as new linkages in trade and transportation have brought new risks alongside new opportunities since 1945", the increasingly interconnected nature of the world's communication infrastructure has opened the door to a host of dangers, including hacking, computer viruses and cyberterrorism.[86]

Criminal organizations "have taken advantage of the information and technological revolution to as great or a greater degree than has government and business

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[84] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold. pp.2
[85] Ibid. pp.240
[86] Ibid. pp.241-242

and to a far greater degree than has the criminal justice system".[87] That is, the advances in communication technologies have paved the way for criminals to commit crimes that are easier to carry out than traditional crimes. Every step of technological progress has increased the use of technology as a weapon of crime by criminals. For example, just as the internet has contributed to globalization by providing a cheap and reliable form of communication for people, it has opened the door to cyber crimes causing that can cause severe damage to computer systems all around the world.

According to Picaralli, "[t]he emergence of instantaneous, global and secure forms of communication is the foundation of the global spread of criminal networks that exist simultaneously in multiple countries".[88]

Shelley exemplifies criminal activities facilitated by the possibility of speedy and secure communication as below;

> "Child pornography has spread because the Internet makes it possible to distribute pornography anonymously through Web sites". Material can be produced in one country and distributed in another by means of the Web, e-mail, and an international financial system that facilitates wire transfers. Drug traffickers can use encryption to provide security for their messages concerning their business operations. Informal financial transfers can be made without a trace, aided by instant messages on computers, and wire transfers made by fax or computer to offshore locales place massive amounts of funds outside of any state regulation".[89]

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[87] Fields, C. B., & Moore, R. H. (1996). Comparative Criminal Justice : Why Study? In C. B. Fields & R. H. Moore (Eds.), *Comparative Criminal Justice : Traditional and Nontraditional Systems of Law and Control* (pp. 1-14). Prospect Heights, IL.: Waveland Press.
[88] Picarelli, J. T. (2008). Transnational Organized Crime. In P. Williams (Ed.), *Security Studies : An Introduction* (pp. 453-467). London: Routledge. pp.455
[89] Shelley, L. (2011). The Globalization of Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 3-10). Cambridge ; New York: Cambridge University Press. pp.5

This is important because, the internet has had the lion's share of the communications market in the world for last two decades. For example, while there were only 10 websites in December 1991, the number of websites had increased to 240 million by July 2008.[90] In addition, the number of internet users rose from 16 million in December, 1995 to 2,110 million in June, 2011. As a result of this enormous growth in the number of internet users, e-commerce has produced a multibillion dollar market in the world.[91]

However, this enormous growth in the use of the internet has changed the phenomenon of crime. While the internet has provided people with an excellent means of communication, it has also provided excellent opportunities for criminals to commit crimes. People who use the internet in order to commit a crime have created a new type of crime: termed cyber crimes. Attorney General Janet Reno stated these crimes have global implications and can affect the entire world. According to Reno, "[n]o area of criminal activity is more on the cutting edge or has greater global implications than crime involving technology and computers".[92]

Kizza states that "the threat of crime using the Internet is real and growing and it is likely to be scourge of the 21st century".[93] Because of the many easy to use functions of the internet, criminals and terrorists have become increasing users of this. On the other hand, crackers and hackers use internet for purposes of theft and senseless vandalism or

[90] UNODC. (2010). *The Globalization of Crime a Transnational Organized Crime Threat Assessment*. Vienna, Austria: United Nations Publications.
[91] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold. pp.241
[92] Reno, J. (1997). *High-Tech and Computer Crime*. Paper presented at the P8 Senior Experts' Group on Transnational Organized Crime, Virginia. http://www.justice.gov/criminal/cybercrime/agfranc.htm
[93] Kizza, J. M. (2005). *Computer Network Security*. New York: Springer. pp.132

political goals.[94] Therefore, "the past three decades have seen the world become one where cyber attacks are a serious concern".[95]

In sum, the advances in technology and transportation, freedom of movement of people, money and goods across borders resulting in globalization have contributed to an increase in crime types and criminals. It is evident that, in the age of globalization combating crimes and criminals activities requires the use of new deterrence methods and technologies.[96]

New Policing Technologies In The Fight Against Crime

The increasing pace of globalization and with this, the increasing pace of crimes require more effective methods of intervention. Since "global problems require global solutions", it seems better cooperation between police forces across the globe must be forged in order to fight against transnational crimes more effectively. However, each country is responsible for the local component of any transnational crime generated within its borders and must deal with this problem in a more effective way than the past. In the same vein, Felson argues that;

> "Indeed, all crime requires a local focus of action at some point, perhaps at most points in its sequence. We expect that most transnational crimes include a chain of local actions that outnumber the border-crossing pieces

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[94] Langhorne, R. (2006). *The Essentials of Global Politics*. London: Hodder Arnold. pp. 242

[95] Wagner, A. R., & Fisch, Z. (2005). Cyber-Terrorism: Preparation and Response. In S. C. Shapira, Hammond J. S. and Cole L.A. (Ed.), *Essentials of Terror Medicine* (pp. 255-268). New York: Springer.

[96] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies.

of the chain. Indeed, local people on both sides of a border are usually involved in local aspects of transnational crimes".[97]

In the age of globalization, as Chan argues, "there is, every reason to expect that the latest round of technological change –the information technology revolution- would have an equally dramatic impact on policing".[98] In this respect, advances in technology present good opportunities for police forces to apply in their fight against crime within the national borders.

This chapter will examine CCTV systems, modernization of patrol cars, vehicle tracking systems, advances in lawful interception and observation systems as examples of new policing technologies that can be employed to combat crimes.

CCTV Systems

CCTV (Closed Circuit Television) is a video surveillance system "designed for monitoring a variety of environments and activities".[99] In short, it consists of different types of cameras broadcasting on a private network and video recording devices that collect and store video information transmitted from this private network. Today, "every state-of-the-art security system must include video as a key component to provide the "remote eyes" for security, fire, and safety".[100]

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[97] Felson, M. (2011). Routine Activities and Transnational Crime. In M. Natarajan (Ed.), *International Crime and Justice* (pp. 11-18). Cambridge ; New York: Cambridge University Press.

[98] Chan, J. B. (2001). The Technology Game: How Information Technology Is Transforming Police Practice. *Criminal Justice, 1*(2), 139-159. pp.140

[99] Harwood, E. (2008). *Digital Cctv : A Security Professional's Guide*. Amsterdam ; Boston: Elsevier/Butterworth-Heinemann. pp.1

[100] Kruegle, H. (2007). *Cctv Surveillance : Analog and Digital Video Practices and Technology* (2nd ed.). Amsterdam ; Boston: Elsevier Butterworth Heinemann. Pp.1

CCTV cameras can be found in different locations such as metro stations, road intersections, airports, schools, banks, streets, town squares, shopping centers, offices, car parks, stores and etc.[101] CCTV cameras are either wired or wireless. A monitoring center collects all video data coming from these cameras over the wired or wireless network. CCTV cameras can also be constructed as fixed cameras or ptz cameras. PTZ cameras can be controlled from a monitoring center to monitor a subject within the coverage range of the cameras.

CCTV systems are of high importance for city security today, therefore, the number of cameras deployed in cities has been increasing gradually. For example, it was reported that there were more than 4 million cameras in the city of London in 2006.[102] According to Kruegle, "[t]he most significant driving force behind the explosion in the use of closed-circuit television (CCTV) has been the world wide increase in theft and terrorism and the commensurate concern and need to protect personnel and assets".[103]

Welsh and Farrington assert that CCTV system can be used as a crime prevention mechanism by police forces.[104] In this respect, the London Police Force indicates the

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[101] Goold, B. J. (2003). Public Area Surveillance and Police Work: The Impact of Cctv on Police Behaviour and Autonomy. *Surveillance & Society, 1*(2), 191-203.

[102] Farrington, D., Gill, M., Waples, S., & Argomaniz, J. (2007). The Effects of Closed-Circuit Television on Crime: Meta-Analysis of an English National Quasi-Experimental Multi-Site Evaluation. *Journal of Experimental Criminology* (3), 21-28.

[103] Kruegle, H. (2007). *Cctv Surveillance : Analog and Digital Video Practices and Technology* (2nd ed.). Amsterdam ; Boston: Elsevier Butterworth Heinemann. Pp.1

[104] Welsh, B. C., & Farrington, D. P. (2002). Crime Prevention Effects of Closed Circuit Television: A Systematic Review *Home Office Research Study 252*: Home Office Research, Development and Statistics Directorate.

CCTV system is "an important weapon to fight against crime".[105] A number of theories of how CCTV can be used in crime prevention are outlined below;

> "First, CCTV may reduce crime by deterring potential offenders because they think that they have an increased risk of being caught. Second, CCTV may encourage more people to use the area and, hence, may increase the perceived risk of being caught by increasing natural surveillance. Third, CCTV may facilitate the effective deployment of police and security staff to intervene to prevent crime and/or apprehend offenders. Fourth, CCTV may encourage the general public to take more precautions, and fifth, CCTV may encourage the general public and employees to intervene to prevent crime"[106]

Law enforcement agencies can use CCTV systems to collect information from different locations. These locations can be strategically planned by law enforcement personnel, and different types of CCTV cameras can be installed overtly at these locations "to deter crime and provide general surveillance of remote areas such as parking lots, perimeter fence lines, warehouses, entrance lobbies, hallways, or production areas".[107]

Criminals, suspects, suspicious events such as an unclaimed bag in front of a school which can be a bomb, traffic violations or emergency situations can be monitored in real time by the use of CCTV systems that are monitored at the command control center. In the case of an emergency, police patrols can be dispatched to the scene

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[105] Metropolitian. (n.d.). Cctv. Retrieved October 24, 2011, from http://www.met.police.uk/crimeprevention/cctv.htm
[106] Farrington, D., Gill, M., Waples, S., & Argomaniz, J. (2007). The Effects of Closed-Circuit Television on Crime: Meta-Analysis of an English National Quasi-Experimental Multi-Site Evaluation. *Journal of Experimental Criminology* (3), 21-28.
[107] Kruegle, H. (2007). *Cctv Surveillance : Analog and Digital Video Practices and Technology* (2nd ed.). Amsterdam ; Boston: Elsevier Butterworth Heinemann. Pp.10

immediately. Moreover, any past crime in the coverage area of CCTV cameras can be analyzed by looking into the archived video recordings to identify criminals. Thus, suspect or suspects of any crime can be recognized and arrested more easily with the use of archived videos of CCTV systems.

CCTV systems can also be combined with systems like plate recognition[108], face recognition and motion detection to be used more effectively. For example, "[i]f the plate of a vehicle reported stolen is introduced to the system, the moment the stolen vehicle passes the intersection point the system warns the control center by a warning message and enables the capturing of the criminals."[109] Furthermore, surveillance cameras installed on police helicopters can be added to the base CCTV system over wireless connection for real time tracking of suspects by helicopters in police operations.[110]

Modernization of Police Patrol Cars

Advances in technology have also paved the way for the modernization of police patrol cars. Today police patrol cars not only employ two way radio communication devices but also two way data communication devices that can help a police officer to investigate the name of a suspect in the main database of the police department, check a person's license plate from the Motor Vehicle Division records or check messages coming from command centers and can answer these messages etc. A police officer can write his/her report at the

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[108] Mobese. (2008c). Plaka Algılama Sistemi (Plate Recognition System). Retrieved November 3, 2011, from http://mobese.gov.tr/pas.htm

[109] Datateknik. (2008). Mobese (Mobile Electronic System Integration). Retrieved November 3, 2011, from http://www.datateknik.com.tr/en-us/content.asp?ctID=1010

[110] Mobese. (2008b). Helikopterden Görüntü Aktarma Sistemi (Video over Helicopter System). Retrieved November 8, 2011, from http://mobese.gov.tr/hgs.htm

tablet pc in the patrol car or can take pictures of the suspects and send these pictures to the command center to identify the suspects.[111] All two way data communication is encrypted to prevent any classified information from being seen by others.

Furthermore, new patrol cars have vehicle tracking systems so that a command center can monitor their real time movements on a digital map.[112] That is, command center can see where all the patrol cars are located and can dispatch the nearest car or cars to the scene when a crime or an emergency situation arises or a suspect or suspects are seen in the vicinity.

Vehicle Tracking Systems

Vehicle tracking systems are used to monitor the real time movements of a target vehicle on a digital map running on a computer.[113] Through the use of this system, law enforcement agencies can monitor the movements of those vehicles that belong to the suspects or criminals. Alternatively, as mentioned above, this system can be used in police patrol cars so a command center can see and dispatch them more effectively. As the main focus of the study, vehicle tracking systems will be examined in detail in the next chapter.

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[111] Snow, R. L. (2007). *Technology and Law Enforcement : From Gumshoe to Gamma Rays*. Westport, CT: Praeger Publishers.

[112] Mobese. (2008a). Arac Takip Sistemi (Vehicle Tracking System). Retrieved November 5, 2011, from http://mobese.gov.tr/ats.htm

[113] Snow, R. L. (2007). *Technology and Law Enforcement : From Gumshoe to Gamma Rays*. Westport, CT: Praeger Publishers.

Computer Forensics

Cyber crimes have been a crucial issue for law enforcement agencies since the arrival of the internet. In parallel with the extensive use of the internet, cyber crimes are significantly increasing in number each year in parts of the World.

A cyber crime is defined as a crime that "the illegal act must involve a connected computing system either as an object of a crime, an instrument used to commit a crime or a repository of evidence related to a crime"[114]. Nagpal defines it as an "unlawful act wherein the computer is either a tool or a target or both"[115]. Kizza gives a more detailed definition for it indicated as below.

> "Alternatively, one can define a cyber crime as an act of unauthorized intervention into the working of the telecommunication networks or/and the sanctioning of an authorized access to the resources of the computing elements in a network that lead to a threat to the system's infrastructure or life that or cause a significant property loss".[116]

The number of internet users in the world is increasing gradually. For instance, the number of internet users in Turkey increased from about 2 million in 2000 to about 5.5 million in 2004, to 10.22 million in 2006 and 36.4 million in 2012.[117],[118] As in other countries, the growing internet use in Turkey has led to the misuse of the internet by criminals, hackers and other groups. For instance, according to the 2008 data of the

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[114] Kizza, J. M. (2005). *Computer Network Security*. New York: Springer., pp.132

[115] Nagpal, R. (2002). *Cyber Terrorism in the Context of Globalization.* Paper presented at the II World Congress on Informatics and Law Madrid, Spain.

[116] Kizza, J. M. (2005). *Computer Network Security*. New York: Springer., pp.132

[117] InternetWorldStats. (2012a). Top 20 Countries with the Highest Number of Internet Users. Retrieved May 15, 2012, from http://www.internetworldstats.com/top20.htm

[118] InternetWorldStats. (2012b). Turkey Internet Usage Stats and Market Report. Retrieved May 15, 2012, from http://www.internetworldstats.com/euro/tr.htm

Turkish National Police, there has been a significant increase in the number of cyber crimes committed in Turkey since 2006. As can be seen in Table1, while the number of suspects who were arrested for involvement in cyber crimes was 2.209 in 2006, it increased to 2.992 in 2007 and this rose to a record level of 4.363 in 2008. Similarly, while cyber crimes cases numbered 1.218 in 2006, they increased to 1.743 in 2007 and more dramatically they reached 2.724 in 2008.

Type of Case	2006		2007		2008	
	Case	Suspect	Case	Suspect	Case	Suspect
Credit Card Counter Feiting and Fraud	310	468	594	907	830	991
Banking Fraud	723	1.398	642	1.187	1.177	2.114
Cyber Crimes and IT Fraud	178	283	416	764	560	842
Others	7	60	91	134	157	416
Total	1.218	2.209	1.743	2.992	2.724	4.363

Figure 1. Cyber Crimes in Turkey for the years between 2006-2008.[119]

In 2006, 468 people were arrested for credit card fraud, 1,398 people were arrested for bank fraud on the internet, and 283 people for involvement in cyber crimes and IT fraud. The number of people involved in credit card fraud increased to 907, the number of people involved in bank fraud on the internet increased to 1,177 and the number of people involved in cyber crimes and IT fraud rose to 764 in 2007. As seen in Table1, a dramatic increase in cyber crimes took place in 2008 with 991 people who were arrested for involvement in credit card fraud and 2,114 people who were arrested for involvement in bank fraud and 842 people for involvement in cyber crimes and IT fraud.

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[119] KOM. (2009). Turkish Report on Drugs and Organized Crime 2008. Retrieved May 15, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2008_Ingilizce.zip

While banking fraud decreased in numbers from 2114 to 1113 in 2009, bank and credit card fraud increased in numbers from 991 to 2176 in 2009 as shown in the figure below.

Type of Arrest	2009	
	Arrest	Suspect
Bank and Credit Card Fraud	1,511	2,176
Interactive Banking Fraud	550	1,113
Cybercrime and Fraud	353	534
Qualified Fraud via Internet	412	731
Other	45	116
Total	2,871	4,670

Figure 2. Cyber Crimes in Turkey in 2009[120]

Although bank and credit card fraud and interactive bank fraud were the most frequently committed cyber crimes in Turkey for the years 2010 and 2011, the number of incidents and suspects perpetrating these type of crimes was not as high as they were in 2008 and 2009.

The new developments and precautions taken against cyber crimes in the context of interactive banking plus the increased awareness of citizens concerning this kind of fraud can be considered among the reasons explaining the recent decrease in interactive banking frauds and bank and credit card frauds in Turkey. As one of the biggest banks of Turkey Vakifbank indicated in its 2010 annual report as outlined below, interactive bank users started to use one time password sent by banks through SMS messages so that interactive banking fraud became harder than before to carry out by criminals.

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[120] KOM. (2010). Turkish Report on Drugs and Organized Crime 2009. Retrieved May 15, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2009_Ingilizce.zip

"Under the 3D Secure application whereby the cardholder is verified by insertion of a password so as to ensure security of online transactions, one-time dynamic passwords are now started to be sent via SMS to the mobile phone of the cardholder"[121]

INCIDENT TYPE	2010	
	INCIDENT	SUSPECT
Bank and Credit Card Fraud	1,132	1,005
Interactive Bank Fraud	151	300
Offenses Against Information Systems*	975	1,351
Qualified Fraud via Internet	71	115
Other	28	134
Total	2,357	2,905

Figure 3. Cyber Crimes in Turkey in 2010.[122]

On the other hand, offenses against information systems which were formerly called cybercrimes and fraud increased from 534 to 1351 in 2010 and numbered 1898 in 2011 as shown in Figures 3 and 4, respectively.

Type of Crime	Number of perations	Number of Suspects
Banking and Credit Card Fraud	1,819	1,503
Interactive Banking Fraud	148	348
Crimes Committed Against Information Systems	1,791	1,898
Qualified Fraud Through Internet	112	285
Other	31	123
TOTAL	3,901	4,157

Figure 4. Cyber Crimes in Turkey in 2011.[123]

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[121] Vakifbank. (2010). 2010 Activities. Retrieved May 15, 2012, from
http://www.vakifbank.com.tr/interaktif_faaliyet_raporu/2010/en/m-1-15.html
[122] KOM. (2011b). Turkish Report on Drugs and Organized Crime 2010. Retrieved May 15, 2012, from
http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2010_Ingilizce.pdf

Based on all the aforementioned cybercrime statistics in Turkey, it can be said that although some precautions are being taken in parallel to the development of information technologies, cyber crimes are gradually increasing and are going to continue to provide a potential global security threat to the world. In this respect, LEA officers who fight against cyber crimes will play a role of high importance in terms of global security.

Law enforcement agencies use a method called *computer forensics* in order to be able to fight cyber crimes and cyber criminals. Computer forensics, in short, is the conservation, identification, extraction and documentation of computer data[124].

Computer forensics "is the art and science of applying computer science to aid the legal process. Although plenty of science is attributable to computer forensics, most successful investigators possess a nose for investigations and for solving puzzles, which is where the art comes in"[125].

According to another definition, it is "[t]he preservation, identification, extraction, interpretation, and documentation of computer evidence, to include the rules of evidence, legal processes, integrity of evidence, factual reporting of the information found, and providing expert opinion in a court of law"[126]

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[123] KOM. (2012). Turkish Report of Anti-Smuggling and Organized Crime 2011. Retrieved May 2, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2011_Ingilizce.pdf

[124] Kruse, W. G., & Heiser, J. G. (2002). *Computer Forensics Incident Response Essentials*. Indianapolis: Addison-Wesley., pp.2

[125] Brown, C. L. T. (2006). *Computer Evidence Collection and Preservation*. Massachusetts: Charles River Media., pp.3

[126] Hailey, S. (2002). What Is Computer Forensics. Retrieved from http://www.cybersecurityinstitute.biz/forensics.htm

Based on the above definitions, it can be said that computer forensics are forensic processes of extraction of electronic evidence from computers and other kinds of electronic devices that are able to store or transmit electronic data, by using computer science methods.

It can be said that computer forensics has started since the usage of 20 Mega Byte hard drives. In these times, a zip diskette, a DOS diskette and a hex editor was enough for computer forensics operations[127] and the main evidences extracted by computer forensics experts were generally simple file types such as text files[128].

Potaczala states that the first known example of a computer forensics operation is the investigation of a system administrator to find out who, how and when someone has entered to his system[129].

In computer forensics operations special experts are needed, because normal or even advanced computer users don't understand its concept clearly. If a person is not a computer forensics expert, he/she can cause irreversible damage to the evidence in a computer forensics operation.

Computer forensics is comprised of collection, preservation, filtering and presentation phases.[130] According to a broader classification, it consists of First Response

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[127] Brown, C. L. T. (2006). *Computer Evidence Collection and Preservation*. Massachusetts: Charles River Media., pp.3

[128] Whitcomb, C. M. (2002). An Historical Perspective of Digital Evidence: A Forensic Scientist's View. *International Journal of Digital Evidence, 1*(1)., pp.3

[129] Potaczala, M. (2001). *Computer Forensics*. Florida: University of Central Florida Publications., pp.3

[130] Brown, C. L. T. (2006). *Computer Evidence Collection and Preservation*. Massachusetts: Charles River Media. pp.6

(Incident Response), Collection and Preservation, Evidence Extraction, Analysis and Reporting phases[131].

First response is the phase that electronic evidence is confiscated at the crime scene by computer forensics experts. If individuals or corporations can't locate their security gaps, this situation continues until it is found and in many circumstances, being slow in becoming aware of the problem can cause bigger damages to individuals or corporations.[132] Devices at a crime scene such as computers and cell phones must never be turned off if they are running. Otherwise the volatile data of the running devices is deleted.[133] Therefore, computer forensics experts can extract the volatile data by live data collection methods that recover the volatile data embedded in the memory of the computer and this prevents data loss when the device is turned off.[134]

In the data collection phase, it is suitable to take at least two different backup of the original data. In this step "bit to bit" copying is made in order to extract deleted files. "Bit to bit" copying is different than the standard data backup process. In this copying, the fingerprint of the copied data, which is called as MD5 hash value, shows that this copy is exactly the same with the original data[135]. Bit to bit copying is also called as

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[131] Sen, O. N. (2005). An Assessment of Computer Forensics Programs for Police Forces *The Statements of 2nd Police It Symposium* (pp. 35-41). Ankara: Turkish National Police.

[132] Mandia, K., Prosise, C., & Pepe, M. (2003). *Incident Resonse and Computer Forensics*. California: McGrawHill., pp.17

[133] Ozdilek, A. O. (2006). *Cyber Crimes and Their Law*. Istanbul: Vedat Kitapcilik.

[134] Brown, C. L. T. (2006). *Computer Evidence Collection and Preservation*. Massachusetts: Charles River Media., pp.214-216

[135] Kruse, W. G., & Heiser, J. G. (2002). *Computer Forensics Incident Response Essentials*. Indianapolis: Addison-Wesley., pp.14-15

forensic duplicate. It is the file "that contains every bit of information from the source in a raw bitstream format". [136]

In the evidence extraction step, all deleted files are recovered and it is tried to obtain evidence from both existing and recovered data[137]. Encase of Guidance Software Corporation and FTK of AccessData corporation are the most prominent and successful evidence extraction software and devices.

In the evidence analysis phase, file contents, file access information, web surfing information, and chatting information are examined and their relation to the crime is investigated. In this step, below procedures are followed;

- Detection of the time information of accessing, creating and last writing of the data

- Internet surfing history and surfing time information

- Downloaded files via internet

- Recovering of password protected files

- Hidden file detection

- Print spool files

- Word search in files

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[136] Scu.edu. (2010). Forensic Duplication of Hard Drives. Retrieved October 20, 2011, from http://www.cse.scu.edu/~tschwarz/COEN252_06/PPtPre/ForensicDuplication.ppt

[137] Uzunay, Y. (2005). The Process of Digital Evidence Investigation *The Statements of 2nd Police It Symposium* (pp. 42-47). Ankara: Turkish National Police.

- File filtering.[138]

In the evidence extraction and the analysis of the extracted evidence phases, evidence integrity is the basis of computer forensics[139]. If any data is changed by accident, it loses its originality and, therefore, its validity. Following all the previous phases, all the analyzed data can be deemed as providing valid evidence and must be included in the report presented to the courts.

New Developments in Lawful Interception

Lawful interception is another crucial method used by law enforcement agencies to fight against crime. Lawful interception (LI), in short, is the legally sanctioned access of law enforcement agencies of private communications. ETSI defines it as "a security process in which a service provider or network operator collects and provides law enforcement officials with intercepted communications of private individuals or organizations".[140]

LI provides crucial information for law enforcement agencies (LEA) regarding what criminal suspects are doing or what are they planning to do. In this context, lawful interception has become one of the most important tools for LEAs to fight against crimes. One of the foremost LI systems providers, SS8, argues that LI system "provides vital assistance to law enforcement agencies in identifying and apprehending targets involved in criminal activities including child pornography, kidnapping, drug trafficking, acts of

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[138] Aydogan, H. (2009). *New Electronic Evidence Extraction Methods.* Police Academy Security Sciences Institute, Ankara.
[139] Kruse, W. G., & Heiser, J. G. (2002). *Computer Forensics Incident Response Essentials*. Indianapolis: Addison-Wesley., pp.3
[140] ETSI. (2011). Lawful Interception. Retrieved November 2, 2011, from http://www.etsi.org/WebSite/Technologies/LawfulInterception.aspx

terrorism, fraud, and other threats to personal safety and national security".[141] The other

foremost LI systems provider, Verint, indicates that it's LI equipment, RELIANT;

- "Intercepts virtually any wired, wireless, or broadband communication network and service

- Collects, integrates, and stores case-relevant historical communication data records (CDRs), with real-time intercepts

- Intuitive, flexible system administrator and operator user interfaces for monitoring and managing data

- Sophisticated analysis tools, including location, free text search, speech, and visual link analysis

- Enables information sharing between departments and other law enforcement agencies and the transfer of communications in legally compliant formats for evidence

- Securely stores and displays information in accordance with strict security measures".[142]

LI technologies have evolved since the laws allowed their first usage. Today, they

have to be more capable and robust than the past. For example, the interception of email

trafficking is not as easy as the interception of landline telephone communications as was

done in the old days. On the other hand, the amount of intercepted data is not comparable

to the data intercepted in the past.

According to ITU's 2011 estimation, there are almost 6 billion mobile phone

subscriptions while the number of fixed telephone lines is about 1 billion. Moreover, one

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[141] SS8. (2011). Solutions > Law Enforcement Agencies. Retrieved November 3, 2011, from
http://www.ss8.com/solutions-for-law-enforcement.php
[142] VERINT. (2011). Reliant Monitoring Center for Law Enforcement and National Security Agencies.
Retrieved November 2, 2011, from
http://verint.com/communications_interception/section2a.cfm?article_level2_category_id=7&article_level2
a_id=196

third of the world's population, around 2.5 billion people, uses the internet and there are more than 1 billion mobile broadband subscriptions for internet.[143] In light of this stunning pace of development in the realm of communications, law enforcement forces have to renovate their technologies periodically to keep up their ability to conduct lawful interception and keep pace with these rapid advances. These developments in lawful interception can be summarized as below:

- Internet monitoring

  o Email monitoring

  o Online chat monitoring

  o VoIP monitoring

- Mobile-Cellular Communications monitoring

  o Conversation Monitoring

  o SMS-MMS monitoring

  o 4G-3G-GPRS-WAP Monitoring

- Fixed Telephone Line Communications Monitoring

  o Conversation Monitoring

  o Fax monitoring

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[143] ITU. (2011). Ict Facts and Figures. Retrieved November 2, 2011, from http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf

- DSL-ADSL internet monitoring

- Satellite communications Monitoring

  - Conversation Monitoring

  - Data monitoring

In the present globalization age, communication technologies are always changing and therefore, keeping up with these new technologies is of high importance in terms of LI. This is because criminals, especially organized criminals, are adept at following and using new technologies to a greater degree than the governments and LEAs. For example, as one of the most advanced forms of innovation, the use of 4G mobile communications technology has recently been introduced. Unless current LI systems become capable of monitoring 4G technology, LEAs are going to lose a lot of crucial communication data records (CDRs) especially those needed to help in their fight against crimes.

In addition, LI today is much more challenging than it was previously. For example, fixed line telephone call interception was relatively simple, but mobile phone interception, or even internet interception requires the demodulating of more complex data transmission, decryption of encrypted communication and messages and filtering of a huge amount of data to intercept only monitored suspects while maintaining others privacy. Moreover, LI system providers are still working how to deal with current interception problems. What is evident is that with the fascinating pace of new

communication technologies in our globalized world, these problems will continue to occur.

New Developments in Observation Systems

In some cases, LEAs have to insert an electronic transmitter called a "bug" after getting a judicial warrant[144] into the houses or offices of suspects especially when they are otherwise unable to obtain any valuable data for their operations. LEA officers use safe houses or observation cars to receive what is transmitted by these bugs.

Sometimes targets are monitored by LEAs without entering the houses of suspects. In this case, LEAs use powerful surveillance cameras installed in safe houses or observation cars that have very high zoom function and are capable of monitoring in very low light. Furthermore, LEAs can use laser listening devices and audio amplifying devices to monitor suspects from remote distances.

Over the years, the technology of observation systems has also changed. The bugs can be smaller but can transmit over longer distances. Today, they have encryption and digital modulation formats that provide more secure connections between the transmitter and the receiver to prevent classified information from being seen by others. Cameras have lower light sensibility and more resolution and zoom capability.

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[144] Cornell.edu. (2010). Electronic Surveillance. Retrieved November 3, 2011, from http://www.law.cornell.edu/wex/electronic_surveillance

VEHICLE TRACKING SYSTEMS AND THE FIGHT AGAINST INTERNATIONAL ORGANIZED CRIME

Vehicle tracking system is a global positioning system (GPS) based technology that monitors the real time movements of a target vehicle on a digital map running on a computer. Geographical positioning information of the target vehicle is provided by GPS satellite service.

This chapter will first define GPS and then describe Vehicle Tracking Systems. Third, it will assess the global use of GPS tracking systems. Last, it will discuss Vehicle Tracking Systems as a new tool in the fight against international organized crime

Global Positioning System (GPS)

As it is mentioned above, the Global Positioning System (GPS) is one of the services of global satellite system. GPS is a "U.S.-owned utility that provides users with positioning, navigation, and timing (PNT) services"[145]. One of the biggest GPS receiver producers, GARMIN, defines GPS as a "satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense".[146] Although GPS was first developed for military applications, the U.S. government made GPS available for civilian use in the 1980s.

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[145] GPS.gov. (2011a). Gps Overview. Retrieved July 5, 2011, from http://www.gps.gov/systems/gps/
[146] Garmin. (2011). What Is Gps? Retrieved July 5, 2011, from http://www8.garmin.com/aboutGPS/index.html

GPS consists of three segments; the space segment, the control segment, and the user segment. The U.S. Air Force is responsible for the development, sustainability and operation of the space and control segments.

> "The space segment consists of a nominal constellation of 24 operating satellites that transmit one-way signals that give the current GPS satellite position and time.
>
> The control segment consists of worldwide monitor and control stations that maintain the satellites in their proper orbits through occasional command maneuvers, and adjust the satellite clocks. It tracks the GPS satellites, uploads updated navigational data, and maintains health and status of the satellite constellation.
>
> The user segment consists of the GPS receiver equipment, which receives the signals from the GPS satellites and uses the transmitted information to calculate the user's three-dimensional position and time".[147]

There are two different positioning services that GPS satellites provide: Standard Positioning Service (SPS) and Precision Positioning Service (PPS).

The SPS is a positioning and timing service for peaceful civil, commercial, and scientific use. It consists of "space-based positioning, navigation, and timing (PNT) signals delivered free of direct user fees for peaceful civil, commercial, and scientific uses worldwide".[148] PNT signals are broadcasted by all satellites at the GPS L1 (1575.42 MHz) frequency that contains "a coarse/acquisition (C/A) code ranging signal, with a navigation data message".[149]

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[147] GPS.gov. (2011a). Gps Overview. Retrieved July 5, 2011, from http://www.gps.gov/systems/gps/
[148] PNT.gov. (2008). Global Positioning System Standard Positioning Service Performance Standard. Retrieved July 5, 2011, from http://www.pnt.gov/public/docs/2008/spsps2008.pdf
[149] Ibid.

The PPS, known as military GPS service, is a "positioning and timing service provided by way of authorized access to ranging signals broadcast at the GPS L1 and L2 frequencies".[150] The PPS is only available to the authorized users defined by the U.S. government.[151] The PNT signals are broadcasted at both the GPS L1 (1575.42 MHz) and L2 (1227.6 MHz) frequencies. In PPS, broadcasting of the same code and the data with two different frequencies reduces radio degradation caused by the Earth's atmosphere. Therefore, the PPS provides more precise PNT signals that can be received by the user segment than the SPS does.

In the SPS the GPS signal accuracy is about 7.8 m at a 95% "confidence level"[152].[153] Because there are two frequencies that carry GPS signals to the user segment, in the PPS, the GPS signal accuracy is 5.9 m at a 95% confidence level.[154]

The positioning method is based on the resection of the distances from three different GPS satellites to a certain GPS receiver on the earth's surface. A GPS receiver picks up the PNT signals transmitted by GPS satellites and takes the distance information

[150]PNT.gov. (2007). Global Positioning System Precise Positioning Service Performance Standard. Retrieved July 5, 2011, from http://www.pnt.gov/public/docs/2007/ppsps2007.pdf
[151] GPS.gov. (2011b). Performance Standards & Specifications. Retrieved July 5, 2011, from http://www.gps.gov/technical/ps/#spsps
[152] Confidence level means 95% global average user range error (URE) during normal operations over all age of data (AOD)
[153] PNT.gov. (2008). Global Positioning System Standard Positioning Service Performance Standard. Retrieved July 5, 2011, from http://www.pnt.gov/public/docs/2008/spsps2008.pdf
[154]PNT.gov. (2007). Global Positioning System Precise Positioning Service Performance Standard. Retrieved July 5, 2011, from http://www.pnt.gov/public/docs/2007/ppsps2007.pdf

from itself to GPS satellites. To be able to calculate its position, a GPS receiver needs at least three distances to three simultaneously tracked satellites. [155]

In terms of understanding GPS, if there was only one GPS satellite sending PNT signals to the GPS receiver, then the location estimation would become any point on a circle with radius R1 centered about the GPS satellite as shown in figure 5.[156]

GPS Satellite

R1
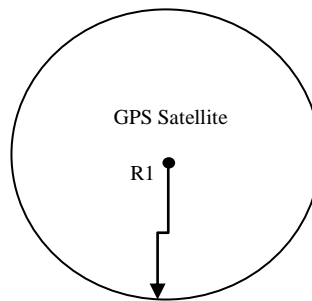
Figure 5. Location estimation with one GPS satellite

A

GPS Satellite

GPS Satellite

R1

R2

B
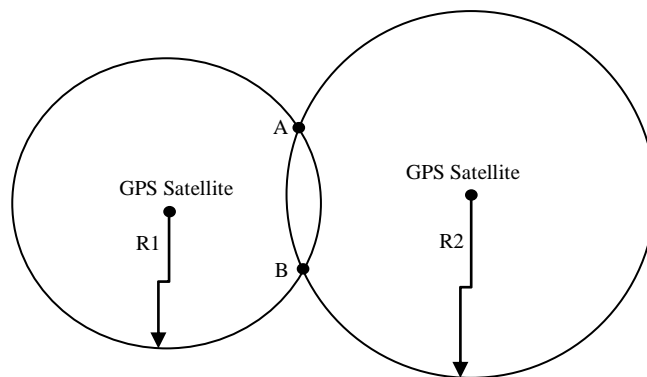
Figure 6. Location estimation with two GPS satellites

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[155] El-Rabbany, A. (2002). *Introduction to Gps : The Global Positioning System*. Boston, MA: Artech House.
[156]Kaplan, E. D., & Hegarty, C. (2006). *Understanding Gps : Principles and Applications* (2nd ed.). .Boston, MA: .Artech House.

If there were two different GPS satellites sending PNT signals to the GPS receiver, then the location estimation would be the two different points at the intersection of circles with radiuses R1 and R2 centered about GPS satellites as shown in figure 6.

Previous location estimation ambiguities can be solved if there are at least three GPS satellites sending PNT signals to the GPS receiver. With three known distances, a single point can be estimated as shown in figure 7.[157]
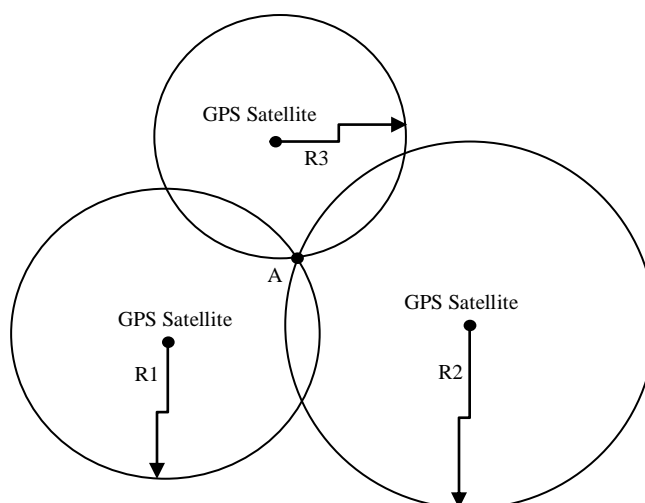
Figure 7. Location estimation with three GPS satellites

This is sufficient to make approximate positioning estimates with three GPS satellites; however, four or more are required to achieve better accuracy. There are, however, 24 satellites around the globe and at any point on the earth's surface at least four of these can be seen so that positioning can be made accurately.[158]

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[157] Ibid.

[158] NASA.gov. (2011b). How Do Global Positioning Systems, or Gps, Work? Retrieved July 5, 2011, from http://www.nasa.gov/mov/255363main_134_GPS_Work.mov

GPS Based Vehicle Tracking Systems

Basically, the GPS based vehicle tracking system (VTS) is a system that monitors the real time movements of a target vehicle on a digital map running on a computer. Snow mentions VTS as a form of "Global Positioning System equipment" that police can attach to a car by a magnet or adhesive and they can then monitor the movements of the car on a computer screen. According to Snow, this device is used to follow suspects, locate police vehicles, track stolen property, and track criminals and is used by undercover officers.[159]

VTS is composed of two units: A Vehicle Tracking Device (GPS Tracking Device) and a Monitoring Center.[160]

A Vehicle Tracking Device is attached to the target vehicle which is to be monitored by an adhesive or a magnet. It consists of a GPS Receiver Module, a data modem and a Microcontroller unit. The GPS receiver module receives the GPS PNT signals coming from GPS satellites. The Microcontroller unit gathers data from the GPS receiver module and sends position information via a data modem over the GSM/GPRS network to a Monitoring Center.

The Monitoring Center consists of a data modem, a computer and a Geographic Information System (GIS) based vehicle tracking software.

The data modem of the monitoring center obtains location information from the data modem of the vehicle tracking device over the GSM network or internet. If the

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[159] Snow, R. L. (2007). *Technology and Law Enforcement : From Gumshoe to Gamma Rays*. Westport, CT: Praeger Publishers.
[160] TNP. (2006). *Technical Department R&D Bureau Course Notes*. Ankara: IDB Teknik.

vehicle tracking device consists of a GSM data modem then a GSM data modem has to be used at the monitoring center side. However, if the GPS tracking device consists of a GPRS modem, then the location information can be sent to a specific internet IP address over the GSM network. In this case the LAN or WIFI modem of the computer can obtain access to this specific IP address over internet. [161]

A geographic information system (GIS) is defined as a system that "integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information". [162] The software that monitors the movements of the vehicle has to have a GIS module embedded in it. The GIS module is a module developed by a well-known GIS software developer firm such as MapInfo or ArcGIS so developers can build their own software according to their own interests. The GIS module in the software consists of map layers. Each map layer provides additional information to the base map. The GIS based tracking software running on the computer communicates with the vehicle tracking device, gathers location information from the target and locates the exact position of the target on the relevant map layer in real time.

In sum, on the vehicle side there is a device attached to the vehicle by an adhesive or a magnet that sends location information and at the monitoring side there is GIS based software that shows where the target vehicle is.

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[161] Ibid.

[162] GIS.com. (2011). What Is Gis? Retrieved July 5, 2011, from http://www.gis.com/content/what-gis

Global Use Of GPS Tracking Systems

The GPS tracking system is a general term that refers to the monitoring of the real time movements of targets such as vehicles, fleets, humans etc. on a digital map running on a computer. If it is purposively used for vehicle tracking, for instance, then it is called a GPS vehicle tracking system and so on.

GPS tracking systems have a wide variety of usage. They can be used in the tracking of vehicles, fleets and assets globally. Furthermore, they can also be used for the tracking of family members, persons and criminals.

GPS tracking systems are used in the transportation industry, especially in fleet tracking, "to lower the fleet usage cost and minimize the risk of theft and hijacking".[163] By the use of GPS fleet tracking systems, the central monitoring and dispatching unit of the fleet company can monitor where their vehicles are located and what their speeds are and can obtain status information about their vehicles.

