INFORMATION SEEKING BEHAVIOR OF CRIME SCENE INVESTIGATORS
IN THE TURKISH NATIONAL POLICE
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Dissertation Prepared for the Degree of
DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS
May 2010

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This exploratory research is the first one among occupational information seeking behavior studies that focuses on information seeking behaviors of the crime scene investigators. The data used in this dissertation were gathered via a self-administrated survey instrument from 29 cities in Turkey. Findings obtained from the data analyses show that there is a strongly positive relationship between the experience of the crime scene investigators and the use of personal knowledge and experience as a primary information source (experience is operationalized with age, service years in policing, and service years in crime scene investigation units). The findings also suggest that increasing of the level of education is negatively related to relying on immediate colleagues as an information source among the crime scene investigators. These findings are consistent with related literature and theory.

The data analysis shows that crime scene investigators work in cities with higher population rates have more complaint scores than those who work in cities with lower population rates across Turkey. The findings from the data analysis may suggest valuable implications to defeat the barriers between crime scene investigators and information sources.

The researcher drew a proposed theoretical framework of an information behavior concept in the context of crime scene investigation that may help those who are interested in the phenomenon and its applications to other contexts.
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Mehmet Demircioglu
ACKNOWLEDGMENTS

First of all, I would like to express my sincere thanks to the people of Turkey. With their tax money, my organization, the Turkish National Police (TNP), supported my expenditures during my master’s and doctoral education in the United States of America.

The most heartfelt thanks must go to my family, particularly my wife Hanife, and my daughters Nur and Bahar and my son Murat. Attaining my doctorate would not have been possible without my lovely wife’s support and patience during my graduate education. I am hoping her support lasts forever.

In addition, I would like to thank very much Brian O’Connor, the chair of my committee, along with Miguel Ruiz and Suleyman Ozeren. In particular, Dr. O’Connor’s supervision and encouragement were the key points that helped me complete this marathon.

I also would like to thank all others who supported me and believed in TNP’s project. Finally, my thanks go to Osman Kilic and Mustafa Yavuz. Without their hospitality and help I would not have finished up on time the writing of the dissertation.

I regret to have to express my sincere condolences for the unexpected death of one of my dissertation committee members, Dr. Kevin Yoder. I can only imagine what a difficult loss this is for his wife and other family members. My sincere thoughts go to all of his family members and his loved ones. He is warmly remembered. Finally, I also regret to have to acknowledge that while attending to my doctoral studies I also lost one of my very best friends Semih. I would like to dedicate this dissertation especially to Police Major Semih Balaban, who was killed on duty by a terrorist. As a police major, I
and my dedicated police friends’ responsibility is to keep the public we serve safer. If necessary, we will give up our lives to protect our people, as Semih did.
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CHAPTER 1
INTRODUCTION

1.1 Introduction

This dissertation is about the information seeking behavior of crime scene investigators in the Turkish National Police. The theoretical aspect of the study relies on the model of information seeking behavior of professionals (Leckie, Pettigrew, & Sylvain, 1996). The data used in this dissertation are gathered via a self-administered survey instrument in 29 cities of Turkey. The data analyses show some level of consistency with the theory. In addition, from the policy implementation and managerial aspect, the findings from the data analysis and results may suggest valuable implications for the barriers between the crime scene investigators and information sources.

Researchers in information science have studied a variety of occupations from very common to unusual ones. In terms of the diversity and the richness of research in the literature of information science regarding information seeking behavior of professions, Ph.D. students, along with researchers and the academicians of this field, should be well-motivated to think on new research topics as a gap in the literature related to occupations. There have been only a few studies to examine information seeking behavior of police. Also, there has been no previous attempt to examine the information seeking behavior of crime scene investigators.

1.2 Abstract

Theorists and researchers in the information sciences have studied the
information seeking behavior of professions. On the other hand, among these studies policing as a profession has not been studied sufficiently. In other words, there are only a small number of studies related to information seeking behavior of police. Aside from the information seeking behavior aspect there has been no previous attempt to explore the information needs and information sources of crime scene investigators.

In this dissertation, the perceived gap in the literature of information seeking behavior of police is stated and reviewed. The need for more research on the information seeking behavior of police is still remaining.

The potential fruit of this study should be a model that explains everyday work-related behaviors of crime scene investigators. This research study has two dimensions. One is applied research to understand the reality of crime scene investigators’ on-duty information behavior. This understanding may guide top-level directors, along with the policy makers of the police organization, to review and evaluate current information policies of the CSI units in TNP. The other dimension is basic research—the larger problem space in which this specific research problem exists was that “more research needs to be done on police and similar professions in order to develop a model of information behavior that is more applicable to their everyday work lives” (Baker, 2004, p. 1).

1.3 Problem Statement

The basic problem motivating the researcher is as follows: the information needs and information seeking behavior of crime scene investigators should be determined to understand the information needs of, and information sources used by crime scene
investigators. These findings may be helpful to adjust the current educational policies and library resources in the police organization.

Addressing this problem implies a need to develop an environment in which crime scene investigators can satisfy their information needs. Not only from the researcher’s personal experience as a crime scene investigator, but also having informal discussions with some friends who are crime scene investigators in the Turkish National Police (hereinafter CSIs in TNP), it is seen that there are calls for determining the information needs and information sources of CSIs in TNP.

The researcher has had several conversations and discussions with his colleagues who have been working in CSI departments in TNP. The findings of this fruitful communication were that the CS investigators are not current in their field, which means that some of the CSIs do not tend to follow up on new developments in the field. Also, they are not aware of the fact that they are not current in the field. Some of the crime scene investigators do not think that they have to be current. Most of the techniques they have applied are the same over the decades, and many believe that the only change is the brand and fancy shape of the tools. In addition, according to them, making them being current in the field is a duty that must be performed by the central Department of the Criminal Police Laboratories.

Another problem that has been found during this communication process is that there are a number of barriers between CSIs and the tasks they have to complete. These barriers that surround the environment of CSIs and their professional world should be altered and defeated to give the best service in CSI.
From the basic theoretical aspect, modeling the information seeking behavior of crime scene investigators is necessary to compare with similar information seeking models.

1.4 Purpose

Evidence-based decisions are appropriate to help professionals in terms of offering effective information sources and well-qualified services to their clients. The best way to verify these decisions can be drawn by academically accepted research. Given the lack of empirical research on information needs of crime scene investigators (CSIs) in Turkish National Police (TNP), the researcher focused on the needs of CSIs in the TNP by exploring their information seeking behaviors.

The outcomes derived from this study will be very essential for the police organization to evaluate and satisfy the crime scene investigators` information needs and information sources. In addition, determining the barriers affecting CS investigators` information seeking behaviors is critical to reducing these barriers by providing appropriate policy implementation at both the micro and macro levels within the target organization.

On the other aspect of the study, I reviewed and tested the model of professionals' information seeking behavior by Leckie et al. (1996). Then I tried to develop a theoretical framework of the information-behavior concept in the context of crime scene investigation.
In sum, the aim of the study is to propose recommendations in respect to a street-level daily service which is crime scene investigation that would suit the CS investigators’ specific information needs.

1.5 Significance

The study represents a very original perspective both as a first and as an unusual one not only for the Turkish National Police, but also for the literature in information seeking behavior. Also, it has a strong potential to be a forerunner for the follow-up studies for police organizations and crime scene investigation units.

Determining the information needs and information seeking behavior of CSIs will help policy makers and top-level managers to adjust the current educational policies in the police organization.

From the theoretical aspect, the study is testing Leckie et al.’s (1996) model of information seeking behavior of professionals. In addition, the researcher aims to yield a theoretical framework of the information behavior concept in the context of crime scene investigation. If the framework may comprehensively explain the phenomena of street-level public services, such as crime scene investigation, the framework will be suggested to other theorists and researchers of information science to test on other public services such as emergency servicing.

1.6 Scope of the Study

Each researcher must have a scope to manage his or her study. Some of the main factors affecting a research study are time, money, and human resources. The
special conditions of a researcher are the essential factors to determine the edges of a proposed study. The most important factor affecting this study was the lack of time of the researcher. Due to the contract between the researcher and his sponsor, the Turkish National Police, the study had to be completed within a very limited time period. Thus, the researcher and his dissertation committee members have agreed on a scope for a manageable study.

The scope of the study has two dimensions. One is related to the theory chapter, and the other is about the data collecting.

1.6.1 Scope of the Theory and Models and the Literature Review

The theoretical foundation of this research is derived from Leckie et al.’s general model of the information seeking of professionals. Other information seeking theories and models related to work environment, and professions are not reviewed in this study.

By the same token, the literature reviewed for this study is bounded with the academic publications of occupational information behavior.

1.6.2 Scope of the Research to Collect Data

The data are gathered via a survey instrument. Instead of whole-unit workers in a CSI unit, the questions are asked of those who work in the field of crime scene investigation. In other words, those who are working in the other offices of a CSI unit such as crime lab, AFIS, bureau of photography, and office of biological evidence were not asked to answer the questionnaire.
1.7 Research Questions

The following research questions are analyzed through the research:

RQ1: What are the information sources used by the CSIs in the context of (1) keeping up-to-date; and (2) conducting crime scene investigation services in the TNP?

RQ2: What barriers affect information seeking behavior of CSIs in the TNP?

1.8 Independent and Dependent Variables

The study explores the ISB of CSIs in the TNP based on Lecki et al.'s (1996) model of information seeking behavior of professionals. Since the unit of analysis of the research is CSIs in the TNP, the following characteristics are determined as the independent variables for use in the research:

- Age
- Service year in policing
- Service year in CSI units
- Education
- Rank
- Geographic location (city size)

The following characteristics are determined as the dependent variables for use in the research:

- “Use of information sources” in the context of conducting crime scene investigation-related tasks
- “Use of information sources” in the context of keeping current in the field of CSI
- “Barriers” that affect information seeking behavior of crime scene investigators in the TNP
1.9 Hypotheses

Related to some of the components of Leckie et al.’s (1996) model of information seeking behavior of professionals, the hypotheses below are produced to test the model.

First, there is no hypothesis about gender. The reason is that almost all of the crime scene investigators who work in the field are male.

H1: Age will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H2: Years in policing will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H3: Years in CSI services will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H4: Education level will be positively related to level of “colleagues” use as an information source in the context of keeping up-to-date.

H5: The rank level will be positively related to “legal and official documents” use as an information source in the context of keeping up-to-date.

H6: Across the country, the city size will be positively related to level of complaints on work-related barriers of the CSIs in TNP.

1.10 Overview of the Coming Chapters

This dissertation has six chapters. Chapter 2 is the literature review of the dissertation, composed of the following parts: In the first part, the definition and the context and concept of information are deeply discussed to provide understanding of how to define information. After this discussion, information behavior and information seeking behavior are defined and discussed. In the second part, I discuss why and which occupations are worthy to study in terms of information seeking behavior. In the third part, the information-behavior literature of professions is reviewed. In the fourth
part, the concept of police and information seeking behavior is highlighted. In addition, the lack of police-based information seeking behavior studies in information science is elaborately described. The literature related to information seeking behavior of police is detailed, respectively.

In Chapter 3, the model of the information seeking of professionals is thoroughly explained. The components of the model are reviewed and detailed. Also, the variables of the model are compared with the nature of the crime scene investigation environment.

In Chapter 4, the methodological approach of the study is justified and explained, and research questions and the respective hypotheses are listed. Since the study includes a survey instrument, some basic characteristics of the instrument such as the unit of analysis, sampling strategy, and sample characteristics are explained. Necessary information about collected data is given. Based on the model of Leckie et al. (1996), justification and operationalization of the variables are elaborately explained in the last part of the methodology chapter.

In Chapter 5, the analysis of the collected data is presented. In particular, the output of SPSS on descriptive and bivariate analysis is provided to detail information about the relationships between the dependent and the independent variables. Furthermore, hypothesis testing is conducted by implementing appropriate statistical techniques in order to answer the research questions.

In Chapter 6, there is a large ground for critical thinking of findings of the research study. The proposed model of information seeking behavior of crime scene investigators is offered. In particular, in the light of the results of the hypotheses the
policy implication is examined thoroughly to suggest the top-level managers and bureaucrats of the related organization. In the last part of the chapter, suggestions and recommendations for future research are provided.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

The purpose of this dissertation is to determine the information needs and information seeking behavior of crime scene investigators in the Turkish National Police (TNP) within the context of Leckie et al.’s (1996) model of professionals’ information seeking.

The variety of theoretical and empirical approaches to the literature of information behavior is enormous. This chapter’s aim is to review literature about the information seeking behavior (ISB) of various professions, including not only from academicians to health care providers, but also police.

It is essential to realize why it is important to study the ISB of occupations. Understanding this not only will motivate researchers and librarians but also the outcomes may contribute to effective information seeking for people from various professions. Finding the domain factors that negatively affect information seeking behavior of professionals is and will be very helpful to eliminate and avoid inappropriate information seeking habits of professionals.

2.2 Outlines of the Chapter

The literature reviewed for this dissertation is divided into five parts. The first part reviews the discussions on the definition of information. The second section is about
information behaviors of occupations including but not limited to scientists, managers, attorneys, and health-care providers. The main reason to review these occupations is that I believe that to some extent they have some similarities with crime scene investigation as a profession. Crime scene experts are not only police officers but also apply some techniques and use tools that are used by occupations such as health-care providers, and chemical scientists. In the following section of the literature review, there is a brief and relatively shorter literature review related to research by occupation regarding information behavior of professionals. Finally, in the last section, some brief examples of research related to information seeking behavior of police are reviewed.

2.3 Strengths of the Literature

The literature in this paper has been partly adapted from Annual Review of Information Science and Technology (ARIST). In terms of credibility, I believe that the selected literature is very strong due to the credibility of ARIST. The reputation of ARIST convinced me of the trustworthiness of some of the cited studies published in Volume 41 of ARIST, which was edited and reviewed by Donald O. Case (2006).

2.4 The Gap in the Literature of Information Behavior

Information in any form is one of the most essential needs for almost every person, organization, and profession, and information science deals with information. One of the sub-disciplines of information science is information behavior. The information behavior of occupations has been attracting attention of academicians,
theorists, and researchers. According to Julien and Duggan (2000), almost half of the information seeking-related studies are focused on occupational research.