Some of the advantages of GPS fleet tracking systems are described below;

- Increased Productivity
- Reduced Labor Costs , by eliminating "discrepancies between hours worked and hours claimed by drivers with powerful fleet reports"
- Control of Fuel Costs by eliminating unapproved or any extended journeys
- Improved Customer Service
- Increased Fleet Safety and Security

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[163] GpsGate. (n.d.). Gpsgate Tracking Solutions. Retrieved July 21, 2011, from http://gpsgate.com/solutions

- Reduced Operating Expenses

- Going Green

- Reduced Unauthorized Vehicle Use.[164]

The locating of any vehicle in the fleet system is independent of distance. Vehicles can be anywhere in the world but their locations, speeds, status information and etc. can be monitored by this system. GPS (global positioning system) satellites have global coverage capability for sending positioning information anywhere in the world. GSM (global system for mobile) communication networks also have global coverage and the location information received by GPS tracking device is transmitted over the global GSM network to the monitoring center as shown in figure 8.

Taxi companies too use GPS tracking systems to lower the waiting time to get their customers after they call for a taxi and to lower the idle driving time of the Taxi fleet when the Taxi fleet drives without a customer in the taxi. The main dispatcher unit can see the Taxi fleet on the map and locate the closest available vehicle for an assignment. Therefore the use of GPS tracking systems offers both cost and time saving opportunities for taxi companies.

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[164] FleetMatics. (n.d.). Why Fleet Tracking? Retrieved July 21, 2011, from http://www.fleetmatics.com/why-fleet-tracking/2
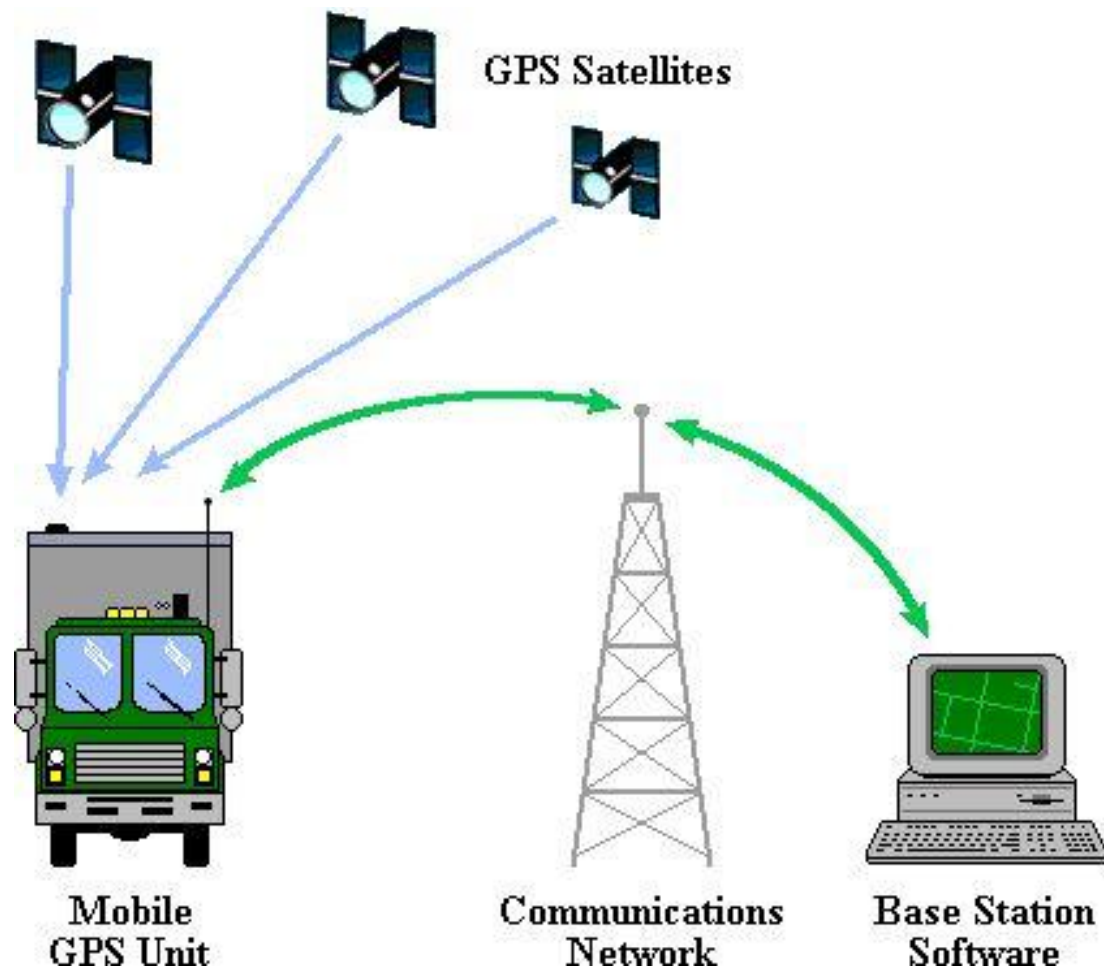
Figure 8. GPS Fleet Tracking Sytem[165]

Assets can be tracked by GPS tracking systems globally. The GPS tracking of

assets is "the most cost-effective solution available for monitoring assets from continent

to continent and across urban and remote areas".[166] If combined with extra sensors such

as tamper sensor, door contact sensor, vibration sensor and temperature sensor, GPS asset

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[165] Springer, E. (n.d.). Gps Tracking Basics of Fleet Tracking, Vehicle Tracking and Asset Tracking. Retrieved July 23, 2011, from http://www.gpstrackingcanada.com/gps-tracking-basics-of-fleet-tracking-vehicle-tracking-and-asset-tracking/

[166] LiveViewGPS. (n.d.). Worldwide Gps Satellite Tracker. Retrieved July 23, 2011, from http://www.liveviewgps.com/worldwide+gps+satellite+tracker.html

trackers can inform users whether "an intruder tries to enter a secured area, disturb a piece of protected equipment, or remove the unit from the asset"[167].

Some of the applications of GPS asset tracking can be stated as outlined below;

- "Test and Lab Equipment
- Office and School Furniture
- Computer Systems
- Tools
- Transportation Equipment
- Artwork and Displays
- Documents"[168]

GPS tracking systems are also used by utility companies in order to dispatch their vehicles more optimally. The use of GPS tracking devices in the vehicles of utility companies can increase their service levels "for selecting the most appropriate vehicle for service and repair assignments".[169]

GPS tracking systems are also used to monitor offenders on parole in the community and to apprehend them if they enter a prohibited area. In this application, the GPS tracking device is embedded in an ankle bracelet that offenders wear.[170] The use of GPS tracking systems to monitor offenders on parole is a useful tool alternative to jail and in protecting the public from offenders. Sergeant R.M. Abbott of the Pitt County Sheriff's Department said that the use of GPS tracking systems to monitor offenders on

[167] BrickHouseSecurity. (n.d.). Mobilelock Gps Asset Tracker with Anti-Theft Alarm. Retrieved July 23, 2011, from http://www.brickhousesecurity.com/mobile-alarm-gpslocator.html
[168] GigaTrak. (n.d.). Asset Tracking and Asset Management. Retrieved July 23, 2011, from http://www.gigatrak.com/software/asset_tracking_system.aspx?gclid=CIXzscCTnaoCFYne4AodC0Ubxw
[169] GpsGate. (n.d.). Gpsgate Tracking Solutions. Retrieved July 21, 2011, from http://gpsgate.com/solutions
[170] Careless, J. (2011). Gps Tracking of Sex Offenders. Retrieved July 22, 2011, from http://www.hendonpub.com/resources/articlearchive/details.aspx?ID=923

parole "saves taxpayers money in cost to incarcerate individuals and increases child support payment collections because it allows individuals to continue working and making payments rather than sitting behind bars".[171]

Figure 9. The use of GPS tracking systems in monitoring offenders on parole.[172]

Law enforcement agencies also use GPS tracking devices to monitor patrol cars. The use of GPS tracking devices in patrol cars can increase the efficiency of the arrival time of patrol cars to the crime scene. The monitoring and dispatch center can see the exact location of all patrol cars in real time and dispatch the nearest patrol cars to the crime scene.

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[171] Ibid.

[172] GPSWire. (2011). Haryana to Tag Criminals on Parole with Gps. Retrieved July 23, 2011, from http://gpswire.net/?p=1884

GPS Based Vehicle Tracking Systems As A New Tool In The Fight Against Transnational Organized Crime

As mentioned before, GPS tracking systems have a wide variety of uses in the world. With their global tracking capabilities, they are used to track cars, trucks and other transportation vehicles. Furthermore, they are used in tracking of family members, persons and criminals. Police forces can track their patrol cars by using them. Moreover, they use GPS tracking systems to track offenders on parole.

Of the many uses mentioned above, GPS tracking systems can also be used by law enforcement agencies in the fight against international organized crime. Madsen describes transnational organized crime as illicit trafficking in both illicit and licit products.[173] In this context, transportation vehicles are of high importance in illicit trafficking in both illicit and licit products. If transportation vehicles were not used in illegal trafficking, the cannabis cultivated in Afghanistan, for example, could not be transported to Europe by organized criminals.

The TNP indicates that there is a positive relationship between the number of operations and the number of confiscated vehicles in illegal drug trafficking.[174] From this perspective, it is thought that the tracking of the vehicles used by organized criminals in illegal trafficking of illicit and licit product will be or is useful.

The use of VTS in the fight against international organized crime can help police forces in several ways as indicated below;

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[173] Madsen, F. G. (2009). *Transnational Organized Crime*. London ; New York: Routledge.
[174] KOM. (2011a). The 2010 Annual Summary Report of the Anti-Smuggling and Organized Crime Department. Retrieved July 25, 2011, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2010_Raporu.pdf

- Both criminals (targets) and their illegal trafficking can be tracked by police more easily

- It can eliminate the physical tracking of criminals by police forces

- It can eliminate the target losses resulting from the physical tracking of criminals by police forces

- It can eliminate the suspicion of the targets about being followed by the police

- If the targets are sure that they are not followed by police, they can behave freely and contact with other suspects more easily who aren't known by police

- Their tracks and duration of their stopovers can be monitored by police

- Police forces can not only analyze movements and stopovers of the targets and try to find out what they are doing at any moment, but can try and identify who they contact

CONCLUSION

There has been an increase in crime types and criminals due to the globalization. In this context, IOC is "both more damaging and more evasive now than in the past".[175]

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[175] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies. pp.21

Therefore, IOC is regarded as one of the most important global security threats and it is of high importance in terms of global security.

It is evident that, in the age of globalization combating crimes and criminals activities requires the use of new deterrence methods and technologies.[176] In this respect, advances in technology present good opportunities for law enforcement agencies (LEA) to apply in their fight against crime within the nation. Thus, the study proposes that CCTV systems, modernization of patrol cars, vehicle tracking systems, advances in lawful interception and observation systems can be employed to combat crimes.

The examples provided in the study show that global satellite radio and TV services, satellite communications services and satellite imagery services have already contributed to global security in informing people about programs that promote food security, good health and peace education, in monitoring the earth's environmental condition and in responding to man-made or natural disasters. Apart from above satellite services, the study argues that VTS can also contribute to global security by contributing LEAs' fight against IOC.

In sum, the study assesses the use of new policing technologies and specifically the use of VTS in the operations of the LEAs. It accepts VTS as an important tool for combating crime and attempts to understand the impact of this new method in the fight against IOC.

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[176] Ibid.

CHAPTER 3

RESEARCH DESIGN

RESEARCH METHOD

This study is an exploratory multiple case study examining the impact of the use of new technologies and the use of VTS by the TNP in the fight against international organized crime.

The researcher considers this study to be exploratory, because there is no previous study or model that might have been considered in this area. Moreover, it is beyond the scope of the study to evaluate whether the use of new technologies and VTSs is better than the other methods used by the TNP in combating IOC. Rather, the study focused on how the use of new technologies and especially the use of VTSs by the TNP have contributed to the fight against IOC.

UNITS OF ANALYSIS

The unit of analysis of the study is the responses of the police professionals working in the Ankara, Istanbul and Van districts of the TNP.

In the Ankara district of the TNP there were two different groups who were interviewed. The first interviewee group in Ankara consisted of police professionals who had a technical background and were responsible for the establishment of new technologies for the TNP. The second interview group in Ankara and other interviewees

in Van and Istanbul district of the TNP were police officers who had participated in at least one operation in which VTSs were used to combat international organized crime.

SELECTING THE CASES

The study consisted of two different case studies. The first case study assessed the views of police professionals working in Ankara district of the TNP regarding the role of new policing technologies to combat crime. These interviewees had technical background and they were responsible for the establishment of new technologies for the TNP. The Ankara district has been selected because the Ankara unit of the TNP houses the Telecommunications Department, Information Technologies Department, Cyber Crimes Department and Intelligence Department of the organization. These departments are responsible for overseeing the new policing technologies for the TNP.

The second case study focused on the use of VTS by the TNP in the fight against international organized crime. It also aimed to clarify whether there were any differences in the use of VTS in the operations of the TNP in the Van and Istanbul districts of Turkey and what the role of the Ankara unit was in these operations. For this purpose, interviews were conducted with the police professionals working in the Division of Anti-Smuggling and Organized Crime in Van and Istanbul districts of the TNP and in the Department of Anti-Smuggling and Organized Crime in the Ankara district of the TNP. The cities of Ankara, Istanbul and Van are shown in figure 10.

Figure 10. The cities of Ankara, Istanbul and Van

The reason for the selection of the Van and Istanbul districts in the second case study is because of their importance in the TNP's drug interdictions. According to the TNP, the Van district, which is in the Eastern Anatolian region of Turkey, is one of the four entrance points for drug trafficking coming from Iran. Istanbul, on the other hand, is on the main route for drug trafficking going to Europe. Moreover, both Van and Istanbul have been reported as the two districts in which the highest amount of heroin and cannabis was seized by operations of the TNP during 2010 in Turkey.[1]

The Ankara district has been selected because the Ankara unit of the TNP houses the Department of Anti-Smuggling and Organized Crime of the organization and manages all the IOC related operations conducted in all districts of Turkey. The second case study consists of three cases. For each case, the interviewee group presented unique

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[1] KOM. (2011a). The 2010 Annual Summary Report of the Anti-Smuggling and Organized Crime Department. Retrieved July 25, 2011, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2010_Raporu.pdf

characteristics. The second case study tried to uncover differences in these characteristics among each group.

In sum, there were four different interview groups in the study.

1. Interviews conducted with police officers working in the Telecommunications Department, the Information Technologies Department and the Intelligence Department of the Ankara district of the TNP.

2. Interviews conducted with police officers working in the Department of Anti-Smuggling and Organized Crime of the Ankara district of the TNP.

3. Interviews conducted with police officers working in the Division of Anti-Smuggling and Organized Crime of the Istanbul district of the TNP.

4. Interviews conducted with police officers working in the Division of Anti-Smuggling and Organized Crime of the Van district of the TNP.

DATA COLLECTION

The study used two types of data sources. In this respect, interviews were the most important data source of the study. This qualitative data were supplemented with archival research, including analysis of annual reports, publicly available documents and official papers.

Interviews

Qualitative data were collected in semi structured interviews at the sites and by telephone using the instrument shown in Attachment 7. Before conducting interviews, interviewees were given consent statements for interview shown in Attachment 4 (see appendixes). Thus, they were informed about the researcher's identity, the purpose of the interviews, confidentiality, whether there were foreseeable risks to participation in this study. Furthermore, interviewees were asked for their permission to allow the researcher to audiotape (sound) as part of that research study in a separate consent statement form. Shank states the tape recorder is an observational device that is "drawn toward sounds and sound patterns".[2] According to him, transcripts of verbal records play an important role in qualitative research.[3] When interviewees allowed the researcher to audiotape, the interviews were recorded and later transcribed. When interviewees did not allow the researcher to audiotape, their responses were only jotted down by the researcher during interviews. The transcripts of the interviews formed the primary data source for this study.

In the present study, the police professionals working in the Ankara district of the TNP who had a technical background and were responsible for the establishment of new technologies for the TNP and the police professionals working in the Van, Istanbul and Ankara districts of Turkey who had witnessed the use of VTSs in their operations in the fight against international organized crime were interviewed. Because of the specialty of

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[2] Shank, G. D. (2006). *Qualitative Research : A Personal Skills Spproach* (2nd ed.). Upper Saddle River, N.J.: Pearson Merrill Prentice Hall. pp.25
[3] Ibid.

the subject, others who had just only superficial information about the topics were not interviewed.

Eighteen police officers currently holding supervisory positions in technological departments of the Turkish National Police (TNP) were interviewed about the use of new policing technologies in the fight against crime and how they benefited from their use.

- Four of the interviewees were from the Telecommunications Department of the TNP,

- Three were from the Information Technologies Department of the TNP,

- Six were from the Cyber Crimes Department of the TNP

- Five police professionals were from the Intelligence Department of the TNP

Furthermore, 45 people currently working in the Van, Istanbul and Ankara districts of Turkey were interviewed about the use of VTS devices in the fight against IOC and how they benefited from its use. These officers were either holding supervisory positions or working as a field officer in these districts of the TNP. Before starting interviews, officers working in these districts of the TNP were first asked whether they had ever witnessed to the use of a VTS device in an operation. When an officer replied negatively to this question, then the researcher did not start the interview. In other words, interviews were only conducted with officers who had witnessed to the use of a VTS device in an operation.

- Fifteen police professionals were from the Department of Anti-Smuggling and Organized Crime in the Ankara district of the TNP,

- Fifteen police professionals were from the Division of Anti-Smuggling and Organized Crime in Istanbul district of the TNP,

- Fifteen police professionals were from the Division of Anti-Smuggling and Organized Crime in Van district of the TNP.

In sum, 63 people were interviewed in the study as shown in below figure.

18 interviewees	45 interviewees
• The Telecommunications Department of the TNP. **(4 people)** • The Information Technologies Department of the TNP. **(3 people)** • The Cyber Crimes Department of the TNP. **(6 people)** • The Intelligence Department of the TNP **(4 people)**	• The Department of Anti-Smuggling and Organized Crime of the TNP. **(15 people)** • The Division of Anti-Smuggling and Organized Crime of the Istanbul district of the TNP. **(15 people)** • The Division of Anti-Smuggling and Organized Crime of the Van district of the TNP. **(15 people)**

Figure 11. Interviewees

Archival Research

Annual reports, publicly available documents and official papers were also used as other data source in the present study.

A statistical data regarding the use of VTSs in the operations of the TNP was used in the sixth chapter of the study. However, the researcher didn't have access to all the statistical data starting from VTSs' first day of use by the TNP in all districts in Turkey. This was because, after contacting the relevant TNP police administrators, this researcher found that no such data exists. Upon the researcher's written request to the TNP, a statistical data was prepared by the TNP accordingly. Thus, the statistical data in the study did only cover the use of VTSs by the TNP in a small scaled city and in a middle scaled city during 2010. The names of these cities were kept secret by the TNP.

Retrospective data contained in the drug reports of international and national institutions (UNODC and the TNP) and cyber crime statistics of the TNP were also used in the study. Furthermore, the US and European court reports were examined in the seventh chapter of the study to see whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe.

SAMPLING

In order to select interviewees, the sampling technique of this study was "relevance sampling" which is also called as "purposive sampling".[4] In other words only members of the relevant population were selected for this study, rather than a population representing a larger group whether or not it was relevant to the focus of the study.

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[4] Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology* (2nd ed.). Thousand Oaks, Calif.: Sage.

In relevance sampling, "an analyst proceeds by following a conceptual hierarchy, systematically lowering the number of units that need to be considered for an analysis".[5]

The criteria selecting for the interviewees were as follow:

- They had to be police professionals working in the TNP.

- They had to be working in the Van, Istanbul or Ankara districts of Turkey.

- They had to have technical background and responsible for the establishment of new technologies for the TNP or they have to have participated at least one operation to combat international organized crime in which VTS was used.

CODING

Coding "requires thinking outside the box. It means putting aside preconceived notions about what the researcher expects to find in the research and letting the data and interpretation of it guide analysis".[6]

The raw data obtained from the transcripts of the interviews, which were in the form of a series of paragraphs, and was coded by using the NVivo qualitative research software in order to put these transcripts into categories and sub topics. This coding process continued progressively.

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[5] Ibid. pp.119

[6] Corbin, J. M., & Strauss, A. L. (2008). *Basics of Qualitative Research : Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Los Angeles, Calif.: Sage Publications, Inc. pp.160

ANALYSIS

The study used the content analysis method to create an in-depth analysis of the interviews conducted with police professionals from the TNP regarding the operations in which vehicle tracking systems were used to combat international organized crime.

Krippendorff defines content analysis as a research technique "for making replicable and valid inferences from data to their context".[7] He states that data can be "works of art, images, maps, sounds, signs, symbols and even numerical records"[8]. In another definition, content analysis is regarded as a research technique "for objective, systematic, and quantitative description of the manifest content of communication".[9]

The study proposed to answer the research question and the secondary questions by analyzing these interview results. According to Krippendorff the task in content analysis is "to make inferences from data to certain aspects of their context and to justify these inferences in terms of the knowledge about the stable factors in the system of interest" so that "data become recognized as symbolic or are rendered informative about something of interest to the analyst"[10].

Zhang and Wildemuth classify the steps of content analysis as data preparing, defining of unit analysis, developing categories and coding scheme, testing coding

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[7] Krippendorff, K. (1989). *Content Analysis: An Introduction to Its Methodology* (7th ed.). Newbury Park, CA: Sage Publications.

[8] Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology* (2nd ed.). Thousand Oaks, Calif.: Sage. pp.19

[9] Berelson, B. (1952). *Content Analysis in Communication Research*. Glencoe: Free Press.

[10] Krippendorff, K. (1989). *Content Analysis: An Introduction to Its Methodology* (7th ed.). Newbury Park, CA: Sage Publications.

scheme, coding data, assessing coding consistency, drawing conclusions from the coded data and reporting methods and findings.[11]

From this perspective, first, interview records were transcribed. Second, in terms of the unit of analysis of this study, transcripts of the interview records were unitized. Third, unitized transcripts were put into categories and a coding scheme was prepared. Fourth, the coding scheme was tested with a small part of data and all data was coded according to the tested coding scheme. Later, coding consistency was assessed. Finally, the conclusion of the study was drawn in the light of the coding processes and its findings was reported in the final part of the study.[12]

USING NVIVO SOFTWARE FOR QUALITATIVE DATA ANALYSIS

Nvivo is a qualitative data analysis software that "helps people to manage, shape and make sense of unstructured information". [13] In the study, Nvivo software was used for coding, organizing and analyzing the interview data.

In the first step the raw data obtained from the transcripts of the interviews was written in Microsoft Word in the form of a series of paragraphs. In this context, four data file was generated as indicated below;

- Ankara.docx containing the responses of 15 officers from Ankara unit of the TNP,

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[11] Zhang, Y., & Wildemuth, B. M. (2009). Qualitative Analysis of Content. In B. M. Wildemuth (Ed.), *Applications of Social Research Methods to Questions in Information and Library Science* (pp. 308-319). Westport, Conn.: Libraries Unlimited.
[12] Ibid.
[13] Nvivo. (2012). What Is Qualitative Research. Retrieved June 25, 2012, from http://www.qsrinternational.com/what-is-qualitative-research.aspx

- Van.docx containing the responses of 15 officers from Van unit of the TNP,

- Istanbul.docx containing the responses of 15 officers from Istanbul unit of the TNP

- Technology.docx containing the responses of 18 officers from Telecommunication, Information Technologies, Cyber Crimes and Intelligence Departments of the TNP

These four files were later imported to NVivo qualitative research software for analysis. After reading and examining the content of these four files in NVivo software, the responses of the interviewees for each question were put into categories by generating tree nodes for the relevant questions. Furthermore, different responses of the interviewees for a certain question were coded as different sub tree nodes generated under the same tree node.

For example, the figure below taken from NVivo software shows the responses of interviewees for the question "What is your general view of the use of technology in police operations?" was coded in NVivo software.

Figure 12. An example of NVivo Coding Scheme

Actually working with NVivo to analyze the interview data was a data mining process and what was done with NVivo was a content analysis. As a first step in reading and examining the answers of the first respondent to the above question, a coding scheme was generated. Later this coding scheme was expanded according to the next respondent's answer to the same question. This coding process continued progressively. Finally, data showed these answers fell into two separate response topics: 1. The use of new technologies contributes to being successful in the fight against crimes and 2. The use of new technologies in the fight against crime is a must.

After generating sub tree nodes for each tree node in NVivo and classifying the answers under these sub tree nodes, how many of the respondents shared the same idea for each sub tree node was identified. For instance, the first topic was mentioned by six respondents and the second topic was mentioned by sixteen respondents in the context of the above example.

The above coding steps were repeated for all questions posed to the interviewees. Finally, NVivo coding results were exported to Microsoft Excel software to generate charts for each question.

VISUALIZATION AND EVALUATION OF ANALYSIS RESULTS

Visualization of any qualitative analysis is of importance for providing a clear understanding of what is found in any study. To do this in the present study, NVivo coding results were first exported to Microsoft Excel software. Then, a frequency calculation was generated for each question in order to examine how many of the respondents shared the same idea relative to the total number of respondents for the particular question. Later, appropriate graphs were generated for each question.

The figure below shows the NVivo analysis results for the question "What is your general view of the use of technology in police operations?" indicated in Figure 10 and how these were visualized. "The use of new technologies contributes to being successful in the fight against crimes" answer was provided by 6 of the respondents out of 18 (33% of the respondents). Similarly "The use of new technologies in the fight against crime is a must" answer was provided by 16 of the respondents out of 18 (88% of the respondents).

There were two types of questions asked of the respondents in the study. For the first type, respondents had the ability to provide many alternative responses. For example, if the respondents gave two different answers for the same question as in the above example, some of the respondents gave answer 1, some of them gave answer 2 or some of them mentioned both answers 1 and 2 at the same time for this question.
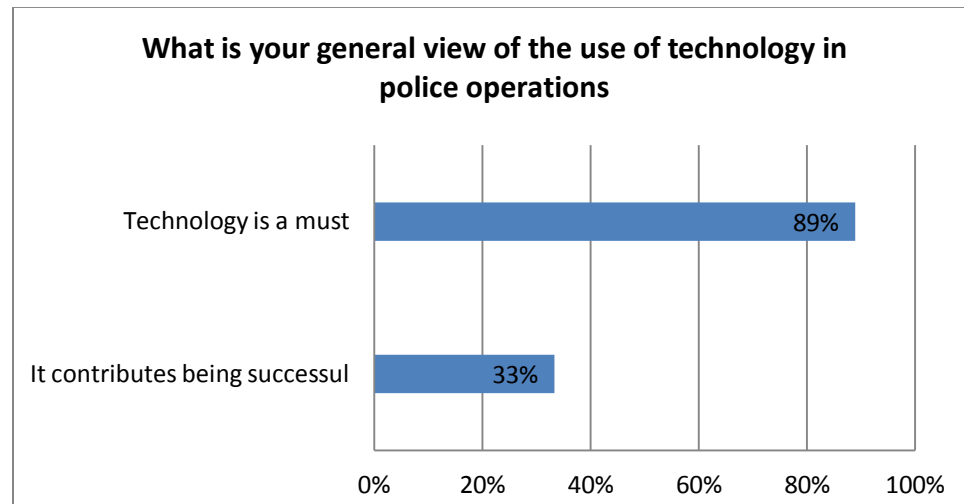
Figure 13. Bar chart visualization of NVivo analysis results

In the above example, answer 1 was mentioned by 88% of the respondents, while answer 2 was mentioned by 33% of the respondents. On the one hand, this data also means answer 1 is of high importance. On the other hand, answer 2 is also important because it was mentioned by respondents, quite frequently, but is less important than the first response. Furthermore, for this type of question the total percentage of the answers provided by the respondents exceeded 100% because some respondents provided more than one answer for the same question as shown in Figure 14.

Figure 14. NVivo analysis results before visualization

For the second type of question, interviewees had to provide only one answer for the question. For example when interviewees were asked which type of vehicles were used most to install a VTS during their operations, they were expected to give only one answer to this question. According to the given answers, it was found that four types of vehicles were involved most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs as seen in Figure 15.
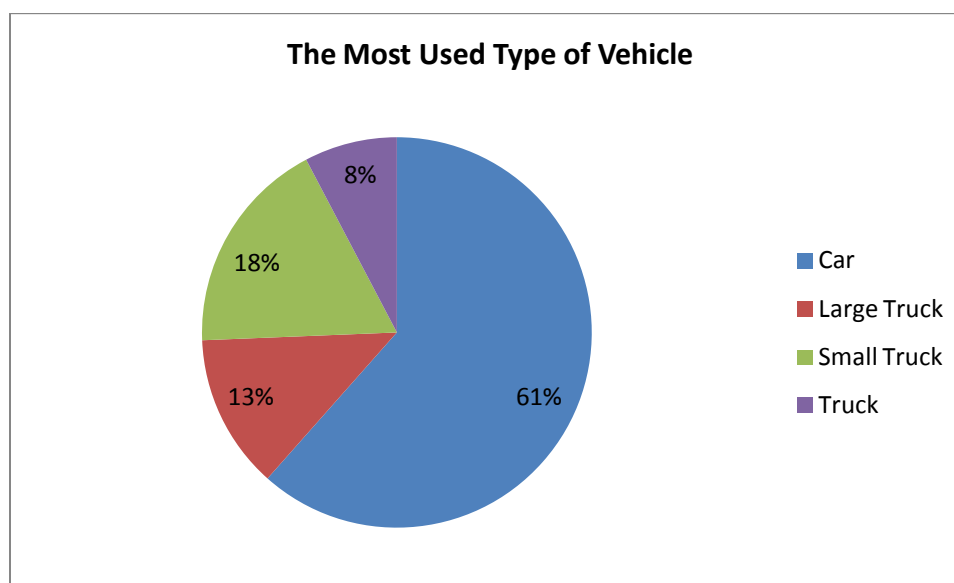
Figure 15. Pie chart visualization of NVivo analysis results

The above figure shows the NVivo analysis results for the question "Which type of vehicles were used most to install a VTS in your operations?" and how these were visualized. For these type of questions, pie charts were used instead of bar charts because the sum of the percentages was 100%.

In sum, the percentage values for each type of question show how many of respondents out of the total number of respondents gave same answer for a certain question. These results were visualized by generating either bar charts or pie charts

according to the question type. While evaluating these answers given by respondents, the results were ordered starting from the most frequently given answer to the least commonly provided answer. In other words, the answers with the highest percentages of responses were examined first, while the answers with lowest percentages were examined last in the relevant sections of the study. No answer was omitted in the study although some answers were given by only one of the respondents. In this context, the researcher aimed to touch on every aspect of the questions posed to respondents in the study.

CHAPTER 4

ANALYSES AND FINDINGS - I

This chapter examines CCTV systems, the modernization of patrol cars, vehicle tracking systems, advances in lawful interception and observation systems as examples of new policing technologies that can be employed to combat crimes.

For this purpose, 18 police officers currently working in technological departments of the Turkish National Police (TNP) were interviewed about the use of new policing technologies in the fight against crime and how they benefited from their use. Four of the interviewees were from the Telecommunications Department, three were from the Information Technologies Department, six were from the Cyber Crimes Department (which was established at the end of 2011) and five police professionals were from the Intelligence Department of the Ankara district of the TNP.

THE USE OF NEW TECHNOLOGIES BY LAW ENFORCEMENT AGENCIES IN THE FIGHT AGAINST CRIME

Interviewees were asked what their general view of the use of technology in police operations was. The answers provided were focused on two issues as shown in Figure 16.

Eighty nine percent of respondents asserted that the use of new technologies in the fight against crime is a must. In this regard, what one of respondents put forward as outlined below was commonly articulated by most respondents.

"Today, criminals and crime organizations are using the latest technological developments and they also keep up with the advances in technologies. In most of the crimes they commit criminals use the latest technological developments. Therefore, the use of new technologies in the fight against crimes and criminals is not a need, but a necessity"

What is your general view of the use of technology in police operations

Technology is a must	89%
It contributes being successul	33%

0%   20%   40%   60%   80%   100%
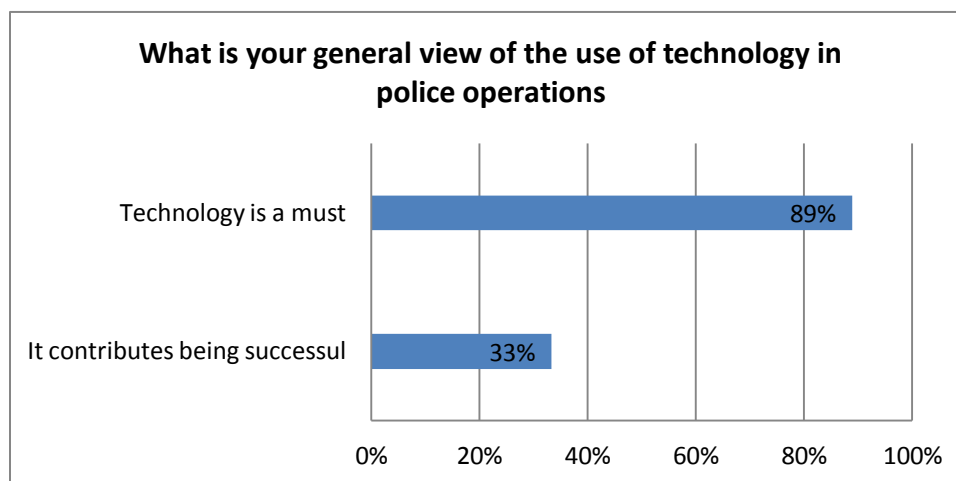
Figure 16. General Views of the Use of Technology in Police Operations

Moreover, 33% of respondents also emphasized that the use of new technologies contributes to being successful in the fight against crimes. As one respondent indicated below,

"Police must certainly use new technologies in the fight against crime. Their use helps police react faster and provides more success by enlightening the issues."

Interviewees were also asked why they use new technologies in the fight against crimes as shown in Figure 17.

The Reasons of the Use of New Policing Technologies

Police can better fight against new crime types — 44%

Personnel, money and time saving — 17%

Easier detection of crime — 33%

Police have to be one step ahead of criminals — 83%

(0% 20% 40% 60% 80% 100%)
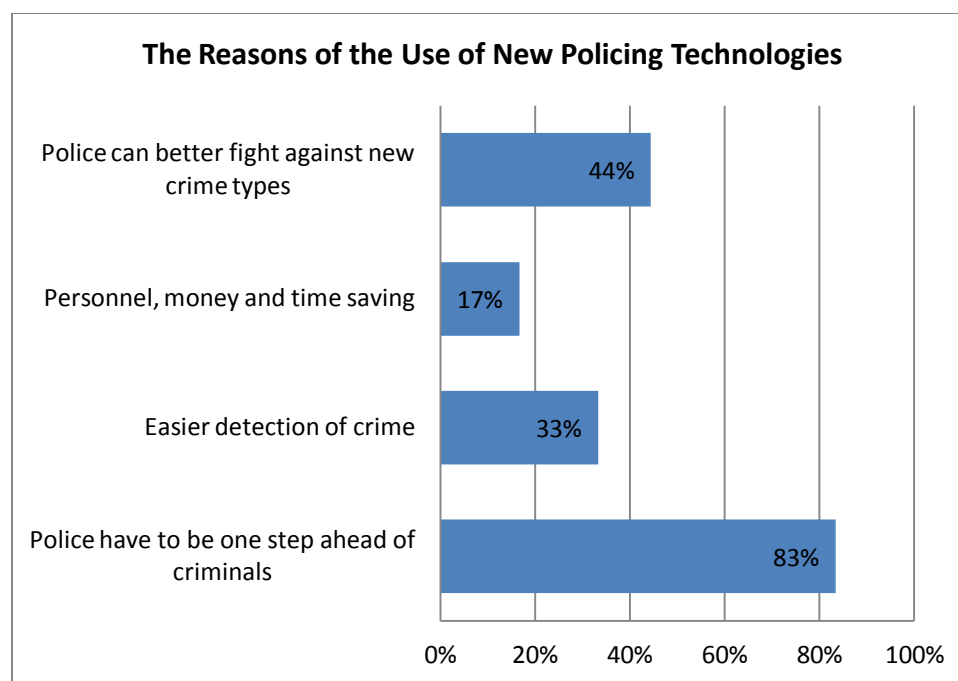
Figure 17. The Reasons of the Use of New Policing Technologies

According to the vast majority of respondents (83% of them), criminals keep up with new technologies and, therefore, police have to be one step ahead of criminals. In this context, the use of new technologies to deter criminals is of utmost importance for law enforcement agencies in the fight against crime. Similarly, one police professionals said that;

> "Criminals do their best in order not to be caught by police and for this purpose they always try to improve the methods they used. In this respect, they have greatly benefited from the use of new technologies in the context of their illegal businesses. Therefore, police have to improve in order to better fight against crime. Using old technologies, following or catching criminals becomes impossible. For example, while criminals were talking about everything in telephone conversations 10 years ago, today even normal citizens can't talk in much detail in their telephone conversations."

Forty four percent of respondents indicated that the use of new technologies can help police to fight against new crime types more successfully. According to one respondent,

> "By using technology, police can react faster. Technology can also enlighten the police more successfully about the details of certain crime cases and can help in the detection of criminals by the police. Moreover, the use of technology is a must for solving some crime types that have emerged along with advances in technology. Therefore, police forces have to be one step ahead of criminals in using and applying new technologies."

Thirty three percent of respondents emphasized the importance of the use of new technologies in making the detection of crimes easier and 17% of respondents mentioned the time, money and personnel saving properties of technology as another reason for the use of new technologies in their fight against crime.

THE CONTRIBUTIONS OF THE USE OF CCTV SYSTEMS IN THE FIGHT AGAINST CRIME

In the present study, interviewees were asked how the CCTV systems they were using contributed to their fight against crime. Their responses were coded as shown in Figure 18.

All of the police professionals interviewed responded that they benefited from the use of CCTV systems in both the detection and seizure of suspects or criminals. According to one respondent;

> "It is very hard for criminals to act without being caught by CCTV systems in a city surrounded by these systems. In numerous cases where

there was no evidence, police have been enlightened by technology and have solved crime challenging cases due to the analyses obtained from these systems."

Another respondent touched on the interesting issue below after mentioning how the use of CCTV systems is important in the detection and seizure of criminals.

"In some cases, video clips obtained from a CCTV system that belongs not to us [police] but to a jeweler, market or any other kind of private company made news on television. If the citizens watching the news know the suspects or criminals, they call the police and inform them about what they know about the suspect or criminals. In some cases, police identify suspects or criminals by having police specialists who are very knowledgeable about the criminals in the region watch the video clips taken from our CCTV systems or those that belong to private companies. By integrating video analysis tools and face recognition systems with CCTV systems, police can also increase the detection rate of suspects or criminals."

Sixty seven percent of respondents argued that the use of CCTV systems by the police deters criminals from committing a crime in the vicinity of CCTV cameras because of the feeling that they are being watched by police. As one of respondents indicated below, the increased risk of being caught by police deters them to commit a crime.

"In the cities where CCTV systems are effectively used by police, the possibility of criminals being caught increases and, therefore, it is a deterrent for the criminals who aim to commit a crime"

The Contributions of the Use of CCTV Systems

Category	Percentage
It helps detect suspects-criiminals	100%
It helps seize suspects-criminals	100%
Deterrence	67%
It prevents personnel loss in some points	17%
It helps after crime investigations	50%
It helps enlighten cases	61%
It changes crime location	39%
Police patrols can be dispatched more efficiently	17%
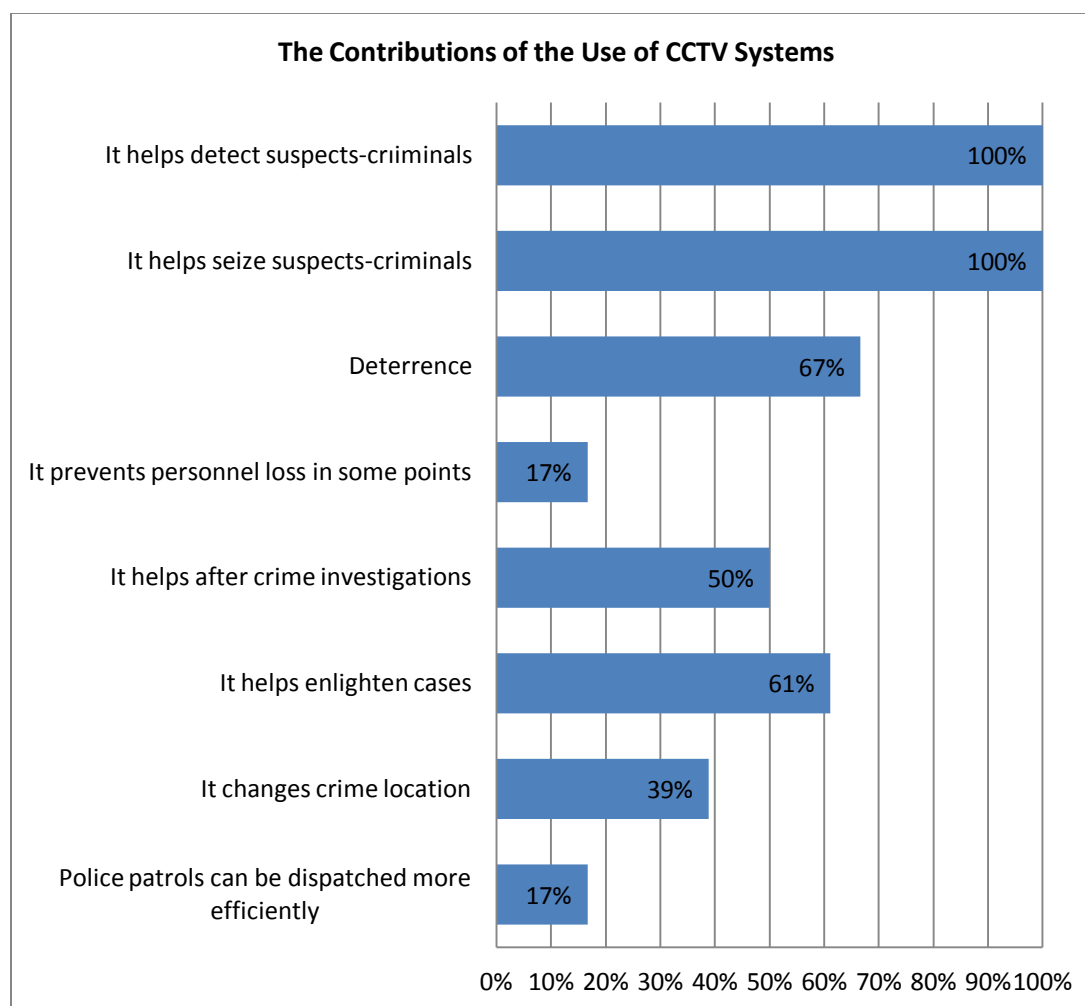
Figure 18. The Contributions of the Use of CCTV Systems in the Fight Against Crime

Sixty one percent of respondents said that the use of CCTV systems helps enlighten police about selected cases. In the same vein, 50% of respondents mentioned that they benefited from use of CCTV systems after crime investigations. According to one respondent;

"CCTV systems are very useful in enlightening police about the cases in question. After a crime investigation, they help police obtain evidence against the cases."

As another respondent indicated below, after crime investigations, police officers are more able to identify suspects or criminals or they can obtain information about their moving directions.

"After a crime was committed, the use of CCTV systems helps police identify criminals, because they can detect in which direction they have fled etc. These systems should also be strengthened by face recognition or plate recognition technologies."

Seventeen percent of respondents mentioned that police can eliminate some personnel losses in certain places due to the use of CCTV systems in that region. One of respondents explained that;

"On some occasions, in order to maintain security police can use CCTV systems rather than deploy some of its personnel. Thus, by doing this police forces can use their personnel more efficiently."

Thirty nine percent of respondents argued that the use of CCTV systems can direct crime to other locations in which these systems are not used. According to what was said above, the use of CCTV systems increased the risk of being caught by police because they deter criminals from committing a crime. In this context, they can move to other places to commit crimes where they feel that they are not being followed by police. Moreover, 17% of respondents claimed that police patrols can be dispatched to the crime scene more efficiently.

THE CONTRIBUTIONS OF THE USE OF MODERNIZED PATROL CARS IN THE FIGHT AGAINST CRIME

In the present study it was also the purpose to try to find out how the use of modernized police patrol cars contributes to the fight against crime. For this purpose, police professionals were asked how they benefited from the use of modernized police patrol cars in their fight against crime. The answers provided by the respondents were coded as shown in Figure 19.

All respondents emphasized that they benefited from the use of modernized police cars in both the context of detection as well as the seizure of suspects or criminals.

According to one respondent;

"Using these modernized cars, the suspects observed by police officers in the vicinity of the cars can be queried by using tablet pcs in the cars, and thus the IDs of these suspects can be identified and whether they have committed any crime before can be detected."

For another respondent;

"The use of modernized cars helps police to detect suspects and criminals. For example, if the photos of suspects wanted are sent to the tablet pcs installed in these cars over a GSM network by 3G or GPRS data transmission. The police officers who see the pictures in the cars can detect the suspects. Furthermore, due to the use of integrated plate recognition systems, the plates of other cars in the vicinity of modernized patrol cars can be detected automatically and the system informs police about the suspects or any wanted criminals"

The Contributions of the Use of Modernized Patrol Cars

Category	Percentage
Personnel, time and money saving	17%
Eaiser information collection about suspects	33%
Faster information sharing from the crime scene	44%
More efficient dispatching of patrols to the crime scene	100%
It helps seize suspects-criminals	100%
It helps to detect suspects-crıiminals	100%
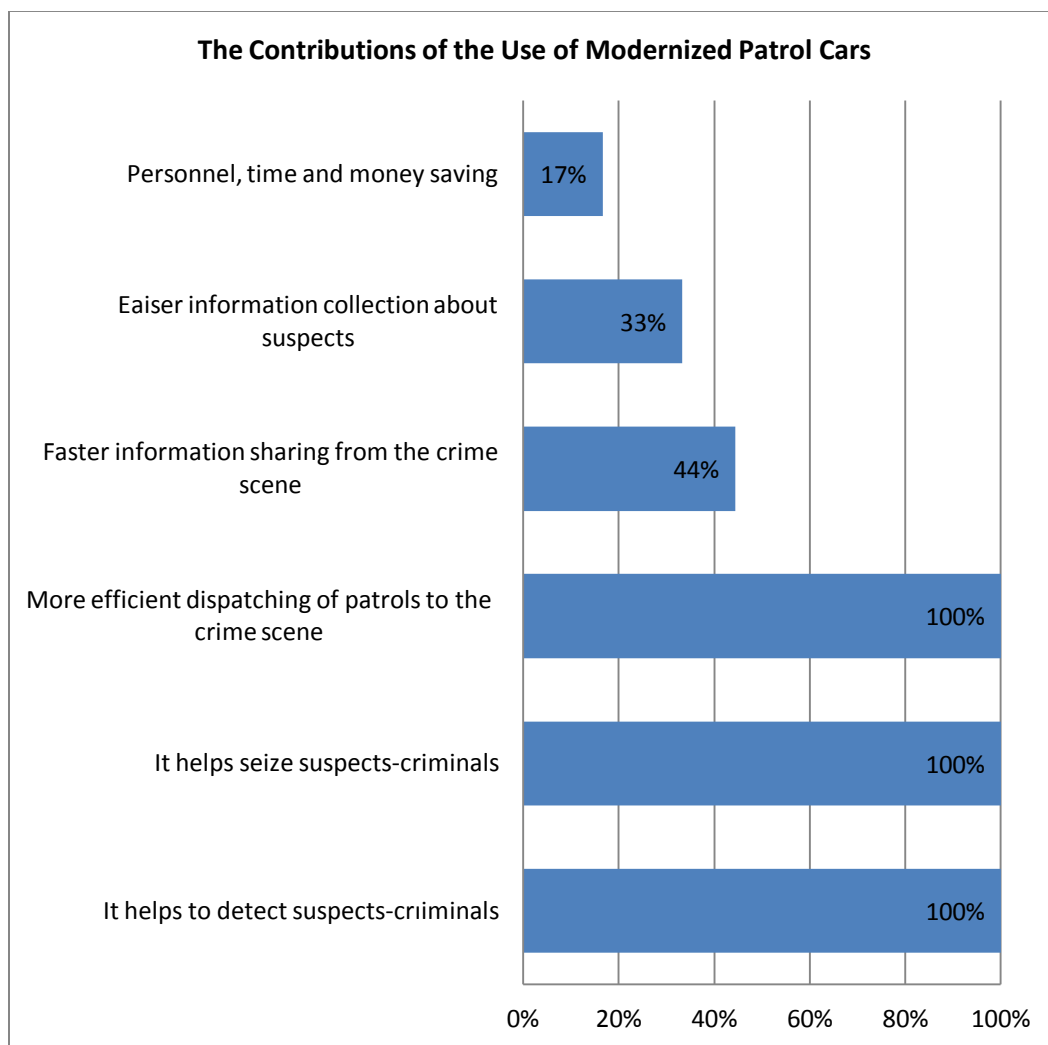
Figure 19. The Contributions of the Use of Modernized Patrol Cars in the Fight Against Crime

In addition to what was said above, 44% of respondents indicated that the information obtained from the crime scene can be transferred to the command center and to other patrol cars faster and with more detail when using technology. Thus, other police patrols can also be informed by the command center. As one respondent said that "the photos of suspects taken by police officers can be sent to the command center and these photos can be used to identify the persons that police have warrants of arrests for."

Thirty three percent of respondents said that police officers can obtain information about the suspects or criminals in the vicinity more easily. Thanks to the tablet computer and two way wireless data transmission unit in the cars, police officers can query the suspects by using secure application servers that belong to the police and can do this over the GSM wireless network.

Furthermore, all of respondents argued that due to the vehicle tracking system installed in these cars, the command center can dispatch police patrol cars more efficiently. According to one respondent, as indicated below, due to the use of vehicle tracking systems in the cars, the command center is able to see the whereabouts of all patrols cars.

"Because the command center can view the exact locations of all patrol cars on the map and knows the location of crime scene, it can detect patrol cars should be sent to the scene and this makes the operation more efficient"

If there is any need to dispatch one of the police patrols to a certain address, the command center detects the nearest car to the address and dispatches this police team accordingly. In this respect, police patrols can be dispatched more efficiently than those applied according to conventional methods.

Seventeen percent of respondents mentioned that in addition to the above benefits of the use of modernized cars by police, the use of these cars can provide a personnel, time and money saving solution for police. As was mentioned before, the dispatching of modernized cars to the crime scene can be done more efficiently because the command

center can view the nearest vehicle to the crime scene. Moreover, due to use of technological equipment in these cars, as respondents indicated, "more work can be done with less personnel". In this respect, this usage presents a personnel, time and money saving solution for police forces.

THE CONTRIBUTIONS OF COMPUTER FORENSICS IN THE FIGHT AGAINST CRIME

Interviewees were concentrated on two issues about the use of computer forensics in the fight against crime as shown in Figure 20. First, all of respondents argued that the use of computer forensics is a must in the fight against cyber crimes. Second, most emphasized that by obtaining extra evidence from all kinds of electronic devices used by criminals the usage of computer forensics in one area can contribute to the fight against crimes in another.
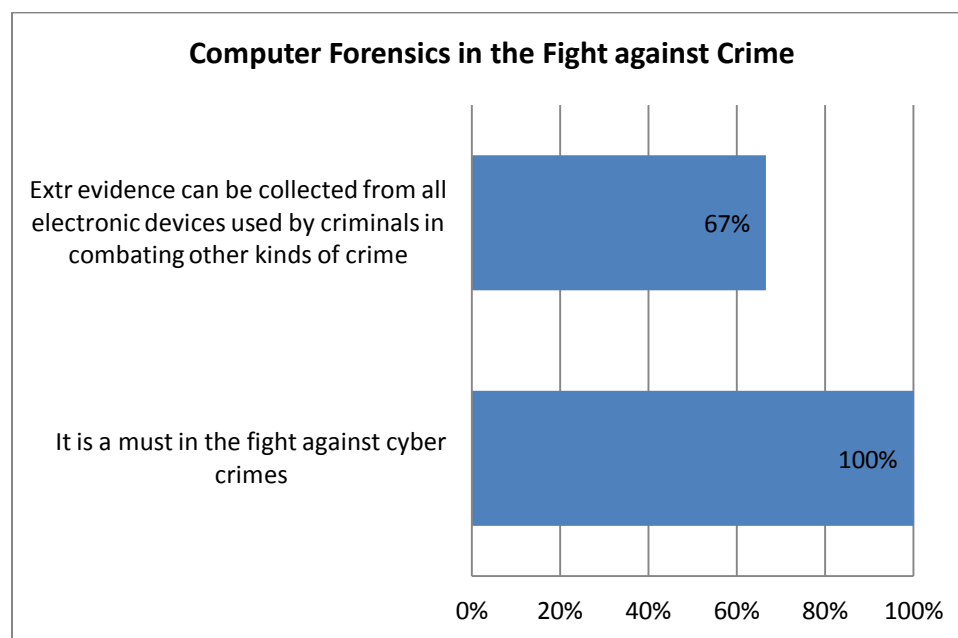
Figure 20. Computer Forensics in the Fight against Crime

One of respondents indicated the importance of computer forensics as follows;

> "Digital evidence provides an important key in enlightening many crime types. Computer forensics is an essential method in the process of interpreting digital evidence and there is no an alternative to the use of computer forensics in the fight against cyber crimes."

As one of respondents explained below, smart phones, laptops, USB memories, digital cameras, Ipads or Kindles are parts of everybody's daily life today. By computer forensics, police officers can obtain crucial evidence from these devices that criminals use.

"Because a considerable part of evidence is often stored in these digital media, evidence collection and examination by using computer forensics and related storage media are of high importance in proving criminal guilt."

Interviewees were also asked international aspect of cyber crimes as shown in Figure 21. 67% of respondents said that they had witnessed a cyber crime case which was committed abroad, but the victim was in Turkey. 56% of respondents indicated that they had witnessed a cyber crime case was committed in Turkey, but the victim was abroad. Furthermore, 44% of respondents indicated that they had witnessed a joint operation of the TNP and a foreign LEA or LEAs who had tracked and seized cyber criminals.

International Aspect of Cyber Crimes

The respondents witnessed a joint operation of the TNP and a foreign LEA or LEAs to track and seize cyber criminals — 44%

The respondents witnessed to a cybercrime commited in Turkey but victim was in abroad — 56%

The respondents witnessed to a cybercrime commited in abroad but victim was in Turkey — 67%
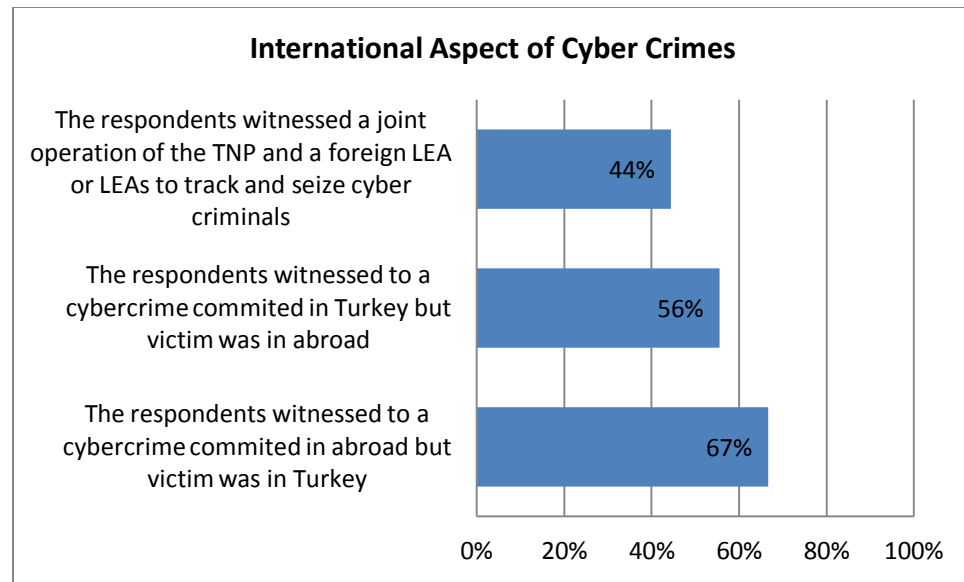
Figure 21, International Aspect of Cyber Crimes

It is generally accepted that committing a cyber crime without any connection in the foreign country is not easy, because hackers all over the world need cooperation. They have a virtual society in which they help and support each other and without any strong reference any other person cannot enter their societies. Thus, it is a challenge for the law enforcement agencies to fight against these crimes.

For example, let us think of a web site broadcasting from Germany. Over this website, the criminal causes damage to his victim who has entered to this website. In this scenario, both criminal and his victim can live in the same apartment in Ankara in Turkey, for example. But, without getting the essential information such as the IP numbers of this website and etc. from Germany, it is not possible to detect the criminal. In this respect, the cooperation between LEAs is of high importance.

Interviewees used Operation Zotob of the TNP as an example of international operational cooperation in the fight against cyber crimes. In this operation, one of the three hackers who created and distributed the "Zotob" computer worm, Atilla Ekici, a 21-year old resident of Turkey, was arrested in Turkey. The other hackers, Farid Essebar and Achraf Bahloul, were also arrested in Morocco.

The Zotob worm created and distributed by these three hackers affected many websites such as CNN International, the New York Times and ABC in 110 different countries. Microsoft Corporation gave the needed information to FBI and the FBI shared this information with Turkish and Moroccan Police. The FBI described this operation as follows: "With the help of Moroccan authorities, the Ministry of Interior Turkish National Police, and valuable assistance from Microsoft Corporation, three individuals were arrested on August 25, 2005, just 12 days after the worm was released".[1]

Operation Chao was exemplified by the respondents as another example of international operational police cooperation in the fight against cyber crimes. In Operation Chao in 2008, the TNP cooperated with the American Federal Bureau of Investigation (FBI) because of the overseas connections and actions of a criminal organization in preparing fake ATM mechanisms and modified POS terminals.

In this operation, it was found that the leader of the organization was a Turkish citizen, known as Chao, and he was responsible for more than one cyber crime activities. As an administrator of the server system named Darkmarket, he was sharing bank and

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[1] FBI. (2010). Fbi Announces Two Arrests in Mytom and Zotob Computer Worm Investigation. Retrieved May 15, 2012, from http://www.fbi.gov/news/pressrel/press-releases/fbi-announces-two-arrests-in-mytob-and-zotob-computer-worm-investigation

credit card information of victims acquired illegally via these servers. TNP founded that "the leader of the organization was a well known person among credit card fraudsters and he provided escrow in changing the stolen property and amount and he got a commission in return"[2].

Criminal organizations have some equipment they can use to copy credit card information and to make ATM cards and carry out fraud and also this group was sending these devices illegally to many places around the world. The leader of this criminal group, Chao, was traced by the FBI and Interpol. Turkish police captured Çağatay Evyapan, known as Chao, at his luxury villa in Istanbul. When he was captured, he said "If I hadn't been caught, I would have stolen $4 billion from US banks". He was charged with copying the credit cards of bank clients and emptying their accounts, a fraud amounting to $500 million over a period of five years.[3] This year National Computer Forensics and Training Alliance (NCFTA) awarded one personnel working in the Division of Cyber Crimes and Information Systems of the KOM Department with 2008 Cyber Crime Fighter Award because of his effort in Chao operation[4].

The attack of a hacker activist group named Anonymous in 2011 of the government web sites of Turkey was provided as a specific example of a cyber crime which was committed abroad, but the victim was located in Turkey. The anonymous group called this attack "Operation Turkey|" and they announced on the attack on their

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[2] KOM. (2009). Turkish Report on Drugs and Organized Crime 2008. Retrieved May 15, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2008_Ingilizce.zip. pp.79-85
[3] Today'sZaman. (2008). Four-Month Investigation Nets Fbi-Evader Chao. Retrieved May 15, 2012, from http://www.todayszaman.com/tz-web/detaylar.do?load=detay&link=153030&bolum=101
[4] KOM. (2009). Turkish Report on Drugs and Organized Crime 2008. Retrieved May 15, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2008_Ingilizce.zip. pp.79-85

website before stating they would attack some government websites of Turkey on August 22, 2011, because of the establishment of a new internet filtering system by the Turkish government at that time. Due to the preparation made by a special team composed of different government officers, this attack was kept under control. Because the anonymous group could not achieve its goal, it had to stop these DDOS (denial of service) attacks two hour later. However, during these two hours some of the government web sites experienced online access problems.

Operation Virtual Earthquake was used by respondents as an example of a cyber crime which was committed in Turkey, but the victim was abroad. In the operation, the TNP identified a criminal organization engaged in international credit card fraud in 2008. This criminal organization was communicating over Real Unix IRC servers with each other and these servers were broadcasting from many different countries such as the United Kingdom, Israel and the United States of America. The TNP detected the authorized person in the server nicknamed as TRaVma was the leader of this criminal organization. After a lot of simultaneous operations in different cities of Turkey, the TNP arrested 29 people and captured "lots of hard disks, credit cards with empty and loaded magnetic bands, an encoder device (used to copy bank and credit cards), a title deed and significant amount of cash".[5]

In the operation named Virtual Trap, the TNP identified a criminal organization whose members consisted from Turkish, British and Greek citizens engaged in international credit card fraud in 2008. Turkish Police detected that

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[5] Ibid. pp.79-85

"the organization was established by people in the United Kingdom with the aim of copying credit cards of victims in order to gain unlawful profit and they were looking for an office in Adana [which is a city in Turkey] to install devices to copy the credit card information belonging to victims".[6]

In this operation thirteen people were apprehended in Istanbul while they were using fraud credit cards. Furthermore, one thousand skimmed credit cards and other forms of equipment for copying credit cards were seized.

Lastly, the barriers in the fight against cyber crimes were examined. The responses of interviewees were coded as shown in Figure 22. According to 67% of respondents, the most important problem is the presence of poorly qualified persons who are expected to fight against cyber crimes. Because in cyber crimes LEA officers are interested in obtaining digital evidence by using computer forensics methods, the police have to be highly skilled because computer forensics, by its very nature, requires one to have detailed information in IT and especially specialization in that area. Otherwise, LEA officers can harm digital evidence or they may fail to obtain digital evidence and therefore one may unable to detect the crime. In the same vein, 28% of respondents emphasized the fact that the detection of crime and evidence collection in this realm are harder to uncover than conventional crimes. As one respondent indicated:

"Cyber crimes are transnational crimes. In this context, criminals and their victims can be in different countries. In that case, detecting or finding the criminals can be very challenging for LEA officers."

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[6] Ibid.. pp.79-85

The Barriers in the Fight against Cyber Crimes
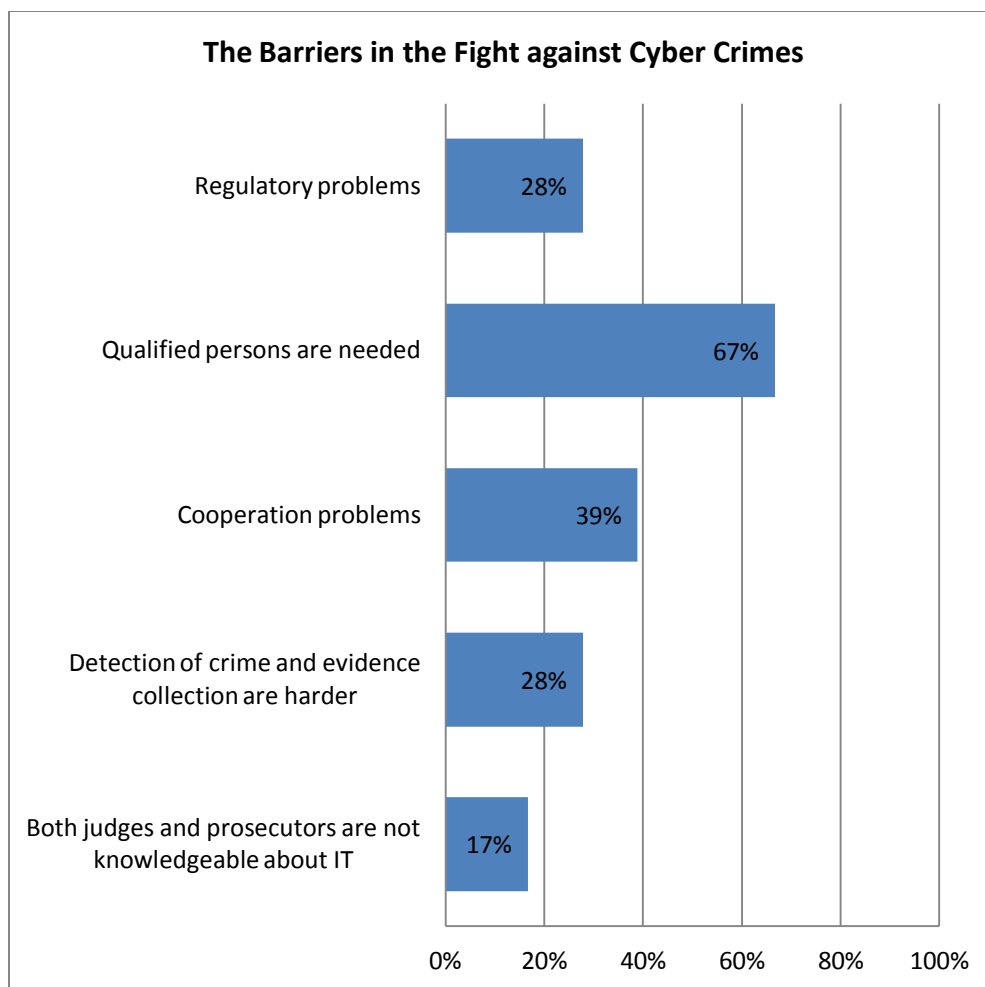
Figure 22. The Barriers in the Fight against Cyber Crimes

Twenty eight percent of respondents indicated that the problems in international operational cooperation between LEAs are also important in the fight against cyber criminals. As was previously indicated, in order to find cyber criminals in cyberspace, LEA officers have to access essential information such as IP addresses that their counterparts in foreign countries can provide. Because of the bureaucracy in judicial cooperation between countries, in some cases essential information cannot be delivered to

the recipient country on time. For example, as one of respondents indicated, sometimes it takes more than 6 months for a document regarding the request for information of an IP address to arrive into the hands of the authorities. However, in the fight against cyber criminals information is time sensitive, and therefore the LEAs have to access this kind of crucial information on time in order to detect these crimes or criminals.

If there is no police cooperation between countries, this too can harm the operation of LEAs on each side and criminals arrested will not be charged with some of the crimes they are responsible for. As some of respondents stated, a criminal nicknamed "Sabo" was followed by both the TNP and the FBI, but there was less than good cooperation between the agents of these two organizations. The criminal was arrested by the TNP with its own methods and without getting the help of the FBI. This operation could have ended earlier if these two agencies had cooperated more ably. In the end, the criminal was sentenced for the crimes he committed in Turkey, but not for the crimes he committed in the US.

Twenty eight percent of respondents said that there are some regulatory problems that negatively affect LEA officers' fight against cyber crimes. As one of the respondent indicated below;

"Legal infrastructures or legislative amendments may not be sufficient in the cyber crimes area. Legislative amendments are not able to keep up with the same pace of technology. In this context, there are legal gaps in the fight against cyber crimes"

Furthermore, as 17% of respondents indicated, both judges and prosecutors may not be knowledgeable about IT, and especially about computer forensics. In that case, police officers have problems in the fight against cyber crimes. Because, no matter how qualified police officers are, and are needed in the fight against these crimes, this also applies to the judicial side of the system who need to be involved in any effective fight against cyber crimes.

THE CONTRIBUTIONS OF LAWFUL INTERCEPTION IN THE FIGHT AGAINST CRIME

The present interviewees indicated how the police benefited from the use of lawful interception in many ways as shown in Figure 23. The vast majority of respondents emphasized its contribution in obtaining evidence more easily in the fight against crimes. By lawful interception of telephone calls, email trafficking or even peer to peer chatting law enforcement agencies can obtain much crucial evidence easily for their investigations.

Similarly, lawful interception was identified by 61% of respondents as the easier way for intelligence gathering by LEAs. Intelligence departments of LEAs can obtain crucial information from possible suspects by lawful interception methods. In this context, as 22% of respondents pointed out, LEAs can prevent possible suspects or criminals before they commit a crime based on the intelligence they obtain through lawful interception. One of respondents pointed out the importance of lawful interception as below;

"In the fight against crime both in terms of preventive and judicial purposes and in detection and deciphering of criminal organizations, lawful interception is a must"

The Contributions of Lawful Interception

- The relationship between criminals can be detected — 50%
- It is the most important tool in the fight against crime — 44%
- Eaiser intelligence gathering — 61%
- Eaiser evidence collection — 72%
- Crime prevention — 22%

(Scale: 0% 10% 20% 30% 40% 50% 60% 70% 80%)
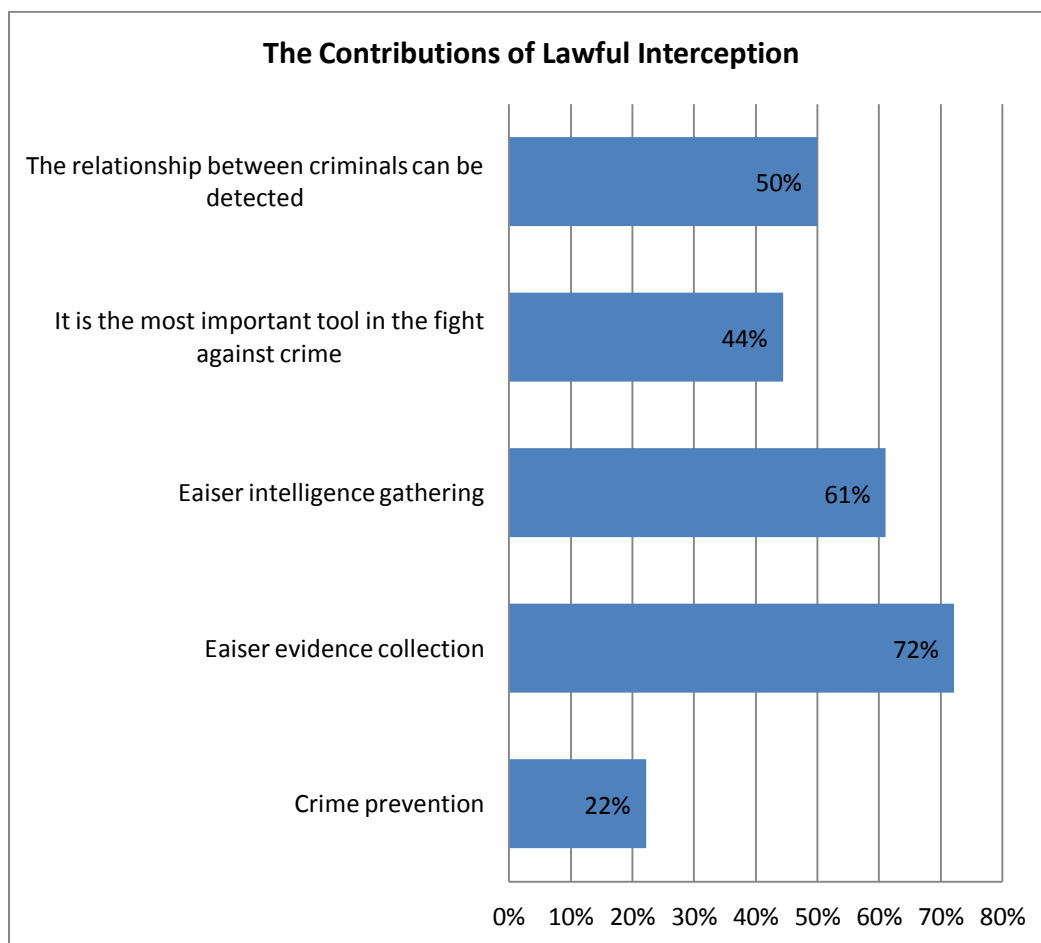
Figure 23. The Contributions of Lawful Interception in the Fight Against Crime

Fifty percent of respondents mentioned the importance of lawful interception as a key method in establishing relationships between suspects or criminals. As one respondent said "lawful interception contributes one hundred percent to the detection of the relationships between suspects or criminals". Because every communication is made up of least two persons, lawful interception provides LEA officers with a means of

detecting with whom suspects or criminals communicated about their illegal plans. In this respect, "state of art" analytic tools combined with lawful interception systems are used by LEA officers in detecting the relationships between criminals.

Based on its importance in the fight against crimes, 44% of respondents argued that lawful interception is the most important method in the fight against crime. According to the respondents, lawful interception is an irrevocable tool because they can easily obtain crucial evidence for their investigations. Apart from what was mentioned before, 11% of respondents indicated that the evidence obtained by lawful interception proves criminal guilt in many cases.

THE CONTRIBUTIONS OF OBSERVATION SYSTEMS IN THE FIGHT

AGAINST CRIME

The vast majority of respondents argued that the use of observation systems is very important in evidence collection as shown in Figure 24. Furthermore, 28% of respondents said the use of observation systems is very useful in the fight against organized criminals.

According to one respondent;

"Criminals can behave more freely when they feel they are safe. In this respect, audio and video surveillance of criminals where they feel they are safe can result in crucial concrete evidence for LEA officers."

Furthermore, one of respondents indicated as below that;

"Using observation systems LEA officers can learn about undetected crimes. Recorded data obtained by these systems is concrete evidence which is very important in the fight against crime."
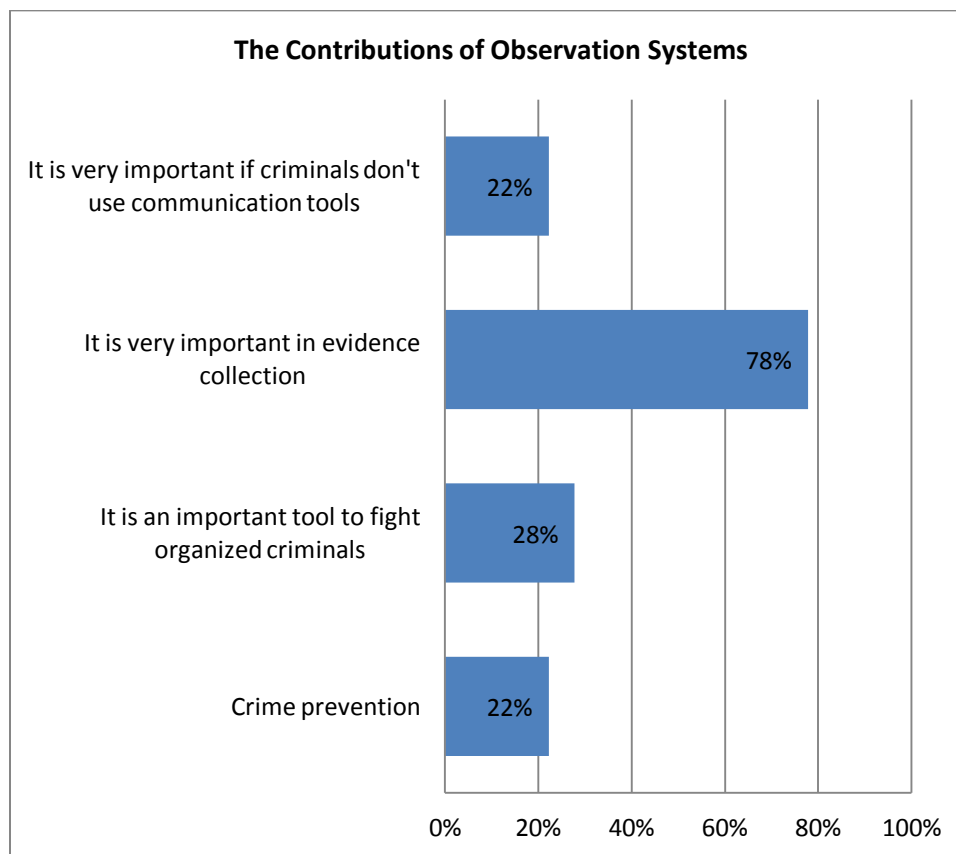
Figure 24. The Contributions of Observation Systems in the Fight Against Crime

As 22% of respondents pointed out, observation systems were indicated as a secondary solution for LEAs. According to one of respondents;

"Observation systems are of high important in the fight against crimes, especially when other methods applied by police are not sufficient for solving the investigation."

In other words, interviewees indicated that LEA officers used observation systems if they were not able to obtain enough evidence from lawful interception for their investigations. As one respondent indicated below:

"Criminals generally don't use their cell phones because they think that they are being followed by police. In that case police have to use observation systems to fight against these criminals."

Twenty two percent of respondents pointed out that LEAs can prevent possible suspects or criminals before they commit a crime based on the intelligence they obtained by observations systems. As one respondent indicated below;

"Observation systems help LEA officers obtain intelligence about suspect and criminals and, therefore, crimes can be prevented before they are committed."

Another respondent gave an operation example of how police prevented a probable action of criminals due to the use of observation systems as below;

> "Using high zoom capable cameras LEA officers can keep suspects or criminals under control and keep them under surveillance for long durations and even for months. In an operation a criminal was monitored for fifteen days. During this time, police detected who came to and went from his house. A day police saw the criminal went from his house and came back later with a bag which appeared to be very heavy. Suspecting this bag could contain explosives, police entered the house and seized the criminal with 13 kg plastic explosive. In the operation, police also detected some other members of this criminal organization, more importantly it prevented a probable bombing action planned by these criminals."

FINDINGS OF THE CHAPTER

In the present study, all of the interviewees emphasized the importance of the use of new technologies in their fight against crime. The use of technology was regarded by them as not only a need but a must. Because criminals are good at following new technologies and applying these new methods into their illegal businesses, police have to be one step ahead of them. Furthermore, the use of new technologies not only contributes to their fight against crime but it is also a personnel, time and money saving solution for police.

The study found that police have been benefiting from the use of CCTV systems in both detection and seizure of suspects or criminals. The use of CCTV systems helps police enlighten cases and especially after crime investigations, police can identify suspects or criminals or detect in which direction they have moved. As some respondents indicated, these systems should be strengthened by integrating video analysis tools, face recognition systems and plate recognition systems. Thus, the efficiency of these systems will be greatly increased.

It was also found that, on the one hand that the use of CCTV systems by police deters criminals from committing a crime in the vicinity of CCTV cameras because of the feeling that they are being watched by police. On the other hand, the deterrence property of CCTV systems can also direct crimes to other places where these systems are not used. Furthermore, the use of CCTV can provide a personnel-related saving method for police.

The study also found that police have been benefiting from the use of modernized patrol cars in both their application for detection and seizure of suspects or criminals.

Due to the use of vehicle tracking system in the cars, the dispatching of police patrols to the crime scene or a certain address can become very efficient especially from the point of police patrol's reaching the crime scene in a timely way. Moreover, thanks to two way data communication systems, cameras and tablet computers installed in the cars, two-way information sharing is becoming very effective, fast and simple. Furthermore, the use of CCTV cameras can be yield personnel, time and money saving benefits for police.

In the present study the importance of computer forensics in the fight against cyber crimes was pointed out. It was also found that police forces have been benefiting from computer forensics in their fight against other kinds of crime by obtaining extra evidence from all kinds of electronic devices used by criminals.

The study also evaluated the transnational aspect of cyber crimes based on international operational police cooperation examples and found that cooperation between police forces is of utmost importance in the fight against cyber crimes.

Although cooperation between police forces is of utmost importance in the fight against cyber crimes, it was found that some cases were not solved due to cooperation problems. For example, because of the bureaucracy involved in carrying out judicial cooperation between countries, in some cases essential information cannot be delivered to the recipient country on time. However, in the fight against cyber criminals information is time sensitive, and therefore the LEA may need this kind of crucial information at a specific time in order to be able to detect a crime or criminals. Moreover, as was exemplified in an operation of the TNP and FBI for the detection and seizure of a

criminal nicknamed as "Sabo", the two LEAs did not cooperate and, therefore, the criminal was arrested too late and was sentenced only for the crimes he committed in Turkey, but not for the crimes he committed in the US.

The inadequacy of qualified persons was reported to be one of the most important problems in the fight against cyber crimes. The hardships involved in collecting evidence was mentioned as another barrier in the fight against cyber crimes. Because the main focus is digital evidence in the fight against cyber crimes, inexperienced LEA officers can harm digital evidence in advertently or may not be able to obtain digital evidence and therefore may be unable to detect the crime. It was also pointed out that because of the existence of legal gaps and uninformed judges and prosecutors, the LEA officers' fight against cyber crimes can be more difficult than anticipated in some cases.

The study results also showed that evidence can be obtained more easily or intelligence departments of LEAs can obtain crucial information more easily due to the use of lawful interception of telephone calls, email trafficking or even peer to peer chatting in the fight against crime. In this context, due to the use of lawful interception crimes can be prevented before they are committed, because what suspects or criminals' plan can be learned by applying lawful interception devices. Furthermore, state of art analysis tools combined with these systems are of high importance in detecting the relationships between criminals. In sum, it was argued that lawful interception is the most important method in the fight against crime.

The use of observation systems was indicated as providing a very important solution for evidence collection in the fight against crime and especially in the fight against organized criminals. It was found that observation systems were used especially when LEA officers were not able to obtain enough evidence from lawful interception processes used for their investigations. The importance of the use of observation systems stems from their ability to obtain evidence from places where criminals feel they are safe. In this respect, very crucial information can be obtained and based on the intelligence that LEA officers obtain through observations systems LEAs can prevent possible suspects or criminals before they commit a crime.

CONCLUSION

The increasing pace of globalization and with this the increasing pace of crimes require more effective methods of intervention. In the age of globalization, as Chan argues, "there is, every reason to expect that the latest round of technological change –the information technology revolution- would have an equally dramatic impact on policing".[7] In this respect, advances in technology present good opportunities for police forces to apply in their fight against crime within the national borders.

The study emphasized the importance of the use of new policing technologies in LEAs fight against crime. In this respect, the use of technology is not only a need but a must. Because criminals are good at following new technologies and applying these new methods into their illegal businesses, LEAs have to be one step ahead of them.

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[7] Chan, J. B. (2001). The Technology Game: How Information Technology Is Transforming Police Practice. *Criminal Justice, 1*(2), 139-159. pp.140

In sum, the study found that LEAs have been benefiting from the use of CCTV systems, modernized patrol cars, computer forensics, lawful interception and observation systems in both detection and seizure of suspects or criminals. Furthermore, the use of new policing technologies can provide a personnel-related saving method for LEAs.

CHAPTER 5

ANALYSES AND FINDINGS - II

In this chapter, the contribution of the use of VTS devices by police practitioners in the fight against IOC is examined. In the study, 45 police professionals working in the TNP were interviewed and they were selected among the police professionals who used VTS devices in police operations to fight against IOC. 15 police professionals were from the Division of Anti-Smuggling and Organized Crime in Van district of the TNP, 15 police professionals were from the Division of Anti-Smuggling and Organized Crime in Istanbul district of the TNP, and the other 15 police professionals were from the Department of Anti-Smuggling and Organized Crime in the Ankara district of the TNP.

There are six research question examined in this chapter as shown below. Each research question were supplemented with several sub research questions.

1. What are the contributions of the VTSs in the fight against international organized crime?

   The study examined the contribution of the use of VTS devices by police practitioners in the fight against IOC. It also evaluated how LEAs benefit from the use of VTSs. Furthermore, the statistical data regarding the use of VTSs in the fight against international organized crime was examined.

2. What are the differences between the use of VTSs and physical tracking?

In this section a comparison between the use of VTSs and physical tracking in tracking of targets by police officers was made. In this respect, whether the use of VTSs eliminated physical tracking or not, what the advantages and disadvantages of the use of VTSs were and how the targets behaved when the police used VTS for tracking the targets was examined.