Policing is one of the crucial professions that affect our society and daily lives in terms of our safety and criminal justice. Although the literature of professions’ information behavior is abundant, police-related academic studies are very limited. This lack of literature is an opportunity for those who are especially studying the information behavior of professionals.

As a profession, policing has a variety of sub-branches to serve society in the most effective way. To provide understanding of criminal activities and arrest suspects, crime scene investigation units and forensic and/or criminal police laboratories have been established.

Since policing itself has not been sufficiently studied by the academic world of information behaviorists, it can be said that regarding information seeking behavior (ISB) of CSI the literature has not yielded any studies yet.

2.5 Information Behavior and Theory

In terms of applying theory to the research, among the 300 research studies identified in the sample, Julien and Duggan (2000) found that only 18.3% \((n = 55)\) were theoretically grounded, while 81.7% \((n = 245)\) were not theoretically grounded. Overall, 83.1% \((n = 365)\) of the literature was atheoretical.

Pettigrew, Fidel, and Bruce (2001) comprehended a review for ARIST to classify and explain information-behavior theories since 1978. Approaches of cognitive, social, or multifaceted were assigned by Pettigrew et al. to classify the literature.
By the same token, Fisher, Erdelez, and McKechine (2005) published a book titled *Theories of Information Behavior*. Academicians, researchers, students, and practitioners of the field of information behavior have this invaluable edited ready reference guide book of *Theories of Information Behavior* that includes more than 70 information-behavior-related models and theories.

Chatman (1996) emphasized the fact that “working with conceptual frameworks and empirical research has never been easy” (p. 205). The editors of the theory book stated that this conceptual framework is very important and helpful to people relevant to information behavior. That is why this book is a collaborative effort of the school of information behavior. Case (2006) emphasized that instead of taking from other disciplines, many of the theories in the book are produced by this field’s faculty.

In terms of having “long-standing and continuing” influence in information behavior because of their contribution by theories and models, the following academicians are credited by Case (2006): Dervin; Wilson; Kuhlthau; Dawson; Hjorland; and Savolainen. Wilson (2000) also added the name of Ellis, because of participating in the shift that has begun to focus on the person, rather than system users.

Related to a person’s physiological, cognitive and effective needs, Wilson (1981) developed a model of information seeking behavior (see Figure 2.1).
According to Wilson (1981), (a) the person himself, (b) the person’s role due to life and/or work, and (c) external environments, such as economic or even political, in which the person’s life and/or work takes place are the possible context of the three needs. The barriers as hinderers of information searching also take place in the same settings.

Two years after Wilson (1981), Dervin (1983) came along with her famous idea that has been named by her as the sense-making approach. Briefly, sense-making has four core elements: (1) a situation; (2) a gap; (3) an outcome, and (4) a bridge (see Figure 2.2).

Wilson’s (1981) barriers that impede the information searching process were formulated as a “gap” by Dervin (1983). A gap is defined by Dervin as “a person’s information problem in a situation that [is] tied to time and space.” To solve the problem, the information seeker tries to consider possible actions to manage the problem. This pose is an “outcome,” —that is, the consequences of the sense-making process—, and
finally, the person should find a means which is here named as bridge to close the gap between the situation and the outcome. As Dervin (2005) pointed out in her Web page about sense-making, this approach "cannot be encapsulated in a few sentences or even the intersection of all documents in this Web site" (para. 2).

Figure 2.2. Dervin’s sense-making metaphor (1992).

The reason why Wilson’s (1981) and Dervin’s (1983) studies are cited here is that in this study the barriers that negatively affect the information behavior of crime scene investigators are tested. Thus, these two scholars’ works are theoretically supportive point of this study.
2.6 Definition Discussions on Information

Information has been defined from various aspects by the theorists and academicians of information science. It is difficult to find a commonly accepted definition of information among the theorists and academicians of information science. What information is has represented a remarkable discussion in this science.

2.6.1 Defining the Definition

Definitions are the boundaries that help us to understand, know, and have an idea of limitations of things such as words, statements, concepts, and phenomena. We perceive and limit the things by giving them definitions. “What do you mean by that?” and “How do you define that?” are two of questions scientists frequently ask to understand the boundaries of a concept of a phenomenon.

One of the most essential aspects of any science, including information science (IS), is to clearly define their fundamental terms to address a science’s interest area within a universal context.

In some hard sciences such as physics, biology, and mathematics, to have a commonplace fundamental definition for their fields is not so hard due to the fact that these sciences' terms are commonly known, understood, and accepted by others. For instance, mathematics uses numbers; biology is the study of life, and so forth.

On the other hand, the question of how to define information has been discussed over the decades by the philosophers of IS.
2.6.2 Who is the Definer?

One of the reasons for this long-term discussion is the fact that the definers of information and related concepts often do not come from the same disciplines. This is the interdisciplinary nature of information science.

A definition of a subject can vary based on the definers’ standpoints, including their disciplines and professions. To have a manageable argument, trying to credit others’ definitions can make definition seekers very tired. Instead, information scientists should define the context and concept of information from their own discipline’s point of view.

Some can argue that whether a given definition of information by an information scientist does not make his or her expectations satisfied to support a theory relies upon or a practical action the scientist is in. Capurro and Hjorland (2003) have written a chapter about the concept of information for *Annual Review of Information Science & Technology*. These two important philosophers’ approach to the topic is very broad. They frame the limitation of trying to have a common definition for information by highlighting a universal scientific fact that “in scientific discourse, theoretical concepts are not true or false elements or glimpses of some element of reality; rather, they are constructions designed to do a job in the best possible way” (p. 344).

2.6.3 Method to Define Information

The environments we live in surround us with information. Yuexiao (1988) has highlighted the phenomenon that information has several hundred definitions. Since we are looking for the definition of information from a specific perspective from which the
concept of information has been understood, it is better to ignore the historical development of “information” as a word. Furthermore, due to its interdisciplinary nature, IS has been raised on the shoulders of other disciplines such as library science and computer science; thus the discussion about the definition and the concept of information from other sciences is very helpful for comprehending the notions that lie in the concept of information. As Bates (1999) reminds us, “Today, in information science, many newcomers without a background in the field are coming in” (p. 1043). That is true for me as well, in that I am a police officer with a BA in criminal justice, along with a master’s diploma in public administration. I am looking for something that can be obtained via the knowledge gathered by the discipline of information science.

2.6.4 A Meta-Discipline

Bates (1999) considers IS as a meta-discipline. According to her, “the meta-disciplines are distinguished by the fact that they are interested in the subject matter of all the conventional disciplines, [and] they do something with that subject matter that is of value for society” (p. 1044). She supports the idea that “the content of all the conventional disciplines is being shaped and molded for a societal objective through different types of professional activities involving the manipulation and transmission of knowledge” (p. 1044).

Bates (1987) limited information as a product of human agency and argued that defining the parameters and variables associated with the information sciences universe is a concern in this field. Bates (1999) identified three aspects of information and the concept of information science: “(1) The physical question: What are the features and
laws of the recorded-information universe? (2) The social question: How do people relate to, seek, and use information? and (3) The design question: How can access to recorded information be made most rapid and effective?” (p. 1048).

Since IS is a meta-field, Capurro and Hjorland (2003) have reviewed and classified the disciplines and studies that have tried to define information. Their approach is fairly logical in looking at the information concept not only from different aspects, including interdisciplinary sciences, natural sciences, and the humanities and social sciences, but also from the concept of information science.

2.6.5 Looking from Other Sciences’ Perspectives

According to Webber (2003), not only “information” but also “science” are problematic words.

Bogdan’s (1994) skeptical approach can make one very pessimistic and want to give up the effort to find a satisfactory definition of information. Bogdan concluded that “there seems to be no unique idea of information upon which these various concepts converge and hence no proprietary theory of information” (p. 53). On the other hand, a very brief answer of Wiener (1961)—“information is information, not matter or energy” (p. 132)—can make some “wow”! According to Capurro and Hjorland (2003), Wiener’s (1961) approach is a challenge to dialectical materialism. By the same token, using the definition of Stonier (1991, p. 258), “information, like matter and energy, is a basic property of the universe,” can be slippery or tricky for someone who is trying to produce or understand a definition of information in terms of documents.
In the approach to information as a human phenomenon, it is not enough to simply have a specific definition. From a natural sciences perspective, to understand the concept of information, one should not ignore Shannon’s (1948) model of communication to comprehend his definition of information. This model of communication has six core elements: information source, transmitter, receiver, destination, message, and signal (Shannon, 1948). Shannon’s definition of information has been argued and cited by most of the philosophers, including information scientists. On the other hand, while most of the philosophers of IS have been citing Shannon for his definition of information; interestingly, Shannon and Weaver (1972) are not satisfied with this model of communication due to the fact that it does not focus on the meaning of information.

Mahler (1996) highlighted the “contextual concept” of information. He stated that “information can only be defined within the scenario; it is not just out there.” This contextual concept has been understood by Capurro and Hjorland (2003) as “the question, ‘What is information?’ [that] cannot be stated without reference to a situation” (p. 361).

The concept of information in the humanities and social sciences is important to discuss. From the psychological view, Bateson’s (1972) definition of information is very brief: “a difference which makes a difference” (p. 459). Case (2007) also uses Bateson’s simple definition as a reference to explain information: “information can be any difference you perceive, in your environment or within yourself. It is any aspect that you notice in the pattern of reality” (p. 5). As a key concept, information has been defined by philosophers of sociology, political science, and the economics of information.
According to Barman (1989), in the policy making process, information has a unique, key role as (1) a resource, (2) a commodity, (3) a perception of patterns, and (4) a constitutive force in society.

As can be seen, each discipline and profession has its own definition and concept for information.

To define information, having references from other disciplines and professions is necessary to provide a standpoint to discuss the issue. However, the information scientists should have their own definition for information. Thus, information in information science is the right perspective in which to discuss the definition of it.

2.6.6 Information in Information Science

What “information” is in information science has been answered by Saracevic (1999) as “we don’t know” (p. 1054). According to Saracevic, since “information is a basic phenomenon”…the “‘we-don’t-know’ answer applies” (p. 1054). However, from the standpoint of signals or messages for decisions, information is considered by Saracevic as a narrow sense of expression. From the standpoint of cognitive processing and understanding, information is considered in a broader sense by Saracevic. The last but still important standpoint of information is the broadest sense of it, which is context. Saracevic highlights this “…because information is used in a context and in relation to some reasons” (1054).

Belkin and Robertson (1976) also discussed the fundamental phenomenon of information in the context in which it occurs. The authors briefly give an example: “In the context of heredity, (genetic) information is that which is carried by the genes” (p. 198).
In sum, Belkin and Robertson explained the various information concepts and their associated structures including (1) heredity, (2) uncertainty, (3) perception, (4) individual concept-forming, (5) human communication, (6) social conceptual structures, and (7) formalized knowledge.

With the above-given structures Belkin and Robertson (1976) emphasized that “the definitions are not context-free” (p. 201). Along with the contextual issues, the concept of information science is also varying.

According to Case (2007), “defining information in an absolute and final sense is not entirely necessary for the study of information phenomena to proceed” (p. 61). Instead of an absolute definition of information, what we need are “useful conceptualizations” of information (Artandi, 1973). Related to Artandi’s thought, Belkin (1978) highlighted the reason why information scientists are dealing with concepts of information instead of a definition of information: “the distinction is that a definition presumably says what the phenomenon defined is, whereas a concept is a way of looking at, or interpreting, the phenomenon” (p. 58). According to Belkin, thinking the way of concept rather than definition is essential for someone to “become free to look for a useful concept, rather than a universally true definition of information” (p. 58).

2.6.7 Conclusion of Definition Discussion

Without having a given context and a concept in a context for information, one may not have unique definitions for the information sciences’ core elements including information, information need, and information seeking.
However, we, as information scientists, do not need to declare a universal definition of information unless a clear statement of context and its concept is given. The definition of information cannot, in fact, be universal. It is a phenomenon that has been and will continue to be discussed by scientists and philosophers. The answer depends on the owner of the question, and different answers should be produced for the related sciences, disciplines, fields, and professions.

In sum—tell me which field you are from, what you are looking for, and then I will give an appropriate definition for your interest, which will benefit and be helpful to you as a map to surf in your field.

2.7 Definition of Information Behavior

Since this dissertation is about information behavior, it is vital to define what information behavior is.

Information behavior is defined by Wilson (2000) as the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use. Information seeking behavior is the purposive seeking for information as a consequence of a need to satisfy some goal. Information-searching behavior is the “micro-level” of behavior employed by the searcher in interacting with information systems of all kinds. It consists of all the interaction—or at the intellectual level—which will also involve mental acts, such as judging the relevance of data or information retrieved. Information-use behavior consists of the physical and mental acts involved in incorporating the information found into the person’s existing knowledge base. (pp. 49–50)

Information behavior is defined by Fisher and Julien (2009) as follows: “information behavior focuses on people’s information needs; on how they seek, manage, give, and use information, both purposefully and passively, in the varied roles that comprise their everyday lives” (p. 317).
Wilson’s (2000) definition of information behavior is “the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use” (p. 49). In his fruitful study for the ARIST article, Donald O. Case (2006) refined Wilson’s definition as follows: “Information behavior includes purposive information seeking; serendipitous encountering of information; and the giving, sharing, and use of information” (p. 293).

2.8 Why Is the Information Seeking Behavior of Professions Worthy of Study?

Many researchers and scholars have been studying information behavior of occupations. Regarding information behavior studies, not only the contexts and variety of people but also motivations and goals are differing due to the degree of stakes that play a significant role and catch the attention of researchers.

2.8.1 Assumptions

According to Case (2007), there are three assumptions that can help us understand why information studies are varying from people to situations. These assumptions are (1) rational, (2) decision, and (3) value (p. 10).

These assumptions’ importance depends on the number of people affected by a search for information and implementation based on a decision. Case (2007) explained this importance with a scale: At the very left side of this continuum scale of importance only a few people are being affected from an unimportant decision, whereas at the right of it a very vital decision can affect a huge number of people.
Case’s (2007) criteria to evaluate the importance of an information search clearly relies on the “ultimate impact on our own feelings or well-being as humans”, and “… numbers of people affected” (p. 10).