3. What are the examples of real police operations in which VTS was used?

The study provided successful police operation examples concerning the use of VTS. It examined the duties of the respondents in these operations and whether there was any support from the central unit of the TNP for these operations.

4. What are the operational characteristics of the use of VTS?

In this section the operational characteristics of the use of VTS such as the average use of these in operations, when they were placed and removed, what the most frequent type of vehicles VTSs are placed in, which parts of the vehicle are most suitable for installing a VTS, and the use of these in marine applications was assessed. Moreover, whether criminals ever detected the VTSs placed in their vehicles and whether they ever placed a VTS in police vehicles was examined in the study.

5. What are the differences of the use of VTSs in Van, Istanbul and Ankara cities from the operational characteristics perspective?

In the study the differences in the use of VTSs in Van, Istanbul and Ankara cities from the operational characteristics perspective was evaluated in terms of the operational characteristics of the use of VTS mentioned above.

6. How has the use of VTS contributed to international police operations in the fight against international organized crime?

The study included international police operation examples. In this context, international controlled delivery operations and international police operations which are examples of international police cooperation were examined. Moreover, the effect of political elements and problems in international operational police cooperation was also evaluated

RESEARCH QUESTION 1: WHAT ARE THE CONTRIBUTIONS OF THE VTSs IN THE FIGHT AGAINST INTERNATIONAL ORGANIZED CRIME?

According to the interview responses, the study found that VTS devices are widely used by police officers in their fight against IOC. In this respect, interviewees were first asked whether the use of VTS contributes to the operations of the TNP in the fight against IOC. Not surprisingly, all interviewees (45 people) unanimously agreed that they benefited from the use of VTS devices in their operations.

How Do LEAs Benefit From the Use of VTSs

Interviewees explained how they benefited from the use of VTS devices in their operations as indicated in the figure below.

How Do LEAs Benefit From the Use of VTSs

Category	Value
With whom they met or To whom they transferred the illegal subject can be known	8%
Tracking is done more easily	24%
Rountines of Criminals can be known	22%
Personnel, time and labor cost lessens	24%
Operational planning becomes more easier	5%
It prevents the risks of physical tracking	14%
It detects stop by points of Criminals	35%
It detects routes of Criminals	41%
It detects Location of Criminals	62%
Big organizations active in different countries can be detected and taken under control	8%
Based on the locaational info, more information about the target can be taken with other tools	3%

Figure 25. How Do LEAs Benefit From the Use of VTSs

According to the answers provided, the most prominent features of VTSs are their detection capability in terms of identifying the location, route and sites where suspects/criminals may be located. The great majority of police professionals indicated that VTSs contributed to their operations by helping them to detect the geographical location of criminals. This is explained as the most important contribution of the VTSs because this prevents target losses during operations. In this context one respondent stated that

"We can find the targets by using VTSs even if we lost them in physical tracking."

Another respondent said VTSs are very useful because

"....by using VTS, we can make point shot detections and catch right people. Moreover, VTS is of high importance in catching red-handed operations."

Forty one percent of respondents said that VTSs contributed to their operations by helping them to detect the route of the target vehicles used by criminals. As one respondent indicated the routes of the target vehicles are known by police in real time when these devices are used. In other words,

".....the target vehicles can be tracked in real time until the last moment without losing them."

Thirty five percent of respondents said that VTSs contributed to their operations because these helped them to detect the precise locations including stop points of the vehicles used by criminals. According to these respondents by analyzing these stop points

more in depth information can be obtained during their investigations. For example, one respondent argued that

".....looking these stop by points and examining how often our targets stopped by at the same points, we can learn more addresses which are important for the targets".

According to 24% of respondents, VTSs contributed to their operations because tracking of criminals could be done more easily. This is because their use lessens the need for physical tracking of the targets in some operations or helps the physical tracking in other operations. As one respondent indicated;

".......due to the use of VTSs, operational planning, physical tracking, catching criminals has become easier and reduces problems that we may experience in an operation to the minimum level".

For another respondent it was reported tracking can be done more easily because,

"......when tracking criminals, the use of VTSs makes the guidance of physical tracking team easier to follow the targets".

Twenty four percent of respondents said that VTSs contributed to their operations by lessening/lowering/reducing personnel, time need to carry out an operation. As well, labor costs are decreased when VTSs are used in their operations. According to these participants, fewer numbers of personnel are needed as well when VTSs are used in the operations because of the diminished need for physical tracking. This also means fewer numbers of cars are needed and, thus, gas costs are reduced.

Knowing the routines of criminals was pointed out as another important contribution of VTSs in the fight against crime. 22% of respondents said that the use of VTSs gave them the opportunity to learn the routines of criminals by examining their activity maps and by analyzing all the daily activities of the targets. As the police professionals indicated below it seems of high importance to guess what the criminals will do next and this is assisted through the use of VTSs in their operations.

".... we can follow the routine activities of criminals and thus we can keep them under control.

".....examining their routine activities we can see their unordinary movements which can be important for us"

".... we can guess with where they go to or with whom they will contact according to their routine routes or stop points"

Fourteen percent of respondents said that VTSs contributed to their operations because they helped to prevent the probable risks of physical tracking and lessened the need for physical tracking and thus reduced related problems in an operation. In physical tracking there is the possibility of being burnt by the physical tracking team, which raises the risks of both the operation and the tracking team. The use of VTSs lessens the need for physical tracking in some operations. Moreover, the physical tracking team can track the targets from a safe distance that reduces the possibility of being burnt by them. This is because knowing that they won't lose their targets even if they don't track them

physically, the physical tracking team can track the targets from greater distances and they may only get closer to see what their targets are doing when they stop.

Another contribution of VTSs in operations was explained by 8% of respondents in terms of their contribution to the detection and deciphering of big organizations active in different countries and in efforts to enable them to take steps to keep these organizations under control. As one respondent said;

> "Member of the crime organizations active in different countries or member of the crime organizations whose activities effect more than one country can be tracked step by step, they can be taken under control and whole organization can be deciphered by the use of VTSs".

Especially in controlled delivery operations VTSs appeared to be very useful in helping physical tracking teams track criminals because they provide tracking members of big criminal organizations with information on where criminals are active in different countries without 'losing' them. For example, in a controlled drug delivery operation the target can be tracked from the start in his originating country up until the last delivery destination point including those delivery countries in between. It is well established that the targets can obtain a drug in Country A and then proceed and maybe deliver some of the drug to their contacts in Countries B, C, and D and they can deliver the remaining part of the drug haul to the last destination point in Country E. The entire route of the targets can be tracked by using VTSs in addition to the physical tracking of the drug dealers by police officers in each country. Sharing the real time locational data of these movements between foreign police forces provides for easy tracking of the targets and all

police teams can join the operation in different countries and can view and record the whereabouts of their targets in real time. This use of VTSs in controlled delivery operations will examined in detail in the next sections.

In further interviews, 8% of respondents said that VTSs specifically contributed to their operations because they helped to identify other people criminals might meet or transfer the illegal object[s] to. In operations, learning about the other connections of the targets is very important. Targets can contact both known and unknown persons during an operation. By examining the stop points of the targets, the persons living at these addresses can be identified or one can help keep the targets at those addresses under surveillance and examine what they do and with whom they meet so an entire operation can be better understood.

Five percent of respondents pointed out that operational planning became easier when they began to use VTSs in their operations. According to these individuals dispatching the physical tracking team to the location of the target/s can be done more readily because "the location" is exactly precisely.

Three percent of respondents said that VTSs contributed to their operations, because based on the locational information, more information about the targets can often be obtained than with other technical tools. As the respondent said;

> "When a VTS is placed, examining the locational data we can detect that from which city security camera (CCTV camera) the targets can be seen in detail. For example, when a target goes from a city A to city B, without making physical tracking we can get more information about the target looking the city security cameras on the route."

The Statistical Data Regarding the Use Of VTSs In The Fight Against International Organized Crime

The researcher requested from the Department of Anti Smuggling and Organized Crime (KOM department) to have access to their operational data regarding the use of VTSs in operations. However, the KOM department didn't allow the researcher to see their operational documents but they prepared the statistical data upon this request.

The KOM department prepared the statistical data for the year 2010 including the use of VTSs in two cities in Turkey. The data included how many operations were done in 2010 in these two cities and in how many of them the VTSs were used. Moreover, it included that how many operations were successful due to the use of VTS.

The name of these two cities were not indicated. However, it was indicated that one of them was a small-scaled city and the other one was a middle-scaled city.

According the data regarding the use of VTSs in a middle-scaled city, VTSs were used 110 times (59%) in 186 operations held in 2010 as shown in Figure 26. In 104 of these operations, the use of VTS were reported as very important for being successful in the operations. In other words, the success rate of the use of VTSs in operations %94. That means the vast majority of police operations in a middle-scaled city became successful when VTSs were used.
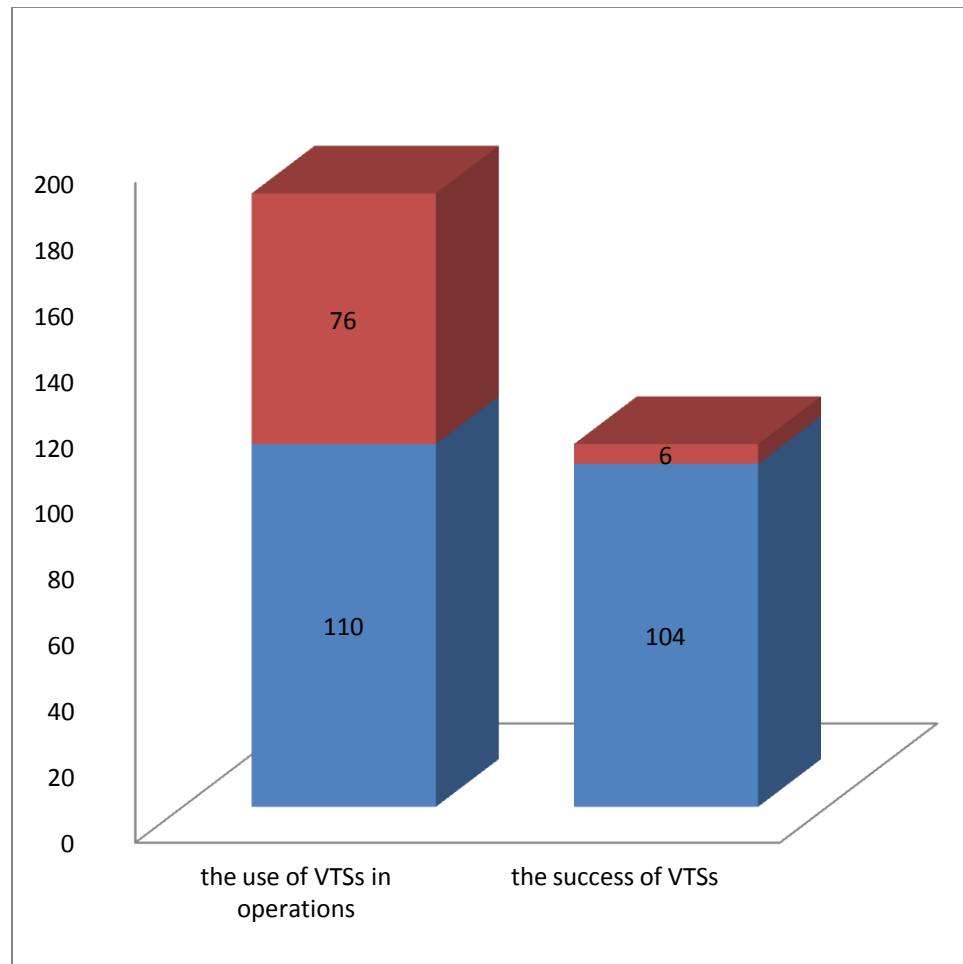
Figure 26. The Use of VTSs in a Middle-Scaled City

According the data regarding the use of VTSs in a small-scaled city, VTSs were used 24 times (31%) in 76 operations held in 2010 as shown in Figure 27. In 20 of these operations, the use of VTS were reported as very important for being successful in the operations. In other words, the success rate of the use of VTSs in operations %83. That means the vast majority of police operations in a small-scaled city became successful when VTSs were used.
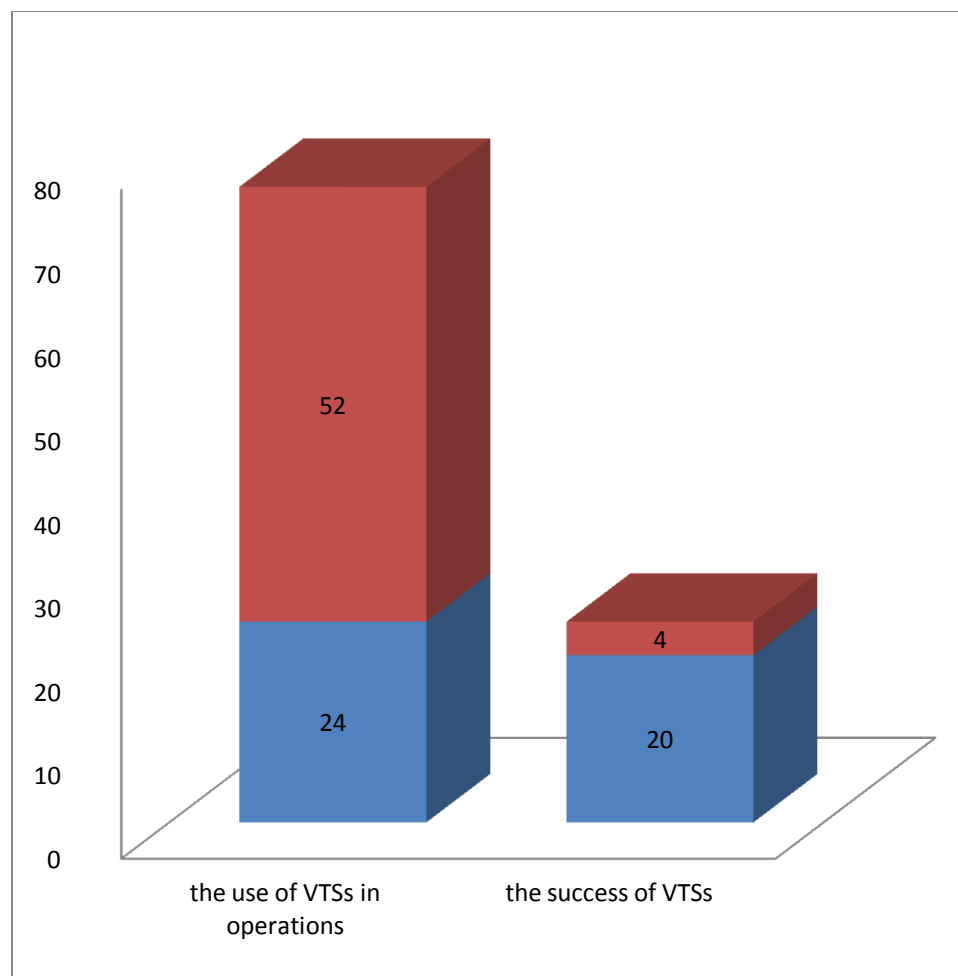
Figure 27. The Use of VTSs in a Small-Scaled City

FINDINGS OF THE RESEARCH QUESTION 1

As it is indicated above all interviewees unanimously responded that they benefited from the use of VTS devices in their operations. The statistical data prepared by the KOM department was also showed that the vast majority of police operations became successful when police officers used VTSs in their operations.

The detection of geographical location of the target vehicles VTSs were placed was indicated as their most important contribution to the fight against IOC. The

locational data obtained from these devices were used to learn routines of criminals which was used to guess what criminals would do next. Moreover, VTSs were explained as a complementary tool for the physical tracking.

The KOM Department's fight against IOC is of high importance from the global security perspective. For example, Turkey is on the main route for drug trafficking going to Europe. In this respect, the cities Van and Istanbul where respondents selected from have been reported as the two districts in which the highest amount of heroin and cannabis was seized by operations of the TNP during 2010 in Turkey.[1] According to the 2011 Report of KOM department , Istanbul and Van have again been reported as the two districts in which the highest amount of heroin was seized by operations of the TNP during 2011 in Turkey.[2] They have also been reported as they were among the districts in which highest amount of other kinds of drug was seized by operations of the TNP during 2011 in Turkey.[3] The same report also indicated that seized heroin amounts in Turkey with their identified destinations as shown in Figure 28. According to this figure, The Netherlands, Germany and Albania were reported as the identified destinations of the highest amount of seized heroin in Turkey. Moreover, Slovenia, Greece, Austria Moldavia and Belgium were also reported the other identified destinations of the seized heroin in Turkey.

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[1] KOM. (2011a). The 2010 Annual Summary Report of the Anti-Smuggling and Organized Crime Department. Retrieved July 25, 2011, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2010_Raporu.pdf
[2] KOM. (2012). Turkish Report of Anti-Smuggling and Organized Crime 2011. Retrieved May 2, 2012, from http://www.kom.gov.tr/Tr/Dosyalar/Dosyalar/2011_Ingilizce.pdf
[3] Ibid.
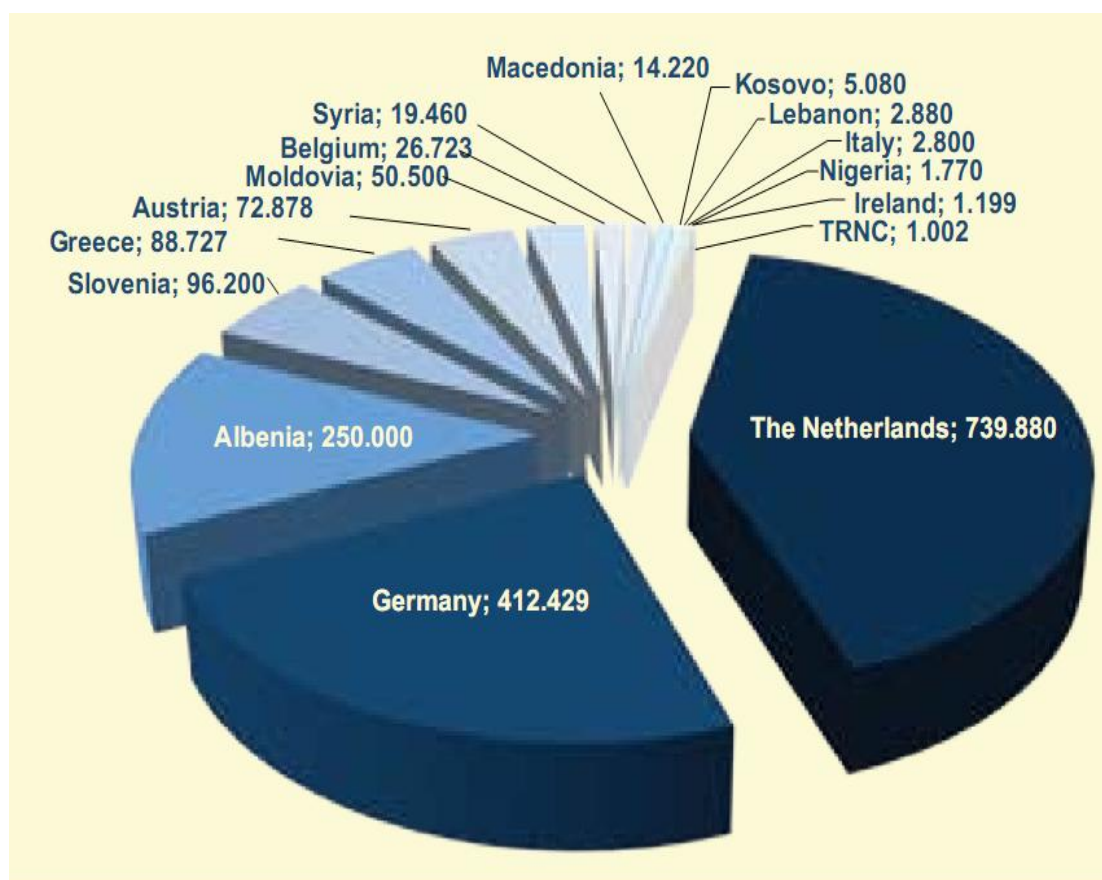
Figure 28. Seized Heroin Amounts in Turkey with Their Identified Destinations-2011 (kg)[4]

In this chapter, it was found that police officers from KOM Department benefited from the use of VTS devices in their operations. Moreover, the statistical data prepared by the KOM department was also showed that the officers have been using VTSs in their operations to a great extent.

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[4] Ibid.

RESEARCH QUESTION 2: WHAT ARE THE DIFFERENCES OF THE USE OF VTSs VERSUS PHYSICAL TRACKING?

In general the use of VTSs in operations as evaluated by police professionals included the themes of physical tracking, plus the complementary use of physical tracking in the operation, and the use of VTSs as an alternative to physical tracking in operations.

In this section the use of VTS in operations is evaluated taking into consideration the physical tracking methods used in operations.

Does VTS Eliminate Physical Tracking?

Interviewees were asked whether VTS devices eliminate the need for physical tracking of targets in operations. Their responses were coded according at four different levels.
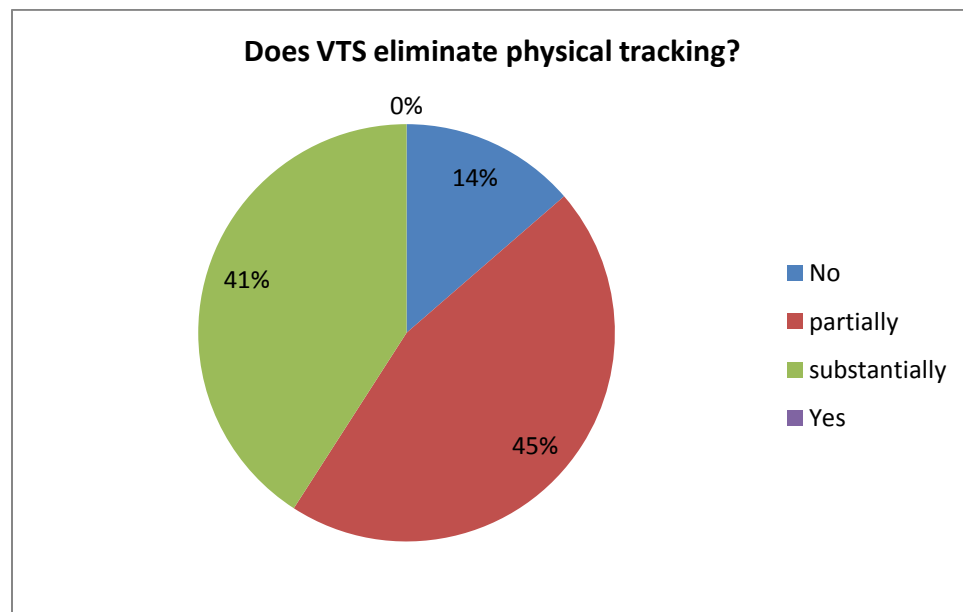
Figure 29. Does VTS eliminate physical tracking?

Although there were some examples of operations in which only VTSs were used to track criminals but no physical tracking was applied, none of respondents said that the use of VTSs completely eliminates the use of physical tracking in their operations because generally, physical tracking is an essential component of operations.

The majority of respondents agreed on that VTSs eliminate physical tracking in their operations to great or some extent. 41% of respondents said that the use of VTS greatly eliminates the need for physical tracking in their operations. However, they indicated that it does not eliminate physical tracking totally because they also need physical tracking in their operations.

As one respondent indicated;

> "The use of VTSs does not eliminate physical tracking totally because the targets can go another place by walking after they parked the tracked vehicle. When the vehicle stops, the function of the VTSs ends. At this point we have to track the targets physically."

Forty five percent of respondents argued that physical tracking is needed in every operation but the use of VTSs greatly helps their physical tracking ability. In this context VTSs lessen the need for physical tracking in the operations and partially eliminate the need for physical tracking of the targets at some points of the operations.

In the same vein one of the respondent said that;

"The use of VTSs does not eliminate physical tracking, but it greatly contributes to physical tracking in operations."

For another respondent the use of VTSs eliminated the need for physical tracking

"especially in the detection of the routes of the targets and tracking of their routes, ...[however] seeing the target is a must in operations."

One of respondents explained the importance of physical tracking as;

"..........in the detection of with whom the targets contacted or where the targets actually went physical tracking is a must in the operation."

Apart from what was stated above, some police professionals asserted that they never gave up physical tracking from the beginning of the operation until it ended even if they used VTSs in their operations. As a matter of fact, 14% of respondents said that especially in controlled delivery operations they did not have the luxury of placing a VTS on the target vehicle and for waiting for this to transmit information. Because of the importance of the operation, physical tracking is a must and it must be done from the beginning of the operation until the operation ends whether or not VTSs are used in the operation.

Disadvantages of Physical Tracking

In this section the disadvantages of physical tracking are examined in light of the responses of the interviewees. Their responses are coded as per the figure below.

Among the given responses, the main risk in tracking personnel seems to be in being burnt while carrying out physical tracking in the operations and the risks of being

burnt during the operation were the most touched upon issues by the interviewees in terms of the disadvantages of physically tracking targets.
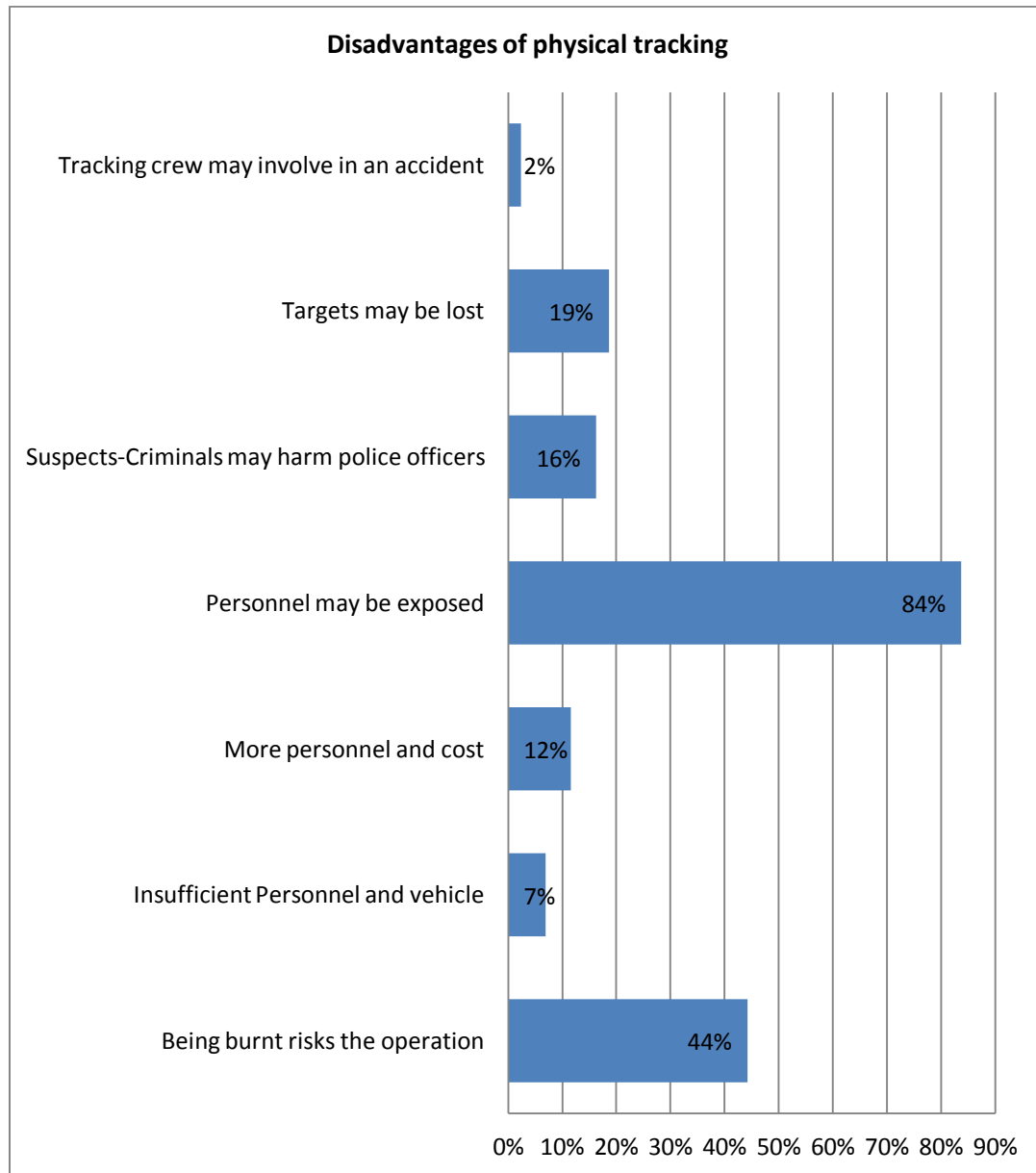
Figure 30. Disadvantages of physical tracking

The great majority of respondents indicated that being burnt is one the most important disadvantages that can be experienced by tracking personnel during the operations. They argued that, when physical tracking is carried out, there is always the possibility of being burnt during the operations. An interviewee explained that

"In the fight against organized crimes, member of the criminal organization are tracked by police officers for a long time. Because of the length of the tracking, physical tracking personnel may be noticed by criminals in the operations."

For another respondent, being burnt during physical tracking was explained as;

".......when making physical tracking to track criminals, we are witnessing that criminals mention in their telephone conversations that they are suspected of being tracked by police."

Forty four percent of respondents said that if a tracking personnel is burnt during physical tracking procedures this increases the risk of jeopardizing the entire operation. Criminals being tracked by the police can become more suspicious and cautious during physical tracking. They may not take action for a long time or they may not make contact with other criminals. As one police professional said

"Being burnt results in more alarmed criminals and they take additional measures to guard themselves in order not to be deciphered or tracked by police. Moreover, the planned operation of police may be deciphered by criminals."

After being burnt police officers may endure considerable hardship to fight against these criminals. They may have to change their tactics over some time. According to sensitivity of their targets police officers may abandon physical tracking of criminals or they may change the tracking personnel and the vehicles used in the tracking and track the criminals with a new track crew and a new set of vehicles more cautiously.

Moreover, being burnt when tracking not only raises the risk of the operation, but also risks the life of tracking personnel. 16% of respondents indicated that suspects-criminals may harm police officers after physical tracking personnel are burnt. One police professional explained the situation as below;

> "Police officers may be burnt in the operations. After being burnt, they are recognized (or known) in the region where criminals are tracked and this situation prevents the entering of police to the region. Moreover, the relatives of the criminals sometimes harm the police officers when they enter the region."

One of the other disadvantages of physical tracking as explained by an informant is the loss of the target during operations. 18% of respondents said that targets may be lost if VTSs are not used in the operations and tracking is only done physically. As one respondent said below, the targets may be lost during the live physical tracking.

"In live physical tracking, instant disappearances of the targets can result in losing the targets completely in the operations. However, due to the use of the VTSs we can keep the movements of the targets under control and tracking can be done more easily"

For another respondent, target losses may arise as a result of being burnt during physical tracking by the team in an operation. The respondent indicated that in physical tracking

"......if criminals notice that they are being tracked by police, they disappear without a notice and change their behaviors."

Twelve percent of respondents said that if only the physical tracking method is used in operations, more personnel and funds are needed according to the operations in which VTSs are used. They said that the use of VTSs considerably reduces these costs in the operations.

Seven percent of respondents mentioned that they live with hardships when carry out physical tracking because of insufficient personnel and vehicles assigned for the operation. Having more personnel in physical tracking teams makes the tracking easier and reduces the possibility of being burnt. However, police professionals said that in many cases they did the physical tracking with very few personnel and vehicles.

In addition to the above disadvantages of physical tracking, just 2% of respondents indicated that in physical tracking, tracking personnel may be involved in an accident. Although this was not mentioned much, this can also be regarded as a disadvantage of physical tracking. This is because physical tracking personnel may not concentrate on driving safely while tracking the target vehicles. In this respect physical tracking personnel can become more vulnerable to be being involved in accidents.

Behavior of the Targets When the Police Use VTS for Tracking the Targets

In order to understand what changes the use of VTSs produces from the viewpoint of the targets behavior, interviewees were asked whether the targets operated more freely when the police used VTS for tracking the targets, if they are not worried about being followed by police and if they made contact other suspects not known by police more easily. The answers to this question were coded according to four different level; yes, substantially, partially, and no as indicated in the figure below.

Do targets operate more freely when the police use VTS for tracking the targets?

7%

19%

74%

- No
- partially
- Yes
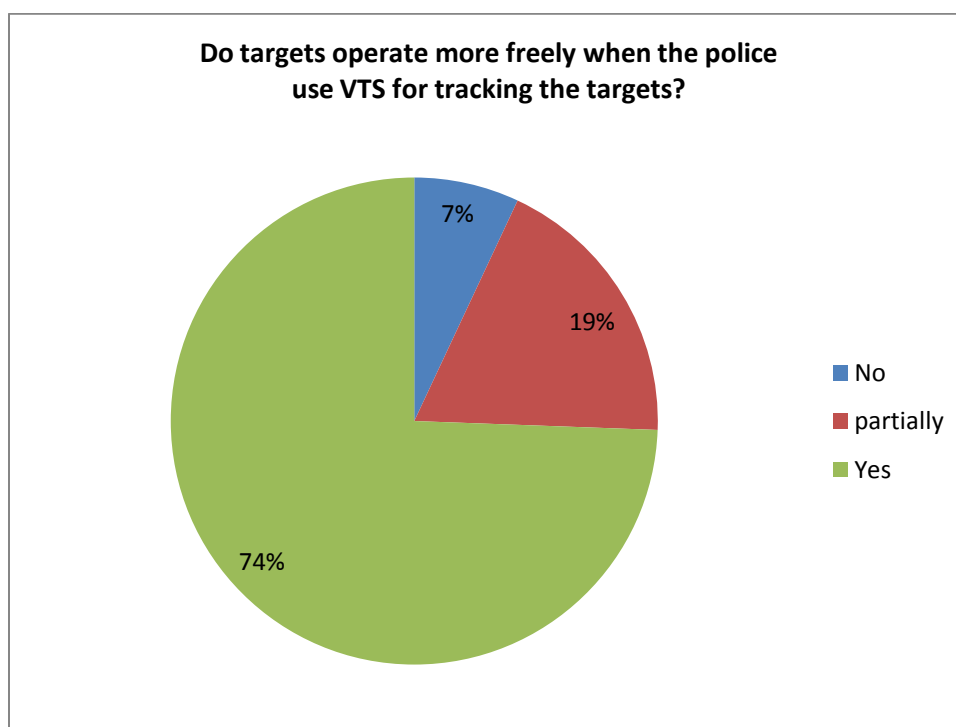
Figure 31 . Behavior of the Targets when the VTS are used

The majority of the interviewees, 74% of respondents, responded that targets operate more freely when VTSs are used in operations because they are not worried about

being followed by police. Similarly, the targets can also contact with other suspects who are important for the operation.

> "Criminals usually meet with each other where they feel themselves safe. In other words, they abstain to meet with each other people in public places. They usually meet at the places where police can't easily enter to and exit from or the places at which when any foreign person enters the area the person can easily be recognized that he/she does not belong the vicinity. Using VTSs in the operations, where the targets go or at which addresses they stop at such safe places can be detected. Therefore, the VTSs' contribution to the operation is of high important"

Some other respondents indicated that criminals may go to meet other contacts and leave their cell phones at their homes or offices. Seeing any physical tracking team, helps them to contemplate leaving their cell phones at their homes or offices and provides them with an alibi, so they may operate more freely and meet with their contacts.

As one of these respondents argued;

"When we use VTSs we realize that the targets operate more freely. Due to the use of VTSs their meeting points and addresses can be detected even if they don't take their cell phone with them."

Nineteen percent of respondents indicated that the use of VTSs may reduce the targets' suspicion about being followed by police and therefore they may operate more freely and contact other suspects who are important for the operation.

One of these interviewees responded that;

"Usually our targets think they are being followed by police. However if they don't have concrete suspicion, we can say that they operate more freely and contact with other criminals more easily. In this respect the use of VTSs contributes to reduce their suspicion."

For another respondent this changed according to the attention level of the targets.

As the respondent stated:

"[Whether the targets operates more freely when VTSs are used in the operation to track targets] is possible for some of the targets. Because, it depends on the attention level of the targets. If they are very attentive they can also notice the GPS tracking device placed their cars."

However, 7% of respondents said that the use of VTSs did not change the targets' suspicion about being followed by police in any way. According to these respondents, the targets always think they are being tracked and, therefore, they don't operate freely or more freely.

One respondent explained this as follows;

"We can't say the operate more freely. It is because criminals operate within the psychology that they are always being followed by police"

Advantages of the Use of VTSs in the Operations

In an effort to demonstrate how police benefit from the use of VTSs in the operations, the interviewees were asked what the advantages of the use of VTS are. The responses were mainly parallel to what they responded about the contribution of VTSs to their operations at it is indicated in Figure 32. In this respect, the similar answers were not examined in detail in this section.
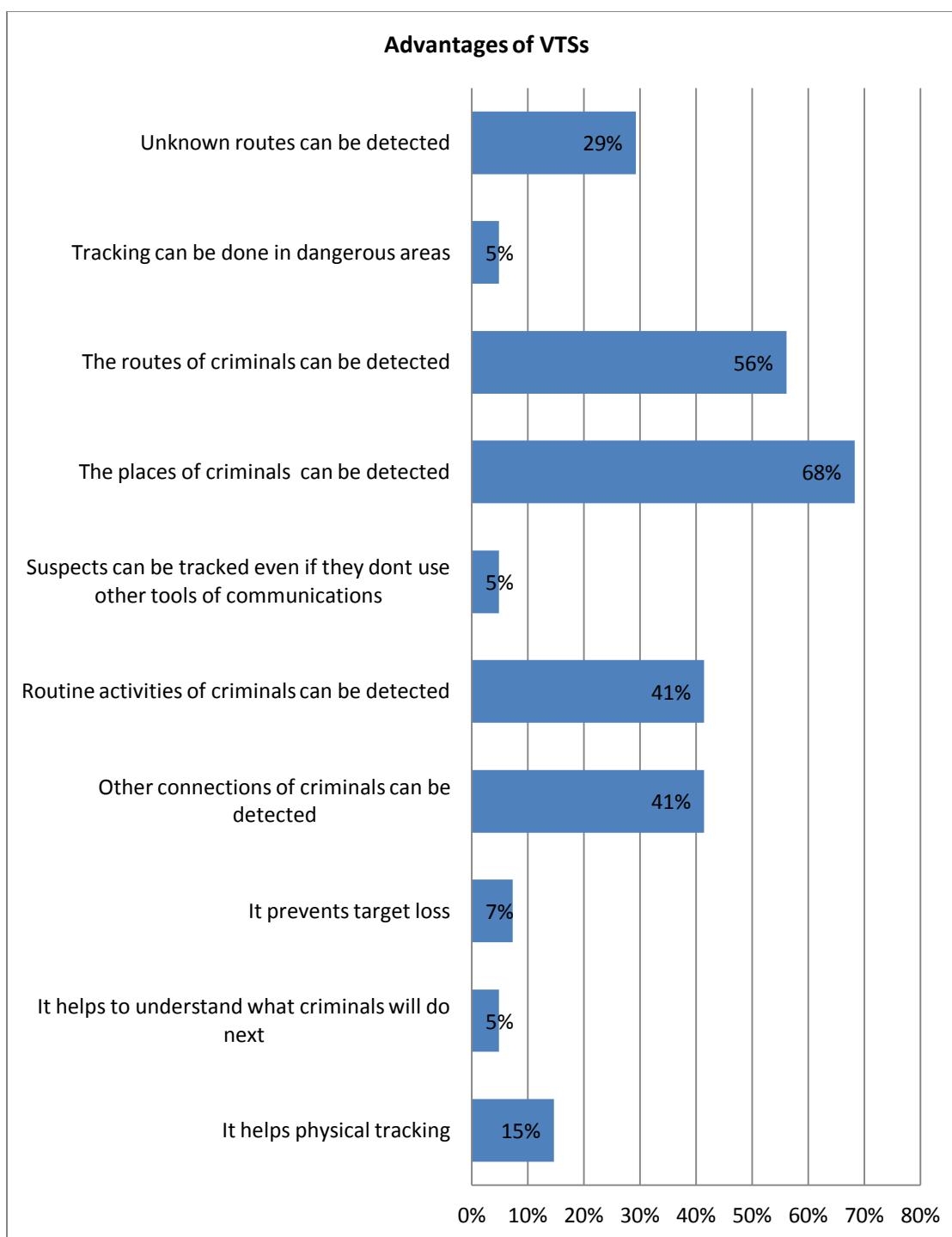
Figure 32. Advantages of VTSs

The respondents claimed that the most important advantages of the use of VTSs in their operations were the detection capability of the geographical location of the places visited by and the routes taken by their targets, which are very important data for any operation. %68 of respondents indicated that this device helps detect the locations of criminals and %56 of respondents said that it helps detect the routes taken by criminals.

Forty one percent of respondents also pointed out that knowing the routines of criminals through the use of VTSs is another important advantage for their operations. Detection of other connections of the criminals through the use of VTSs was also declared by %41 of respondents at the interviews as another advantage of VTSs.

In addition to what was stated above %29 of respondents indicated that they could detect unknown stop points or routes of criminals when they used VTSs in their operations. This was because every movement of the targets could be recorded by the tracking software and could be sent to a computer, and by examining this recorded locational data, the unexpected movements, routes or stop points can easily be detected.

The VTS software also provides users an opportunity to simulate recorded data for desired time intervals. If users make a simulation of the recorded data of their targets for a certain time interval, they can see the whereabouts of the target vehicles during this time interval. In this respect, when a target vehicle waits at certain location on the digital map for a long time, it means the target vehicle is parked or stopped at that point.

A respondent indicated retroactive crime analysis can be done by examining unknown movements of the targets.

"For example our target committed a crime two day ago but we don't know whether the target was there. Looking the GPS data we can detect whether the target vehicle was in the vicinity of crime area."

For another police professional, unknown movements or stop points of the targets gave them an important clue for their investigations.

"If target vehicle was not stopped in the driveway of the target or in the vicinity of his/her house, we can think that this stop point can be the crime point that can be the loading or delivering place for drugs or an important meeting point used by criminals."

Fifteen percent of respondents said that they benefited from the use of VTSs while they carried out physical tracking during operations. According to these respondents the use of VTSs was of high importance in determining the success of the operation. Police officers said they could apply different tactics in the fight against crime, due to the locational data obtained by VTSs. One respondent gave an example as outlined below;

"We can go to the meeting points detected by the VTSs earlier than the targets and wait the till their coming. When they come, we can take photographs and record video of their meeting which can be the important evidence for the investigation."

The ultimate goal in physical tracking is not to lose the targets until the operation ends. As one respondent indicated below, the use of VTSs contributes to this operational goal.

"If we placed a tracking device to the target's car then it means there is a live tracking of the target. The investigation is expected to be completed in

a short time and, therefore, our first aim is not to lose targets. In this context, the use of VTSs contribute much for our success in physical tracking".

Similarly, 7% of respondents especially pointed out that the use of VTSs prevented target losses during operations. Because VTSs can detect the exact geographical location of the targets in real time, the target can easily be kept under control during the investigation period.

Five percent of respondents said that targets can be tracked even in the places where entry by the police can be dangerous. Criminals can't meet readily with others in public places. They try to meet with others at places where the entering of any police officer can easily be detected by criminals. By the use of VTSs in an operation, police officers can track their targets without physically entering such dangerous zones.

Five percent of respondents argued that they were able to track criminals even if the targets did not use other tools of communications. Criminals generally think that they are being followed by police especially when they are planning to commit a crime and preparing themselves for it. In this respect, they guess that their cell phones are being intercepted and their approximate locations or at least the distance from which the GSM base station they are getting service is known by police. In this situation they may leave their cell phone at their homes or offices to deceive police and keep secret that they are going to commit crimes or meet other criminals privately. If they are not being followed physically by police, it is not possible to guess where they have been during the time period when their cell phones are not with them. Actually, it is not possible to understand

whether they left their home, and whether their cell phone was giving a signal at home or not.

Lastly, it was indicated by 5% of respondents that the use of VTS greatly increased their operational planning capability. They said that when examining locational data it was possible to learn the routines of criminals and, therefore, they argued they could better predict what the targets would do next or in the foreseeable future during operations.

Disadvantages of VTSs

The interviewees generally did not mention much about the disadvantages of the use of VTS. Only 12 police professionals responded to this question. They mostly pointed out exposing of the VTS in the operation may sabotage the operation and some problems based on their battery life as shown in Figure 33.

Fifty five percent of respondents said that if VTSs are noticed by criminals, the operation may become unsuccessful. As one police professional stated:

> "In physical tracking if the team is noticed criminals operate more carefully. However, finding a GPS tracking device placed at their car means hundred percent they are being followed by police. Therefore, they may postpone their plan for a certain time or they abandon completely to apply it".

Another police professional responded that

> "If you are tracking criminals out of the country and if this is not a controlled delivery operation, than it means you don't have any physical tracking team in the operation to follow criminals. The only solution to

track criminals is to place a GPS tracking device and if criminal notice the placed device, the operation completely ends."
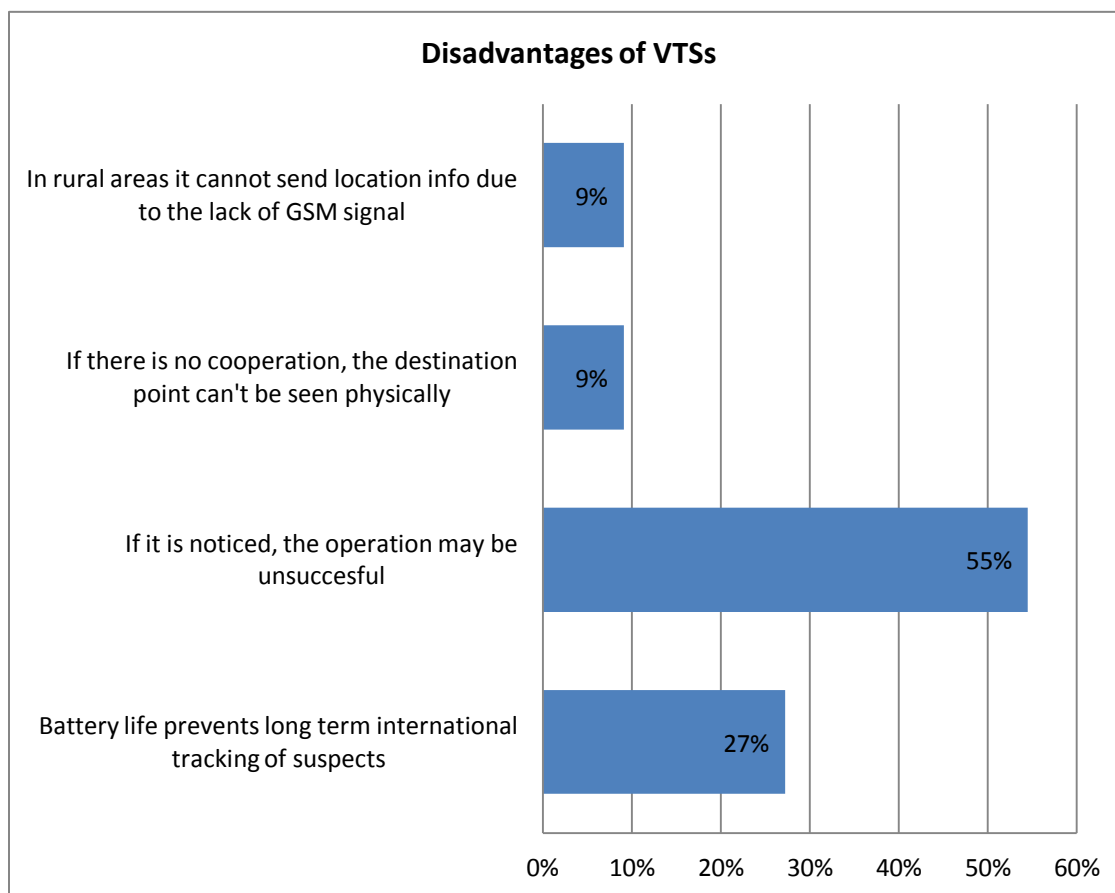
Disadvantages of VTSs

Twenty seven percent of respondents said that the depletion of battery life of the VTSs harms the operation. Because there is no physical tracking option abroad, there may be no opportunity to conduct a controlled delivery operation, especially where tracking depends solely on the use of VTSs. In this context, the long term tracking of the targets by VTS may deplete its battery. Therefore, the tracking ends if the battery depletes. The battery life of the VTS tracking devices changes according to the device

type and model. Moreover, the data transfer interval between the device and the operational center is another important factor that determines the battery life of the device.

Similarly, 9% of respondents said that if it is not a controlled delivery operation or there is no cooperation between police forces, there may be no chance to see who their targets contact or to whom they deliver illegal subjects.

Nine percent of respondents mentioned a technical disadvantage of the VTS. One police professional said that;

"The VTSs send the locational data over GSM network. Because in rural areas GSM coverage is very limited, we can't track our targets in real time by VTSs when our targets in rural areas."

However, what the respondent said does not mean the locational data in rural areas is totally lost. This is because, when there is no GSM coverage, VTS tracking device records locational data to its embedded memory and sends this recorded data to the operational center when the device enters in a region that has GSM coverage. For example, when a VTS placed target vehicle stays in a region that does not have GSM coverage for two hours, this two hours' locational data of the vehicle is sent to the operational center when the vehicle enters a region that has GSM coverage. During these two hours, the vehicle is "off the radar " but by examining its backward locational data, the whereabouts of the vehicle can easily be detected.

FINDINGS OF RESEARCH QUESTION 2

In this section the use of VTSs was evaluated in response to the physical tracking of criminals in operations. Although there were some examples of operations in which only VTSs were used to track criminals but no physical tracking was applied, none of respondents said that the use of VTSs completely eliminates the use of physical tracking in their operations because generally, physical tracking is an essential component of operations. However, it was found that the use of VTS greatly helped physical tracking in operations and in some occasions it was alternatively used to track criminals. While physical tracking is made, there is always the possibility of being burnt in operations and this both risks the success of operations and the life of physical tracking team. In this respect, the use of VTS can eliminate such risks in operations. Moreover, it was found that the targets operate more freely when the VTSs are used in the operations because they are not worried about being followed by police.

The respondents claimed that the most important advantages of the use of VTSs in their operations were the detection capability of the geographical location of the places visited by and the routes taken by their targets, which are very important data for any operation. Police officers can also make a simulation of the recorded data of their targets for a certain time interval and they can see the whereabouts of the target vehicles during this time interval and learn the routines of their targets. Although it was not mentioned much about the disadvantages of the use of VTS by the respondents, some of them pointed out exposing of the VTS in the operation may sabotage the operation and some problems based on their battery life

RESEARCH QUESTION 3: WHAT ARE THE EXAMPLES OF REAL POLICE OPERATIONS IN WHICH VTS IS USED

Successful Police Operation Examples Due to the Use of VTS

Interviewees were asked questions about a real police operation example in which the use of VTS is of high importance to be successful. Thirty seven police professionals responded to the question and each of them reported on their experiences regarding a real police operation they were involved in. In this respect, their responses directly reflect what is experienced in the operations when using VTSs.

Most of respondents indicated that the location of the criminals was detected by the use of VTS in the operation as shown in Figure 34.

According to 46% of respondents, the operation would not have been successful if they did not use VTS devices to locate the criminals. One respondent pointed out as below that how VTS was important in the detection of a stash house.

> "By the use of VTS, we detected that the criminals dealing with drugs were parking their cars on the same street but at different places. Therefore, we suspected of existence of a stash house used by criminals at this street. Using two different observation vehicles at different points on the street, we detected that our two targets were carrying drugs underneath of their jackets with the amount of 2 kilograms. We also detected the stash house they used and seized 55 kilograms of cannabis and 1500 pieces of ecstasy drugs at that house."

Real Police Operation Examples

- Different police units were able to obtain locational data in a controlled delivery operation
- From a long distance, it provided the physical tracking team an opportunity to take the targets under control without being burnt
- Knowing location information helped make operational planning easier
- Operations became successful through the detection of new criminal linkages
- The operation was successful, although other kinds of interception methods were insufficient
- The location of the criminals was successfully detected
- The target vehicle was very fast and physical tracking crews were not able to follow the vehicle
- Without any physical tracking, the operation was implemented
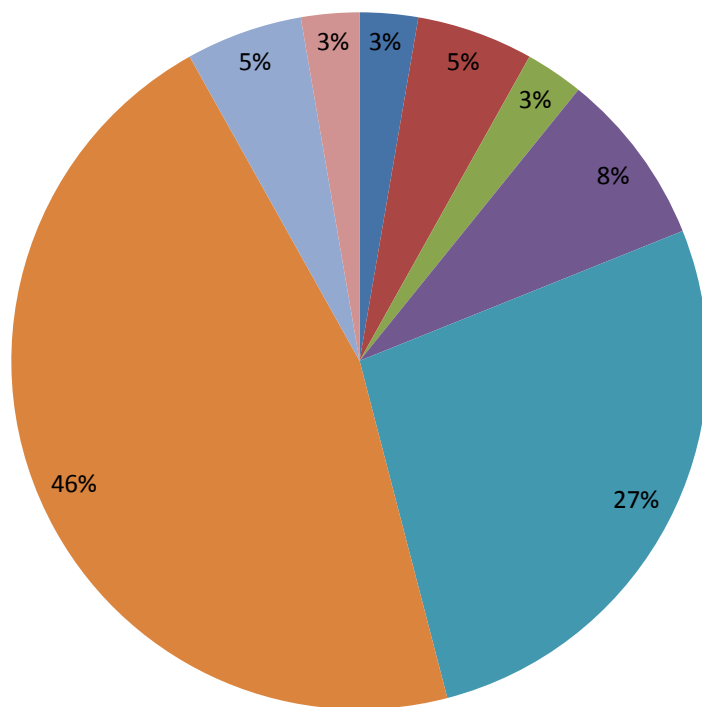
Figure 34. Real Police Operation Examples

Another police professional indicated as outlined below how they found the loading and delivery point of the drug loaded truck, and detected all its routes through the use of VTS in the operation.

> "We detected that criminals were making a stash section in a large truck. After they finished making this secret section, we placed a GPS tracking device to the truck and waited to see to where it would go. The truck was loaded with drugs in Van and went to the city of Diyarbakir over Agri, Mus and Bingol cities. During the going of the truck, the other two criminals were controlling the route whether any suspicious thing existed on the road. Moreover, sometimes one of these two criminals get on intercity bus to control the road. We had to do physical tracking from a safe distance in the operation and if we didn't place the GPS tracking device to the truck, we could not find the loading and delivering point of the drug."

Twenty seven percent of respondents said that although other technical interception methods, exist, especially the cell phone interception method, these were insufficient in the operation, and the operation became successful due to the use of VTS. After obtaining a warrant, cell phone interception was always used by police officers in these operations. Listening to the conversations of the targets, understanding who they contact is important for the success of operations. Moreover, which GSM base station the target's phone is getting service from can be identified, and although this may not depict the precise geographical location, it at least gives the police information about which area the target is in approximately. However, cell phone interception is also a widely known issue among criminals. Knowing that they are being listened to by police they talk with each other with encryption or they sometimes turn off their cell phones or do not carry their cell phones with them thinking that the police can find out in which area they have been.

One police professional pointed out how their operation became successful due to the use of VTS as below example respectively.

"Although all of the organized criminals in the operation gave away their cell phone not to be found by police, we detected their location and seized all of them by the use of VTS in the operation."

Similarly another police professional indicated that;

> "....when our target turned his cell phone off, we had only VTS option in the operation. Because the cell phone was turned off, we could not detect what the target was doing and where the target was. However, due to the VTS placed his vehicle we detected he was staying in his office."

Eight percent of respondents said their operations were successful due to the use of VTS in detecting new connections of the targets. In the operations, especially operations to combat organized criminals, knowing who they may meet or make contact with is of high importance. Examining the locational data sent from a tracking device to the operational center, the addresses the target vehicle has been at and sites where they have remained motionless for a while can be detected. With the help of physical tracking or using observation vehicles one can detect who the targets met at these addresses as this can be seen.

One respondent indicated as outlined below how they became successful by analyzing the locational data obtained from a VTS and by detecting other suspects in their investigation.

"In our investigation we detected the other contacts of our targets at different cities when we tracked our targets by VTS. This information was later used in another operation and after we seized them for trading drugs."

Five percent of respondents said that they experienced hardships in physical tracking but the operation became successful when they used VTS. According to these persons the target vehicles were capable of going very fast and, therefore, physical tracking teams weren't able to follow the vehicles with police vehicles.

"It was very hard to follow the vehicle of the targets because they were driving very fast. After placing a GPS tracking device to this vehicle, we were able to follow the vehicle. Because our teams were always waiting in the vicinity of the vehicle."

Five percent of respondents indicated that the physical tracking team was able to track the targets from a safe distance so that this prevented their being burnt in the operation. In physical tracking there is always the risk of being burnt risk of the tracking team. Tracking the targets from a greater distance using VTS, reduces the risk of the physical tracking team being burnt.

Three percent of respondents provided another interesting operation example. According to this respondent, without carrying out any physical tracking in the operation they were able to locate and seize criminals due to the use of VTS. Another police professional stated as per below that their operation became successful because

> "...... using VTS we were able to see up to date locational information of the target and learned the route used by the target. Based on these

information we guessed what the target could do and therefore our operational planning became easier in this way."

Three percent of respondents indicated the importance of the use of VTS in the realm of controlled delivery operations. According to a respondent

"....in an international controlled delivery operation, each police agency joined to the operation obtained the exact geographical location data of the same target vehicle and operation successfully completed by the use of VTS."

In controlled delivery operations, physical tracking is always done in order not to lose track of the targets. However, in some countries joined to the operation sometimes the police agencies seize the criminals due to some problems in the operation and the controlled delivery operation ends in this way. The use of VTS contributes two important elements in these cases. First, it prevents target losses and, second all police agencies joined to the operation can view what is going on in real time, and therefore, the route and starting point from the originating country to the destination country is kept under control .

The Duty of Respondents in the Operation

The duties of 37 respondents who commented on the above police operation examples are shown in the figure below. 84% of respondents indicated they were the person responsible for executing the operation. The other 16% of respondents said that their responsibility in the operation was to provide technical and operational support.

The Duty of the Respondents in the operation

16%

84%

■ Executer of the operation

■ Tecnical and operational support
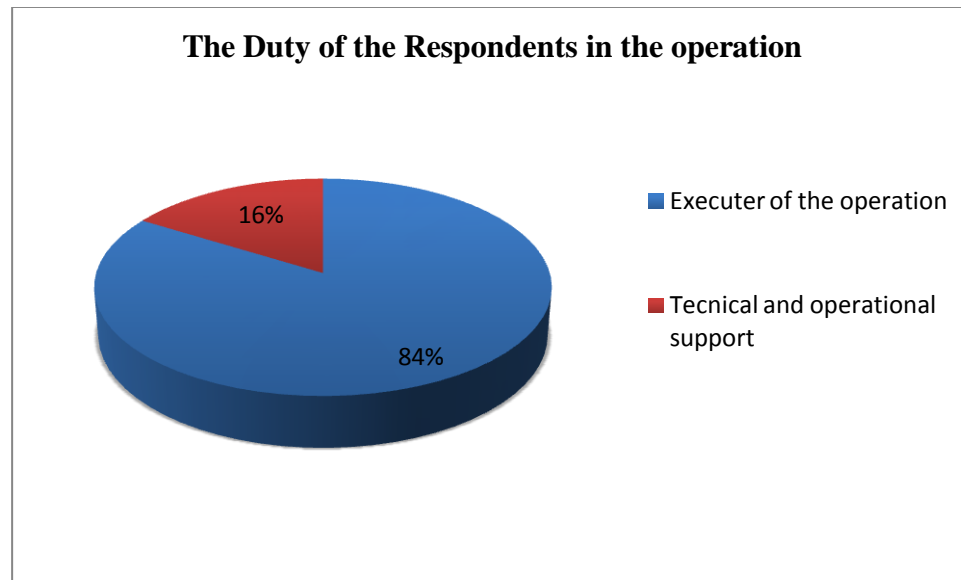
Figure 35. The Duty of the Respondent in the operation

Was There Any Support from the Central Unit for This Operation?

Thirty seven interviewees who responded about a real police operation in which the use VTS was of high importance for being successful were asked whether they received any support from the central unit for this operation. Thirty six police professionals answered the question as shown in Figure 36. Twenty six of them (or 72%) said that they did not need any support from the central unit. However, 10 police professional indicated they needed support for

- having a technical person in the operation

- the placement of the VTS in the operation

- obtaining technical support for the operation

- obtaining technical devices for the operation.
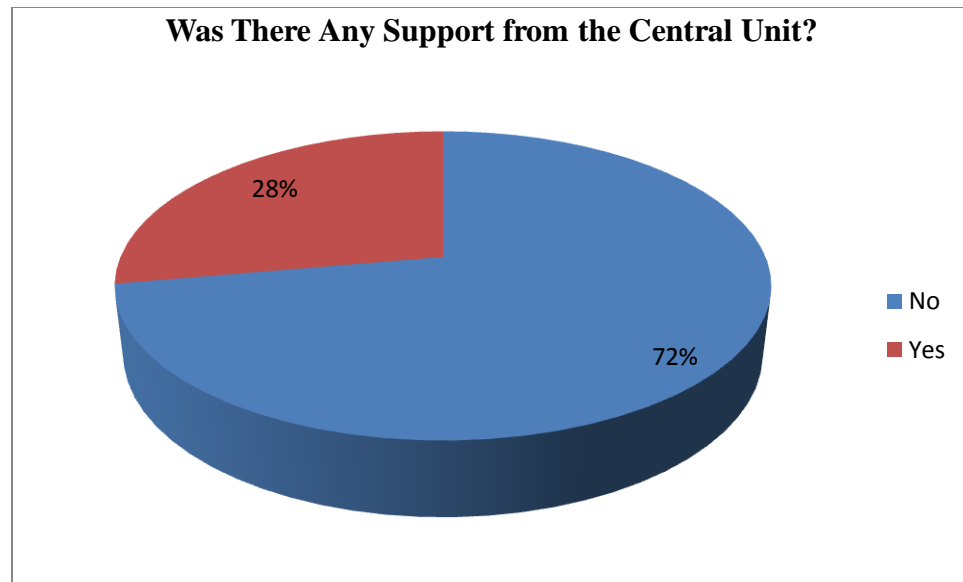
Was There Any Support from the Central Unit?

FINDINGS OF RESEARCH QUESTION 3

In this chapter, real police operations in which VTSs used were examined. In most of the operations, it was found that the operation would not have been successful if police officers did not use VTS devices to locate the criminals. It was also found that, although lawful interception methods, especially the interception of cell phone conversations, used in the operation were insufficient, the operation became successful due to the use of VTS by police officers. The use of VTSs was also exemplified in the realm of controlled delivery operations in order not to lose criminals in operations.

The respondents who gave these operation examples were mostly were the person responsible for executing the operation and most of them indicated did not need any support from the central unit about the use of VTS in the operations.

RESEARCH QUESTION 4: WHAT ARE THE OPERATIONAL CHARACTERISTICS OF THE USE OF VTS?

Average Use of the VTS

Interviewees were asked how long on average they had needed to use VTSs in general in their operations. Their responses were coded into six different categories. Of course, it was expected that they would not be able to provide an exact time interval in most cases, but at least they would be able to provide a general time frame. Forty three of the interviewees answered the question, and their answers were coded to the nearest time interval. For example, if an interviewee said that VTS had been used for about 3-4 weeks, this was coded as 1 month.

The most frequent answer provided by the interviewees was "3 months" as shown in Figure 37. 39% of respondents said that their average use of the VTS approach in their operations was 3 months. According to these respondents, this was because the warrant duration that provides permission to use the VTSs in operations is 3 months. They said that 3 month's use of VTS was sufficient in their operations and they generally did not need any extension of the warrant.

Ten percent of respondents said that the average use of VTS in their operations was generally 6 months.

According to 8% of respondents, the average use of VTS in their operations was about 1 year or more if they were fighting against a big criminal organization.

Eight percent of respondents pointed out that the average use of VTSs in their operations was generally 1 month.

Three percent of respondents said that the length of use of VTSs in their operations was about 1 week. According to a respondent, the division he worked for was not an active operational division, so they did not use VTSs much. However, when used, this generally took 1 week.
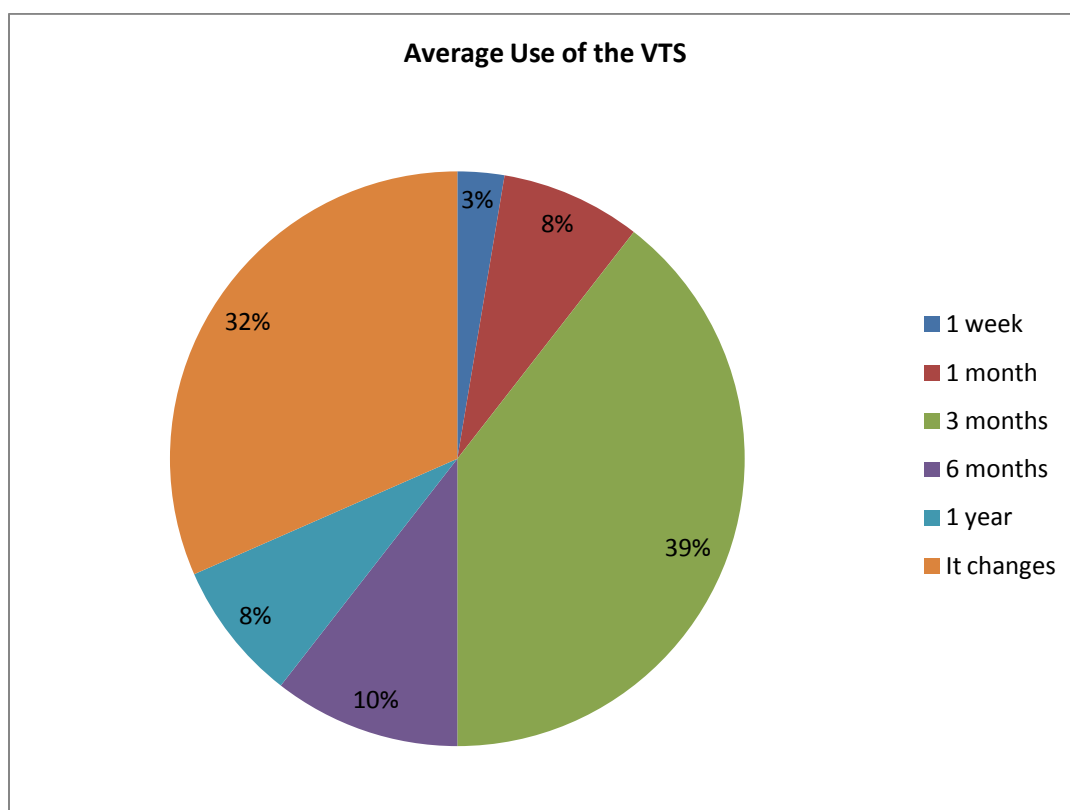
Figure 37. Average Use of the VTS

Thirty three percent of those interviewed could not give a time interval saying that it varied from operation to operation, and therefore their answers were coded as "it changes" as shown in Figure 38.

When VTS is Placed?

Interviewees were asked when police officers decided to place a GPS tracking device on the targets' vehicle. Thirty five of respondents answered the question and these answers were coded as shown in Figure 38.

According to 28% of respondents, it was placed when they could not benefit from communication interception methods, especially the interception of cell phone communications of the targets. These respondents indicated that the targets generally turned their cell phones off and frequently changed both their cell phones and numbers. Therefore, they generally could not benefit from cell phone interception of the targets in their investigations. As one respondent said below, VTS became their most important tool in these investigations.

"....when we could not get information via cell phone interception and cell phone signals because our targets turned them off, we used VTS and it became an important tool in our operations."

Twenty six percent of respondents said that VTS was placed on the targets' car when physical tracking was not possible due to the possibly of the tracking team being burnt in the operation. Similarly, one respondent explained that they used VTS in their operations "…….if the physical tracking was not possible or it was risky in the route that criminals used, we preferred to track criminals by placing a tracking device to their cars."

Another 26% of respondents indicated that they used VTSs when they suspected that their targets would carry out an illegal activity in a short time.
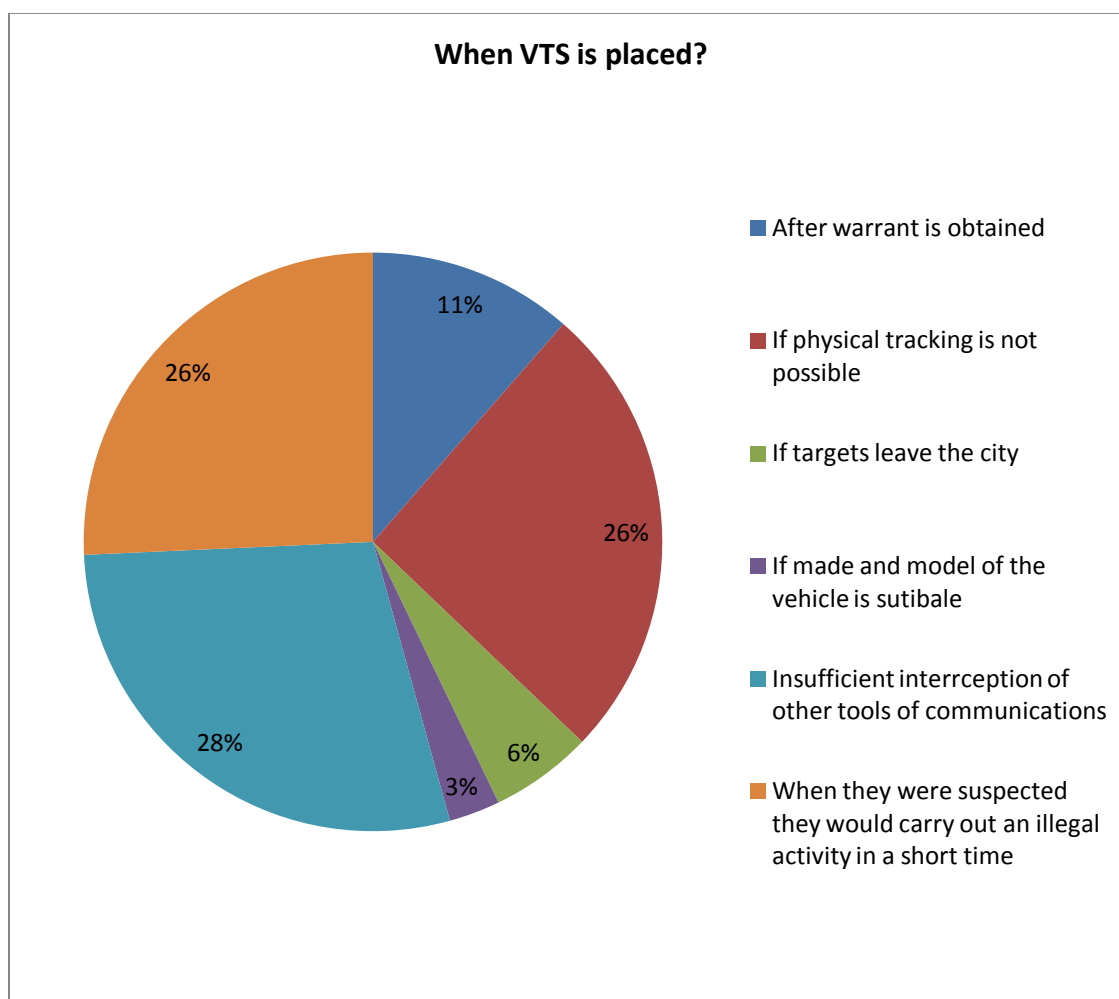
When VTS is placed?

Figure 38. When VTS is placed?

Eleven percent of respondents said that they placed the VTSs after they obtained warrants. In Turkey, the police are allowed to use VTS if this is decided by the courts. Without any exception, police officers have to obtain a valid warrant to place a GPS tracking device on a suspect/criminal's vehicle in their investigations or operations. Therefore, although this was mentioned by only four respondents during the interviews, this does not mean VTSs were used after obtaining valid warrants solely by these four police officers.

Six percent of respondents indicated that the use of VTS was meaningful in an operation especially if their target left the city. The use of VTS provided them with a means of tracking their target over long distances.

Three percent of respondents mentioned an important situation that affected the decision as to whether VTS would be used in the operation. According to a respondent the make and model of the VTS is an important factor for decisions made regarding the placement of a VTS. This is because some vehicles were not suitable sites for placing a VTS.

When is a VTS Removed?

Interviewees were asked when they removed the VTS placed to criminals' vehicles. The vast majority of respondents said they removed the tracking device when their operation ended as shown in Figure 39. Although this can be thought of as an ordinary answer at first, this answer shows that police officers continue to benefit from the use of VTSs until the operation ends.

Forty two percent of respondents said that GPS tracking devices are removed before their batteries are depleted. According to these respondents, if their warrant is still valid and the operation continues, they either replace the device with a new one or replace the battery of the device and place it once again on the target's vehicle.

Thirty seven percent of respondents said that the device is removed when there is no longer a need to track the targets. These police professionals indicated that, although

the warrant was still valid, they removed the GPS tracking device from the targets' car because the tracking of these targets was no longer necessary for the operation.

When VTS is removed?

Category	Value
When warrant ends	13%
When the vehicle is changed	13%
when the operation ends	71%
when device is broken or does not work properly	11%
When criminals become suspicious about the device	5%
If there is no need	37%
Before the vehicle is taken to the mechanic to be repaired	21%
before the battery depletes	42%
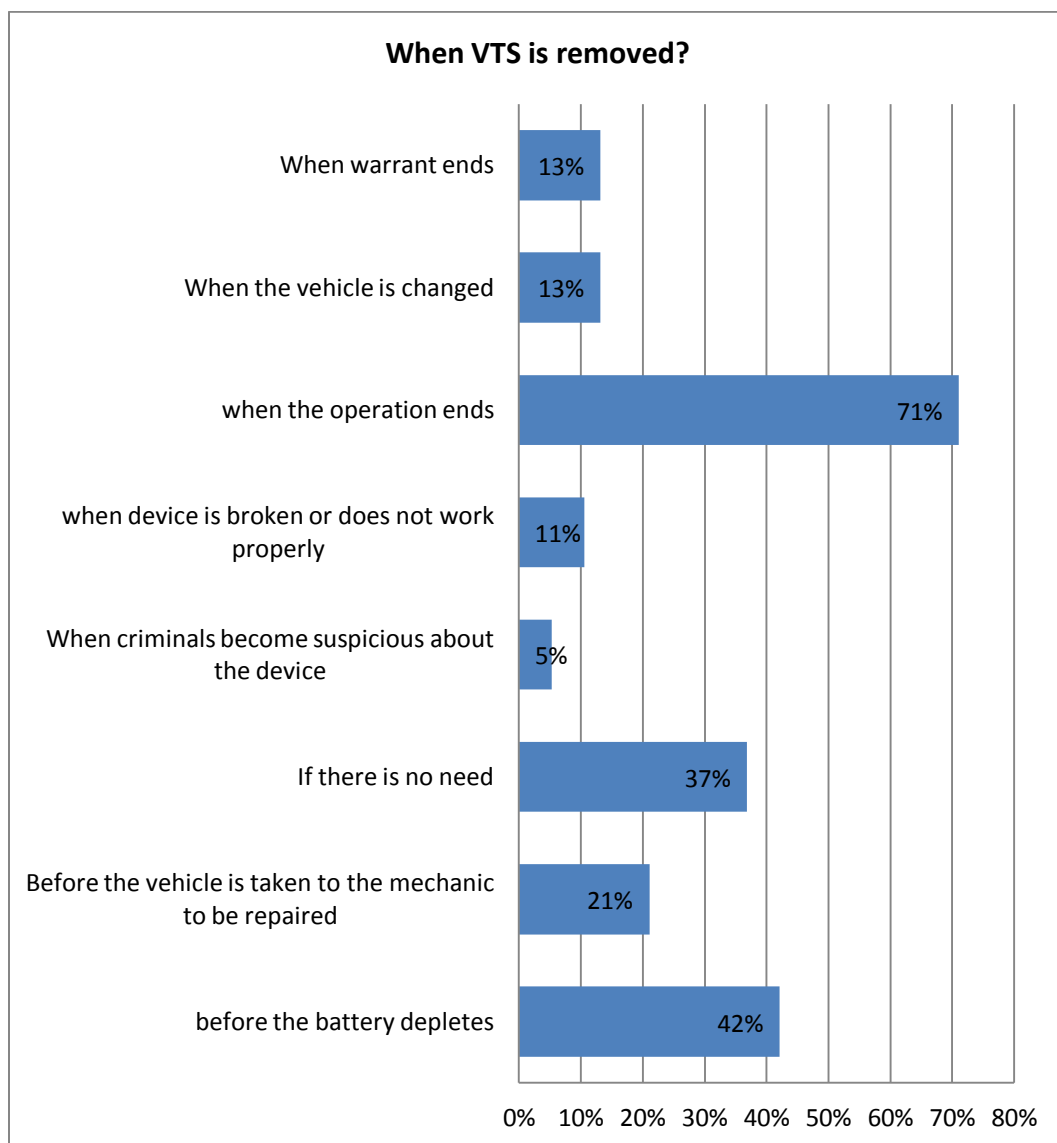
Figure 39. When VTS is removed?

Twenty one percent of respondents indicated that they removed the device because there was a risk of the device being noticed by the targets. According to these

informants, they removed the device when they learned that the targets would take their vehicles to a mechanic to be repaired or to a car service for a periodic checking. Two of them said that they had to remove the device at the mechanic by cooperating with the mechanic after their target left the vehicle.

Thirteen percent of respondents indicated they gave up using the GPS tracking device in the operation and removed it from the targets' vehicle because the warrant ended. However, in some operations they again placed the device onto the targets' vehicle after obtaining a new warrant because the tracking of the targets by VTS was still important for the operation.

For another 13% of respondents it appeared that if the vehicle tracked by VTS was given to another person who was unrelated to the investigation, then the device was removed from the targets' vehicle.

Eleven percent of respondents indicated that GPS tracking devices sometimes did not work properly or could break down. According to these individuals, in such situations they removed the device from the targets' vehicle and replaced it with a new one if the warrant was still valid.

Five percent of respondents indicated GPS tracking device were removed as soon as possible if the targets suspected its use.

What is the Most Frequent Type of Vehicle VTS is Placed?

To be able to identify in which vehicle type VTSs are most sited in the fight against organized crime interviewees were asked which type of vehicles were used most to install

a VTS during their operations. Thirty nine police professionals answered the question. According to the given answers, it was found that four types of vehicles were involved most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs as seen in Figure 40.
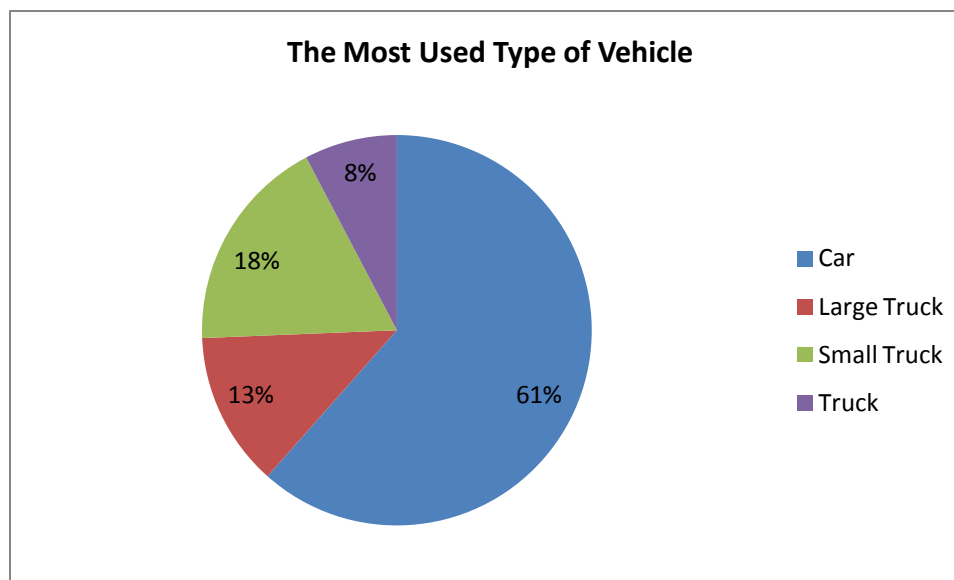
Figure 40. The Most Used Type of Vehicle

According to 61% of respondents the most common site for placing a VTS in a vehicle type is the car. 18% of respondents indicated they generally placed VTSs onto small trucks in their operations. 13% of respondents said large trucks and 8% of respondents said trucks as the most frequent type of vehicle where VTS were placed.

In addition to above vehicle types, buses and midi buses were also exemplified as VTS installed vehicles but here the goal of the question was to find out the most frequent vehicle type that police officers installed VTS in the operations to fight against international organized crime.

Which Parts of the Vehicle are Most Suitable for Installing a VTS

Interviewees were asked about which parts of the vehicle were most suitable for installing a VTS. Thirty five police professionals answered the question and all of them unanimously indicated that the undercarriage part of the vehicles is the most suitable place for installing a VTS. According to these respondents, a VTS can easily be installed to the undercarriage part of the vehicles due to its strong magnets. Furthermore, the undercarriage part of the vehicles is the best place to hide a VTS in a short time.

Have Criminals Ever Detected the VTS Placed to Their Vehicles?

In the present study it was also the purpose to try to find out whether VTSs used in operations had ever been detected by criminals. For this purpose, the interviewees were asked whether they had ever witnessed any operation in which VTSs were detected by criminals. Their answers are shown in below figure.
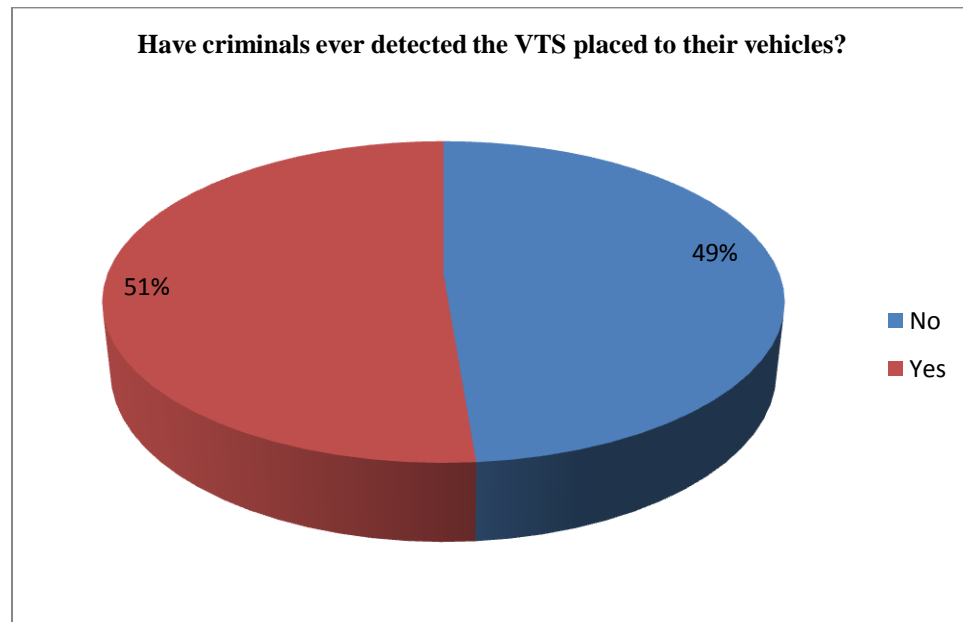
Figure 41. Have criminals ever detected the VTS placed to their vehicles?