### 2.8.2 Examples

First, whatever the consequence of the decision, based on someone’s looking for a “best holiday” for him- or herself, the information search could affect a very limited number of people, such as the traveler and perhaps his or her family or close friends. This is an unimportant situation in the large scheme of things.

Second, the local weather conditions can affect the schools in a school district. Consider a school district that makes an urgent decision to cancel school due to severe weather conditions based on information retrieved from a government meteorological office. This situation is more important than the traveler’s case in the previous paragraph.

Third, a war can affect the lives of millions of people. Consider a situation in which, after a long technical process of information gathering, analyzing, and synthesizing, an intelligence agency submits an intelligence report that urges the government to take action against an enemy that is about the hit one’s homeland. This information must be seriously reviewed and considered for a further decision-making process. The ultimate effects of a declaration of war against an enemy could potentially affect millions of people.

Fourth, a cure can save billions of lives. In this case, let us imagine an exploration of a medicine that has been found by a biomedical scientist. Let us call this
medicine as new cure for HIV. Without a doubt, this invention could affect billions of people not only in the way of a health issue, but also as a sociological and physiological issue. The information seeking process, including decision making behind the scenes, could affect the entire globe.

2.8.3 Which Case to Accept

Among the above-given four cases, one can decide that the last case is the most important one and that thus it is worth studying on that treatment to save the lives of many human beings. This is why more research has been conducted on certain types of information seeking and less on others.

2.8.4 What about Crime Scene Investigation?

Late or faulty justice is not justice. In most occupations, professionals can compensate for some level of mistakes that they have made. On the other hand, health care providers and law enforcement agents must not make any fatal mistakes. For instance, if a crime scene investigator does not correctly name a DNA label, the result could be catastrophic for those who are innocent but accused of crimes. As understood from this example, if the information need of a crime scene investigator could not be sustained, then the result could indeed be fatal.

Considering the potential benefits and outcomes of research on human beings, not only academia but also public administrators and policy makers “might be able to devise a tool or service that would help a scientist reach his [sic] research goals” in the
future (Case, 2007, p. 11). As stated above, by supplying appropriate tools via the research, potential outcomes will be helpful for society.

2.9 Professions' Information-Behavior Literature

Information behavior is one of the sub-disciplines in information science. The aim of studying information behavior is to understand how everyday people such as pregnant women, graduate students, twins, and professionals such as teachers, healthcare providers, and lawyers seek and use information in their daily and work lives. These studies also focus on “[the] purposes [for which] the information is sought, how this information influences the effectiveness of the work and what barriers people perceive in their search for, and use of, necessary information” (Kostainen, Valtonen, & Vakkari, 2003, p. 157).

Case (2006) cited his study of Looking for Information (2002) which included a framework for reviewing the information behavior literature. According to Case (2002, p. 250) this literature includes but is not limited to the following categorized areas:

Information seekers by

- Occupation (e.g., scientists, managers)
- Role (e.g., patient or student)
- Demographics (e.g., by age or ethnic group).

Case (2007) highlighted the fact that in the literature of information seeking behavior, among the above categories, occupational information seeking behavior has been “the most common structure” (p. 251) or “the most common entry point” (p. 251) for research on information behavior.
Professions from the very common, such as scientists, engineers, lawyers, health-care providers, and scholars, to very uncommon ones such as the artisan fisher folk of Uganda and maize farmers in South Africa have been studied by various researchers to understand information seeking behavior patterns of these occupations. According to Case (2007), these studies share two common points that are (1) “… people still turn to other people for information” (p. 283), and (2) “who or what do people consult for information?” (p. 283).

2.9.1 Limitation of Reviewed Research

Because of time as a limitation of this research project, studies published before 2000 have not been focused on. Not having experience with some technical difficulties, and only being able to access electronic sources from anywhere except the campus was not preferred. The sources from electronic searches of bibliographic databases via UNT e-libraries should not be considered as the limitation. The searching, of course, was also limited to English. Searching key words were “information” + “behavior,” “information” + “needs,” and “information” + “uses.”

Limitations of some reviewed studies were restricted to small and non-probability samples and could not be distributed randomly because of the nature of the targeted professions. This situation makes them vulnerable in terms of determining their representativeness; examples include Murphy (2003) and Kwasitsu (2003).
2.9.2 Research on “Information Seekers by Occupation” Other than Police

Researchers have been studying different scientists, including but not limited to chemistry faculty, biochemists, academic meteorologists, and toxicologists. To have a more manageable topic for this particular paper, the literature reviewed in this study discusses occupations including: scientists, engineers, attorneys, and health-care providers. In addition to general policing, in particular crime scene investigation requires some features that these occupations have (Kostiainen et al., 2003). In the following section, there are some brief examples of research related to information seeking behavior of the above-mentioned professions.

2.9.2.1 Scientists

Flaxbart (2001) interviewed six faculty members of chemistry and biochemistry at the University of Texas at Austin. In sum, this group tended to use electronic journals and networked database systems due to benefits such as time-saving and convenient access to more journals.

In another study of 149 toxicologists, biochemists, and other scientists at EPA, Murphy (2003) studied how the interdisciplinary scientist seeks information and manages his or her time in regard to information-gathering tasks. The results of the study showed that these scientists tended to have difficulty managing their time effectively when performing an information seeking task.

Interestingly, Case (2006) concluded that “scientists are no longer the frontier of information seeking research, as they were 30 years ago” (p. 296). Case’s comment on this situation is that “…we already know enough about scientists” (p. 296).
2.9.2.2 Engineers

Engineers are the other common occupation that has been deeply studied by researchers. Fidel and Green (2004) made detailed interviews with 32 engineers to understand accessibility as a factor that influences the selection of engineers’ information sources. They found that engineers (1) mostly selected sources with which they were familiar, and (2) tended to prefer document sources rather than electronic sources for saving time.

To compare the accessibility and use of information sources among computer scientists and software engineers in Israel, Yitzhaki and Hammershlag (2004) conducted a mail questionnaire of 233 Israeli computer scientists and software engineers employed in academia and industry. The results showed that while printed professional journals and printed and electronic conference or meeting papers were preferred by the academicians, the industry group frequently used electronic textbooks and trade or promotional literature. Both groups showed the same level of ability in terms of accessibility to the information sources.

2.9.2.3 Academic Scholars

Talja’s (2002) study is an example of researching academic scholars. Talja studied information sources, peer influence, and information sharing among 44 faculty members at two Finnish universities. Talja found that collaboration and information sharing are essential aspects of scholarship.

By the same token, Belefant-Miller and King (2003) studied reading habits and e-mail usage of 451 faculty members at the University of Tennessee at Knoxville. Their
findings stated that the faculty spent 24 minutes per day on e-mails and 78 minutes per week on non-e-mail computer networks. These numbers do not seem believable; today, scholars may spend more time on e-mail than this study suggests.

In another study about academia, Meho and Tibbo (2003) concluded that in terms of locating and using relevant research, interdisciplinary scholars should work harder and employ more elaborate methods of information seeking.

2.9.2.4 Managers

Over the past few decades, scholars of organizational behavior have increasingly studied managerial decision making. As Case (2006) stated, these scholars tended to use managerial information behaviors in terms of “scanning,” (p. 297) “sense-making,” (p. 297) and “information seeking” (p. 297).

Farhoomand and Drury (2002) conducted a survey study, titled “Managerial Information Overload,” of 1,300 managers in four English-speaking countries (Singapore, the U.K., Hong Kong, and the U.S.), which found that the half of the managers believed that a major effect of information overload was loss of time (72%) and that it had a negative effect on work (40%). The managers tried to combat managerial information overload by “filtering” the information (47%) and by “eliminating the source” (24%). Farhoomand and Drury concluded that improving the ability for personal inquiry was a need of the managers.

Using a case-study approach, coupled with grounded theory, Correia and Wilson (2001) interviewed 47 managers in the chemical industries sector in Portugal to understand factors influencing environmental scanning in the organizational context.
The authors concluded that “the more open the organization is to its environment, particularly in terms of openness to information flows, the more likely it is that individuals in the organization will experience exposure to relevant information and develop an information consciousness” (p. 15).

Another case study, using the grounded theory approach in the U.K. and Finland, by Houtari with Wilson (2001), aimed to determine the critical success factors (CSF) of organizational information needs. The authors defined the role of CSF as follows: “in any organization…if objectives associated with the factors are not achieved, the organization will fail” (p. 2). They concluded that, in competitive markets, to gain success organizations must be aware of CSF to determine their strategic information-management needs.

Interestingly, a study conducted by Mackenzie (2003) found it statistically significant that managers in the study tended to gather information they did not actually need. The factor that motivated those doing so was "being perceived as a manager who is well connected and ‘in the know,’ as well as able to work within the time constraints that are inherent in the manager’s information environment" (MacKenzie, 2003, p. 75).

2.9.2.5 Researchers

In an empirical study of 180 researchers from Hewlett Packard and Compaq labs, Hirsh and Dinkelacker (2004) analyzed the selected researchers’ “preferred means of information seeking” (p. 807). Researchers in the study tended to rely on Web-based sources because those sources required the least time “to track down” (p.
The second dominant factor in selecting a source was “the authoritativeness” of it (p. 807).

By using a self-administered, Web-based survey with 114 people in London, Jamali and Nicholas (2008) focused on the ISB of physicists’ and astronomers’ “methods applied for keeping up-to-date and methods used for findings articles” (p. 444). Findings of the study reveal “the need for and the value of looking at narrower subject communities within disciplines for a deeper understanding of the information behavior of scientists” (p. 444).

2.9.2.6 Attorneys

Due to the specific requirements of their work-related tasks, attorneys generally “… encountered in past information behavior literature” (Case, 2006, p. 300). Meanwhile, lawyers pose legal activities, as their information needs are derived from the necessity that aims to enhance these professionals’ performance.

Wilkinson (2001) stated that “legal research should not be considered information seeking” (p. 257). Analyzing 154 interviews of practicing lawyers in Ontario, Canada by applying the critical-incident technique, Wilkinson concluded that, related to the size of the firms, the most preferred information sources of the lawyers were informal and internal. Informal sources can be explained as unrecorded meetings with witnesses and even with the suspects and defendants.

By adopting a stratified random sampling method, 361 lawyers were selected by Haruna and Mabawonku (2001) to be interviewed and observed to determine the information needs and information seeking behavior of lawyers in Logos, Nigeria. The
findings of the study, which were statistically significant, were that almost all of the lawyers (97.6%) tended to have “the latest decisions of superior courts of record” (p. 72). With 95% willingness, this group also wanted to be informed about the “most recent legislation” (p. 73). In terms of information sources of the lawyers, “library collection” (p. 76) was the dominant tool, followed by “interpersonal communication with colleagues” (p. 77) (94.8%, 75.5%, respectively). Interestingly, unlike the above-mentioned professions, these professionals did not tend to use “electronic databanks” (p. 75) (8.5%). As a recommendation of the study, Haruna and Mabawonku advised that “law libraries should be up-to-date and well equipped” (p. 82) in order to meet lawyers’ information needs.

With eight practicing lawyers, with an equal gender distribution, practicing in New Jersey, Kuhlthau and Tama (2001) conducted semi-structured interviews to understand how these lawyers used information to accomplish their complex tasks. The authors determined that the more complex the tax, the more performing of information seeking behavior. In addition, they found that these lawyers tended to ask for “printed texts” (p. 225) via electronic sources that respond to these lawyers’ specific information needs.

2.9.2.7 Health-Care Providers

Interestingly, as Fisher and Julien (2009) stated in their ARIST article on information behavior, medical field workers have been the focus of numerous ISB researches and studies. These studies include but are not limited to medical doctors, family doctors, physicians, clinical teams, primary-care clinicians, critical-care nurses, nurse practitioners, and dentists.
Cogdill (2003) conducted a study among nurse practitioners (NPs) to determine their information-related behavior. The responses of 134 NPs over the 300 NPs contacted showed that NPs mostly tended to need information related to drug therapy and diagnosis after meeting with patients. Regarding this need, NPs' most frequent sources of information were their colleagues, drug reference manuals, textbooks, and protocol manuals. Cogdill underlined the necessity of educational or outreach programs in terms of promoting the use of information resources among health-care providers to respond to their needs and consultations to manage patient problems.

Social workers, as the part of the multi-disciplinary staff within a hospital, are indispensable. Harrison, Hepworth, and de Chazal (2004) conducted a study using triangulation of data by implementing a questionnaire, arranging focus groups, and doing semi-structured interviews with 35 social workers to review the information needs and provisions of library and information services for this group. The findings indicated that, regarding access to information sources, this group was not information rich. Their knowledge of information skills needed to be renewed. The group claimed that they did not have enough opportunity to use the Internet. With face-to-face verbal contact, they tended to gather information in an absence of “research culture” (p. 27). Harrison et al. (2004) found that this group has been studied by only a few researchers. The authors' overall advice was to establish a service-level agreement for the provision of library and information services for social workers.

McKnight (2007) claimed that while post-hoc self-report studies about ISB of critical-care nurses are plentiful, observational studies of the patterns of their on-duty information behavior have not been conducted. To develop a grounded theory model by
doing participant observation and in-context interviews to describe the observable information behavior of a sample of critical care nurses in a 20-bed critical care unit of a community (non-teaching) hospital, the author found that rather than patients’ “report” charts, the nurses’ attention was focused on patient-specific information. In addition, due to the nature of the work environment the critical-care nurses could not find opportunity to consult published sources of information. McKnight concluded that “understanding the reality of nurses’ on-duty information behavior may guide librarians and systems designers in the provision of more appropriate systems and services” (p. 57).

2.9.2.8 Conclusion

In the above section, information seekers by occupation are exemplified by certain research studies. As stated before, the choice of scientists, engineers, academic scholars, managers, researchers, attorneys, and finally health-care providers is due to some degree to the nature of these occupations; one could find some similarities between CSI and the cited professions. For instance, CSIs should know related legal issues when they conduct CSI services. This is essential because each step taken by the CSI must be legal and legally justifiable. Another example is that, like health-care providers, CSIs should have some knowledge about human anatomy. Like researchers, CSIs have to follow up newly emerged CSI techniques.

Policing is a profession that affects our own safety along with that of the society we live in. The success of a police organization is vital for a safer neighborhood, and the more the organization is successful, the safer we are. Information flow is the key to the
success of the police organizations, and this flow of information goes through the information sources. Those who need information and are looking for information at all levels of sub-police units should adequately reach, review, use, and at times eliminate the sources of information.

Unlike scientists, engineers, lawyers, and health-care providers, police have not been efficiently studied from the IB and ISB perspectives. The next section reviews police-related information-behavior studies.

2.9.3 Research on Information Seeking Behaviors of Police

There have been very limited studies to examine information seeking in police investigation. In addition, there have not been any previous attempts to examine the information seeking behavior of crime scene investigators.

In this part of the literature, I have reviewed information seeking behavior and the information literacy of police. The perceived gap in the literature of information seeking behavior of police is reviewed. The need for more research on information seeking behavior of police is still remaining. The fruit of these studies should be a model that explains everyday work related behaviors of police.

The limited literature about the information seeking behavior of law enforcement agencies, including police, includes Kostiainen, Valtonen, & Vakkari (2003), Baker (2004), and Al-Daihani and ur Rehman (2006).

2.9.3.1 Information Literacy of Kuwaiti Police Officers

The study of Al-Daihani and ur Rehman is scholarly in nature and represents a
very original perspective both as a first and as an unusual one for its region. Also, it has a strong potential to be a forerunner for the follow-up studies of the Kuwaiti police organization. Determining the skills of police officers regarding their (1) computing skills, (2) information skills, and (3) judgment of applying to different information sources will help policy makers adjust the current educational policies in the police organization and minimize the waste of resources.

I have implemented a pilot test questionnaire that helps to prepare the final version of the questionnaire survey. The demography of the survey participants is evenly distributed among the whole police organization of Kuwait; however, the study excludes non-ranking police officers. The 60% response rate for the 210 participants should be an acceptable ratio to reach reliable and valid results. The questionnaire has adequate contents to measure the research question and test hypotheses. The results are tested by implementing certain statistical techniques, including one-way ANOVA, an LSD post-hoc test, and central-tendency measurements using SPSS.

It is interesting that any limitations of the study were not stated by the authors. Even though the survey participants were assumed to be bona fide, the survey was offered to those who were participating in a compulsory training course at the Police Academy. This situation might be justified by the researchers on the basis that using a convenience sampling method is very adequate. However, the survey was conducted during an enforced training course, which affects the promotion process of the police officers. Thus, the participants could have been scared because of the “my boss syndrome,” which leads the responders into a bias state to some degree. A third but very important limitation of the study is that it does not include non-ranking police
officers, who are the majority of real users of the information tools, systems, and databases at all levels of police environments.

2.9.3.2 Information Seeking Behavior of Vice Officers

In the summer of 2003, Lynda M. Baker conducted interviews with seven vice officers; all of them female. Baker tested “the information seeking of professionals model” of Leckie et al. (1996). The purpose of the study was “… to examine the information behavior of female police officers involved in undercover work in controlling prostitution” (Baker, 2004, p. 1). The larger problem space in which this specific research problem exists was that “more research needs to be done on police and similar professions in order to develop a model of information behavior that is more applicable to their everyday work lives” (p. 2).

This article is scholarly in nature and also represents a very original perspective due to the fact that there are almost no research studies that have focused on police regarding information needs and the information seeking behavior of police. Therefore, this research has a strong potential to be a forerunner for similar studies. On the other hand, due to the nature of the police job, the information is accepted as “secret”—police organizations do not want to share their information with others. Furthermore, due to the organizational subculture, police do not want to be studied as the subject of a research topic.

The literature review section of the study is short, and the author highlights the necessity of the study by explaining the gap in the literature. The method to collect data is qualitative, and the researcher has conducted interviews with the female police
officers. The number of the participants is only seven due to the fact that only female officers participated in the study. This, however, has made the study very strong to verify and understand what is going on.

The result of the study showed that the model did not address the role of informal information giving. The need for a new model to explain “informal information sharing and need in a work environment” was suggested. Future studies are needed to support this suggestion. The limitations of the study are not stated, and similar studies should be conducted to compare the findings.

2.9.3.3 Undercover Police Work

One of the comprehensive studies related to the information seeking behavior of police was done by Aksakal (2005). Please notice that Aksakal is also a member of TNP. In his dissertation, Aksakal (2005) highlighted the fact that undercover police work is “a complex and extreme example of information seeking and gathering” as compared with other professions (p. 4).

It is possible to apply Aksakal’s determination for the CSI police officers due to the fact that CSI is a complex process of information seeking and gathering. Like undercover policing, CSI is also “an extreme case due to the nature of the profession’s need for rapid and accurate information acquisition and processing” (p. 4).

Risk is embedded in the nature of policing. Aksakal tried to highlight the difficulties of undercover policing in regard to information seeking. Particularly, “information is sought under street conditions from individual human sources, which
makes it dangerous and risky since there is lack of verification of the source and information received” (p. 4).

Like undercover policing, CSIs also encounter risks and barriers in performing their jobs. For instance, biological residues, including blood, always pose a big risk of very serious disasters such as HIV infection.

Another fatal example of this risky condition is a real story. Once a bomb expert had asked the CSIs to examine a case in which a bomb mechanism was placed. Here, it needs to be clarified that, as a rule of safety, it must be considered that when a bomb expert asks the CSI team to examine a device, the CSIs automatically assume that the bomb expert means that he or she is sure that the bomb and its mechanisms are free from the risk of exploding during further CSI analysis. Unfortunately, while CSIs were trying to deal with the evidence, the bomb was triggered from a new ignition method that was not known by the bomb expert. The bomb claimed 10 casualties, of which five were very serious. Three of the casualties had to leave active policing and were retired from service. Without a doubt, the experience and knowledge levels of these police officers were very high. When I visited them in the hospital, the injured CSI experts underlined the fact that, “this was something that we could not control and prevent. If we had known that the device was not clear, we would not have approached the scene.”

On the other side of the story, after losing his fingers and the vision of one eye, the bomb expert declared that to his best knowledge and experience the bomb mechanism was cleared by him before he invited the CSI for further examination.

Threats coming from the crime scene are enormous. The fact of these types of sudden or unknown potential risk points such as the possibility of chemical poisoning or
explosive items make the CS investigator think more than twice before taking any action on the scene.

Information for a CSI in the field comes from several sources, including other police officers on the scene, such as the bomb expert. When the issue is related to the professional knowledge and expertise of those involved, the others should respect and accept the given information.

A faculty member could get insufficient information from the library. After realizing this fact, he or she goes for deeper information sources. Unlike the faculty member, for the CSI “information seeking and gathering is not just your average subject or keyword search in the library catalogs or even a simple search in police databases” (Aksakal, 2005, p. 4).

At the street level, professionals, including police officers, are aware that “information seeking in the streets cannot realistically make significant use of the methods that have been developed for more conventional information seeking behaviors” (p.4).

Whatever the barriers, effort, costs, and other necessary inputs due to the nature of the profession, law enforcement agencies must provide the services. Information is the key to being successful in policing (Chen, Chung, Xu, Wang, Qin, & Chaur, 2004). The information in most cases comes from the field officers, who should develop their best model of information seeking practices in terms of having valuable information to serve in policing and the administration of justice.
2.9.3.4 Information Seeking Behavior in Pre-Trial Investigation

Related to criminal investigation by police, Kostiainen, Valtonen, and Vakkari (2003) studied the information needs and information seeking behavior in pre-trial investigation. Kostiainen et al. define information in the pre-trial investigation process as a tool which helps investigators to find an answer to these three questions: 1. Crime; what are the essential elements of the offence? 2. Circumstances; when and where did the crime take place and what might have caused it? And 3. Parties involved; who is the injured party and who is the offender? (p. 158)

According to the authors, to complete the task, solving the crime by trying to answer the above questions, internal and external sources are applied by investigators. The authors claim that, unlike ordinary information sources such as friends, handbooks, printed and digital journals, due to “the confidential nature” (p. 159) of the pre-trial investigation it is necessary to use mainly internal sources such as “the investigator’s own memoranda, the station archive and the police information system” (p. 159).

Kostiainen et al. highlighted that since the information and its sources are related to the pre-trial investigation, in which the information seeking behavior is used to accomplish the task, there is a need “to identify the factors [such as] information, sources and information seeking as a whole” (p. 159). Since a pre-trial investigation has several stages and components, the authors aimed to identify the characteristics of these components.

As with Baker (2004), Kostiainen et al. (2003) also tested a model of the information seeking of professionals based on Leckie et al. (1996). With a qualitative case study, Kostiainen et al. (2003) observed a medium-size Finnish police station to understand the information needs and information seeking behavior and information sources of the investigators.
Consistent with the Leckie et al. (1996) model, Kostiainen et al. (2003) explained six components of the model: (1) work roles, (2) tasks, (3) characteristics of information needs, (4) awareness of information, (5) sources of information, and (6) outcomes and feedback. In addition, after evaluating the data that was collected by the triangulation approach, including interviews, observation and document reviewing, Kostiainen et al. adapted the Leckie et al. (1996) model (see Figure 2.3) to the pre-trial investigation model, which looks hard to follow due to different lines such as straight lines and broken lines (see Figure 2.4).

*Figure 2.3.* The information seeking of professionals' model (Leckie et al., 1996).
Figure 2.4. Model of the information seeking of professionals by Leckie et al. (1996) adapted to the pre-trial investigation. (Straight lines refer to the head of the investigation and senior investigator, broken line -.-.-.-. refers to investigator and broken line - - - - - - refers to secretary.)
Kostiainen et al. (2003) concluded that like engineers, health-care professionals, and investigators, pre-trial investigators also use “sources of information selected by familiarity and former utility” (p. 174). In addition, “the easiness and trustworthiness” (p. 174) are the key factors to choose the sources of information. The confidentiality, which is an essential criterion for police, is being kept by applying internal sources such as “the organization’s own information systems” (p. 174).

2.9.3.5 Information in Policing and Crime Scene Investigation

Reviewing the information behavior literature yielded the fact that the literature contained nothing about “crime scene investigation” as a profession. In terms of wording, instead of “crime scene investigation”, "pre-trial investigation" is the closest phrase to CSI in the information science literature. Pre-trial investigation as an expression has been used by Kostiainen, Valtonen, and Vakkari (2003), and their definition of information (given above) in pre-trial investigation is consistent with Buckles’ (2007) definition of crime scene investigation, which is “a methodical process that involves identifying, documenting, collecting, preserving, and evaluating information and evidence at a crime scene to determine what happened, how it happened, why it happened, and who or what was responsible” (p.6).

2.9.3.6 Evidence is Information

Buckles (2007) states that “everything considered evidence relating to a crime is information subject to use” (p.6). In sum, in the field of crime scene investigation “evidence is information” (p.6). So what is evidence? It could be anything that “tends to
prove or disprove a fact at issue in a criminal action” (p.6). “Evidence is the legal means by which one attempts to prove or disprove something” (p. 7).

For CSIs, evidence is information. Or we can make a simple mathematic equation test by converting evidence is information to information is evidence. In terms of the data and information distinction, to align with the core philosophy of information science, any potential evidence must be considered as still data until it has been accepted as evidence at the end of the evaluation process by the crime scene analysts and crime lab technicians. If potential evidence such as a fingerprint from the crime scene was not considered as evidence, and was not put in the trial file, then it should be considered as data. Crime scene investigators are those who have to distinguish potential evidence that is data from evidence that is information.

Kostiainen et al. (2003) highlighted the fact that "information varies from crime to crime” (p. 159). The information needed could be different, even for cases involving the same types of crimes. Without any doubt, the information needed in a homicide case cannot be the same as that in a traffic offence. Since each crime case is unique, the information needs of crime scene investigators and sources used by the CSIs to solve a crime and accomplish the task are different.

Returning to the “evidence is information” concept, I found an opportunity to talk with Michael Buckland, Professor Emeritus at the University of California, Berkeley, on March 19, 2010, when he was at the University of North Texas for the Document Academy conferences. I summarized my dissertation topic in general, and then I focused particularly on the idea of “evidence is information within the context of crime
scene investigation.” Buckland stated that “the idea in the dissertation is well established in the context of CSI, and it is difficult to reject the idea.”

2.10 Theoretical Framework of Information Behavior Concept in the Context of Crime Scene Investigation

In terms of the scarcity of theories in information science, information seeking behavior as a sub-discipline has a number of conceptual frameworks to understand the core elements of the information seeking patterns of a context. This includes models of information behavior in different contexts. One of these contexts is occupational-related models.

In the context of professional information behavior, the researchers and theorists of information science have been trying to draw models, theoretical frameworks, and finally theories that help to explain the phenomena.

Information and the information behavior of professions have been reviewed with consideration of core elements of information behavior.

The core elements of information behavior in a professional environment, in general, include but are not limited to the following components:

- Information
- Information need
- Information situation
- Information use environment
- Information seeking
- Information searching
- Information sources
• (Serendipitous) information encountering
• Information need resolution.

Related to these core elements, I have a suggestion of a theoretical framework for CSI in the last chapter of the dissertation.

2.11 Model of Information Seeking of Professionals

Before explaining the model of information seeking of professionals, it is essential to know the distinction between theory and model.

2.11.1 Definition of Theory

Bates (1987) characterizes theory as “...the entire body of generalizations and principles developed for a field. A theory is a system of assumptions, principles, and relationships posited to explain a specified set of phenomena. The core meaning of theory centers around the idea of a developed understanding, an explanation, for some phenomenon” (p. 7).

Buckland (1991) defines theory as being “in the broad sense of a description or explanation of the nature things, not in the more restricted sense, used in some sciences, of denoting fundamental laws formally stated and falsifiable” (p. 18).

Since we are the discipline of information science, it is better to give a definition of theory about information science. Hjorland (1998) highlighted information science theory as “a theoretical explanation of information systems efficiency, of user behavior, of the function of different search agents such as descriptors, titles, and so on” (p. 607).
2.11.2 Definition of Model

As many authors of IS state, it is a common fact that information science has models rather than theories. Thus, a definition of a model is also essential.

Bates’ (1987) explanation for models is that “models are of great value in the development of theory. Models are most useful at the description and prediction stages of understanding a phenomenon. Only when we develop an explanation for a phenomenon can we properly say we have a theory, consequently, most of ‘theory’ in LIS is really still at the modeling stage” (¶ 4).