Thirty nine police professional answered the question and twenty of them (51%) indicated they have witnessed the detection of VTS by criminals when these have been placed in their vehicles. The answer, on the other hand, does not reflect any certain amount of detection of the VTS by criminals. It only reflects the fact that about half of respondents had witnessed at least one operation in which the use of VTS was detected by criminals. These respondents gave some examples of how criminals behaved when they detected the device.

According to one respondent

"...after they found out a VTS placed their cars, they always checked their vehicles whether any other VTS was placed. In some situations, they preferred to use a rental car when they planned to do their illegal activity."

Another respondent indicated that

".....when these organized criminals detected a VTS placed to their cars by police, either they broke the device immediately or they placed the device to another person's vehicle to deceive police about their whereabouts."

Forty nine percent of respondents, however, responded that they had never been witness to such a situation in their operations.

Have Criminals Ever Placed a VTS to the Police Vehicles?

Apart from what the police do, interviewees were also asked whether they have witnessed criminals placing a VTS on police cars in order to track police vehicles as a counter measure for their illegal activities.

Thirty nine police professionals answered the question and all of them unanimously pointed out that they had never witnessed such a situation. However, three of them indicated that they had witnessed the use of VTSs by organized criminals to control their members who are not trusted very much as far as making contact with the police or cooperating with the police about their illegal activities.

The Use of VTSs in Marine Applications

Interviewees were asked whether there was any operation where a VTS was installed on a ship, boat or any kind of maritime vehicles. It was the aim here to learn whether there is any operation where VTS is used to monitor maritime trafficking of illegal products. Forty one police professionals answered the question. Thirty eight of them said they had never witnessed nor heard about any operation where a VTS was used to monitor maritime trafficking of illegal products. Two police professionals from Ankara gave detailed examples of how VTS were placed on a maritime vehicle.

In the first example, the respondent provided an example of police cooperation between the Spanish and the Turkish police agencies in which VTSs were used to monitor a maritime vehicle. However, in the context of this operation, the VTS was not

installed by police officers to monitor criminals, but was installed by the criminals to monitor their members and their illegal products.

The second example provided by another police professional from Ankara was another example of police cooperation. This operation was carried out between the US DEA and the Turkish police agencies and the VTS was used to monitor maritime trafficking of illegal products. In the operation, officers from the DEA agency provided the exact location of the ship to the officers of the TNP as the GPS tracking device had to be installed on a container that carried 800 kg amount of cocaine. Both of these two examples are detailed in the next section regarding the use of VTS international operations.

The third respondent said that he had heard about an operation in which a VTS was used to monitor maritime drug trafficking over Lake Van. However, no further details were available about this operation.

FINDINGS OF RESEARCH QUESTION 4

In this section, it was found that VTSs were used for three months in operations. Most of respondents said that three month's use of VTS was sufficient in their operations and they generally did not need any extension of the warrant. According to the respondents VTSs were mostly placed when they could not benefit from lawful interception methods, especially the interception of cell phone conversations of the targets. Moreover VTSs were also placed on the targets' car when physical tracking was not possible due to the risk of the tracking team being burnt in the operation. It was also found that VTSs were

used in operations until the operations ended. On the other hand, these devices were removed in operations before their batteries were depleted.

The study found that four types of vehicles were involved most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs. Most of respondents indicated that the most common site for placing a VTS in a vehicle type was the car. Moreover, the undercarriage part of the vehicles was explained as the most suitable place for installing a VTS.

Furthermore, approximately half of respondents indicated they have witnessed the detection of VTS by criminals when these have been placed in their vehicles. The answer, on the other hand, does not reflect any certain amount of detection of the VTS by criminals. All of respondents pointed out that they had never witnessed criminals placing a VTS on police cars in order to track police vehicles as a counter measure for their illegal activities.

Lastly, the vast majority of the respondent pointed out that they had never witnessed the use of VTSs in maritime illegal trafficking. However, only three examples were given by police professionals how VTS were placed on a maritime vehicle.

RESEARCH QUESTION 5: WHAT ARE THE DIFFERENCES OF THE USE OF VTSS IN VAN, ISTANBUL AND ANKARA CITIES FROM THE OPERATIONAL CHARACTERISTICS PERSPECTIVE

In this study, it was also the purpose to try to find out whether there were any differences in the use of VTSs in police operations in the cities of Istanbul, Van and Ankara.

Average Use of the VTS

The answers of respondents working in Istanbul, Van and Ankara are shown in Figure 42. Three months was the answer most provided by the respondents who were answering a question about a certain time interval concerning the average use of VTS in cities of Istanbul, Van and Ankara.
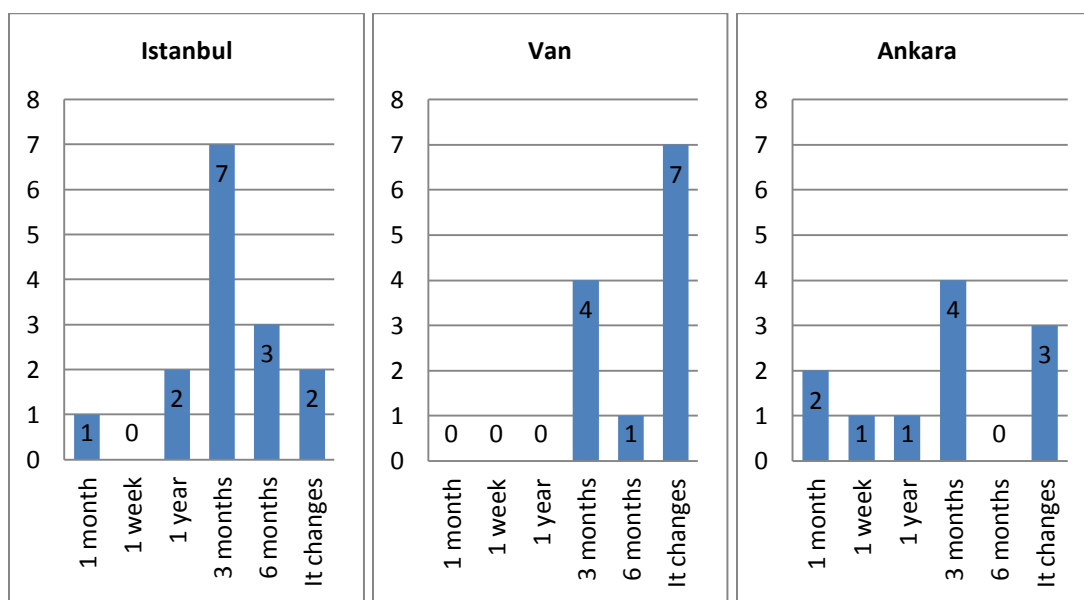
Figure 42. Average Use of VTS in the Cities of Istanbul, Van and Ankara

The time period of one year was only provided by one respondent working in Istanbul and Ankara. The time period of a week was provided by a respondent working in Ankara.

In sum, in Istanbul the average use of VTS varies from 1 month to 1 year, but 3 months is the most common time interval for the use of VTSs in Istanbul. In Van, no certain time interval was given earlier than 3 months. However, 3 months was indicated as the most frequent time interval when discussing the use of VTS. In Ankara, short time interval answers were seen   most often among the respondents working there. It is thought that this was because the duties of respondents working in Ankara were generally more about the controlled delivery of operations. According to these respondents, when any controlled delivery operation this was done in the border cities of Turkey, and this means either the operation would end shortly or the criminals would leave the county in a short time frame.

When is VTS Placed?

The most outstanding difference was seen in the answers regarding the use of VTS when police officers could not benefit from communication interception methods, especially the interception of cell phone communications of the targets as shown in Figure 43. While 38% of respondents from Istanbul and 31% of respondents from Ankara, indicated that they placed VTS in the vehicles of the targets because they could not benefit from communication interception methods, however, only 11% of respondents from the city of Van shared the same idea.
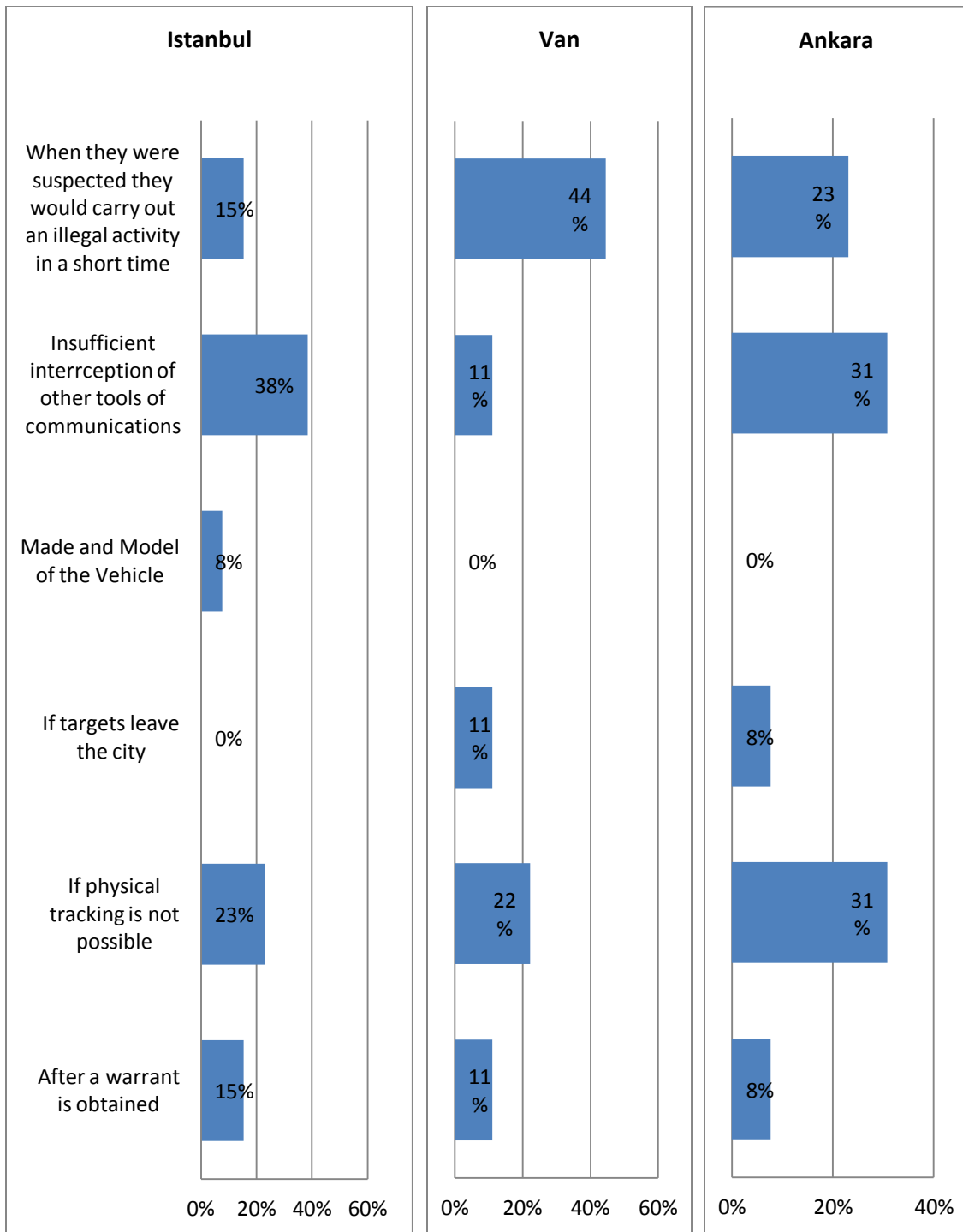
Figure 43. When VTS is placed in the cities of Istanbul, Van and Ankara

Moreover only 8% of respondents working in Istanbul indicated that they might decide to use VTS in their operations if the make and the model of the vehicle was suitable. In addition, only 11% of respondents from Van and 8% of respondents from Ankara indicated they placed VTSs in the vehicle of the target if they went out of the city.

When VTS is Removed?

The most prominent differences between Istanbul, Van and Ankara concerning the removal of VTS from the vehicles of the targets was seen in the answers coded as "When criminals become suspicious about the device" and "Before the vehicle is taken to the mechanic to be repaired" as shown in Figure 44.

While 14% of respondents from Istanbul indicated that VTSs were removed as soon as criminals become suspicious about the device, no respondents from Van and Ankara mentioned such an application in their cities.

Unlike the respondents from Istanbul and Ankara, no respondent from Van indicated they had experienced a situation where they had removed the VTS from the vehicles of the targets because the vehicle would be taken to the mechanic to be repaired in the near future.
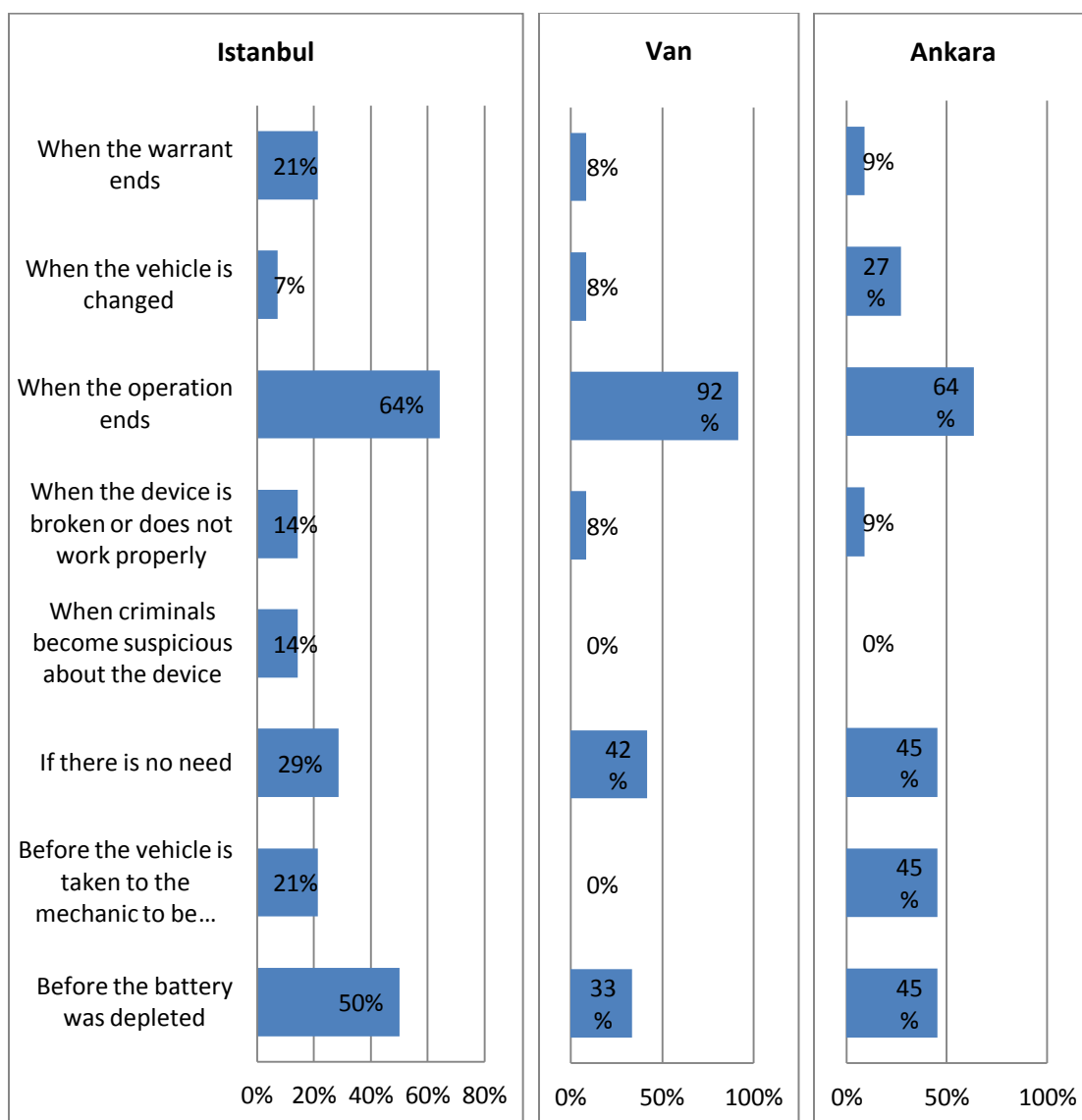
Figure 44. When VTS is removed in the cities of Istanbul, Van and Ankara

What is the Most Frequent Type of Vehicle where VTSs are Placed?

The types of vehicles used most to install a VTS in the operations are apparently different in each city as shown in Figure 45.

In Istanbul, the most frequent type of vehicle indicated was cars by a great majority of respondents (92% of respondents). In Van small trucks and cars were

indicated respectively as being used most to install a VTS in the operations. The placement of the VTS in small trucks was most seen in Van while there was only a small amount in Istanbul and not one in Ankara.

On the other hand, Ankara was remarkable in terms of the placement of the VTS in large trucks and trucks. Although the car was defined as the most frequent type of vehicle where VTSs are placed in Ankara, 33% of respondents indicated VTSs are also placed in large trucks in Ankara.
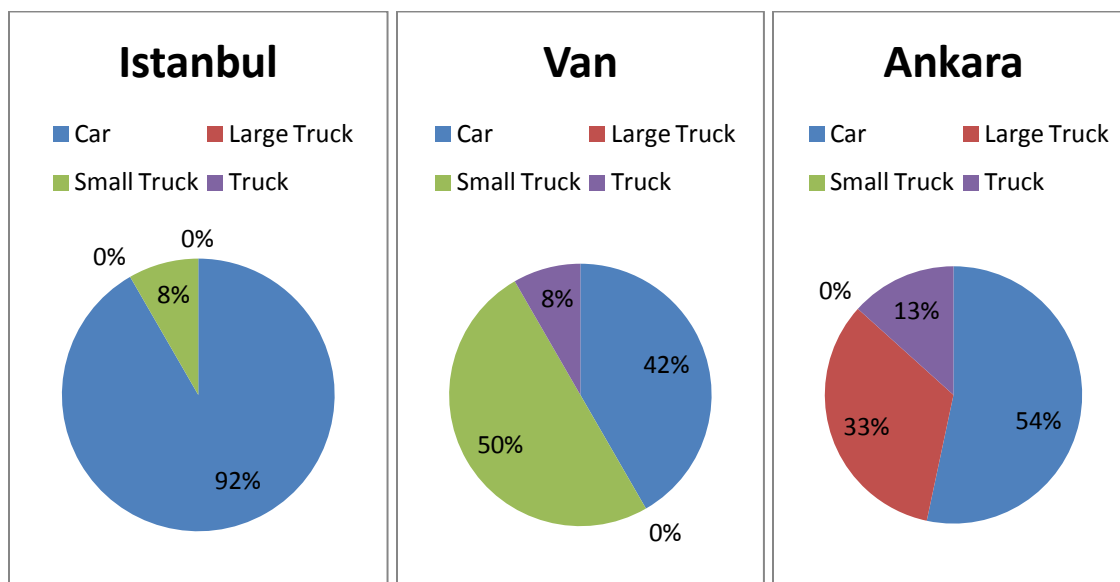
Figure 45. The Most Used Type of Vehicle in the cities of Istanbul, Van and Ankara

In sum, cars are important in Istanbul. Small trucks are most used in Van. Similarly, large trucks and trucks are most used in the city of Ankara.

It is argued that small trucks are widely used by the citizens of the city of Van. In this respect, this may be one of the reasons for the use of small trucks by criminals in the

city of Van. As an entrance point of the Afghanistan originated drug, drugs coming to the city of Van are both delivered in Turkey and transferred to the European countries. Therefore, small trucks can be used to hide the drug more easily than cars especially when the amount of the drug is big enough.

Both national and international controlled delivery operations are carried out by the Department of Anti-Smuggling and Organized Crime in Ankara (KOM Department). Moreover, the KOM Department is in contact with foreign police agencies and cooperates in some operations with them. Because large trucks and trucks are most used in international transportation, they are most suitable for organized criminals to carry their illegal subjects between countries. In this respect, the reason for the placement of VTS in the large trucks and trucks in the operations held by police officers from Ankara are possibly the controlled delivery operations or the operations in which the target vehicle is coming from a foreign country or the target vehicle will leave from the country in question.

Which Parts of the Vehicle is Most Suitable for Installing a VTS

All respondents in each city unanimously answered the question as the undercarriage part of the vehicles. In this respect, no difference was found between the cities of Istanbul, Van and Ankara.

Have Criminals Ever Detected the VTS Placed on Their Vehicles?

The distribution of answers of respondents for the question "Have criminals ever detected the VTS placed to their vehicles" are apparently different in each city as shown in Figure

46. In Istanbul, the great majority of respondents explained that they had witnessed at least one operation in which the targets detected the VTS placed in their vehicles. However, the great majority of respondents in Van explained that they had not witnessed an operation in which the targets detected the VTS placed in their vehicles. In Ankara, on the other hand almost half of respondents said they had witnessed such an operation and the other half said they had not.
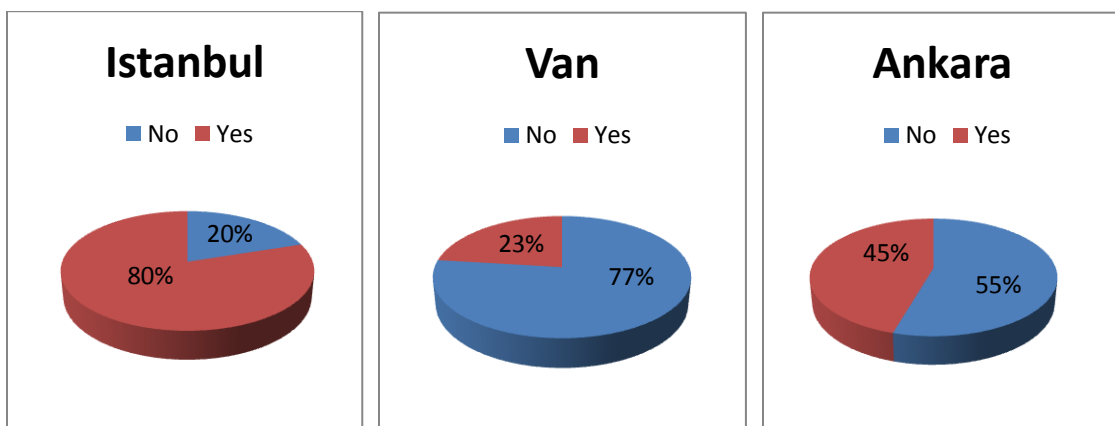
Figure 46. Have criminals ever detected the VTS placed to their vehicles in the cities of Istanbul, Van and Ankara?

According to these results it can be said that the organized criminals in Istanbul are apparently more attentive or more knowledgeable about the use of VTS than the criminals in Van.

Have Criminals Ever Placed a VTS to the Police Vehicles?

All respondents in each city unanimously answered the question saying they had never witnessed criminals placing a VTS on a police vehicle. In this respect, no difference was found between the cities of Istanbul, Van and Ankara.

The Use of VTSs in Marine Applications

The vast majority of respondents in each city answered the question saying they had never witnessed nor heard about any operation where a VTS was used to monitor maritime trafficking of illegal products. However, one respondents from each city gave an example of the use of VTSs in a maritime vehicle. In this respect, no difference was found between the cities of Istanbul, Van and Ankara.

FINDINGS OF RESEARCH QUESTION 5

In this section, it was the purpose to try to find out whether there were any differences in the use of VTSs in police operations in the cities of Istanbul, Van and Ankara.

According to the average use of VTS in these cities, it was found that in Istanbul the average use of VTS varied from 1 month to 1 year, but 3 months was the most common time interval for the use of VTSs in Istanbul. In Van, no certain time interval was given earlier than 3 months. However, 3 months was indicated as the most frequent time interval when discussing the use of VTS. In Ankara, short time interval answers were seen most often among the respondents working there.

It was also found that, police officers from Ankara and Istanbul placed VTS in the vehicles of the targets because they could not benefit from communication interception methods, however, only a small amount of respondents from the city of Van shared the same idea. Moreover, the respondents from Istanbul indicated that VTSs were removed as soon as criminals become suspicious about the device, no respondents from Van and Ankara mentioned such an application in their cities.

The types of vehicles used most to install a VTS in the operations were apparently different in each city. In this respect, cars were important in Istanbul. Organized criminals in Istanbul may operate more easily by using cars rather than big vehicles. From the drug trafficking perspective, dividing huge amount of drugs into small parts and carrying them by cars may be the other reason for this.

Small trucks were most used in Van. Because small trucks are widely used by the citizens of the city of Van, this may be one of the reasons for the use of small trucks by criminals in the city of Van. Moreover, small trucks can be used by organized criminals to hide the drugs coming from Afghanistan more easily than cars especially when the amount of the drug is big enough.

Large trucks and trucks, on the other hand, were most chosen vehicle types by criminals in the operations of the KOM Department in which VTS placed. Because large trucks and trucks are most used in international transportation, this may be one of the reasons for the use of large trucks and trucks by criminals to carry illegal subjects between countries. In this respect, the reason for the placement of VTS in the large trucks and trucks in the operations held by police officers from Ankara are possibly the controlled delivery operations or the operations in which the target vehicle is coming from a foreign country or the target vehicle will leave from the country in question.

The study also found that the organized criminals in Istanbul were apparently more attentive or more knowledgeable about the use of VTS than the criminals in Van. In Istanbul, the great majority of respondents explained that they had witnessed at least one

operation in which the targets detected the VTS placed in their vehicles. However, the great majority of respondents in Van explained that they had not witnessed an operation in which the targets detected the VTS placed in their vehicles.

The use of VTS to track marine vehicles was not seen much in Turkey.

RESEARCH QUESTION 6: HOW HAS THE USE OF VTS CONTRIBUTED TO INTERNATIONAL POLICE OPERATIONS IN THE FIGHT AGAINST INTERNATIONAL ORGANIZED CRIME

In this section the use of VTSs in international operations is examined. The included international police operation examples concerning the fight against international organized crime are mostly based on what the interviewees told the researcher during the interviews.

The interviewees were first asked whether there was any operation they were aware of where the TNP cooperated with any foreign law enforcement agency regarding the sharing of the GPS coordinates of the targets outside of Turkey who were being tracked by a VTS belonging to the TNP.
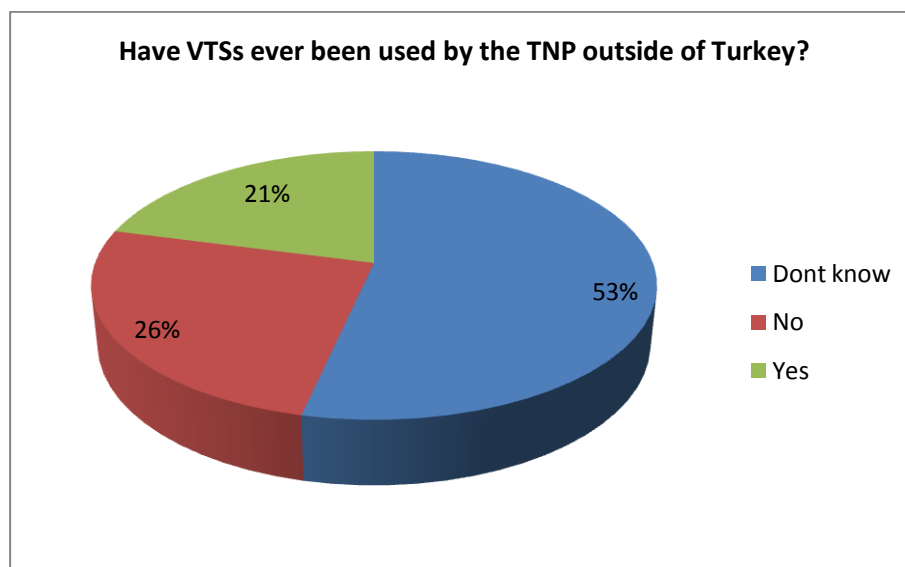
Figure 47. Have VTSs ever used in an international operation?

Forty three police professionals answered the question. Only 21% of respondents indicated they were aware of such an operation as shown in Figure 47. 26% of respondents said that they had never witnessed such an operation in their units. The remaining 53% of respondents said that they have no idea about the question.

Interviewees were secondly asked whether there was any operation they were aware of where the TNP cooperated with any foreign law enforcement agency regarding the sharing of the GPS coordinates of targets inside Turkey who were being tracked by a VTS belonging to a foreign law enforcement agency.

Thirty eight police professionals answered this question. Only 11% of respondents indicated they were aware of such an operation as shown in Figure 48. 34% of respondents responded that they had never witnessed such an operation in their units. The remaining 55% of respondents said that they had no idea about the question.
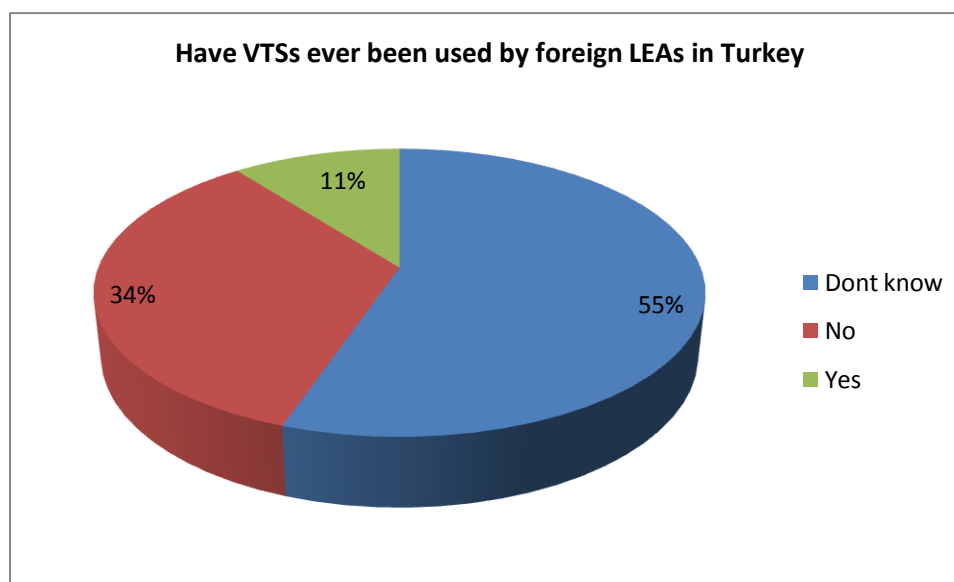
Figure 48. Have VTSs ever been used by foreign LEAs in Turkey

It was found by asking these questions that approximately half of the interviewees had some information about the issue. The majority of the answers came from the police professionals from Ankara and it was because all international police operations are administered by the Department of Anti Smuggling and Organized Crime of the Turkish National Police (KOM Department). For example, the KOM Department is responsible for obtaining warrants for international controlled delivery operations. There is a unique court in Ankara which only provides warrants for these operations. Therefore, police professionals working in the KOM Department are either involved in these operations or have information about these operations because they are carrying out these bureaucratic activities in the name of other police units from all over Turkey.

Below, two types of international police operations designed to combat international organized crimes in which VTSs were used are examined. The first is an internationally controlled delivery operation and the second is a police operation as a result of international police cooperation.

International Controlled Delivery Operations

The Operation Complicated: A Controlled Delivery Operation of Turkey, Greece, Macedonia, Serbia, Croatia, Slovenia, Austria and Germany

An organized crime group dealing with drug trafficking between Turkey and Germany was detected by the Department of Anti Smuggling and Organized Crime of the Turkish National Police (KOM Department) and eight members of this group were arrested at the port of Cesme of the city of Izmir with 95 kilogram heroin in December, 2004.

Later, the KOM Department officers detected that the same group was again making arrangements to transport illegal drugs to Germany. In this respect, the KOM Department applied to the public prosecutor of Ankara for a warrant for an international controlled delivery operation. Both the KOM department and German Police agency cooperated for this controlled delivery operation.

The vehicle was driven by a person from Germany to the city of Istanbul, Turkey. The driver who was going to drive the vehicle from Turkey to Germany came to the city of Istanbul, Turkey by air. The driver and a person who was going to make a stash section in the vehicle came to the city of Malatya and they were then taken by another person to the city of Elazig. The vehicle was prepared there to be used for drug trafficking. The officers of the KOM department physically tracked the driver and the vehicle when starting the journey from the city of Elazig to Germany.

Because it would leave Turkey soon, the officers of the KOM department obtained a warrant to place a GPS tracking device on the target vehicle to track the whereabouts of the vehicle before it left the country. In this respect, the officer placed the GPS tracking device onto the target vehicle at the county of Ipsala in the city of Edirne, which is at the border between Greece and Turkey. One respondent from the KOM department commented on the use of VTS in this controlled operation as outlined below:

> "Using the internet based VTS monitoring software we followed the whereabouts of the target vehicle. We shared this information with related foreign police officers. It is because, in international controlled delivery operations all of the countries on the route of the target vehicle have to track the vehicle without losing it. In this context, the use of VTS made easier to follow the target vehicle for all police agencies joined to the

operation. Moreover, it contributed to the going of target vehicle to the destination point in a controlled way."

In this operation, 17 country police agencies obtained warrants for this controlled delivery operation. Eight of these countries, Turkey, Greece, Macedonia, Serbia, Croatia, Slovenia, Austria and Germany were actively involved in the operation because the vehicle went through these countries to Germany. Starting from the county of Ipsala in the City of Edirne to the detainment of the vehicle in Germany, the KOM department shared the locational data obtained from a VTS from other police agencies joined to the operation. All of the foreign police agencies monitored the real time locational data of the whereabouts of the target vehicle. In the end, 11 criminals in Turkey and 4 criminals in Germany were arrested and 104 kilogram heroin were detained.

According to another respondent from KOM department;

"The most important outcome of this operation was the proven of an international controlled delivery operation being held by so many counties at the international level and in such a long distance."

The use of a VTS can be the one of the most important elements underpinning success in an operation because the route of the target vehicle starting from Turkey to Germany was monitored by all police officers of foreign police agencies that were joined to the operation.

The Operation Long Way: A Controlled Delivery Operation of Turkey, Bulgaria

Romania and Germany

The officers of KOM department detected that an organized crime group in the city of Adana was planning to transport illegal drug obtained in Iran to a country in Europe. The organized crime group was looking for a driver who could carry the illegal drug abroad. Due to the lawful interception of their GSM phone conversations of the members of this organized crime group, the driver and the vehicle were detected. This was a large Mercedes truck in the city of Istanbul and would carry construction materials from the city of Istanbul to Bucharest, Romania.

The officers of the KOM department assessed that the final destination of the vehicle was Germany, not Romania. Therefore, by contacting the German authorities it was decided to make a controlled delivery operation between Turkey and Germany. The KOM Department applied to the public prosecutor of Ankara for a warrant for an international controlled delivery operation. A warrant was obtained from the High Criminal Court of the city of Adana for the placement of the GPS tracking devices.

The vehicle was physically tracked when it left the country at the city of Edirne, which is at the border between Bulgaria and Turkey. Before the vehicle left the country the GPS tracking device was placed on the truck. On January 10, 2009 the truck left the country and entered Bulgaria. Two days later it entered the city of Bucharest, Romania and stayed in the city for 9 days. During this period, the Romanian police officers physically tracked the vehicle.

In the operation the whole journey of the vehicle was tracked by a VTS placed by Turkish police officers. The locational data was shared between other police agencies joined to the operation. They were able to use the monitoring software and see the whereabouts of the truck after the KOM department provided them with a user account for the software.

On January 21, 2009 the location of vehicle was changed and it was parked in a location where only authorized persons could enter. At this location, Romanian police officers were not able to see the vehicle. It was probable that both the target person and the illegal drug could be lost. Therefore, in response to an assessment between German and Romanian police officers, it was decided that the driver and the vehicle was going to be seized.

In the end the driver was seized and about 59 kilogram heroin was found hidden in 110 different packages in the truck. Moreover, the other 5 members of the organization were arrested in the cities of Istanbul, Adana and Sirnak in Turkey.

A Controlled Delivery Operation of Turkey and Bulgaria

In this operation, the KOM department detected an organized crime group making arrangements to transport heroin abroad. The KOM Department applied to public prosecutor of Ankara for a warrant for international controlled delivery operation and contacted the Bulgarian authorities about the controlled delivery operation. According to the one police professional from the KOM department:

According to the one police professional from the KOM department

> "The officers of KOM department placed a GPS tracking device to the target vehicle and tracked whereabouts of it. The vehicle leaved the country and entered to Bulgaria at the beginning of 2009. The locational data was shared with Bulgarian police and the exact location of the target vehicle was said to them."

In light of this information, the Bulgarian police located the vehicle and physically tracked it. In the end, the vehicle was stopped and 53 kilogram heroin were detained in the operation.

A Controlled Delivery Operation Involving Slovakia, Hungary, Romania, Bulgaria and Turkey

Slovakian authorities contacted the KOM department to request a controlled delivery operation. They indicated that they had detected an organized crime group that was going to transport a large amount of acetic anhydride which is used in producing heroin from Slovakia to Turkey. The goal of this group was later to bring the heroin from Turkey to other European countries. In order to uncover their illegal activities, the Slovakian authorities requested a controlled delivery operation be implemented from countries on the route such as Hungary, Romania, Bulgaria and Turkey.

In this context, the KOM Department applied to the public prosecutor of Ankara for a warrant for international controlled delivery operation on 11.12.2010 and informed and coordinated its division about the operation. Slovakian police officers placed a GPS tracking device in the acetic anhydride loaded truck and shared the locational data with the KOM department. Due to the use of VTS in the operation the truck was monitored until it safely entered Turkey on 14.12.2010 using the Kapikule border gate in the city of

Edirne. After that point, the truck was physically tracked by the officers of the KOM department and it was driven to the city of Istanbul on the same day.

The vehicle stayed 10 days in Istanbul and on 24.12.2010 it was stopped by the officers who detained 10 tons of acetic anhydride from the truck and the controlled delivery operation was ended.

International Police Operations Which Are Examples of International Police Cooperation

The Use of VTS in an Operation of German-Turkish Police Cooperation

The KOM Department was informed by the German Police that they were being followed a vehicle that may contain illegal drugs in 2010. A VTS was placed in this vehicle by German police officers and they monitored the whereabouts of the vehicle starting from its departure from Germany until its entry into the city of Adana in Turkey.

One of respondents from the KOM department summarized the operation as below;

> "They gave the exact coordinates of the vehicle saying that the vehicle is now in a mechanic at XX street in the city of Adana. They wanted us to check the vehicle because it may contain drugs. We found the vehicle according to the given coordinates. We examined the vehicle but could not find any drug in the vehicle. We removed the GPS tracking device and gave it to German liaison officers."

In the operation the target vehicle was tracked by the use of VTS by German police officers. According to the respondent the reason for informing the KOM

department may have been due to the depleting battery of the GPS tracking device. Because of the long use of the GPS tracking device, the battery can become depleted. If this was so, they needed to inform us about the location of the target. Otherwise they could have lost both the target and the device.

The Use of VTS in an Operation of Panama-United States and Turkish Police Cooperation

In 1998 the Panama police informed the US Drug Enforcement Administration (DEA) about a ship containing a large amount of cocaine. The DEA officers tracked the route of the ship. In this context the ship sailed from Chile to Beirut and came to the Turkish port of Mersin. The DEA officers informed the KOM department about the ship and the container carrying cocaine.

According to one respondent from KOM department;

> "The cocaine was expected to be send to Europe but thinking to wait a bit more would be dangerous DEA officers informed us about the ship. They had placed a GPS tracking device to the container that contained cocaine to monitor its whereabouts. We found the ship and the container according to the given locational data and seized 752 kilogram cocaine with this information"

The Use of VTS in an Operation of Spain-Turkish Police Cooperation

The Spanish police detained 316 kilogram heroin in the summer of 2008. According to the Spanish police the heroin was transported using a boat that had departed from Turkey. After this detention Spain police officers contacted the Turkish police officers about the boat and its departure point.

As the police professionals from KOM department said

> "The Spanish police said organized criminals placed a GPS tracking device to the boat in order to monitor whereabouts of it. According to them criminals in Holland monitored the movements of the boat in order to learn it was going safely to Spain during its 15 days trip. As they said the device was placed to the boat in Turkey by a technician and the criminal in Holland monitored the movements of the boat. We investigated what was said and learned from which port it was departed and by whom the GPS tracking device was placed."

This was not an operation in which VTS was used to detect the location of criminals but rather it is an example of how global technology can be used by international organized criminals to control their members.

The Use of VTS in an Operation of Belgium-Turkish Police Cooperation

On March,17 2010 a Belgian Liaison officer informed the police officers of the TNP about a truck which was then in Turkey. According to the liaison officer, the Belgian police detected an organized crime group that was planning to transport some amount of drug from Spain to Belgium. A truck was monitored by the Belgian police officers suspecting that it would use in international drug trafficking. In the operation, the Belgian police officers placed a GPS tracking device to the truck in order to monitor its whereabouts during its international trip.

However, while the Belgian police officers were monitoring the truck by using VTS, they realized that it changed its route. The police officers later learned that the criminals changed their plan and wanted to steal the truck. For this purpose, they planned to drive Syria over Turkey.

The Liaison officer said that the truck was at the border city of Hatay of Turkey and the Belgium police wanted from the TNP to remove the GPS tracking device and deliver it to them. One TNP police professionals summarized the operation as below;

> "The Belgium police gave us the exact coordinates of the vehicle. We informed the Hatay district of the TNP and they stopped the vehicle before it entered the Cilvegozu border gate. The driver of the truck was said the vehicle was stopped because there was an accident on the road and police needed information about the accident. The driver was taken to the police station with this excuse and meantime the other officers searched the vehicle and found the device by the help of the Belgium police."

In the end the TNP officers removed the GPS tracking device successfully by contacting a Belgian police officer who placed the device to the truck. Later the device was delivered by the TNP officers to the Belgian liaison officer on March 25, 2010.

The Effect of Political Elements in International Operational Police Cooperation

In the present study, interviewees were asked about the role of political elements in international operational police cooperation efforts. Eighteen police professionals responded to the question and their answers were coded as shown in Figure 49. The others either did not answer the question or they indicated that they weren't knowledgeable about the question.