Wilson (1999) stated that “…a model may be described as a framework for thinking about a problem and may evolve into a statement of the relationship among theoretical propositions” (p. 250).

To make a sharp distinction between theory and model, Case (2007) points out that “models typically focus on more specific problems than do theories” (p. 120).

The rich diversity of the occupations, along with their various factors such as specific context in which information behavior and information needs vary, has yielded to date different information-behavior models. Because of this diversity of information-behavior models, one could claim that these models are not applicable to all user groups. Seeking a comprehensive model that could explain a very general model of the information behavior of professionals has existed as a research problem among the scholars and researchers of information behavior.

In this regard, Leckie, Pettigrew, and Sylvain (1996) have reviewed a wide variety of occupational information seeking behavior studies limited to lawyers, engineers, and health-care professionals “to propose an original model of the
information seeking process that would be applicable to professionals working in any field” (p. 163).

2.12 Conclusion

In next section, the model of information seeking of professionals by Leckie et al. (1996) is discussed.

The components of the model are explained by comparing them with crime scene investigation as a profession. In addition, the survey questions are justified to test the information seeking behavior of CSI in the Turkish National Police.
3.1 Introduction

In this chapter, the model of information seeking of professionals by Leckie, et al. (1996) is analyzed. In addition, the variables that comprise the components of the model are detailed. Finally, each related variable is compared with the environment of the crime scene investigation.

3.2 Testing a Model

Since models are not like theories, it is hard to claim that models could cover every side of a phenomenon. Occupations, roles, and individual demographics are the most common subjects of ISB studies (Case, 2002). These three elements were put into the model of professionals’ information seeking by Leckie et al. (1996). Thus, the model seems very comprehensive.

Leckie et al. (1996) have developed a general model of information seeking of professionals (see Figure 3.1). While conducting their research to develop a general model of IS, they focused on a limited number of professions, which are (1) engineers, (2) health-care professionals, and (3) lawyers. The most important claim of the model is that it “is applicable to all professionals” (p. 161). This is a very pretentious declaration that the model could work for all professionals. However, whether the model is applicable to CSI, as a profession, is reviewed in the conclusion of this chapter.
3.2.1 Why Leckie et al.’s Model?

Before getting to the model, there are some issues to be clarified. One could argue the reason to select this model for the study is the theoretical foundation. The actual reason is that the model provides leverage to jump up to the study. This is the beginning of the marathon. The author of this dissertation is not a huge fan of the
model. However, among the workplace studies along with other profession-related models and research studies, Leckie et al.’s model is worth study.

3.2.2 Citation Analysis

To show the strength of the Leckie et al.’s model of information seeking professionals, it is better to make a citation analysis. The very “quick and dirty” but easy way is to Google the name of the model. As of February 8, 2010 the result is that the model had been cited 235 times by other scholars.

Another scientific method is to apply to the ISI Web of Science citation analysis index. According to the data retrieved from the ISI Web of Science, to date Leckie et al.’s model of information seeking of professionals has been cited 120 times. In addition, as seen in the Figure 3.2, after 2003 the model has been cited over 10 times each year, except in 2006, when it was cited 9 times.

![Citations in Each Year](image)

*Figure 3.2. Citation report of Leckie et al.’s model of information seeking of professionals from ISI Web of Science. In 2007-2008 the model has been cited over 15*
Therefore, not surprisingly, the richness of citations since 2004 should be understood as the acceptance level of the model in the field of information behavior.

In the next part of the chapter, six components of the model are thoroughly explained and compared with CSI as a profession.

3.3 Model of Information Seeking Behavior of Professions

The original title of the study is “Modeling the Information Seeking of Professionals: A General Model derived from Research on Engineers, Health Care Professionals, and Lawyers” by Leckie, et al. (1996). The aim of the authors was to “posit an original model of information seeking that is applicable to all professionals” (p. 161) by reviewing and comparing other models of information seeking behavior of professions.

Leckie is from the Graduate School of Library and Information Science, University of Western Ontario, London. His attempt to draw a model of information seeking behavior of professionals is invaluable.

In sum, the model has six major components to explain the whole process of information seeking behavior of the professions. These components of the model are: (1) work roles, (2) associated tasks, (3) characteristics of information needs and three factors affecting information seeking, (4) awareness of information, (5) sources, and (6) outcomes.

In the next parts of the chapter, beginning from the work roles and associated tasks, each component, along with the related variables of the components, are
3.3.1 Work Roles and Associated Tasks

The first two components of the model are work roles and associated tasks. Whatever the profession, according to Leckie et al. (1996), each professional generally has five different work roles and associated tasks: (1) service provider, (2) administration and management, (3) researcher, (4) educator, and (5) student.

3.3.1.1 Service Provider and CSI

According to Leckie et al. (1996), “the most prominent role is that of service provider which focuses on the creation and delivery of a vast range of services (including both expertise and physical products) to the client” such as “assessing client needs or solving technical problems” (p. 181).

Engineers’ roles as service providers are “carrying out various technical and nontechnical tasks” (p. 181). By the same token, a lawyer must be “preparing for an upcoming trial” (p. 181). Like engineers and lawyers, health-care providers are also spending most of their work time “in the role of direct service provider, and the tasks associated with patient care create their greatest need for information” (p. 183).

Crime scene investigation departments have to do certain tasks from very basic and simple ones to very complex technical tasks to help related police units and justice departments. To serve their clients, CSI professionals need to keep fresh on any advancement in the profession’s world. These advancements may include, among others, new techniques, products, equipment, tools, and chemicals used in CSI.
3.3.1.2 Administration and Management and CSI

The second important role is defined by Leckie et al. (1996) as administrative and managerial. A task of the administrative or managerial role may require “distinct information needs” (p. 181).

In health care, while “staffing, workload, budgeting, reports” are mostly repeated administrative tasks performed by the nurse administrators, clinical nurses are looking for administrative information related to “tracking equipment, medications, and reports” (p. 181).

Leckie et al. (1996) highlighted a complaint done by the engineers related to their administrative and managerial role, which is that “they are overwhelmed by the amount of paperwork demanded by their work and that such a burden seriously inhibits the quality of their work and their productivity” (p. 182).

CSI professionals have a number of administrative and managerial roles and associated tasks. Staffing, budgeting, planning, organizing the team with qualified investigators, and managing the flow of CSI equipment are some of these tasks. Since crime scene investigation is a process that must always stay within legal boundaries, unlike the engineers cited by Leckie et al. CSIs cannot moan about being overwhelmed by the amount of paperwork due to their specific work.

3.3.1.3 Researcher and CSI

Leckie et al. (1996) defined this role as follows: “Research may be conducted in partnership with an academic institution or it may arise solely from within the
professional’s organization and grow from his work” (p. 182). Tasks associated with the role of researcher involve writing publications and speaking at conferences.

For CSI professionals, to be a researcher as a role is not common, at least for most of employees in the department. From my personal experience, other than ranked officers with the highest degrees, almost none of the CSI units’ personnel could fall into this category. The only exception might be those who have been assigned to the bureau of research and development in a CSI unit. These units are established only in some big cities of Turkey. Thus, small-size cities with very limited personnel do not have research and development bureaus.

3.3.1.4 Educator and CSI

According to the authors, educator has two dimensions: a professional as an educator may educate the public for awareness of the issue via outreach programs, or may teach related courses to the students at any level of an educational institution. Leckie et al. (1996) emphasize the fact that “tasks associated with the educator role would include ‘planning and curriculum development’” (p. 182).

It is possible to verify that some CS investigators have the role of educator. They teach selected candidates of CS investigators to meet the criteria of completion of initial or advanced training programs for specific disciplines of CSI. On the other hand, a few of CS Investigators teach related professionals such as lawyers, prosecutors, and judges via educational institutions of the justice departments. Related to maintaining crime scenes safely, the other police departments are routinely being educated via in-
service training courses. In addition, it is also very common that CS Investigators teach police candidates in a police school and academies.

3.3.1.5 Student and CSI

As Leckie et al. (1996) indicated the fact that "keeping up with the advancements in one’s field and upgrading one’s education and skills by taking courses" is essential for each profession (p. 182). The tasks associated with the student role would be "professional readings, or attending conferences and meetings" (p. 182).

From the CSI departmental perspective, trying to stay fresh in the field is not an easy role to follow. From my experience, the reasons could be that the CSI departments are being taught, supported, and paid for by a central department in Ankara, the capital city of Turkey. The central department is the organizer of planning, including teaching new developments and buying newly developed equipment. This situation may make the CSI departments in the cities a little bit unconcerned and irresponsible with regard to new developments. If the central department does not transfer new techniques to the CS investigators and/or does not buy the new equipments for the sub-departments, CSIs will most likely behave in ways that they know and will “get by.”

From the personnel perspective, it comes to mind that CSI personnel with higher rank who have higher education are keen to learn about the advancements in their field. The higher the rank and education, the more interest there generally is in trying to keep up in the field.

Coming from the field of CSI, I do believe that CS investigators might have some different roles than those listed by Leckie et al. (1996). Of course, it is possible that an
investigator with higher rank and holding a higher education degree could conduct research with universities. It is less likely that researcher as a role is common in the environment of CSI. A general conclusion cannot be made for researcher as the variable of the component.

According to Kostiainen, Valtonen, and Vakkari (2003), the investigators are not only the users of information but also the actors. Kostiainen et al. determined four work roles in pre-trial investigation at a police station: (1) the head of the investigation, (2) senior investigator, (3) the investigator, and (4) a secretary of the investigation (p. 166–167). In this regard, to find new roles that fit for CS investigators, it is better to ask an additional question in the survey. The format of this new question could be an open-ended question. The responders would be free to write and explain their opinion about the roles that they might have while performing their tasks.

3.3.2 Characteristics of Information Needs

The third component of the model is characteristics of information needs. According to Leckie et al. (1996), generally information needs arise out of situations pertaining to a specific task that is associated with one or more of the work roles played by the professional. However, an “information need” is not constant and can be influenced by a number of intervening factors (p. 182).

The way in which information is sought is influenced by the following six factors as the characteristics of information needs commonly found in the literature.
3.3.2.1 Individual Demographics and CSI

According to the literature of information seeking of professionals, individual demographics “… can influence the formulation of the information need” (p. 183). The variables mentioned by Leckie et al. are as follows:

a. Age
b. Profession
c. Specialization
d. Career stage
e. Geographic location (legal jurisdiction).

To test the model, individual demographics are put into the questionnaire. The first part of the survey questions are the individual demographics including but not limited to the above five items. The relationship between the individual demographics and the other factors in the model has been tested in the chapter on analysis.

(a) Age: In the Turkish National Police, the official recruitment age range is between 18 and 26. Thus, it is said that TNP has fairly young police officers.

(b) Career stage: In TNP, career stage can be named as rank. TNP has the following ranks for the officers who work in CSI units.

- Police Officer
- Sergeant
- Lieutenant
- Captain
- Police Major
- Police Chief
(c) Specialization: CSI units have different bureaus and services. The bureau of crime scene investigation in the unit of CSI has 3 different types of teams.

- Heavy Crimes (A Type Team)
- Thievery and Minor Crimes (B Type Team)
- Responsible for Any Type of Crimes Team (C Type Team)

(d) Work Position: Other than these three types of CSI teams in the bureau of CSI, there are the following positions in the units of CSI related to the bureau of CSI.

- CSI Dispatch Officer
- Team Member
- CSI Team Commander
- CSI Shift Commander
- CSI Commander of Shifts
- CSI Bureau Commander
- Deputy Chief Director of the department responsible from the CSI bureau
- Chief of CSI Unit

3.3.2.2 Context (Situation Specific Need, Internally or Externally Prompted) and CSI

The context and characteristics of information needs are much related to each other. Information needs vary due to the nature of the context in which the professional plays his or her role and carries out the associated tasks.

In a CSI environment, the context could be conducting CSI by the types of the crimes. There is no doubt that information behavior in a homicide case could be more specific than a routine theft from an auto.
The other context is “keeping current” in the field. In the roles of being researchers and students, keeping current is essential. This context affects the information needs and sources of CS investigators.

3.3.2.3 Frequency (Recurring Need or New) and CSI

It has been found that “lawyers have recurring information needs relating to previous cases handled by their own firm, which can result in wasted time searching from internal documents if the firm does not have a good records management system in place” (Leckie et al., 1996, p. 183).

A suspect can commit the same types of crimes in different places, and the patterns or techniques used by the suspects could yield the prejudgment that they might be the same person. However, since each crime is unique, the CS Investigators should have a clear mind that the scene must be examined and investigated without falling into any biases or wrong-habit behaviors.

3.3.2.4 Predictability (Anticipated Need or Unexpected) and CSI

In their study, Leckie et al. do not explain anything about this variable. It could be explained in a way that due to the nature of the crime types and their crime scenes, potential evidence could not be retrieved in a sequence that allows the CSI team to easily find the information they seek.

3.3.2.5 Importance (Degrees of Urgency) and CSI

What makes an information need important depends on the context of the
professional’s situation.

Officially, if an investigation has been assigned to the police by a prosecutor, then the case must be completed. Police units cannot have the right to reject a verbal or written order of a prosecutor to begin an investigation. Thus, each case has officially a maximum value of importance. For CSI, each team must go to the given CS addresses to complete their investigation as soon as possible. The risk of contamination of the CS puts tremendous pressure on the CS teams; thus, the CSI teams are always in a rush from one case to the next.

Another issue is that when the crime is a very sensational one such as a killing of a famous person, or a terrorism case, the importance of the case is greater than a routine case. The degree of urgency of these types of cases could require some different patterns of information needs, along with information seeking behavior including different information sources to solve the crime.

3.3.2.6 Complexity (Easily Resolved or Difficult) and CSI

In this regard, one can easily dictate that “information needs varied considerably in complexity” (Leckie et al., 1996, p. 183) for any context in which a professional tries to complete a given task.

Sometimes it could be possible that solving a case could involve very problematic prepossessing due to unexpected circumstances of the crime scene. This situation makes the CSIs perform deep examination and investigation of the scene. From my personal experience, an unresolved case is like a black stain for the police unit in charge. One of the important criteria of being successful as a police department is the
measure used by the traditional top-level police chiefs, which involves measuring their subordinates’ success by looking on the crime statistics in which unresolved case numbers are expected to be significantly lower than in the previous years. Thus, each investigator does not want to be blamed by their superiors or even by the public for being unable to solve a case due to lack of abilities.

In Turkey, in the capital city, Ankara, the homicide unit of the city police has solved each homicide cases in the last seven years except for one. Each suspect has been determined, named, then arrested, and put into the jail. The only exception of this astonishing success story is one case that still remains unresolved. He was gunned down in front of his house during a very important football game time in 2002. Police think that the perpetrator(s) must be working for an illegal group in an intelligence agency or a criminal organization that accepts these types of associations. However, in 2008 a suspect who has been already in the custody claimed that he knew the perpetrator due to the fact that he was approached to execute the job but he declined; then one of his criminal friends had accepted the suggestion to finish the job. Furthermore, after the execution, the perpetrator had consumed the payoff money in gambling parties.

The success of this homicide unit must be deeply investigated for a research idea.
3.3.2.7 Records Management System and CSI

Under the title of characteristics of information needs, Leckie et al. (1996) highlighted the need of a well-designed and managed records management system. These types of systems are very helpful for their clients to save and retrieve valuable data and information. Whenever it is needed, the professionals can apply to these systems to avoid wasting time by overlapping paperwork, etc.

In general, the records management systems of a CSI unit are as follows: Automatic Finger Print System (AFIS) Database, Manual Finger Print Database, Crime Cases and Suspects Archive and Photography Archive. While each city has its own databases, AFIS is being shared by each city in such a way that each unit can upload and retrieve fingerprints to match. The necessity and importance of these databases are known by all CSI units.

3.3.2.8 The Complex Fashion and CSI

According to Leckie et al. (1996), “each factor in the information need component of the model exists on a continuum of intensity and interacts with the others” (Leckie et al., 1996, p. 183). They clarified the issue with the following example.

An information need could be unforeseen but relatively unimportant, and its solution not needed immediately, while on the other hand, an unexpected need could be of great importance and extreme urgency. The level of complexity, the degree of importance and urgency, and whether the information need is anticipated or unexpected together will affect the information seeking activity undertaken
What makes a crime very important and of extreme urgency is changeable. It depends on the social and political factors, and so forth. A routine homicide case could turn into a serious organized crime case. It could even be a terrorism-related crime.

3.3.3 Sources of Information

Leckie et al. (1996) defined this component of the model under the title Factors Affecting Information Seeking. Countless information sources could be used by the professionals to satisfy their information needs in a given task, including immediate colleagues, manuals, their own personal knowledge and experience, etc.

3.3.3.1 Types of Information Sources

Leckie et al. (1996) characterized sources of information in the following types:

- Formal: A conference, a journal
- Informal: Conversation; informal discussion with colleagues
- Internal: Within the organization
- External: Outside
- Oral
- Written: Copy and electronic text
- Personal: Own knowledge and experience, professional practices

The most frequently consulted sources of information by the professionals in the literature are journal articles, informal discussion with colleagues, and their own personal collections.
3.3.3.2 Personal Knowledge and Experience and CSI

Some of the literature claims that personal knowledge and experience are not an information source. Unlike them, Leckie et al. (1996) think that the definition of professional encompasses the fact that personal knowledge and experience should be a source of information. Their definition of a professional is that “… different from other kinds of workers is the advanced body of specialized knowledge that an individual must master to practice a particular profession” (p. 184). Consistent with the above definition, in most of the cases, “… professionals tend to rely on their own personal knowledge and experience first when they are faced with a work-related decision or problem” (p. 184).

Without a doubt, CSI is a profession in which its professionals, CS investigators, must have specialized knowledge and certain skills to conduct and practice CSI. In this notion, the personal knowledge and experience of a CS investigator play an important role. For instance, in a CSI environment, it is the investigator who will decide which techniques and tools should be better to use in a given situation. This decision-making process is based on the personal knowledge and experience of the investigator. In the case of an unfortunate wrong application, the outcome may be wasting or falsifying of the potential evidence. Thus, personal knowledge and experience have a very critical role in this context.

According to Leckie et al. (1996), this variable also implies different practices in various professions to conduct and practice a task. The differences of personal knowledge and experience “… affect which sources professionals will use and may
contribute to habitual patterns of information seeking that are common to certain
groups” (p. 184).

Leckie et al. clarifies this issue as follows: “Nurses require reference materials to
be conveniently located at the nursing station to be of optimal use. Lawyers consult a
collection of a broad range of legal materials in the firm library” (p. 184).

Habitual patterns of information sources used by CS investigators could be flow-
of-information charts, check-box charts, etc.

3.3.3.3 Choice of Information Source is not Dichotomous

According to Leckie et al. (1996), a “combination of several sources (either
simultaneously or in sequence) may be required to fill an information need. This
continual interaction contributes to the overall complexity of the source as a variable
affecting information seeking” (p. 184).

From the CSI perspective, various sources are applied to complete the CSI
process in which evidence as an information need is sought.

3.3.4 Awareness of Information

The second subtitle of factors affecting information seeking is awareness of
information.

Leckie et al. (1996) state that “direct or indirect knowledge of various information
sources (whether a colleague, an online database, or a handbook) and the perceptions
formed about the process, or about the information retrieved, play a crucial role in the
overall information seeking process. Thus, the individual's general awareness about
information sources and/or content can determine the path that information seeking will take” (p.184–185).

Leckie et al. (1996) highlighted seven variables related to awareness of information. The following sections explain these seven variables.

3.3.4.1 Familiarity and Prior Success (Results Obtained from Strategy or Source) and CSI

Based on the literature review, Leckie et al. (1996) found the fact that “professionals are likely to consult a source for information if they are familiar with it and have had prior success using that source for an earlier problem or similar need” (p. 185).

CS investigators are always encountering new crimes scenes, including their core patterns such as places, victims, witnesses, and so forth. On the other hand, CS investigators are likely to consult with their immediate colleagues and immediate supervisors.

3.3.4.2 Trustworthiness (How Reliable or Helpful) and CSI

This is a perception that “a source will provide accurate information—a reflection of the source’s perceived capability” (Leckie et al., 1996, p. 185). It is “the belief that the source is socially not risky… The nature of the request will not be revealed and that confidentiality will be kept.” A professional “…needs some piece of information but does not want to reveal to their supervisor that he has such a need. It is very likely that the professional will then turn to a colleague or other source whom they trust to ask for the required information” (p. 185).
In this regard, this variable is less likely meaningful from the CSI perspective. To solve a crime, due to the nature of CSI, if a source needed to be applied, then it should be so. CS investigators can’t tell that I do not want contact with a victim, witness, or even the suspect. Unlike Leckie et al.’s (1996) example above, without hesitation from his or her supervisors, a CS investigator must ask the questions related to the required information needs. In terms of trustworthiness, another aspect could be that the databases of CSI units are more convenient than the databases of other units.

3.3.4.3 Packaging (Convenience, Usefulness, etc.) and CSI

“The choice of packaging varies according to the purpose” (p. 185); for example, “when pursuing their own continuing education, physicians much preferred a journal format” (p. 185).

In CSI, crime scenes are never perfect. Evidence sometimes is damaged, destroyed, or degraded. Related people and information are not in a good order and waiting for the CSIs. These facts cannot delay or cancel the processing of CSI.

3.3.4.4 Timeliness (Found when Needed) and CSI

According to the authors, “whether a need is planned or unforeseen, it is often important that the information be obtained immediately or within an acceptable amount of time. Its usefulness and impact will decrease if it is either obtained very early or too late” (p. 185). Leckie et al. (1996) made clear the fact that “… the information must coincide with the need, as it happens in natural progression of the professional’s work” (p. 185).
Without any doubt, time is the most critical factor in CSI. Any crime scene must be investigated as soon as possible. All of the information sources must be reached and applied quickly. This variable of the component of the model fits with the reality of CSI.

3.3.4.5 Cost (Relative Cost-Effectiveness) and CSI

In sum, this variable has three dimensions:

1. Money: “… whether a professional decides to use it. The importance of the need, time factor, and monies available will determine how much effort and expense a professional will spend seeking information from any given source” (Leckie et al., 1996, p. 186). In this regard, this variable might found to be meaningless. CSI departments are being supported by the TNP, which is funded by the central government’s planned budget. Regarding public safety services, including CSI, the seriousness of a state requires continuity. Whatever the cost, a crime must be investigated, and the suspects must be arrested and handed over to the justice departments for the trial.

2. Psychological: “… having to learn to use a new source of information or ask a superior at the risk of being judged incompetent” (p. 186). In this regard, the above statement of the authors does not make much sense to the field of CSI.

3. Physical: “… effort to locate and acquire a specific piece of information” (p. 186). CS Investigators must make the effort necessary in energy and resources, whatever the cost, “to locate and acquire a specific piece of information” (p. 186).

In their study, Fidel and Green (2004) found the fact that time along with budget is the main factor for the engineers. Some engineers admitted that they could quit the job “when the money ran out or the budget was canceled” (p. 6).
Unlike tie engineers, from the CSI perspective, whatever the consequences, evidence must be obtained. Thus, psychological and physical factors of the cost issue cannot affect the main goal of accomplishing the crime scene processing and investigation. Unlike many professions, CSI is being budgeted by the states to establish justice. Literally, it is assumed that professions funded by the states such as criminal justice departments, instead of focusing on monetary issues, have merely to focus on the job they have to do.

3.3.4.6 Quality (Level of Detail, Accuracy, and so on) and CSI

According to Leckie et al. (1996), quality versus efficiency is always considered by some professionals in seeking information. The authors gave some examples from the engineers and dentists to clarify this discussion. For instance, the dentists considered the quality of information after the cost and accessibility of it.

The interpretive value of evidence depends on its context rather than its content (Gardner, 2005). When the issue is trying to reach any pieces of a puzzle to solve a crime, CS investigators must assess anything that could yield possible progress to obtain evidence.

The above assessment is not about the quality of the evidence but the evidence itself. Retrieving any evidence by using appropriate legal techniques that are irrefutable by anyone is one of the main goals of the CSI. Thus, in this regard, the quality of the information is not an issue for this profession.

3.3.4.7 Accessibility (Relative Ease of Access) and CSI
The literature has yielded a very common implementation of most of the professions: Physical proximity is considered, followed by the language used as the most dominant factors to convey information by professionals. The literature confirmed that most of the different professionals “perceive their own collections to be the most accessible” (Leckie et al., 1996, p. 186). Since this article was published in the last half of the 1990s, the authors also mentioned the fact that the growth of electronic sources has begun to increase in applying related databases by related professionals. In other words, with the richness of electronic sources, the notion of physical proximity has begun to be replaced with a newly emerging notion of electronic accessibility. In fact, thanks to the Internet and electronic libraries, information can be retrieved within a few seconds wherever it is saved.

From the CSI perspective, evidence must be obtained without the consideration of its physical proximity. To solve a crime, law enforcement agencies including CSI units must reach anywhere without considering the cost or time. This endeavor yields an expected result: Truthfulness is the only reality which will be essential to have a verdict by the court.

Another aspect of the issue is that among all police units, CSI departments are the first in terms of having the most reliable criminal databases, including identification that includes fingerprints and photos of criminals. In most cases, CS investigators in the field can obtain confirmation of ID via the CSI units’ own databases.

Furthermore, the investigation units such as homicide or counter-terrorism units also try to confirm their targets’ ID from the CSI units, due to the fact that during the years CSI units have filed uncountable numbers of people’s fingerprints and photos for
identification purposes. Even if a suspect is arrested with a fake ID card or a fake ID declaration; he or she still would carry his or her original fingerprints in the fingers.

In sum, in this regard, accessibility cannot be an issue for CSI units to reach information which is evidence for CSI as a profession.

3.3.4.8 Summary of the Component

When the profession is crime scene investigation, the legal obligations must be always considered on “the path that information seeking will take” (Leckie et al., 1996, p. 185). From the police aspect, very briefly, the law orders the related police unit to conduct a crime scene investigation process by collecting and analyzing evidence in a proper way. In general, the law-enforcement agencies, in particular CSIs, do not have the luxury to say “not my problem” (Gardner, 2005, p. 380) or to say “that scene is bloody and I’m not working it.” The mission must be accomplished (p. 380).

Let’s imagine a criminal case in which a poor, young female hiker has been raped and killed and then thrown into a small-size dam at a very high altitude by unknown suspect(s). Crime scene investigators must use any means to reach to the crime scene and collect potential physical evidence to enlighten a criminal case or a given task. They could ride on a helicopter; if they cannot find professional divers, they could even ask the administration to drain the dam. As mentioned earlier, in this profession information is evidence. Without considering the awareness of information including but not limited to cost, time, and quality, the law enforcement agencies must obtain and secure the evidence to submit to the courts.
Leckie et al. (1996) studied three professions: lawyers, engineers, and healthcare providers. The model's component of awareness of information does not fully fit the reality of the CSI world. There is a need to refine this component of the model from the perspective of CSI.

3.3.5 Outcomes

The model's last component is outcomes that "are the results of the information seeking process. An outcome may be the end point of the work-related requirements of specific roles and tasks" (Leckie et al., 1996, p. 187). Very clearly, when the information need is met and/or the required task is accomplished by the professional, the outcome of the model occurs.

Leckie et al. (1996) highlighted some variables of the outcomes of information seeking derived from the literature: "Providing a service or product, completing paperwork, realizing operational benefits, and achieving professional development goals" (p. 188).

3.3.5.1 Providing a Service or Product

CS Investigators have to check that each necessary action was taken to complete the investigation process. The stages of documentation must be done in a proper way, which includes completing all of the paperwork along with handing over the related documents and materials, which are evidence or possible evidence, to the related units such as the lab in the CSI department. If a CSI team’s supervisor has a
perception that the information need is met, then the CSI team will finish the IS process, or the supervisor will ask to stop the process.

3.3.5.2 Completing Paperwork

There is some paperwork that must be filled out, written, drawn, and signed during and after the CS examination and investigation process.

3.3.5.3 Realizing Operational Benefits

This variable could be something such as which techniques and/or tools should be used and applied in case of certain situations in any crime scene investigation environments.

3.3.5.4 Achieving Professional Development Goals and CSI

This variable could be something that defined and targeted goals of an in-service training that could be achieved; implementation of a newly emerged technique or how to use a tool could be taught.