According to the answers provided, the majority of respondents indicated that mutual good relations between police professionals is very important in international operational police cooperation, but political elements are also needed for good cooperation. Furthermore, 28% of respondents emphasized that international operational

police cooperation is not possible if the political relations between countries are not good. One of respondents' superb explanation below summarizes the common idea among the respondents.

> "Mutual good relations between police officers are certainly very important. However, when political relations between countries are bad, it is very unlikely one can get good results in international operational police cooperation even if the mutual relationship between the police officers is good. On the contrary, claiming that if political relations between countries are good, then international operational police cooperation is good is also not realistic."

The Effect of Political Element in International Operational Police Cooperation

- ■ Mutual good relations are very important but political elements are also needed
- ■ Mutual good relations is usually sufficient for a good mutual cooperation
- ■ Mutual good relations are just a step towards good cooperation
- ■ Cooperation is not possible if political relations are not good

44%
28%
22%
6%

Figure 49. The Effect of Political Element in International Operational Police Cooperation

Twenty two percent of respondents pointed out that mutual good relations between police professionals has usually been sufficient in many cases regarding international operational police cooperation. As these respondents indicated mutual good relations are usually sufficient in terms of levels of cooperation. However, when there is problem in political relations, mutual relations between police officers also affected.

Apart from what was mentioned before, only a small number of respondents accepted the view that mutual good relations between police professionals is the only step needed for good cooperation. According to this view, there are more important elements in international operational police cooperation as indicated below;

> "In international operational police cooperation, good mutual relations between police professionals is just one step in the process towards good cooperation. Because, the authority and responsibility of the police is limited in an operation, political elements are also important for good cooperation. Furthermore, the regulatory and judicial systems of countries and how interact is also important for obtaining good cooperation."

Problems in International Operational Police Cooperation

The interviewees were also asked what types of problems they had witnessed in international operational police cooperation contexts. Eighteen police professionals responded to the question and their answers were coded as shown in Figure 50. The others either did not answer the question or they indicated they weren't knowledgeable about the question.

The most important problem in international operational police cooperation was indicated by the respondents as mistrust between police officers. As respondents pointed out, relations between police agencies are mostly dependent upon the mutual good relations of police officers. If there is no trust mechanism between these police officers, this directly effects cooperation. Police officers cannot be participative when they don't trust each other.
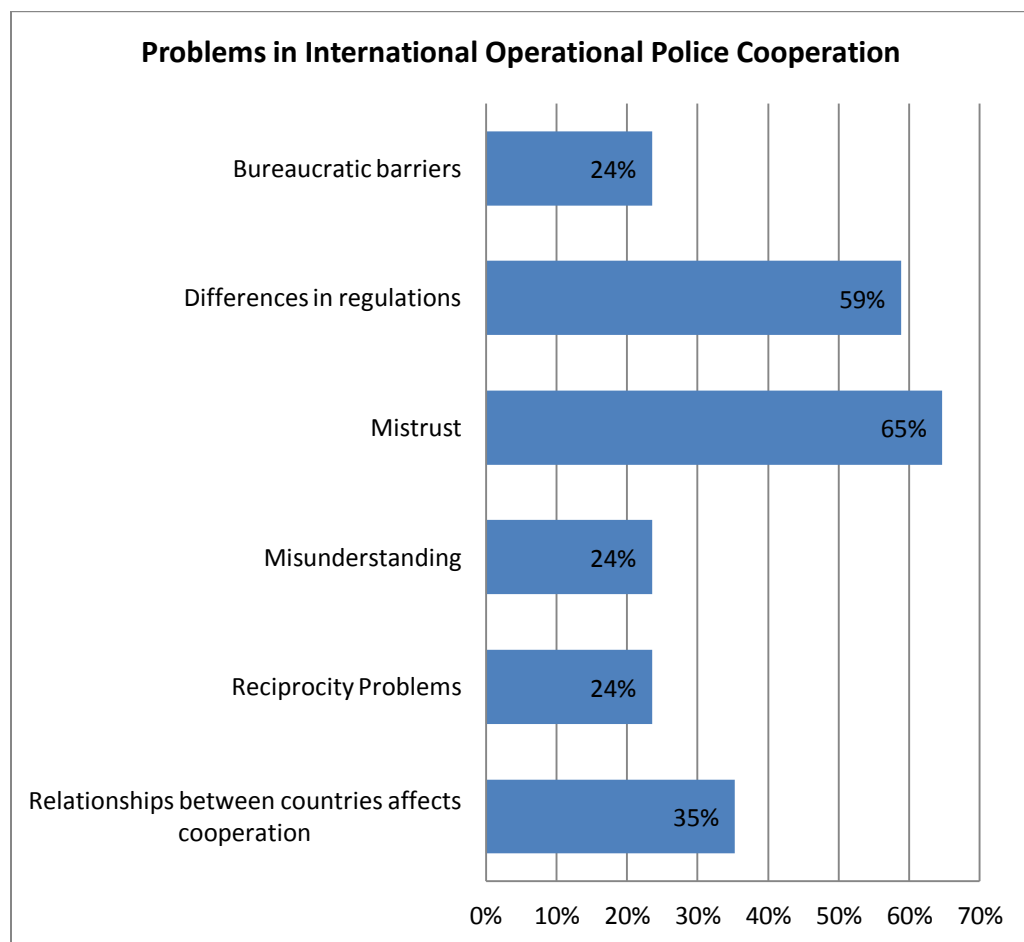
Figure 50. Problems in International Operational Police Cooperation

Fifty nine percent of respondents emphasized the importance of differences in regulations governing the LEAs in each country involved in international operational police cooperation. As one respondent indicated that;

"Problems arising from differences in regulations of the LEAs are not seen as important in the first step, but later this can become a very serious problem causing negation and blockages in the realm of cooperation."

For example while for one police organization a criminal X is seen as a terrorist, the corresponding police organization may not accept the same person as a terrorist and therefore this causes problems in the process of cooperation attempts between police organizations.

The relationships between countries was also exemplified as another barrier by 39% of respondents. As was evaluated in the preceding section, the level of the existing relationship between the countries involved affects the relationship between police officers as well as the cooperation between them. In this respect, respondents said that there was no stability in international operational police cooperation because of the effect of political relations between countries.

Twenty four percent of respondents said that the level of cooperation depends on the reciprocity between police organizations. As one respondent indicated below;

> "Reciprocity is very important in the context of cooperation attempts between police forces. Your counterpart has to trust you. If this is obtained then in many operations mutual information sharing can be carried out. You have to maintain the level of giving information to your counterparts at least at the same level you got information from them. Otherwise, when

you provide information that your counterpart wanted, but they did not reply to you, next time when you wanted information from them, you are going to be careful not to share the information they wanted next time or vice versa."

Bureaucratic barriers were stated to be another barrier that can influence international operational police cooperation and this view was supported by 24% of respondents. Although there appeared to be mutual trust between police officers, sometimes the information that was desired could not be obtained in time because of bureaucratic problems. As one of respondents indicated, police are often not authorized to access some pieces of information. In that case, it may take more time to reply to such a request than the counterpart wants.

Twenty four percent of respondents indicated misunderstandings as another barrier in international operational police cooperation. According to these respondents, the level of foreign language of the police officers may not be sufficient to explain what they wanted from their counterparts, or they could not provide the exact information their counterparts requested.

FINDINGS OF RESEARCH QUESTION 6

In this section the use of VTS in international police operations was examined. For this purpose two types of police operations were assessed: International Controlled Delivery Operations and International Police Operations which are examples Of International Police Cooperation.

The total number of international controlled delivery operations and international police operations that can serve as examples of international police cooperation was very limited, however. For example, the KOM department indicated that there was only one international controlled delivery operation in 2010. According to a 2011 Report of KOM department, the total number of controlled delivery operations between 1997 and 2011 was 166 as shown in Figure 51.

COUNTRIES	NUMBER OF CONTROLLED DELIVERY	AMOUNT (GR)					AMOUNT (LT)		AMOUNT (PCS)			BLACK MONEY	SUSPECT
		CANABIS	HEROIN	OPIUM	MORPHINE BASE	COCAINE	SAPHROLE	ASETIC ANHYDRITE	ECSTASY	CAPTAGON	SUBUTEX		
GERMANY	23	764,900	27,463			10,966							53
USA	22	3,378	1,506	87,376		57,520							75
AUSTRIA	1		1,230										3
BELGIUM	2	1,000,000											
BULGARIA	11	263,000	57,000	34						350,000			20
FRANCE	1						1						
GEORGIA	2										2,016		4
THE NETHERLANDS	5		138,391			300						311,000 Euro 250,000 Sterling	17
UNITED KINGDOM	2		17,160										11
ITALY	2												
IRAN	1												
ISRAEL	1			2,000									3
CANADA	1			8,000									6
MACEDONIA	6		66,560										8
ROMANIA	8	5,938	59,081					4,000					7
RUSSIAN FEDERATION	3							8,150					14
SLOVENIA	1							12,960					4
SLOVAKIA	1							10,000					1
GREECE	3		512,100										33
DOMESTIC	70	1,065,000	1,770,117		267700	400		4,387	152,000	5,262,000			244
TOTAL	166	3,102,216	2,650,608	97,410	267,700	69,186	1	39,497	152,000	5,612,000	2,016		503

Figure 51. The Controlled Delivery Operations of the KOM Department Between 1997 and 2011 [5]

5 Ibid.

Seventy of these controlled delivery operations were domestic. In other words, the number of international controlled delivery operations between 1997 and 2011 was 96. Germany, USA and Bulgaria were indicated as the most common countries involved in a controlled delivery operation with Turkey. Although there were not many examples of the use of VTS in international police operations, the operations examined in the present study showed how VTSs were important in these operations. For instance, in Operation Complicated, the KOM department for the first time witnessed a controlled delivery operation "being held by so many countries at the international level and in such a long distance."

Moreover, the effects of political issues along with the barriers to international operational police cooperation were examined. The study found that although mutual trust between police officers is of utmost importance in the context of international operational police cooperation efforts, good cooperation is unlikely to be maintained in the case of any problem in political relations between countries.

CONCLUSION

The study showed that the TNP officers benefited from the use of VTS devices in their operations. Furthermore, the statistical data prepared by the TNP was also showed that the vast majority of police operations became successful when police officers used VTSs in their operations.

The contributions of the use of VTSs in police operations can be summarized as below;

- The most important contribution of the use of VTSs is the detection of geographical location of the target vehicles

- The use of VTSs helps to learn the routines of criminals which is used to guess what they will do next

- The use of VTSs greatly helps physical tracking in operations

- VTS is a complementary tool for physical tracking of the targets

- In some occasions, VTSs can be used as an alternative to physical tracking

- The use of VTSs can eliminate being burnt risks in operations

- The targets operate more freely when the VTSs are used in the operations because they are not worried about being followed by police

- In most of the operations, the operation would not have been successful if TNP police officers did not use VTS devices to locate the criminals

- Although lawful interception methods, especially the interception of cell phone conversations, used in the operation were insufficient, the operation became successful due to the use of VTSs by police officers

Operational characteristics of the use of VTSs can be summarized as below.

- VTSs were mostly placed when police officers could not benefit from lawful interception methods, especially the interception of cell phone conversations of the targets

- VTSs were also placed on the targets' car when physical tracking was not possible due to the risk of the tracking team being burnt in the operation.

- VTSs were generally used for three months in operations of the TNP.

- VTSs were used in operations until the operations ended and they were removed in operations before their batteries were depleted.

- Four types of vehicles were involved most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs. The most common site for placing a VTS in a vehicle type was the car

- The undercarriage part of the vehicles was explained as the most suitable place for installing a VTS.

- TNP police officers witnessed the detection of VTS by criminals when it was placed in their vehicles.

- TNP police officers had never witnessed criminals placing a VTS on police cars in order to track police vehicles as a counter measure for their illegal activities.

- The average use of VTSs, the type of vehicles VTSs are placed and the attention levels of the criminals vary according to the cities in which VTSs were used.

- VTSs were rarely used in the operations to combat maritime illegal trafficking.

Although the total number of international controlled delivery operations of the TNP and international police operations that can serve as examples of international police cooperation between the TNP and other foreign police forces was very limited, the use of VTS in these operations showed how VTSs were important in these operations.

In sum, the study addressed the importance of new policing technologies in the fight against IOC. There is no unique solution to combat crimes in our globalized world. In other words, these new policing technologies can be used interchangeably by LEA officers. For example, a new accomplice of a criminal can be detected by *interception* of his/her telephone calls. Later, the secret meeting point of criminals can be detected by using *VTSs* and they can be monitored by using *observation systems* at this meeting point. When searching the residence at this point after criminals left, police officers can obtain electronic evidence from criminals' computers, cell phones, digital cameras or other electronic devices by using *computer forensics.* The electronic evidence showing where these criminals cultivated cannabis, for example, can be sufficient to charge these criminals with crime. Finally, their arrest can be announced by a dispatching center and with the help of *CCTV systems* and *modernized patrol cars* and criminals can be identified and where criminals fled can be detected. As in this scenario, the use of these six new policing technologies examined in this study contributes to the fight against crimes in our globalized world. In this respect, the detailed examination of the use of VTSs in the present study also showed that how VTSs are important in the fight against IOC.

CHAPTER 6

THE USE OF VTSs IN THE US AND EUROPE AND HUMAN RIGHTS VIOLATIONS ARISING FROM LAW ENFORCEMENT OFFICER'S USE OF VTSs IN THEIR OPERATIONS

In the previous chapter, it was analyzed and found that how the use of VTSs was important in police operations. However, the use of such new technologies by law enforcement officers in the investigations and operations must not violate the privacy of individuals. As Regan argued "[e]very day millions of ordinary people are subject to a variety of technologies that invade their privacy".[1] In this respect, the use of VTSs has also the potential of invading individuals' privacy. Thus, this chapter analyzes whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe.

US EXAMPLES

GPS tracking devices have been the crucial element of some investigations of US LEA officers. For example, Gardner and Anderson touch on a murder case in their book "Criminal Evidence" as a case enlightened by the use of a GPS device by police officers during the investigation.[2] The murder case was tried in 1999 in Washington and the victim was a nine years old girl. The girl was reported missing, but could not be found either alive or dead. "Although some evidence pointed to the girl's father as a possible

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[1] Regan, P. M. (1995). *Legislating Privacy : Technology, Social Values, and Public Policy*. Chapel Hill: University of North Carolina Press.
[2] Gardner, T. J., & Anderson, T. M. (2010). *Criminal Evidence : Principles and Cases* (7th ed.). Belmont, CA: Wadsworth Cengage Learning.

suspect in the girl's disappearance, searches of his home and truck produced nothing".[3] Placing a GPS tracking device in his truck, the police tracked his whereabouts, and found where he had buried his daughter's body. In light of the evidence obtained from the GPS tracking device and the evidence collected from girl's body, the father was convicted of murdering her daughter.[4]

In 2004, in another example, Scott Peterson was convicted of the murder of his pregnant wife, Laci, and their unborn son after obtaining evidence from the use of GPS devices attached to each of his four cars. The evidence obtained by GPS devices indicated that he was in the same place, Berkeley Marina, where his wife's body was found and when his wife was reported missing. According to this locational data, he later drove to San Francisco Bay, as prosecutors asserted, "possibly fearing someone would find the bodies".[5]

These examples can be broadened, but the question is "Does the use of GPS tracking devices by US LEA officers violate privacy of individuals who are the suspects of an investigation in the US?" In terms of this question, the privacy of individuals in the US is protected by Fourth Amendment. According to Fourth Amendment;

> "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or

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[3] Ibid. pp. 401
[4] Ibid. pp. 401
[5] CNN. (2004). Judge Allows Gps Evidence in Peterson Case. Retrieved October 25, 2011, from http://edition.cnn.com/2004/LAW/02/17/peterson.trial/index.html

affirmation, and particularly describing the place to be searched, and the persons or things to be seized". [6]

In this context, there have been both opponents and proponents of the opinion that the use of GPS tracking devices by US LEA officers does not violate privacy. Proponents of this opinion assert that this is not different from physical tracking of suspects by officers. According to this opinion, attaching a GPS tracking device to a suspect's car in a public place does not constitute a search. As Arlington Commonwealth's Attorney Richard E. Trodden said, "[a] police officer could do the same thing with his or her own eyes".[7] According to Trodden, the use of GPS tracking devices "helps to cut down on the number of police officers who would have to be out tracking particular cars".[8]

Opponents of this opinion assert that GPS tracking devices provide more details than the physical tracking of suspects. As attorney Chris Leibig stated "while it may be true that police can conduct surveillance of people on a public street without violating their rights, tracking a person everywhere they go and keeping a computer record of it for days and days without that person knowing is a completely different type of intrusion".[9] Kanovitz assesses this in his book on Constitutional Law stating that,

> "Fourth Amendment protection is triggered when police use surveillance technologies to obtain information the suspect reasonably expects is private. Wiretapping, bugging, interception of electronic transmissions, such as e-mail, and technologically assisted monitoring of activities inside

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[6] Cornell.edu. (n.d.). Fourth Amendment. Retrieved February 10, 2012, from http://www.law.cornell.edu/constitution/fourth_amendment
[7] WashingtonPost. (2008). Police Turn to Secret Weapon: Gps Device. Retrieved 20 December, 2011, from http://www.washingtonpost.com/wp-dyn/content/article/2008/08/12/AR2008081203275_2.html?nav
[8] Ibid.
[9] Ibid.

the home are the main areas of surveillance law in which a search warrant or wiretap order is required".[10]

According to this informant, police surveillance devices "that simply enable police to monitor activities in open view more efficiently and at a reduced cost do not raise constitutional concerns".[11] From this perspective, the use of GPS tracking devices by LEA officers in the investigations have been interpreted differently in the State Courts of the US. However, a very recent decision of the US Supreme Court given on January 24 of 2012 has put an end to the different interpretations of the State Courts about whether the warrantless use of GPS tracking devices by LEA officers violates suspects' Four Amendment rights.

In this section, State v. Knotts case is first examined. Although it did not include the use of GPS tracking device, this case has proved to be a milestone for later decisions of the State Courts in the US to establish whether the use of GPS tracking devices by LEA officers violates the suspects' privacy which is secured by the Fourth Amendment. Second, different court applications are examined, and after that, the very recent US Supreme court' binding decision is provided as a new milestone implemented by the lower US Courts concerning future decisions as regards the use of GPS tracking devices in the context of privacy.

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[10] Kanovitz, J. R. (2010). *Constitutional Law* (12th ed.). New Providence, NJ: LexisNexis. pp.275-276
[11] Ibid. pp.275

State v. Knotts

In this case, Minnesota law enforcement officers placed a radio transmitter without a warrant called a "beeper" inside a chloroform container which would be sold to Armstrong who was suspected of purchasing chloroform to manufacture illicit drugs. After he purchased this chloroform container, officers followed his car "in which the chloroform was placed, maintaining contact by using both visual surveillance and a monitor which received the beeper signals, and ultimately tracing the chloroform, by beeper monitoring alone, to respondent's secluded cabin in Wisconsin".[12]

After monitoring the activities for three days, officers secured "a search warrant and discovered the chloroform container, and a drug laboratory in the cabin, including chemicals and formulas for producing amphetamine".[13] Although the respondent motioned he tried to suppress the evidence obtained by the warrantless use of the beeper in the investigation, the motion was denied, and he was convicted. However, the Court of Appeals held that "the monitoring of the beeper was prohibited by the Fourth Amendment".[14]

The US Supreme Court held that "[a] person traveling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another". [15]According to the Court,

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[12] TheUSSupremeCourt. (1983). *Unites States V. Knotts*. Retrieved from
http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=us&vol=460&invol=276.
[13] Ibid.
[14] Ibid.
[15] Ibid.

> "police do not need a search warrant to use an electronic beeper to track the movements of a suspect's car because a car driving on a street is exposed to public view. Use of the beeper revealed nothing that the police could not have learned through physical surveillance alone. The beeper simply enabled the police to follow the vehicle they were tailing at a greater distance, while still staying in contact with it". [16]

In light of the above arguments, The Supreme Court ruled on March 2, 1983 that the warrantless use of beeper does not constitute a search. According the Court, the Fourth Amendment does not inhibit "the police from augmenting the sensory faculties bestowed upon them at birth with such enhancements as science and technology afforded them in this case". [17]

The Examples Between 1983-2012

In this section nine different cases are examined to see whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US between 1983 and 2012. In the following cases law enforcement officers placed a GPS tracking device to defendants' vehicles in their investigations and at the end of these investigations defendants were found guilty and sentenced to life in prison. However, defendants appealed arguing that both the placement and the use of the GPS tracking devices independently violated their Fourth Amendment rights and they wanted to suppress the evidence obtained by the use of GPS tracking devices. Below shows how State courts decided for each case.

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[16] Ibid.
[17] Ibid.

State v. McIver

The United States Court of Appeals for the Ninth Circuit concluded that the attachment of the beeper and the GPS device to the undercarriage of McIver's vehicle by law enforcement officers while the vehicle was parked in his driveway did not violate the defendant's Fourth Amendment rights.

State v. Jackson

The Supreme Court of Washington decided that the law enforcement officers "properly obtained valid warrants; thus, evidence obtained through use of the [GPS tracking] device was properly admitted".[18]

State v. Garcia

Upholding the Supreme Court's decision in Knotts v. State case, the United States Court of Appeals for the Seventh Circuit ruled on February 2, 2007 that the warrantless use of a GPS tracking device was neither a seizure nor a search, and, therefore, it did not violate the defendants Fourth Amendment rights.

Nassau County Police Department v. Morton

New York State County Court ruled on November 27, 2007 that the NCDP officers' warrantless use of the GPS tracking device did not violate the appellant's Fourth Amendment rights, arguing "[n]othing in the Fourth Amendment prohibit[s] the police

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[18] WashingtonCourt. (2003). *State V. Jackson*. Retrieved from http://caselaw.findlaw.com/wa-supreme-court/1346233.html.

from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afford[s] them". [19]

State v. Sveum

The Supreme Court of Wisconsin concluded on July 20, 2010 that "the order authorizing law enforcement to install and monitor a GPS tracking device on Sveum's vehicle constituted a valid warrant and that the officers' execution of the warrant was reasonable".[20]

State v. Pineda-Moreno

The United States Court of Appeals for The Ninth Circuit concluded on January 11, 2010 that the attachment of GPS devices to a defendant's vehicle while parked in his/her driveway, in a public parking lot, and on a public street, and the subsequent monitoring of the movements of his car by GPS tracking devices did not violate Pineda-Moreno's Fourth Amendment rights.

State v. Marquez

The United States Court of Appeals for the Eighth Circuit reviewed the case. As in the State v. Knotts case, the jury argued that "[a] person traveling via automobile on public streets has no reasonable expectation of privacy in his movements from one locale to another".[21] Moreover, they indicated that "when police have reasonable suspicion that

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[19] DistrictCourtofNewYork. (2007). *Misha Morton against Nassau County Police Department*. Retrieved from https://files.nyu.edu/jmm257/public/opinion-and-order.pdf. pp.6
[20] WisconsinCourt. (2010). *State V. Sveum.* Retrieved from http://www.wicourts.gov/sc/opinion/DisplayDocument.pdf?content=pdf&seqNo=52412. pp.36-37
[21] TheEighthCircuit. (2010). *United States of America V. Josue Acosta Marquez.* Retrieved from http://www.ca8.uscourts.gov/opndir/10/05/091743P.pdf. pp.6

a particular vehicle is transporting drugs, a warrant is not required when, while the vehicle is parked in a public place, they install a non-invasive GPS tracking device on it for a reasonable period of time".[22]

The Court ruled on May 21, 2010 that the warrantless use of GPS tracking device did not violate the defendant's Fourth Amendment rights.

State v. Cuevas-Perez

The United States Court of Appeals for The Seventh Circuit decided the use of a GPS tracking device to monitor a vehicle's movements on public roads was not a search and, therefore, ruled on April 28, 2011, that the defendant's Fourth Amendment rights were not violated.

State v. Hernandez

The United States Court of Appeals for The Fifth Circuit ruled on July 18, 2011 that the use of GPS tracking device to monitor whereabouts of the defendant was not a search within the meaning of the Fourth Amendment.

State v. Jones : End of the Warrantless Use of GPS Tracking Devices

There has been no decision of the Supreme Court about whether the use of GPS tracking devices by LEA officers constitutes a search under the Fourth Amendment until a very recent decision of the Court on January 24 of 2012 for the case of State v. Jones.

This case concerned the violation of privacy resulting from the attachment of a GPS tracking device to a suspect's car by FBI agents without a warrant in Maryland in

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[22] Ibid. pp.6

2005. The car was registered to the wife of Washington DC nightclub owner Antoine Jones who was suspected of drug trafficking and "was made the target of an investigation by a joint FBI and Metropolitan Police Department task force".[23]

Although agents had a warrant authorizing the installation of a GPS tracking device in the District of Columbia and within 10 days, they installed the device onto the defendant's car on the 11th day when the car was parked in a parked lot in Maryland. The GPS tracking device was used to track his movements for 28 days and it transmitted more than 2,000 pages of geographical location data to a government computer over this period.[24] Evidence obtained from the GPS tracking device led agents to a stash house that contained "$850,000 in cash, 97 kilograms of cocaine, and 1 kilogram of cocaine base".[25] Antoine Jones was found guilty and sentenced to life in prison but he appealed all the way to the Supreme Court.

The defendant side argued that this was a violation of Fourth Amendment because US citizens are protected from invasive searches. On the contrary, the government side argued that tracking of his movements through the assistance of GPS tracking devices was "no different to "tailing" him, which has always been legal"[26] and, moreover, the defendant "did not have a "legitimate expectation of privacy" - the standard legal test in the US for the past 45 years because his car was in a public place".[27] According to the government, "even if the attachment and use of the device was a search,

[23] Supreme

[24] US supreme

[25] US supreme

[26] BBC. (2012). Supreme Court Limits Police Gps Tracking Powers. Retrieved 24 January, 2012, from http://www.bbc.co.uk/news/world-us-canada-16690976

[27] Ibid.

it was reasonable—and thus lawful—under the Fourth Amendment because officers had reasonable suspicion, and indeed probable cause, to believe that [Jones] was a leader in a large-scale cocaine distribution conspiracy" .[28]

However, the Court claimed that the installation and use of the GPS tracking device constituted a search.[29] Because the officers attached this device to the suspect's car without a warrant, the appeals court "had thrown out Jones's conviction and his life-in-prison sentence, and ruled prolonged electronic monitoring of the vehicle amounted to a search".[30] The justices "unanimously upheld a precedent-setting ruling by a U.S. appeals court that the police must first obtain a warrant to use a GPS device for an extended period of time to covertly follow a suspect".[31]

This was a defeat for the US government, "which had argued that a warrant was not required to use global positioning system devices to monitor a vehicle on public streets".[32]

In sum, the U.S. Supreme Court ruled on 23 January 2012 that -- the warrantless use of GPS tracking device is a violation of the Fourth Amendment because the

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[28] Supreme

[29] Supreme

[30] Vicini, J. (2012). Police Need Warrant for Gps Tracking: Court. Retrieved from http://www.reuters.com/article/2012/01/23/us-usa-police-gps-idUSTRE80M1E120120123

[31] Ibid.

[32] TheDailyHerald.com. (2012). Us Top Court: Police Need Warrant for Gps Tracking. Retrieved 24 January, 2012, from http://www.thedailyherald.com/us/3-news/24602-us-top-court-police-need-warrant-for-gps-tracking.html

defendants' Fourth Amendment rights had been violated and "police cannot put a GPS device on a suspect's car to track his movements without a warrant.[33]

This decision of the U.S. Supreme Court is a milestone for the use of GPS tracking device in police operations in the US. There have been different decisions by the courts where some have regarded the use of GPS tracking device in police investigations is no different from chasing a suspect by police officers and some others have regarded this as constituting a "search" and, therefore, a warrant is required before its use by police officers. From now on, all state courts have a new robust interpretation of the use of GPS tracking device that will shape their future decisions. In all cases the warrantless use of a GPS tracking device by police officers will not be possible.

EUROPE EXAMPLES

To be able to extract European reports on this topic, the search engine of European Court of Human Rights' (ECtHR) web site was used. Through the help of this search engine, different keywords were used to search the related data from the all database of EHCR. These keywords are;

- Vehicle Tracking System

- Vehicle Tracking

- Global Positioning System

- GPS tracking

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[33] Ibid.

- GPS

The search terms "Vehicle Tracking System", "Vehicle Tracking" and "GPS tracking" keywords returned nothing. By using the term "Global Positioning System" and "GPS" keywords in the search engine, only nine reports were obtained.

After a careful examination of these nine reports it was found that eight were unrelated and just only one report related to the issue. The unique court decision regarding the use of GPS tracking device by the LEAs to monitor the whereabouts of the targets is examined in the next section.

Case of Uzun v. Germany

In this case, a German citizen Mr Uzun was suspected of being a member of an extremist terrorist movement and, therefore, he was observed by domestic LEA starting from Spring 1993. During his observation, a video surveillance method was used to follow the entries to his flat and his telephone conversation was intercepted. He and a presumed accomplice, S., claimed responsibility for participation in bomb attacks in October 1995. In October 1995, two transmitters were installed in S's car to get further information from them. However, these transmitters were detected by the applicant and S. After learning that they had been observed by the LEA, they behaved more carefully, "never spoke to each other on the phone and succeeded on many occasions in evading visual surveillance by the investigation authorities". Because of these barriers for the investigation, the LEA officers installed a GPS receiver into S's car, at least, to track whereabouts of the applicant and S. starting from December 1995 and until their arrest on 25 February 1996.

A criminal trial opened against the applicant and S. on 12 December 1997. The applicant, Mr Uzun, objected to the use of GPS by LEAs during his surveillance, but the domestic court did not accept his objection because the use of GPS "had been aggregated with other, legal, methods of surveillance" and there was no need to have additional court order for the use of it. The court's decision was based on Article 100c § 1 no. 1 of Code of Criminal Procedure which is outlined below as follows:

> "(1) Without the knowledge of the person concerned
>
> no. 1
>
> a) photographs may be taken and visual recordings be made,
>
> b) other special technical means intended for the purpose of surveillance may be used to investigate the facts of the case or to detect the perpetrator's whereabouts if the investigation concerns a criminal offence of considerable gravity and

The Court asserted that visual or acoustical surveillance methods are "more susceptible of interfering with a person's right to respect for private life, because they disclose more information on a person's conduct, opinions or feelings".

The applicant alleged that;

> "the surveillance measures he had been subjected to, in particular his observation via GPS, and the use of the data obtained thereby in the criminal proceedings against him, had violated his right to respect for his private life under Article 8 of the Convention and his right to a fair trial under Article 6 of the Convention."

It seems that there was some interference in terms of the applicant's private life which is secured by Article 8 of the European Human Rights Convention. According to Article 8 of the European Human Rights Convention;

> "1. Everyone has the right to respect for his private and family life, his home and his correspondence.
>
> 2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."[34]

The main question in this case was whether the interference took place in accordance with the law. The domestic court objected to the applicant's submission assessing the use of GPS in the applicant's surveillance by LEA within the meaning of Article 8 § 2 and considered that "this interference had a basis in German statute law, Article 100c § 1 no. 1 (b) of the Code of Criminal Procedure." Moreover it assessed that the interference to the applicant's private life was lower with the use of GPSs in public places than with other methods of surveillance such as acoustic surveillance of telephone conversations. Therefore the applicant submitted his objection to the ECtHR.

The Court assessed the use of GPS in the context of the applicant's surveillance by the LEA and noted it "served the interests of national security and public safety, the

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[34] ECHR. (2010). European Convention on Human Rights   Retrieved from http://www.echr.coe.int/NR/rdonlyres/D5CC24A7-DC13-4318-B457-5C9014916D7A/0/CONVENTION_ENG_WEB.pdf . pp.10-11

prevention of crime and the protection of the rights of the victims" and was "proportionate to the legitimate aim pursued".

In sum, the use of GPS device was considered "necessary in a democratic society" within the meaning of Article 8 § 2 and the Court decided there was no violation of Article 8 of the Convention.

CONCLUSION

The study analyzed whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe.

The US examples provided in the study starting from 1983 and extending until January 24 of 2012 showed that LEA officers placed VTS devices after obtaining valid warrants or they placed VTS devices without a valid warrant on the suspects' vehicles. Although VTS devices were placed without a valid warrant on the suspects' vehicles in some occasions, the state courts decided the warrantless use of GPS tracking devices by LEA officers did not violate privacy of individuals. According to these courts, the use of VTS by LEA officers was not different from physical tracking of suspects by officers. In this respect, attaching a GPS tracking device to a suspect's car in a public place does not constitute a search, because "[a] police officer could do the same thing with his or her own eyes".[35]

On January 24 of 2012, the US Supreme Court concluded that the warrantless use of GPS tracking devices by LEA officers violates suspects' privacy. According to this

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[35] WashingtonPost. (2008). Police Turn to Secret Weapon: Gps Device. Retrieved 20 December, 2011, from http://www.washingtonpost.com/wp-dyn/content/article/2008/08/12/AR2008081203275_2.html?nav

very recent US Supreme court' binding decision, LEA officers have to obtain a valid warrant before placing a VTS device on a suspects' vehicle.

The unique Europe example provided in the study showed that law enforcement officers placed VTS devices after obtaining valid warrant. In this unique case, the court acknowledged the use of the GPS device "had been aggregated with other, legal, methods of surveillance" and there was no need to have an additional court order in order to use it.

In sum, there was no human rights violations arising from law enforcement officer's use of VTSs in their operations in Europe. In the US, however, there were different interpretations of the State Courts whether the warrantless use of GPS tracking devices by LEA officers violates suspects' privacy or not. In this respect, LEA officers in the US placed VTS devices without a valid warrant on the suspects' vehicles in some occasions. However, a very recent decision of the US Supreme Court put an end to the different interpretations of the State Courts by concluding the warrantless use of GPS tracking devices by LEA officers violates suspects privacy.

CHAPTER 7

CONCLUSION

This study intended to assess whether global satellite technologies have contributed to global security. In particular, the study's goal was to discover the impact of the use of new technologies and especially the use of GPS based vehicle tracking systems by law enforcement agencies in the fight against international organized crime.

Following a logical organization, the study, first, assessed global satellite technologies and their contribution to global security. Then, it examined new policing technologies in the fight against crime in the globalization age. For this purpose the researcher conducted interviews with 18 police officers working in the field. Third, it assessed the use of GPS based vehicle tracking systems in the fight against international organized crime. For this purpose the researcher conducted interviews with 45 police officers working in the field. Finally, the research examined human rights violations arising from the use of VTSs in the US and Europe.

I

Globalization is a process that has been affected enormously by technological advances that have enabled humans, groups and also nations located in different parts of the globe to come closer together. Starting with the launching of the first satellite Sputnik into outer space in 1957, the coverage of global satellite networks increased gradually and satellite networks since then have offered a wide variety of services globally such as

data and voice communications, radio and TV broadcasting, global positioning systems and global imagery services.

From the global security perspective, the study touched on the potential of these satellite services' contribution to global security. As seen in the examples provided in the study, global satellite services have already contributed to global security in the following areas.

Satellite communication services:

In the case of natural or man-made disasters, both PSTN (landline telephone network) and GSM telephone networks can collapse, especially when they are needed most. In this situation, satellite communication services can provide an important telecommunications infrastructure for disaster centers, rescue squads (first responders) and survivors, owing to their expanded capacity and increased speed. In many recent disasters that caused catastrophic death tolls and material damage such as the Japanese earthquake of 2011, the Haitian earthquake of 2010, the Indonesian earthquake of 2010 and the Suriname floods of 2008[1], satellite communication services have demonstrated "the power of emergency telecommunications in saving lives and coordinating efforts

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[1] ITU. (2012). Emercency Telecoms. Retrieved May 15, 2012, from http://www.itu.int/ITU-D/emergencytelecoms/response/index.html

during rescue operations such as the setting up of telemedicine links"[2] and have been used as the fundamental mitigation tool in the aftermath of such disasters.[3]

<u>Satellite TV and Radio services:</u>

Satellite TV and Radio services have informed people about programs that promote food security and good health, which are important in terms of global security. In this respect, WorldSpace satellite radio was founded to stop the spread of AIDS in Africa. Moreover, the Arid Lands Information Network - Eastern Africa (ALIN-EA) operating in Kenya, Uganda, Tanzania and Ethiopia joined up with the WorldSpace to inform people living in these countries by means of WorldSpace's satellite radio broadcasting. Similarly, the cooperation between WorldSpace Foundation and Operation Lifeline Sudan (OLS) can serve as another example of how satellite radio services have contributed to global security. The OLS was established in April 1989 "as a consortium of UN agencies - UNICEF and the World Food Programme - and more than 35 NGOs following a severe famine in Southern Sudan that killed 250,000 people, mostly children".[4] It focuses on good health (HIV/AIDS prevention), food security (clean water and sanitation), peace education and the environment in Southern Sudan.[5]

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[2] UN.org. (2006). Un Mobilizes Portable Satellite Phones for Disaster Relief. Retrieved August 25, 2011, from http://www.un.org/apps/news/story.asp?NewsID=19145&Cr=disaster&Cr1=
[3] GlobaFone. (2007). Satellite Phone Usage in Disaster Mitigation. Retrieved August 25, 2011, from http://www.globafoneiridiumphones.com/pdfs/Why%20you%20need%20satellite%20phones%20040207.pdf
[4] WorldSpace. (n.d.). Special Projects. Retrieved August 25, 2011, from http://www.worldspace.org/projects.html
[5] UNICEF. (2004). Southern Sudan (Ols) Retrieved August 25, 2011, from http://www.unicef.org/lifeskills/index_8400.html

ASTRO, the satellite television and radio service provider for Malaysia, Brunei and Indonesia, supports UNICEF in Malaysia for HIV/AIDS prevention and marginalized and vulnerable children protection "by providing free airtime on both its TV and radio channels for its Unite for Children, Unite Against AIDS campaign public service announcements".[6]

Satellite radio and television services have also been used for delivering up-to-date disaster assistance information in natural or man-made disasters. For example, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) cooperated with DISH Satellite TV Network and XM Satellite Radio "to deliver up-to-date disaster assistance information to Hurricane Katrina evacuees in shelters and other locations across the country" in 2005.[7]

Satellite Imagery:

Satellite imagery products have been used in many different areas such as in monitoring the earth's environmental condition, in responding to man-made or natural disasters etc. From a global environmental security perspective, monitoring the world's natural resources by satellite imagery can help global institutions to take the needed precautions to cope with food and water scarcities in failed and fragile states in order to prevent probable conflicts arising from these scarcities. Satellite images have helped scientists monitor the earth's environmental condition. The monitoring of global

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[6] UNICEF. (n.d.). Challenging Hiv and Aids: Partners. Retrieved August 26, 2011, from http://www.unicef.org/malaysia/hiv_aids_4188.html
[7] FEMA. (2005). Dish Satellite Tv Network and Xm Satellite Radio Deliver Fema Information to Shelters. Retrieved August 26, 2011, from http://www.fema.gov/news/newsrelease.fema?id=18980

warming, climate change, air pollution, drought, erosion, deforestation and etc. by way of satellite imagery has paved the way for proactive problem solving methods for environment related global security problems.

The use of satellite imagery in responding to natural disasters is also highly important in terms of global security. This is because natural disasters "do not occur within strict national boundaries, their effects can be felt across the world".[8] In this context, satellite imagery was used "to guide emergency response and inform the public during natural disasters" in the US' Hurricane Ike disaster in 2008.[9] Similarly Hurricane Irene of 2011 that threatened the east cost of the US was also monitored by satellite images[10] and the public was informed to take needed precautions.

Apart from above satellite services, Global Positioning System (GPS) based tracking systems were examined in detail in the study from the view of its contributions to the fight against international organized crime.

II

IOC is considered as one of the major threats to global security, "impeding the social, economic, political and cultural development of societies worldwide"[11] and organized criminals have expanded their activities thanks to globalization. IOC "appears

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[8] Munro, E. (2006). Gcsp Policy Brief No. 17: Natural Disasters, Globalization, and the Implications for Global Security. Retrieved from
http://www.gcsp.ch/content/download/1257/9804/file/GCSP%20Policy%20Brief%2017.pdf
[9] Eisler, P. (2008, Nov, 9). Commercial Satellites Altering Global Security, *USA Today*. Retrieved from http://www.usatoday.com/tech/news/surveillance/2008-11-06-googleearth_N.htm?AID=4992781&PID=4172469&SID=1dr0w4f8pxktr
[10] NASA.gov. (2011a). August 27, 2011 - Hurricane Irene (09l) over the Bahamas. Retrieved August 27, 2011, from http://modis.gsfc.nasa.gov/gallery/individual.php?db_date=2011-08-27
[11] UNODC. (2011). Unodc and Organized Crime. Retrieved September 13, 2011, from http://www.unodc.org/unodc/en/organized-crime/index.html

now to be both more damaging and more evasive than in the past"[12] and today international organized crime activities have become one of the most important threats for global security. Thus, the fight against IOC becomes more crucial than ever.

The increasing pace of globalization and with this, the increasing pace of crimes requires more effective methods of intervention. In this respect, advances in technology present good opportunities for police forces to apply in their fight against crime within the national borders. This study proposed that the use of new technologies and especially Global Positioning System (GPS) have contributed to law enforcement agencies' fight against IOC.

The use of the new technologies in combating IOC has caused tangible changes in the operations of law enforcement agencies. In an effort to demonstrate this change, this study intended to answer the question of "What is the impact of the use of new technologies and especially the use of GPS based vehicle tracking systems by law enforcement agencies in the fight against international organized crime?".

The study proposed to answer this question by conducting interviews with the Turkish National Police (TNP) personnel working in the Ankara, Istanbul and Van districts of Turkey. In addition to the perspectives of experts from the field, which formed an essential element of the study, reports and documents regarding the establishment of new technologies in the TNP and descriptive statistics regarding the numbers of

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[12] Mandel, R. (2011). *Dark Logic : Transnational Criminal Tactics and Global Security*. Stanford, Calif.: Stanford Security Studies. pp.21

operations of the Turkish National Police in which VTS has been used were included to strengthen the outcome of the study.