Coming back to the CSI unit from the scene, the investigators have to write an official CSI report, which has to be signed by each investigator who participated in the investigation. Not only the collected materials that are the potential evidence or actual evidence, but also the signed reports, along with the other documentation such as a crime scene sketch are handed over to the related bureaus in the unit such as the fingerprint lab or photography lab.
3.3.6 Feedback and CSI

Leckie et al. (1996) also defines what feedback loop is for the model’s last component. When the information “… need is not satisfied and further information seeking is required” (p. 188). In the new information seeking process, professionals may find that “a completely different mix of source and awareness factors will be involved” (p. 188).

According to Leckie et al. (1996, p. 187) “the feedback loop also illustrates that an information seeking outcome is not a one-dimensional event… Information seeking activities and -related outcomes, therefore, may have a much broader impact on professional practice than has been recognized.”

From the CSI perspective, a feedback loop can be as follows. After the analysis of the collected potential evidence, the lab results will be delivered to the related units, including the prosecutor and the investigation unit in charge; or these units and the court could put new follow-up questions to CSI units about the case. This feedback loop could continue until the crime is resolved or the information need is met.

Delivering the lab analysis results to the related units is one dimension of the feedback loop. The second but, to me, most import dimension of this feedback loop is that CS investigators find the opportunity to evaluate their success in terms of collecting powerful evidence from the field—or vice versa.

3.4 Conclusion

In this chapter, the model of professionals’ information seeking behavior is deeply identified and discussed. The model is compared with the nature of the
environment of crime scene investigation as a profession, and the variables of the components of the model are reviewed under the circumstances of CSI.

The next chapter presents the methodology. In line with the model, the survey construction and operationalizing of the survey are thoroughly explained.
CHAPTER 4
METHODOLOGY AND DATA

4.1 Introduction

This methodology and data chapter reviews the methods to be used in this research to conduct the study. Research questions and related hypothesizes are presented. Definitions of the variable are explained. Dependent and independent variables are set. Finally, the analytic strategies to analyze data are discussed.

4.2 Scope of the Research Questions

The research questions and related hypothesizes of this dissertation are determined under the boundary of the scope of the study.

Regarding the scope of this dissertation, instead of testing whole components of the model of information seeking behavior of professionals by Leckie et al. (1996), the focus of the study is information sources used by crime scene investigators in the Turkish National Police. A secondary focus of the study is the barriers as perceived by the CSIs in TNP.

Information sources used by the CSIs in TNP are examined within the two contexts:

1. Task: Conducting crime scene investigation-related tasks at all levels of work roles and associated tasks by the CSIs.

2. Staying up to date: To follow newly emerged information and techniques, and keeping up-to-date information related to CSI.
4.3 Research Questions

The following research questions are analyzed through the dissertation.

RQ1. What are the information sources used by the crime scene investigators in the Turkish National Police related to the task.

RQ2. What are the information sources used by the crime scene investigators in the Turkish National Police to stay up-to-date in crime scene investigation.

RQ3. What are the barriers perceived by the crime scene investigators in the Turkish National Police affecting their information seeking behaviors?

4.4 Hypotheses

Related to the components of the model, the following hypotheses are produced to test the model.

H1: Age will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H2: Years in policing will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H3: Years in CSI services will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

H4: Education level will be positively related to the level of “colleagues” use as an information source in the context of keeping up-to-date.

H5: The rank level will be positively related to “legal and official documents” use as an information source in the context of keeping up-to-date.

H6: Across the country, the city size will be positively related to level of complaints on work-related barriers of the CSIs in TNP.

4.5 Variables of the Components of the Model
Variables of the components of the model used in the survey questions are presented as follows.

- Characteristics of information
- Individual demographics
  - Gender
  - Age
  - Educational level
  - Geographic location (legal jurisdiction)
- Ranks
  - Police officer
  - Sergeant
  - Inspector
  - Captain
  - Police Major
  - 4th level of police superintendent
  - 3rd level of police superintendent
- Service years in policing
- Service years in CSI units
- Type of CSI team
  - Heavy crimes (A type Team)
  - Thievery and minor crimes (B type Team)
  - Responsible for any type of crimes (C type Team)
- Work position
o CSI Team Member
o CSI Dispatch Officer
o CSI Team Commander
o CSI Shift Commander
o CSI Commander of Shift
o CSI Bureau Commander
o Deputy Chief Director of the Department
o Chief of CSI unit

• Context
  o Keeping current
  o Conducting crime scene investigation

• Sources of Information

The questions in the survey are produced to measure variables of types of sources of information. These sources are classified in 7 different categories, as follows.

• Written
• Internal
• External
• Digital
• Oral (immediate colleagues)
• Personal (own knowledge and experience):

• Barriers

Barriers will be accepted as a new component of the model. This question is adapted from Aksakal’s (2006) study to determine the barriers between the information
Barriers are classified in 5 different categories, as follows.

- Legal and regularity barriers
- Personal barriers
- Educational barriers
- Organizational (internal) barriers
- External (out of organization) barriers

4.6 Research Approach

By using appropriate research methods with data-collecting techniques, a researcher can find statistically significant results for his or her study. Equally important, correctly and properly analyzing the results is one of the essential phases of research that must exist in an academic study.

The researcher applies a self-administrated survey design to reach the data because of the broad range of information and concepts that are related to the ISB of the targeted group, CSIs in TNP.

There might be several methods to exactly determine the ISB of CSIs in TNP. As an independent researcher, I should develop, implement, and justify my own best model to measure what I intend to measure and learn the ISB of CSIs in TNP.

The researcher has employed an exploratory research design that provides a methodological structure for determining information needs and the ISB of CSIs in TNP. The research design approach used for this study by the researcher is a quantitative method.
4.6.1 Exploratory Research

As Bachman and Schutt (2008) explained, exploratory research is “… uncovering detailed information about a given phenomenon, learning as much as possible about particular people and/or events” (p. 10). Exploration as a research approach is generally concerned with “when a researcher examines a new interest or when the subject itself is relatively new” (Babbie, 2007, p. 88).

This study is interested in the information seeking behaviors of crime scene investigators in the Turkish National Police.

The ISB of CSIs is a very new topic that has not been studied previously. Thus, this study is an exploratory study. According to Babbie (2007, p.89) exploratory studies are “essential whenever a researcher is breaking new ground, and they almost always yield new insights into a topic for research”. This study is very original due to its subject.

Donald O. Case is one of the important researchers in information behavior in information science. His opinion about the topic is that “it is a fascinating topic, worthy of investigation” (Case, D. O., personal communication, February 24, 2009).

By the way, the researcher chose TNP due the fact that he has been working in TNP for over 13 years. In addition, the researcher is a police major and an expert of CSI. Selecting TNP is very helpful to collect the necessary data to explore what is going on in the field of CSI.
In sum, given the lack of empirical research study on information needs and information seeking behavior of crime scene investigators in the Turkish National Police, this study represents an exploratory research.

4.6.2 Research Design

This dissertation’s methodological foundation is set on cross-sectional research, which consists of a self-administrated survey design. The results of the questionnaire are analyzed by implementing quantitative data analysis methods.

4.6.3 Cross-Sectional Research

This study is a cross-sectional design, which is the most predominant design used in the social sciences (Frankfort-Nachimas & Nachimas, 2000). The cross-sectional design is identified with survey research. Cross-sectional stands for “a single ‘snapshot’ in time of some phenomenon or an ongoing series of photographs over time” (Sullivan, 2001, p.99). Cross-sectional studies are “based on observations representing a single point in time” (Babbie, 2007, p. 102). As has been stated by Babbie (p. 102) “exploratory and descriptive studies are often cross-sectional.”

4.7 Ethical Issues and Information Review Board

The ethical issues involving research participants cannot be ignored by the researcher. To meet the requirements of ethical issues to conduct the study, the submitted application protocol was approved by the University of North Texas Institutional Review Board. The IRB approval letter is included in the Appendix.
4.8 Unit of Analysis

According to Case (2007), most of the research studies related to ISB are categorized as research by occupation, social role, and demographic group. In the literature review of this dissertation, there are some examples of professions such as scientists, engineers, lawyers, health-care providers, and police. The main topic of this dissertation is information seeking behavior of crime scene investigators in the Turkish National Police.

Babbie (2007) defines the unit of analysis as “the what or whom being studied” (p. 94). According to this definition of whom is being studied, the answer is crime scene investigators in TNP. Thus, the unit of analysis of the research is CSIs in TNP.

4.8.1 Structure of the Turkish National Police (TNP)

The Turkish National Police (TNP) is headquartered in Turkey’s capital city of Ankara. TNP has a centralized structure to employ its personnel and security police all around Turkey. The officially recognized name of the TNP organization is the General Directorate of Security, which currently has 30 different divisions, including but not limited to intelligence, counter-terrorism, counter-smuggling and organized crimes, personnel, and criminal police laboratories (hereinafter CPL).

The Turkish National Police Organization serves in 81 provinces and their sub-cities with over 200,000 sworn police officers at different ranks. Each city has its own first-degree chief of police. Due to Turkey’s administrative structure, while “provincial security departments operate under the authority of a city governor official who is appointed by the prime minister, the centralized General Directorate of Security has
direct control over the provincial security departments and appoints all personnel ranging from line officers to the chief of police” (Akdogan, 2009, p. 44). This heavily centralized structure leads the security police along with required regulations from Ankara. The center divisions of the General Directorate such as the Central Counter-Terrorism Department, the Central Counter-Organized-Crime Department, and the Central Intelligence Department, regulate, enforce, control, and supervise their subdivisions and units located across the country.

4.8.2 Structure of CSI Units

The CSI units are composed of central criminal police laboratories. The central organization of the CPL has a section of crime scene investigation units, which is responsible for directing, regulating, and supervising the 81 provinces’ CSI units.

4.9 Population and Sampling

Each research study requires justification of its own sampling method. The researcher should rationalize why he or she applies the sampling method that is best for obtaining the participants. Probability and non-probability sampling methods are two main sampling strategies. The unit of analysis of this study is crime scene investigators, so the survey cannot be offered to anyone but CSIs.

4.9.1 Purposive Sampling

This study applied the non-probability random-sampling method. According to Bachman and Schutt (2008), the reason to select each sample element is “usually
because of the unique position of the sample elements” (p. 99). The researcher has made a judgment of the sampling strategy, which is purposive sampling because this study along with its sampling is very unique. Random-sampling methods cannot make us reach the CSIs in TNP. Bachman and Schutt (2008) stated that “Non-probability sampling methods can be useful when random sampling is not possible, when a research question does not concern a larger population, and when a preliminary exploratory study is appropriate. However, the representativeness of non-probability samples cannot be determined” (p. 108).

While the selection criterion of the participants of the survey research is a purposive sampling, the questionnaires are offered on a volunteer participation basis. However, to obtain a desired response rate, the researcher asked the cities to encourage as much participation as possible without violating the criteria of voluntariness.

For the survey of the study, I only accepted respondents among those CSIs who work in the field for crime scene investigation. Those who are not working in the crime scene teams that go to the crime scene to investigate and collect evidence were not accepted as the participants in the survey. Due to the situation that there are only a certain number of crime scene investigators who have been deployed in the field, scarcity of numbers of participants did not allow the researcher to make a sub-sampling selection that would prevent one of the potential vulnerable steps of the study. Thus, the participant selection criterion for the survey was very limited.

The study includes non-ranking police officers, who are the majority of real users of the information tools, systems, and databases at all levels of police environments.
Furthermore, all of the investigators were considered bona fide participants of this study. The researcher has obtained a research approval from the General Directory of the Turkish National Police to conduct the survey.

4.9.2 Population of CSI Units

From the personal communication with responsible parties, I was informed that other than Turkey’s 81 city centers, there are 320 CSI units at the sub-divisions of some cities all around Turkey.

In terms of the total population of CSIs across Turkey, I was not allowed to declare the official population. Also, I was not informed with a specific number of officers working in CSI units. It is said that slightly more than 2,500 sworn police officers are serving as CSIs.

The specific unit of analysis of the research is those who are working in the field to conduct crime scene investigation. When I asked the number of CSIs who work in the field, I was told that to estimate this number is not easy. The number depends upon the size of the city. However, in general 40% of a CSI unit works in the field. Thus, if we assume that there are 2,500 CSIs all around Turkey and 40 % of them are working in the field that means \((2,500 \times 40) / 100 = 1,000\) CS investigators working in the field.

4.10 Data Collection

Before beginning to focus on the data and its collection method, it is necessary to inform the readers about some basic characteristics of the Turkish National Police.

Thus, who the crime scene investigators are can be understood.
4.10.1 Characteristics and Data

The researcher collected the data through a survey conducted in different cities of Turkey’s seven official geographical regions: Marmara, Aegean, Mediterranean, Eastern Anatolia, Black Sea, Inner Anatolia, and South Eastern Anatolia.

According to the Turkish Statistical Institute’s last updated data, Turkey’s official population is 75.5 million. The survey responders were collected from 29 different cities and 17 sub-cities. The total population of the responders’ cities is 44,217,000. The ratio of Turkey’s population and the cities where responders work is 58.5%.

Since Turkey has 81 provinces, 29 cities from very different geographic locations should represent the whole unit of analysis. The ratio is 35%, respectively. The researcher reached some of these cities, including Ankara, Samsun, Malatya, Diyarbakir, and Izmir by the criteria of convenience sampling.

4.10.2 Conceptualization, Operationalization, and Measurement

Information seeking behaviors of professionals have been studied by numerous researchers in the field of information science. According to Case (2007), these studies share two common points, which are (1) “a frequent finding is that people still turn to other people for information” (p. 283), and (2) the research question of “who or what do people consult for information?” (p. 283).

The common research questions of these studies are: What are the information behaviors of the targeted group? and What are the information needs of the studied group?

These questions are correlated with this study’s aim, which is to explore the
information needs of CSIs in TNP.

4.10.3 Validity and Reliability

In a scientific research study, whether the measuring device provides an accurate measure of the phenomenon of interest can be evaluated by looking at the validity and reliability (Sullivan, 2001). Sullivan (2001) briefly defines that “validity refers to the accuracy of a measure: Does it accurately measure the variable that it is intended to measure?” (p. 131).