As was emphasized by the interviewees, who were selected from Telecommunications Department, Information Technologies Department, Cyber Crimes Department and Intelligence Department of the TNP, the use of new technologies in the fight against crime is not only a need but a must. Because criminals are good at following new technologies and adapting these new methods into their illegal businesses, police have to be one step ahead of them to succeed. In the study, the use of CCTV systems, modernized patrol cars, computer forensics, lawful interception and observation systems by the TNP were analyzed as examples of new policing technologies currently being employed in the fight against crime.

The study results first showed that police as a whole have benefited from the use of CCTV systems in both the context of detection and the context of seizure of suspects or criminals. The use of CCTV systems helps enlighten police about selected cases and especially after the crime investigation, because police can identify suspects or criminals and can detect in which direction they may have moved. Moreover, CCTV systems can deter criminals from committing a crime in the vicinity of these cameras because of the feeling they are being watched closely by police. Furthermore, CCTV systems can be strengthened by integrating video analysis tools, face recognition systems and plate recognition systems into these systems in order to increase their efficiency.

Second, the study found police have benefited from the use of modernized patrol cars in both the detection and seizure of suspects or criminals. Due to the use of vehicle

tracking system in the cars, the dispatching of police patrols to the crime scene or a certain addresses has become very efficient especially from the point of police patrol's reaching the scene in a timely way. Moreover, thanks to the two way data communication systems, cameras and tablet computers installed in the cars, two-way information sharing provides for a very effective, fast and easy method as a crime deterrent.

The fight against cyber crimes is also of high importance in terms of global security. As seen in the statistical analyses of the study data, cyber crimes are increasing gradually and they are going to continue to be a potential threat to global security. In this respect, the LEA officers' fight against cyber crimes is of high importance in terms of global security. The study, also pointed out the importance of computer forensics in the fight against cyber crimes. It also evaluated the transnational aspect of cyber crimes based on international operational police cooperation examples and found that cooperation between police forces is of utmost importance in the fight against cyber crimes. It was also found that police forces have been benefited from computer forensics in their fight against other kinds of crime by obtaining extra evidence from all kinds of electronic devices used by criminals. Furthermore, the study examined the barriers involved in the fight against cyber crimes. In this context, the inadequacy of qualified police personnel was found to be one of the most important problems in the fight against cyber crimes. The hardships associated with the evidence collection was also noted as another barrier in the fight against cyber crimes. Because the main focus is digital evidence in the fight against cyber crimes, inexperienced LEA officers can harm digital evidence or they may not be able to obtain digital evidence and therefore can't detect the

crime. It was also pointed out that because of the existence of legal gaps and uninformed judges and prosecutors, the LEA officers' fight against cyber crimes can be harder in some cases than in others.

Apart from the aforementioned technologies, lawful interception of telephone calls, email trafficking, and peer to peer chatting etc. that occurs in the fight against crime facilitates the collection of evidence by LEA officers. Moreover, due to the use of lawful interception, crimes can be prevented before they are committed, because what suspects or criminals' plan can be observed and apprehended by lawful interception. Furthermore, state of art analysis tools combined with these systems is of high importance in detecting the relationships between criminals. In sum, it was argued in the study that lawful interception is the most important method in the fight against crime.

Fifth, it was found that the use of observation systems was a very important solution for providing and collecting evidence in the fight against crimes and especially in the fight against organized criminals. According to the study, observation systems were used especially when LEA officers were not able to obtain enough evidence using lawful interception approaches for their investigations. The importance of the use of observation systems stems from their ability to provide evidence from sites where criminals feel they are safe. In this respect, very crucial information can be obtained and based on the intelligence that LEA officers obtain by these observations systems LEAs can prevent possible suspects or criminals from moving forwards before they commit a crime.

Last, the study examined the use of vehicle tracking system (VTS) in the fight against IOC. A VTS is a system that monitors the real time movements of a target vehicle on a digital map running on a computer. Geographical positioning information of the target vehicle is provided by GPS satellite service. GPS based tracking systems have a wide variety of usages such as the tracking of vehicles, fleets and assets, family members, and persons globally. Furthermore, GPS tracking systems can also be used by law enforcement agencies in the fight against IOC. IOC is defined as illicit trafficking in both illicit and licit products.[13] In this context, transportation vehicles are of high importance in illicit trafficking in both illicit and licit products. If transportation vehicles were not used in illegal trafficking, the cannabis cultivated in Afghanistan, for example, could not be transported to Europe by organized criminals.

III

In the present study, the contribution of the use of VTS devices by police practitioners in the fight against IOC was examined. For this purpose, 45 police professionals working in the TNP were interviewed and they were selected among the police professionals who used VTS devices in police operations to fight against IOC. Fifteen police professionals were from the Division of Anti-Smuggling and Organized Crime in Van district of the TNP, 15 police professionals were from the Division of Anti-Smuggling and Organized Crime in Istanbul district of the TNP, and the other 15 police professionals were from the Department of Anti-Smuggling and Organized Crime in the Ankara district of the TNP.

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[13] Madsen, F. G. (2009). *Transnational Organized Crime*. London ; New York: Routledge.

The study, first, found that the TNP officers benefited from the use of VTS devices in their operations. The statistical data prepared by the KOM department also showed that the vast majority of police operations became successful when police officers used VTSs in their operations.

The detection of the geographical location of the target vehicles VTSs when placed as indicated were their most important contribution to the fight against IOC. The locational data obtained from these devices was used to identify the routines of the criminals and this was used to predict what the criminals would do next. Moreover, police officers benefited from the use of VTSs as a complementary tool for the purposes of physical tracking.

Second, the use of VTSs was evaluated in response to the physical tracking of criminals in operations. The study found that the use of VTSs does not completely eliminate the use of physical tracking in the police operations because physical tracking is generally an essential component of operations. However, it was found that the use of VTS greatly helped the process of physical tracking in operations and on some occasions was alternatively used to track criminals. When physical tracking is carried out, there is always the possibility of being burnt in the operation and this risks both the success of the operation and the lives of the physical tracking team. In this respect, the use of VTS can eliminate such operational risks. Moreover, it was found that the targets operated more freely when the VTSs were used in the operations because they were not worried about being followed by police.

It was also found that the most important advantages of the use of VTSs in the operations were the detection capability of the geographical location of the places visited by and the routes taken by their targets, which are very important data for any operation. Police officers can also make a simulation of the recorded data of their targets for a certain time interval and they can see the whereabouts of the target vehicles during this time interval and learn about the routines of their targets. Although not mentioned much, the disadvantages of the use of VTS by the respondents were pointed out by some and included the fact that exposing the VTS in the operation may sabotage the operation along with some problems based on their battery life.

Third, real police operations in which VTSs used were examined and it was observed that if police officers did not use VTS devices to locate the criminals most of the operations would not have been successful. Moreover, although lawful interception methods, especially the interception of cell phone conversations, used in the operation were insufficient, the operation became successful due to the use of VTS by police officers. The use of VTSs was also exemplified in the realm of controlled delivery operations in order not to lose the criminals in the operation.

Fourth, how long on average police officers needed to use VTSs in general in their operations was analyzed. Most of the respondents said that three month's use of VTS was sufficient in their operations and they generally did not need any extension of the warrant. According to the respondents VTSs were mostly placed when they could not benefit from lawful interception methods, especially the interception of cell phone conversations of the targets. Moreover VTSs were also placed on the targets' car when

physical tracking was not possible due to the risk of the tracking team being burnt in the operation. It was also found that VTSs were used in operations until the operations ended. On the other hand, these devices were removed in operations before their batteries were depleted.

The study found that four types of vehicles were involved, most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs. Most of the respondents indicated that the most common site for placing a VTS in a vehicle type was the car. Moreover, the undercarriage part of the vehicles was explained as the most suitable place for installing a VTS. However, although police officers installed these devices on the undercarriage of vehicles which could be the most suitable part for concealing a device, they witnessed the detection of VTS by criminals after placed by police to their vehicles. On the other hand, all of the respondents pointed out that they had never witnessed criminals placing a VTS on police cars in order to track police vehicles as a counter measure for their illegal activities. Furthermore, the study found that although VTSs were usually not used in maritime illegal trafficking there were three examples of how VTS were placed on a maritime vehicle.

Fifth, the study examined differences in the use of VTSs in police operations in the cities of Istanbul, Van and Ankara. According to the average use of VTS in these cities, it was found that in Istanbul the average use of VTS varied from 1 month to 1 year, but 3 months was the most common time interval for the use of VTSs in Istanbul. In Van, no certain time interval was given earlier than 3 months. However, 3 months was indicated as the most frequent time interval when discussing the use of VTS. In Ankara,

short time interval answers were reported most often among the respondents working there.

According to the study findings, the reason for the use of VTSs in the operations was owing to the insufficiency of lawful interception methods in the cities of Ankara and Istanbul. In Istanbul, VTSs were removed as soon as criminals become suspicious about the device, however, this was not mentioned as a process that occurred in the cities Van and Ankara.

The types of vehicles used most for purposes of installing a VTS in the operations were apparently different in each city. In this respect, cars were important in Istanbul. Organized criminals in Istanbul may operate more easily by using cars rather than big vehicles. From the drug trafficking perspective, dividing large amounts of drugs into smaller parts and carrying them in cars may be the other reason for this.

Small trucks were most used in Van. Because small trucks are widely used by the citizens of the city of Van, this may explain why the use of small trucks by criminals in the city of Van was so common. Moreover, small trucks can be used by organized criminals to hide drugs coming from Afghanistan more easily than cars especially when the quantity of the drug is large enough.

Large trucks and trucks, on the other hand, were the most widely chosen vehicle types by criminals in the operations of the KOM Department in which a VTS was placed. Because large trucks and trucks are mostly used in international transportation, this may be one of the reasons for the use of large trucks and trucks by criminals who want to

carry illegal subjects between countries. In this respect, the reason for the placement of a VTS in large trucks and trucks in the operations held by police officers from Ankara is possibly the fact that a controlled delivery operations or operation in which the target vehicle is coming from a foreign country or the target vehicle will leave from the country in question.

The study also found organized criminals in Istanbul were apparently more attentive or more knowledgeable about the use of VTS than the criminals in Van. In Istanbul, the great majority of respondents explained they had witnessed at least one operation in which the targets detected the VTS placed in their vehicles. However, the great majority of respondents in Van explained that they had not witnessed an operation in which the targets detected the VTS placed on their vehicles.

Last, the use of VTS in international controlled delivery operations and international police operations which are examples of international police cooperation was examined. Although there were not many examples of the use of VTSs in international police operations, the operations examined in the study showed that how VTSs were important in these operations. For instance, in Operation Complicated, the KOM department witnessed a controlled delivery option for the first and commented on how this was "being held by so many countries at the international level and in such a long distance." Moreover, the effects of related political elements and the barriers that can arise in international operational police cooperation contexts were examined. The study found that although mutual trust between police officers is of utmost importance in

international operational police cooperation, good cooperation is unlikely to be maintained in the case where there is problem in political relations between the countries.

IV

In the present study, it was found that the use of VTSs was important in police operations. However, the use of new technologies by law enforcement officers in the context of their investigations and operations must not violate the privacy of individuals. Therefore, the study analyzed whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe.

The study, first, examined the use of VTS by LEA officers in the fight against crime in the US. The privacy of individuals in the US is protected by Fourth Amendment below as shown;

> "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized". [14]

Examples provided in the study starting from 1983 and extending until January 24 of 2012 showed that LEA officers placed VTS devices after obtaining valid warrants or they placed VTS devices without a valid warrant on the suspects' vehicles. In this context, there have been two different approaches by state courts regarding the use of VTSs by LEA officers in the fight against crime sin the US. On the one hand, some courts have decided the warrantless use of GPS tracking devices by US LEA officers

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[14] Cornell.edu. (n.d.). Fourth Amendment. Retrieved February 10, 2012, from http://www.law.cornell.edu/constitution/fourth_amendment

does not violate privacy. Proponents of this opinion assert that the use of VTS by LEA officers is not different from physical tracking of suspects by officers. According to this opinion, attaching a GPS tracking device to a suspect's car in a public place does not constitute a search, because "[a] police officer could do the same thing with his or her own eyes".[15] On the other hand, some other courts decided that the warrantless use of GPS tracking devices by US LEA officers does violate the privacy of individuals. According to this opinion, the use of VTS by LEA officers constitutes a search because "tracking a person everywhere they go and keeping a computer record of it for days and days without that person knowing is a completely different type of intrusion".[16]

However, a very recent decision of the US Supreme Court put forth on January 24 of 2012 put an end to the different interpretations of the State Courts by concluding the warrantless use of GPS tracking devices by LEA officers violates suspects' Four Amendment rights. According to this very recent US Supreme court' binding decision, LEA officers have to obtain a valid warrant before placing a VTS device on a suspects' vehicle.

Second, the study examined the use of VTS by LEA officers in the fight against crimes in Europe. There was a unique court decision regarding the use of a GPS device for monitoring the whereabouts of their targets by LEA officers in Europe. In this unique case, the court acknowledged the use of the GPS device "had been aggregated with other,

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[15] WashingtonPost. (2008). Police Turn to Secret Weapon: Gps Device. Retrieved 20 December, 2011, from http://www.washingtonpost.com/wp-dyn/content/article/2008/08/12/AR2008081203275_2.html?nav
[16] Ibid.

legal, methods of surveillance" and there was no need to have an additional court order in order to use it.

The Court considered that the use of GPS device with a valid warrant by LEA officers was "necessary in a democratic society" within the meaning of Article 8 § 2 and decided there was no violation of Article 8 of the Convention.

STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths of the Study

The proposed study is the first in the literature that aims to investigate and describe the application of a specific technology to law enforcement operations in the fight against international organized crime. This study is also first in the literature that aims to point out how global satellites technologies can be important for our global security.

The study has five major strengths. On the one hand, it will play a pioneering role for future research in the field of how global technologies contribute to global security. Since it was an exploratory study, it sought to answer the question of whether new policing technologies and especially GPS based vehicle tracking systems have contributed to combat international organized crime. This may give birth to a broad area of topics for future scholars to study and explain the potential role of other technologies in the context of global security. On the other hand, the study constitutes a unique opportunity for law enforcement agencies and policy-makers to measure the cost and benefits of the existing usage of technologies to combat crime both in Turkey and other

countries. Consequently, the findings of the study will help improve efficient usage of technologies to combat crime.

The other strength of the study is the supportive verification from the field. The primary data source of the study is the interviews conducted with 63 police professionals from the field. There are two important interview groups in the study. First interviewee group consisted of police professionals actively working in technical departments of the Turkish National Police (TNP) and responsible for the establishment of new technologies for the TNP. In this respect, responses of these experts about the use of new policing technologies in the fight against crime were of high importance for the study. Second interviewee group consisted of police professionals actively working in different districts of the TNP and using VTS in the fight against IOC. Thus, their responses about the use of VTSs in the fight against IOC reflected best practices from the field.

The background of the researcher in the areas, globalization, security and technology studies, is another strength. A bachelor degree in Electric&Electronic Engineering, master degrees in Global Affairs and Security Strategies and Administration, and a three year concentration of global technologies and global security literature offer a significant strength to the research. Last but not least, the researcher has twelve years of experience in technical departments of the TNP in various commanding posts. Thus, he has gained both the theoretical and practical perspectives of new policing technologies in terms of global security.

Limitations of the Study

A multiple case study like this has some limitations. In this context, the study had two weaknesses. First, the study didn't include any information about the use of VTSs by other countries' law enforcement agencies in the fight against international organized crime. The interviews, the essential data source of the study, were conducted with police professional actively working in a law enforcement agency, the TNP. However, because of the bureaucratic barriers, it is very hard to get information from a foreign law enforcement agency regarding its internal affairs. For this purpose, the researcher, who is currently an employee at the TNP, has merely focused on the TNP.

Second, the study did not have access to all the statistical data regarding the use of VTSs in the operations of the TNP starting from their first day of use by the TNP in all districts in Turkey. This is because, after contacting the relevant TNP police administrators, this researcher found that no such data exists. Upon the researcher's written request to the TNP, a statistical data was prepared by the TNP accordingly. However, the statistical data in the study did only cover the use of VTSs by the TNP in a small scaled city and in a middle scaled city during 2010.

CONCLUDING REMARKS

The examples provided in the study show that global satellite radio and TV services, satellite communications services and satellite imagery services have already contributed to global security in informing people about programs that promote food security, good health and peace education, in monitoring the earth's environmental condition and in

responding to man-made or natural disasters. Apart from above satellite services, the study found that VTS have also contributed to global security by contributing LEAs' fight against IOC.

IOC is regarded as one of the most important global security threats and it is of high importance in terms of global security. The increasing pace of globalization and with this the increasing pace of crimes require more effective methods of intervention. In the age of globalization, there is "every reason to expect that the latest round of technological change –the information technology revolution- would have an equally dramatic impact on policing".[17] In this respect, advances in technology present good opportunities for police forces to apply in their fight against crime within the national borders. Thus, the study proposed that CCTV systems, modernization of patrol cars, vehicle tracking systems, advances in lawful interception and observation systems can be employed to combat crimes.

The study emphasized the importance of the use of new policing technologies in LEAs' fight against crime and found that LEAs have been benefiting from the use of CCTV systems, modernized patrol cars, computer forensics, lawful interception and observation systems in both detection and seizure of suspects or criminals.

The study also showed that the TNP officers benefited from the use of VTS devices in their operations. Furthermore, the statistical data prepared by the TNP was also showed that the vast majority of police operations became successful when police

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[17] Chan, J. B. (2001). The Technology Game: How Information Technology Is Transforming Police Practice. *Criminal Justice, 1*(2), 139-159. pp.140

officers used VTSs in their operations. In this context, the contributions of the use of VTSs in police operations were found as below;

- The most important contribution of the use of VTSs is the detection of geographical location of the target vehicles

- The use of VTSs helps to learn the routines of criminals which is used to guess what they will do next

- The use of VTSs greatly helps physical tracking in operations

- VTS is a complementary tool for physical tracking of the targets

- In some occasions, VTSs can be used as an alternative to physical tracking

- The use of VTSs can eliminate being burnt risks in operations

- The targets operate more freely when the VTSs are used in the operations because they are not worried about being followed by police

- In most of the operations, the operation would not have been successful if TNP police officers did not use VTS devices to locate the criminals

- Although lawful interception methods, especially the interception of cell phone conversations, used in the operation were insufficient, the operation became successful due to the use of VTSs by police officers
  Operational characteristics of the use of VTSs were found as below.

- VTSs were mostly placed when police officers could not benefit from lawful interception methods, especially the interception of cell phone conversations of the targets

- VTSs were also placed on the targets' car when physical tracking was not possible due to the risk of the tracking team being burnt in the operation.

- VTSs were generally used for three months in operations of the TNP.

- VTSs were used in operations until the operations ended and they were removed in operations before their batteries were depleted.

- Four types of vehicles were involved most commonly: cars, small trucks, trucks and large trucks were used most often to install VTSs. The most common site for placing a VTS in a vehicle type was the car

- The undercarriage part of the vehicles was explained as the most suitable place for installing a VTS.

- TNP police officers witnessed the detection of VTS by criminals when it was placed in their vehicles.

- TNP police officers had never witnessed criminals placing a VTS on police cars in order to track police vehicles as a counter measure for their illegal activities.

- The average use of VTSs, the types of the vehicles VTSs are placed and the attention levels of the criminals for the use of VTSs vary according to the cities in which VTSs were used.

- VTSs were rarely used in the operations to combat maritime illegal trafficking.

Although the total number of international controlled delivery operations of the TNP and international police operations that can serve as examples of international police cooperation between the TNP and other foreign police forces was very limited, the use of VTS in these operations showed how VTSs were important in these operations. Thus, the

VTSs should be used more frequently in these operations and LEAs should share the locational information obtained by these devices with each other.

The use of new policing technologies is of utmost importance in the fight against crimes. However, the use of new policing technologies has also the potential of invading individuals' privacy.[18] Thus, the study analyzed whether there were any human rights violations arising from law enforcement officer's use of VTSs in their operations in the US and Europe. It was found that there was no human rights violations arising from law enforcement officer's use of VTSs in their operations in Europe. In the US, however, there were different interpretations of the State Courts whether the warrantless use of GPS tracking devices by LEA officers violates suspects' privacy or not. In this respect, LEA officers in the US placed VTS devices without a valid warrant on the suspects' vehicles in some occasions. However, a very recent decision of the US Supreme Court put an end to the different interpretations of the State Courts by concluding the warrantless use of GPS tracking devices by LEA officers violates suspects privacy.

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[18] Regan, P. M. (1995). *Legislating Privacy : Technology, Social Values, and Public Policy*. Chapel Hill: University of North Carolina Press.

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APPENDIXES

APPENDIX 1: CONSENT STATEMENT FOR INTERVIEW

You are invited to participate in a research study that is being conducted by Hakan AYDOGAN, who is doctoral student in the Division of Global Affairs at Rutgers University Newark, New Jersey-USA. The purpose of this research is to determine whether the use of GPS based vehicle tracking systems by the TNP has contributed to the fight against international organized crime. Approximately fifty subjects will participate in the study, and each individual's participation will last approximately 45 minutes. Participation means providing certain information about yourself: name, position, agency affiliation, experience within the agency you work for, and experience within the field mission you work in and responding to open-ended questions which are related to the objectives of this research

All information will be confidential. Confidential means that I will keep this information confidential/private by limiting any individual's access to the research data and keeping it in a secure location. The Institutional Review Board at Rutgers University and I are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept until the research is officially approved by Rutgers University.

There are no foreseeable risks to participation in this study. You may not have any direct or indirect benefits from this study. Participation in this study is voluntary.

You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact me by email at haydogan@pegasus.rutgers.edu , or you can contact my study coordinator, Dr. Leslie W. Kennedy, by email at kennedy@andromeda.rutgers.edu .

If you have any questions about your rights as a research subject, you may contact the IRB Administrator, Erik Schneebeck, J.D, at Rutgers University at:

Rutgers University, the State University of New Jersey

Institutional Review Board for the Protection of Human Subjects

Office of Research and Sponsored Programs

3 Rutgers Plaza, New Brunswick, NJ 08901-8559

Tel: 732-932-0150 ext. 2104

Email: humansubjects@orsp.rutgers.edu

You will be given a copy of this consent form for your records.

Sign below if you agree to participate in this research study:

Subject (Print) _____

Subject Signature _____Date_____

Principal Investigator Signature _____ Date _____

APPENDIX 2: THE TURKISH TRANSLATION OF CONSENT STATEMENT

FOR INTERVIEW

Mülakat Rıza Beyanı

New Jersey Eyaleti Rutgers Üniversitesi'nde Küresel Meseleler Bölümü doktora öğrencisi Hakan AYDOĞAN tarafından yürütülecek olan tez çalışmasına katılımınız beklenmektedir. Bu tez çalışmasının amacı GPS tabanlı araç takip cihazlarının Türk Polis teşkilatınca kullanımının uluslararsı suçla mücadelede faydalı olup olmadığının değerlendirilmesidir. Bu çalışmaya yaklaşık 50 kişinin katılacak olup, mülakatların süresi ortalama 45 dakika olacaktır. Bu çalışmaya katılım, sizlerin isim, posizyon, kurumla olan ilişkiniz, emniyet teşkilatında ve saha görevlerindeki deneyiminize yönelik bilgileri vermenizi, çalışmanın kapsamı ile ilgili sorulan açık uçlu soruları cevaplamanızı ifade eder.

Bu çalışma kapsamındaki tüm bilgiler gizli olacaktır. Gizlilik, bu bilgilerin üçüncü şahıslar ile paylaşılmayacağını ve bu bilgilerin güvenli bir ortamda saklanacağını ifade eder. Sadece -kanunla uygun görülen haller dışında- Rutgers Üniversitesi Kurumsal Değerlendirme Birimi, tez danışmanım ve kendim bu bilgilere erişmeye yetkilidir. Bu tez çalışmasına dair bir rapor yayınlanması durumunda veya çalışma sonuçları bir

konferansta yayınlandığında sadece grup sonuçları yayınlacak kişilere ait münhasır bilgiler paylaşılmayacaktır. veriler Bu tez çalışması bilgileri, tez çalışması Rutgers Üniversitesince resmi olarak kabul edilenee kadar muhafaza edilecektir.

Bu çalışmaya katılımın öngörülen bir riski bulunmamaktadır. Sizin bu çalışmadan direk veya dolaylı bir şekilde çıkarınız olmayacaktır. Bu çalışmaya katılımda gönüllük esastır. Çalışmaya katılmak istemeyebilirsiniz veya istediğiniz anda yapılan mülakattan vazgeçebilirsiniz. Ayrıca mülakatta sorulan sorulardan istemediklerinize cevap vermeyebilirsiniz. Tüm bu durumlarda herhangi bir yaptırım söz konusu değildir.

Tez çalışması ve tez çalısması prosedürleri hakkında herhangi bir sorunuz olduğunda benimle haydogan@pegasus.rutgers.edu adresinden veya tez hocamla kennedy@andromeda.rutgers.edu adresinden irtibata geçebilirsiniz.

Araştırma sujesi olarak, kendi haklarınız hakkında herhangi bir sorunuz olduğunda Rutgers Üniversitesi Kurumsal Değerlendirme Birimi Yöneticisi, Erik Schneebeck, J.D. ile aşağıdaki bilgilerden irtibata geçebilirsiniz.

Rutgers University, the State University of New Jersey

Institutional Review Board for the Protection of Human Subjects

Office of Research and Sponsored Programs

3 Rutgers Plaza, New Brunswick, NJ 08901-8559

Tel: 732-932-0150 ext. 2104

Email: humansubjects@orsp.rutgers.edu

Bu formun bir kopyası size verilecektir.

Eğer bu çalışmaya katılmak istiyorsanız lütfen aşağıdaki bilgileri doldurunuz.

Mülakata Katılanın Adı Soyadı _____

Mülakata Katılanın İmzası _____Tarih_____

Ana Araştırmacının İmzası _____ Tarih _____

APPENDIX 3: AUDIOTAPE ADDENDUM TO CONSENT FORM

You are invited to participate in a research study that is being conducted by Hakan AYDOGAN, who is doctoral student in the Division of Global Affairs at Rutgers University Newark, New Jersey-USA. The purpose of this research is to determine whether the use of GPS based vehicle tracking systems by the TNP has contributed to the fight against international organized crime and terrorism. Approximately fifty subjects will participate in the study, and each individual's participation will last approximately 45 minutes. Participation means providing certain information about yourself: name, position, agency affiliation, experience within the agency you work for, and experience within the field mission you work in and responding to open-ended questions which are related to the objectives of this research.

You are asked for your permission to allow us to audiotape (sound), as part of that research study. You do not have to agree to be recorded in order to participate in the main part of the study.

All information will be confidential. Confidential means that I will keep this information confidential/private by limiting any individual's access to the research data and keeping it in a secure location. The Institutional Review Board at Rutgers University and I are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept until the research is officially approved by Rutgers University.

There are no foreseeable risks to participation in this study. You may not have any direct or indirect benefits from this study. Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

The recording(s) will be used for analysis by the researcher. The recording(s) will include your name as the only identifier. The recording(s) will be stored in a locked file cabinet and linked with a code to subjects' identity; and will be destroyed after three years of completion of this research.

Your signature on this form grants the investigator named above permission to record you as described above during participation in the above-referenced study. The

investigator will not use the recording(s) for any other reason than that/those stated in the consent form without your written permission.

You will be given a copy of this consent form for your records.

Sign below if you agree to be audio-taped during the interviews in this research study:

Subject (Print) _____

Subject Signature _____ Date _____

Principal Investigator Signature _____ Date _____

APPENDIX 4: THE TURKISH TRANSLATION OF AUDIOTAPE ADDENDUM TO CONSENT FORM

Mülakat Rıza Formu İçin Ses Kaydı Eki

New Jersey Eyaleti Rutgers Üniversitesi Küresel Meseleler Bölümü doktora öğrencisi Hakan AYDOĞAN tarafından yürütülecek olan tez çalışmasına katılımınız beklenmektedir. Bu tez çalışmasının amacı GPS tabanlı araç takip cihazlarının Türk Polis teşkilatınca kullanımının uluslararası suçla mücadelede faydalı olup olmadığının değerlendirilmesidir. Bu çalışmaya yaklaşık 50 kişinin katılacak olup, mülakatların süresi ortalama 45 dakika olacaktır. Bu çalışmaya katılım, sizlerin isim, pozisyon, kurumla olan

ilişkiniz, emniyet teşkilatında ve saha görevlerindeki deneyiminize yönelik bilgilerin vermenizi, çalışmanın kapsamı ile ilgili sorulan açık uçlu soruları cevaplamanızı ifade eder.

Bu çalışmanın bir parçası olarak verdiğiniz mülakata ait seslerin kaydedilmesine izin vermeniz istenmektedir. Mülakata katılmayı kabul edip, ancak seslerinizin kaydedilmesini istemeyebilirsiniz.

Bu çalışma kapsamındaki tüm bilgiler gizli olacaktır. Gizlilik, bu bilgilerin üçüncü şahıslar ile paylaşılmayacağını ve bu bilgilerin güvenli bir ortamda saklanacağını ifade eder. Sadece -kanunla uygun görülen haller dışında- Rutgers Üniversitesi Kurumsal Değerlendirme Birimi, tez danışmanım ve kendim bu bilgilere erişmeye yetkilidir. Bu tez çalışmasına dair bir rapor yayınlanması durumunda veya çalışma sonuçları bir konferansta yayınlandığında sadece grup sonuçları yayınlanacak kişilere ait münhasır bilgiler paylaşılmayacaktır. Bu tez çalışması bilgileri, tez çalışması Rutgers Üniversitesince resmi olarak kabul edilene kadar muhafaza edilecektir.

Bu çalışmaya katılımın öngörülen bir riski bulunmamaktadır. Sizin bu çalışmadan direk veya dolaylı bir şekilde çıkarınız olmayacaktır. Bu çalışmaya katılımda gönüllük esastır. Çalışmaya katılmak istemeyebilirsiniz veya istediğiniz anda yapılan mülakattan vazgeçebilirsiniz. Ayrıca mülakatta sorulan sorulardan istemediklerinize cevap vermeyebilirsiniz. Tüm bu durumlarda herhangi bir yaptırım söz konusu değildir.

Ses kayıtları araştırmacı tarafından analiz amaçlı kullanılacaktır. Ses kayıtlarında tanımlayıcı olarak sadece adınız yer alacaktır. Ses kayıtları kilitli bir dolapta

muhafaza edilecek, ses kaydını verenin kimliği ile ses kaydı arasında ilişki oluşturmak için kodlama yapılacak ve tüm ses kayıtları çalışmanın bitiminden 3 sene sonra imha edilecektir.

Formdaki im zanız, yukarıda adı belirtilen araştırmacıya tez çalışması ile ilgili yapmış olduğunuz mülakata ait seslerin kaydedilmesi iznini vermektedir. Araştırmacı bu formda yer alan konular dışında sizin yazılı izniniz olmadan ses kayıtlarınızı kullanmayacaktır.

Bu formun bir kopyası size verilecektir.

Eğer bu çalışmaya katılmak istiyorsanız lütfen aşağıdaki bilglieri doldurunuz.

Mülakata Katılanın Adı Soyadı _____

Mülakata Katılanın İmzası _____Tarih_____

Ana Araştırmacının İmzası _____ Tarih _____

APPENDIX 5: INTERVIEW QUESTIONS

1. What is your general view of the use of technology in police operations?

2. What are the reasons of the use of new technologies by law enforcement agencies (LEAs) in the fight against IOC?

3. What are the contributions of the use of CCTV systems in combating IOC?

    a. Do they help LEAs identify suspects or criminals?

    b. Do they help LEAs seize suspects or criminals?

4. What are the contributions of the use of modernized police patrol cars in combating IOC?

    a. Do they help LEAs identify suspects or criminals?

    b. Do they help LEAs seize suspects or criminals?

    c. Does vehicle tracking system in the cars help command center dispatch police patrol cars more efficiently?

    d. Does vehicle tracking system in the cars help LEAs seize suspects or criminals by efficient dispatching of patrol cars to the scene?

5. What are the contributions of the computer forensics in combating IOC?

    a. What are the challenges of combating cyber crimes?

    b. Do cyber crimes in Turkey have relationship with foreign countries?

    c. Have you ever witnessed a joint operation of the TNP and a foreign LEA or LEAs to track and seize cyber criminals? Please explain.

6. What are the contributions of lawful interception in combating crime?

7. What are the contributions of observation systems in combating crime?

8. Does the use of VTS contribute to the operations of the TNP in the fight against international organized crime?

9. If the answer to Question 2 is Yes,

    a. How does VTS contribute to these operations?

    b. What is their main contribution to the law enforcement agencies' fight against international organized crime?

    c. What are the other contributions of the use of VTSs in combating international organized crime?

10. Does the use of VTS eliminate the need for physical tracking of criminals by police forces? If yes, how does it do this?

11. What are the disadvantages of physical tracking of criminals by police forces?

12. Does the use of VTS eliminate the disadvantages of physical tracking of criminals by police forces? If yes, how does it do this?

13. Do you think that when the police use VTS for tracking the targets, the targets operate more freely if they are not worried about being followed by police and

can contact with other suspects more easily who aren't known by police? Can you give an example?

14. What are the advantages of real time target tracking and monitoring along every point traveled and the duration of their stopovers?

15. What analyses can be done from the real time movements and stopovers of the targets? Please explain.

16. What are the other advantages of VTS usage in combating international organized crime?

17. What are the disadvantages of their usage in combating international organized crime?

18. How was the VTS technology applied in the operations you have witnessed? Please explain

19. What was your unit's role in this operation? (**This question is just for the participants working in Ankara Districts of Turkey**)

20. Did your unit receive support from the Ankara unit of the TNP for these operations? (**This question is just for the participants working in Van and Istanbul Districts of Turkey**)

21. For approximately how many days on average are targets tracked?

22. When does the operation chief decide to install or, if installed, remove the VTS from the target's vehicle?

23. Which type of vehicles were used most to install a VTS in your operations?

24. Which parts of the vehicle are most suitable for installing a VTS?

25. Is there any operation where a VTS is installed on a ship, boat or any kind of maritime vehicles?

    a. If yes, how often and at what conditions is it used in maritime vehicles?

    b. If no, why isn't it used in maritime vehicles?

26. What other tracking systems are used to fight against international organized crime?

27. What are the advantages and disadvantages of the VTS compared to other tracking systems?

28. Is there any operation you are aware of where the TNP cooperated with any foreign law enforcement agency regarding the sharing of the GPS coordinates of targets outside of Turkey who were being tracked by a VTS belonging to the TNP?

29. Is there any operation you are aware of where the TNP cooperated with any foreign law enforcement agencies regarding the sharing of the GPS coordinates of

targets inside of Turkey who were being tracked by a VTS belonging to a foreign law enforcement agency?

30. Do you think the TNP personnel have been able to successfully employ and incorporate new technologies such as VTS in their fight against international organized crime?

31. Is there anything else that you want to add to your comments?

APPENDIX 6: THE TURKISH TRANSLATION OF INTERVIEW QUESTIONS

Mülakat Soruları

1. Polis operasyonlarında teknolojinin kullanımı ile ilgili genel görüşünüz nedir.

2. Suçla mücadelede kolluk kuvvetlerince yeni teknolojilerin kullanılmasının sebepleri nelerdir?

3. CCTV sistemlerinin suçla mücadeleye olan katkıları nelerdir?

    a. Kolluk kuvvetlerinin şüpheli veya suçluları tespit etmesine yardımcı olur mu?

    b. Kolluk kuvvetlerinin şüpheli veya suçluları yakalamasına yardımcı olur mu?

4. Modernize Ekip Otolarının suçla mücadeleye katkıları nelerdir?

a. Kolluk kuvvetlerinin şüpheli veya suçluları tespit etmesine yardımcı olur mu?

b. Kolluk kuvvetlerinin şüpheli veya suçluları yakalamasına yardımcı olur mu?

c. Araç takip sisteminin kullanılması, komuta merkezinin ekipleri olay mahalline daha etkin sevk etmesine yardımcı olur mu?

d. Araç takip sisteminin kullanılması, kolluk kuvvetlerinin şüpheli veya suçluları yakalamasına yardımcı olur mu?

5. Adli Bilişimin (Computer Forensics) suçla mücadeleye katkıları nelerdir?

a. Bilişim suçları ile mücadeleki zorluklar nelerdir?

b. Türkiyede işlenen bilişim suçlarının yabancı ülkelerdeki suçlular tarafından işlendiğine tanık oldunuz mu, operasyon örneği verebilir misiniz?

c. Türkiyedeki suçluların yabancı ülkelerde bilişim suçu işlediğine tanık oldunuz mu, operasyon örneği verebilir misiniz?

d. Türk polis teşkilatı ile yabancı polis teşkilatlarının ortak yürüttüğü bir bilişim suçu operasyonuna tanık oldunuz mu, operasyon örneği verebilir misiniz?

6. Yasal dinlemenin suçla mücadeleye katkıları nelerdir?

7. Obzervasyon sistemlerinin suçla mücadeleye katkıları nelerdir?

8. Sizce araç takip cihazların Türk polis teşkilatının uluslarası organize suçla mücadeleye yönelik operasyonlarında katkı sağlamakta mıdır?

9. Eğer 2. sorunun cevabı evet ise,

      a. Araç takip cihazları operasyonlara nasıl katkı sağlamaktadır?

      b. Uluslarası organize suçla mücadelede araç takip cihazlarının en önemli katkısı nedir?

      c. Uluslarası organize suçla mücadelede araç takip cihazlarının diğer katkıları nelerdir?

10. Araç takip cihazlarının (ATC) kullamı suçluların fiziki takibine yönelik ihtiyacı ortadan kaldırmakta mıdır? Lütfen açıklayınız?

11. Suçluların polis tarafından fiziki takibinin dezavantajları nelerdir?

12. ATC kullamı polisin suçluların fiziki takibinde karşılaştığı dezavantajları ortadan kaldırmakta mıdır? Lütfen açıklayınız?

13. ATC kullanıldığında, hedefler takip edilmediklerini düsünerek daha rahat hareket etmekte midirler ve polisin o ana kadar bilmediği diğer şüpheliler ile daha rahat irtibat kurmakta mıdırlar? Lütfen örnek veriniz?

14. ATC kullanımı ile canlı hedef takip etmenin, hedefin her hareketinin ve durma noktalarının bilinmesinin ne tür avantajları olabilir?

15. Hedef hareketleri ve durma noktalarının tespit edilmesinden ne tür analizler yapılabilir?

16. Uluslarası organize suçla mücadelede araç takip cihazı kullanımının diğer avantajları neler olabilir?

17. Uluslarası organize suçla mücadelede araç takip cihazı kullanımının dezavantajları neler olabilir?

18. Araç takip cihazının kullanıldığı bir operasyona yönelik izlenimlerinizi anlatırmısınız? (Cihaz nasıl takıldı, hedefin şüphelenmemesi için neler yapıldı, takip nasıl başladı vb.)

19. Biriminizin bu operasyonda görevi ne idi? (**Bu soru sadece Ankara biriminde çalışanlarca doldurulacaktır**)

20. Bu operasyonda biriminiz Ankara biriminden destek aldı mı? (**Bu soru İstanbul ve Van birimlerinde çalışanlarca doldurulacaktır**)

21. Bu operasyonda hedef veya hedefler yaklaşık kaç gün takip edildi?

22. Operasyon şefi ATC takmaya ne zaman-hangi durumları göz önüne alarak karar verdi, eğer hedef veya hedeflere ATC takıldı ise bunun sökülmesine ne zaman-hangi durumları göz önüne alarak karar verildi?

23. Yapmış olduğunuz operasyonlarda genelde ne tür araçlar üzerine ATC takıldı? (Binek oto, Kamyonet, kamyon vb şeklinde)

24. Araç veya araçların hangi kısımları ATC cihazı takılmaya daha müsaitti?

25. ATC lerin gemi, tekne, kayık vb deniz ulaşım araçlarında kullanıldığı oldu mu?

    a. Oldu ise bu tür uygulamalara ne oranda ve hangi durumlarda başvurulmaktadır.

    b. Olmadı ise ATC ler neden deniz ulaşım araçlarında kullanılmamaktadır?

26. ATC haricinde uluslararsı suçla mücadele başka hangi hedef takip cihazları kullanılmaktadır.

27. ATC lerin diğer hedef takip cihazlarına nispeten avantaj ve dezavantajları nelerdir?

28. Türk polis teşkilatının ATC kullanarak sınır ötesinde takip ettiği hedefler oldu mu? Oldu ise bu takibe yönelik GPS koordinat bilgilerinin yabancı polis teşkilatları ile paylaşılmasına yönelik bir işbirliği yapıldı mı?

29. Herhangi bir yabancı ülke polis teşkilatının Türkiye sınırları içinde ATC kullanarak takip ettiği hedefler oldu mu? Oldu ise bu takibe yönelik GPS koordinat bilgileri Türk polis teşkilatı ile paylaşıldı mı?

30. Türk polis teşkilatı personelinin ATC gibi yeni teknojilere kolaylıkla adapte olduğunu ve bu teknolijleri başarıyla kullandığını düşünüyor musunuz?

31. Eklemek istediğiniz başka bir şey var mıdır?

CURRICULUM VITAE

1978   : Born in Kayseri, Turkey

Education   :

2000   : BS at Gazi University, Ankara, Turkey

2000   : BA equivalent degree at Police Academy, Ankara, Turkey

2006-2009   : MS at Police Academy Security Sciences Institute, Ankara, Turkey

2009-2012   : PhD in Global Affairs at Rutgers University, Newark, NJ

Professional Experience   :

2000-2004   : Turkish National Police, Ankara, Turkey as a Sergeant

2004-2008   : Turkish National Police, Ankara, Turkey as a Police Lieutenant

2008-2011   : Turkish National Police, Ankara, Turkey as a Police Captain

2011-2012   : Turkish National Police, Ankara, Turkey as a Police Major

Publications   :

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