4.10.3.1 Validity

Validity is related with the question of whether the measure actually produces data on the concept or variable of interest. In other words, “validity is the extent that the measurement procedures accurately reflect the concept” a researcher studies (Case, 2007, 181).

The construct validity of the study also appears strong, because of the fact that the questions which were prepared for the survey correlate to the research problem to be explored (Frankfurt-Nachmias & Nachmias, 2000).

4.10.3.2 Reliability

Other than validity, measures can also be evaluated in terms of their reliability. Reliability refers to whether the difference is measured accurately over time. In other words if “… measures are repeated under the same conditions and yield highly similar measurements each time” (Case, 2007, p. 182). The study can be accepted as valid.
That is, a measure’s reliability is to its ability to yield consistent results each time it is applied (Sullivan, 2001, p. 135).

Returning to this research method study, the quantitative survey was conducted from a general sample frame, including 29 cities in 7 regions of Turkey. Thus, the survey will produce consistent results each time, which indicates empirical validity. However, the more detailed questions in a survey could cause fewer responders to complete the survey. If the researcher cannot reach an acceptable confidence level of responses, then the findings cannot generalize to the entire population of crime scene investigators in TNP. Thus, this situation is “...a trade-off between the validity and reliability” (Case, 2007, p. 181). The more depth and breadth of the information the researcher will collect via the survey, the fewer respondents will be obtained.

4.11 Question Construction and the Questionnaire

The questionnaire construction was done after a pilot test. The draft of the survey was tested and revised.

In terms of validity, to have the best and most appropriate questions that make sense to the potential responders, a researcher should prepare the final version of the questionnaire after having enough feedback from the subjects and other people. One more necessary step is needed, which is that this questionnaire should be piloted tested with some related people to gather feedback. After having the last feedback from the pilot test, the questionnaire can be revised or kept the same.

A pilot test of the questionnaire to prepare and clarify the survey questions was done with the colleagues of the researcher. The colleagues are qualified for helping the
researcher due to the fact that some of them are holding an academic title of Ph.D., and others are currently working in different crime scene investigation units in the cities of Turkey.

The researcher conducted a pre-testing questionnaire on a convenience population by telephone conversation and e-mailing a draft of the survey. The feedback and objections were reviewed to make final corrections. The researcher was aware of demographic ratio of the targeted population while reaching them by telephone. In other words, the questionnaire was plotted with a very limited eligible number of crime scene investigators at different levels of ranks, positions, and associated tasks. Their comments were essential and useful for determining the final version of the survey. As a must, the participants of the questionnaire survey are and will remain anonymous.

After having the pilot test consequences, the researcher constructed the final version of the questionnaire. It was finalized based on the information that emerged from the feedback derived from the pilot test, as well as discussing and reviewing with the researcher’s qualified colleagues.

The aim of the questionnaire is to draw out the nature and types of information sources that crime scene investigators use in order to carry out their services as a profession. Trying to learn the most common barriers between the information sources and the CSIs is another important aspect of the questionnaire.

Since the mother language of the participants is Turkish, the questionnaire was designed in Turkish.

The first section of the survey has a number of questions related to demographics and work place. The participants were asked to provide some general
personal information such as educational background, basic job details related to duties on the department, and so forth.

Since the theoretical framework of the research relies on Leckie et al.’s (1996) model of professionals’ information seeking behavior, the parts of the survey flow consistently with the model.

The researcher avoided having biasing words and phrases in the questionnaire. Since the researcher is a crime scene investigator, he could be assumed as an insider. The researcher is using his experience on behalf of his study by gathering valuable initial information through the questionnaire. Furthermore, it is the researcher’s positive prediction that the participants were feeling comfortable that the researcher is an insider. The researcher does believe that this will make the survey more credible to obtain a better response rate. It was pointed out to participants that participation is completely voluntary and that the privacy issue is considered at the highest level, which is vital to have a valid research study.

4.12 Survey Administration and Data Collection

The data were collected with two methods.

4.12.1 Web-based

A self-administered, Web-based questionnaire was designed for conducting the survey.

The questionnaires went online on November 15, 2009. To conduct the survey, a personalized e-mail was sent to the director of the central unit of CSI in CPL. The
director suggested the survey with a link to the questionnaire to the e-mail group of which most of the CSIs are members.

A few weeks later, the researcher directly sent a friendly reminder e-mail to the e-mail group.

4.12.2 Survey Delivery in the Workplaces

Collecting the data for the study was through paper-based surveys and Web-based surveys. The researcher obtained official permission from the Turkish National Police to conduct the study. After having the IRB approval, the researcher went to Turkey to conduct the data collection process personally.

The researcher printed out the survey papers and then handed over the survey papers along with consent forms in the “call center” of the related crime scene investigation bureau in cities of Ankara and Samsun.

During the shift times, the volunteer crime scene investigators found opportunity to answer the survey questions. Please notice that the suggestion to participate in the survey was done by the “call center” of crime scene investigation departments in the cities of Ankara, Diyarbakir, Izmir, Samsun, and Malatya. The printed survey questions and consent forms were put into envelopes by the researcher and left at the “call centers.” The associates of the “call centers” also placed survey return boxes by the coffee machines in the recess rooms of the departments. Reading the directions about the procedures of the survey mentioned in the consent notice forms, the volunteer participants answered the survey questions and then put them into the provided envelopes and sealed them. Later on, they dropped the sealed envelopes into the
survey return boxes provided for them. If the CSIs had refused to participate, they simply ignored the survey questions by not returning the survey forms.

Finally, the call centers collected the returned envelopes from the survey return boxes without opening them. When they decided that no other surveys would be returned after some logical time period, they packed the returned envelopes and then called the researcher to pick up the envelopes from the call centers of the CSI units in the cities of Ankara and Samsun. Please notice that call centers of Malatya, Diyarbakir, and Izmir had shipped me their sealed envelopes containing the answered survey questions.

For the cities Malatya, Diyarbakir, and Izmir, which were not reachable due to the long distances, the researcher e-mailed the survey questions to the heads of the departments, asking for their totally voluntary contribution to the study. When these three cities accepted to participate in the study, the administrative bureau personnel printed the survey questions and then handed over the envelopes to the call center to suggest the survey to the CSIs. Finally, the completed surveys were put into sealed envelopes and shipped to the researcher. The researcher paid for the printing and shipping costs that were spent by the CSI units in different cities.

4.13 Justification of Survey Questions

In this section, step-by-step, the parts along with their survey questions are presented and justified.
4.13.1 Part I: Background Information

This part includes demographics and work-related information.

4.13.1.1 Demographics

Demographics are placed in the component of characteristics of information needs of the model. There are 3 demographic questions on age, gender, and education. The responses to these three questions help the researcher understand the underlying conditions of the subjects, CSIs in TNP. These answers are essential to see the overall picture of the subjects in the profession.

Q.1 What is your gender?

Analysis method: Qualitative.

The gender has only two categories: Male and Female. However, it will be seen that most of the CSIs in the field are male.

Q.2 What is your age?


Age is going to be categorized in more than two categories while inputting the gathered data after having the self-responses from the CSIs.

Q.3 What is the highest level of your education completed?


The education level also has five categories including (1) high school, (2) 2-year college, (3) university, (4) master’s, and (5) doctoral degree.

Studies have shown that educational level affects the information seeking behavior. Assigned positions and given work roles such as researcher and educator are
also related to educational level.

4.13.1.2 Profession-Related Information

In this part, three profession-related variables are asked: work place, rank, experience.

(a) Work place: there is only one question in the category of work place.

Q.4 Which city are you working in?


The answer of this question is help to understand whether or not there are any information needs or information source distinctions among the CSIs in different geographic locations. Geographic location as the variable falls into the individual demographics category in the characteristics of information needs that is the third component of the model.

The answers are categorized in more than two categories while inputting the gathered data after having the self-responses from the CSIs. Twenty-nine different cities at different locations of Turkey were reached; i.e., big-size cities such as Istanbul (western part), Samsun (northern part), and Van (eastern part); middle-size cities such as Tokat and Eskisehir (central part); and small-size cities such as Batman (eastern part). The sizes of the cities are determined by the Central Interim Ministry as A type, B type, and C type cities related to their geographical, economic, and density of population statistics. Whether or not there are any statistically significant relationships between the size of the city and the information seeking behavior of the crime scene investigators in TNP has been tested with the hypotheses.
(b) Rank: The Turkish National Police has a unique ranking system that depends on graduation from the Police Academy and Police Schools. Police officers without any higher-level rank, or unranked, do graduate from police schools with the equivalent of a college degree. On the other hand, the Police Academy is a university, and its students are being graduated with a Bachelor’s diploma in criminal justice. In addition, unlike the other police schools of Turkey, only the Police Academy’s graduates start at the rank of a police sergeant.

Q.5 What is your rank as a police officer in Turkish National Police Organization?


The category has 7 levels beginning from police officer to 3rd degree Superintendent. This category will be categorized while inputting the gathered data after having the self-responses from the CSIs.

The ranks in the Turkish National Police are as follows: 1 = police officer, 2 = sergeant, 3 = lieutenant, 4 = captain, 5 = police major, 6 = 4th degree of police chief and 7 = 3rd degree of police chief.

It should be clarified that, the police chief as ranks are consisting of four sub-ranks: 4th degree, 3rd degree, 2nd degree, and 1st degree chief of police in which the 1st degree is the highest. However, all of these degree ranks are referred to as chief of police.

Also notice that, in a crime scene investigation unit, the highest ranks of the 2nd degree and 1st degree chief of police are not applicable.

In sum, this question informs the fact that any roles, positions, and associated tasks in the professional environment are assigned by the basic criteria of rank.
Experience: It is known that experience is essential to be assigned for a specific task that requires more than an ordinary level of knowledge and skills to complete. To draw a conclusion about how the CS investigators are expert on their subject, one may look at their service years in the service. There is a correlation between experience and years in the service. The following two demographic questions will be asked to make a comment about the responders’ experience.

Q.6 What is the entrance year to the police force?
I became a police officer on ______.

Analysis method: Quantitative: Bivariate statistics, frequency distribution. This category will be categorized in more than two categories while inputting the collected data after having the self-responses from the CSIs. The category ranges from 1 year to 30 years. Years in the service is an indicator of experience which is essential for assigning a role and a task.

Q.7 How long have you been working in the CSI units?
I have been working since _____.


This category will be categorized in more than two categories while inputting the gathered data after having the self-responses from the CSIs.

The distinction between service year in the police organization and in the CSI unit should be understood. Please notice that, one could have been serving in the police organization over the years, whereas he or she could have joined the CSI unit recently. This answer helps to understand the subjects’ experience within the unit. Year in the
crime scene service is the basic indicator of experience, which is essential for assigning a role and a task.

Q.8 In which type of crime scene team are you currently deployed?

1. Felony types of crimes; i.e., homicide, arson, rape
2. Minor types of crimes
3. Any type of crime without a crime type classification
4. Call center
5. Other administrative tasks in the CSI bureau
6. I am not collecting evidence in the field due to my position/rank
7. Not working in the CSI bureau but rather AFIS, Laboratory, etc.


This question has seven categories. Differences and complexity of a task is directly related to the assignation of the CSIs in terms of their expertise level.

The literature claims the fact that complexity of a task affects the information seeking behavior. If there are enough personnel in a CSI unit, the more experienced CS investigators are assigned to felony-type teams. In essence, this assignment is not official. On the other hand, it is the choice of the commander of the CSI bureau that he or she can decide.

(d) Position/Role

Q.9 What is your current position role as a crime scene investigator in the department’s organizational structure?

Analysis method: Bivariate statistics, frequency distribution.
This category will be categorized while inputting the gathered data after having the self-responses from the CSIs. There are 7 different roles beginning from team officer to chief of the department. Please notice that due to lack of qualified personnel in a small-size city it is possible that the head of the department may also go into the field to work and/or help his or her colleagues.

4.13.2 Part II: Characteristics of Information: Sources of Information

As stated by Leckie et al. (1996), the professionals seek information from an uncountable number of sources. These sources are classified by their types:

- Formal: A conference, a journal
- Informal: Conversation; informal discussion with colleagues
- Internal: Within the organization
- External: Outside
- Oral: Discussion with immediate colleagues
- Written: Copy and electronic text
- Personal: Own knowledge and experience, professional practices

In this section, the question will be about sources of information used by CS investigators.

Use of sources of information depends on context. There are two contexts: keeping up-to-date and conducting tasks.

4.13.2.1 Keeping Current
According to Leckie et al. (1996, p. 182), “keeping up with the advancements in one’s field and upgrading one’s education and skills by taking courses” is essential to each professional’s role of being educator and/or student. In this category, the following question is asked.

Q10 How often do you use the following resources as a source of information to stay current in your field? Please choose the appropriate response for each item.

Analysis method: Bivariate statistics, frequency distribution.

Contexts affect the information need and related sources. When the context is keeping current in the field, the needed information sources are distinguished from the context of conducting a crime scene investigation. Thus, there will be a question for the context of CSI.

Respondents will be asked to rank their frequency-of-usage level by marking on a six-point Likert scale. The frequencies of above variables are: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always.

The variables of this question are determined as formal, informal, internal, external, oral, written, and personal experience and knowledge. Some variables such as Web pages of the central CSI department and the departmental library are added to the list for the reason that according to the my knowledge and experience, the official Web pages of the CPL and the SASEM are not updated and there is almost nothing related to CSI; the departmental libraries do not exist in most of the units. If the respondents’ answers are very much lower than the means, these issues should be reviewed and modified by the top-level officers of the CSI units. The variables of the question are listed in Table 4.1 as follows:
Table 4.1

List of Variables of Information Sources Used to Keep Current

<table>
<thead>
<tr>
<th>INFORMATION SOURCES TO KEEP CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Textbooks</td>
</tr>
<tr>
<td>2 Other_books</td>
</tr>
<tr>
<td>3 Printed Scientific-Journals</td>
</tr>
<tr>
<td>4 Departmental_Manuals_Guides</td>
</tr>
<tr>
<td>5 Official_Circulars_memos</td>
</tr>
<tr>
<td>6 Legal_Documents_Codes</td>
</tr>
<tr>
<td>7 Governmental_Documents</td>
</tr>
<tr>
<td>8 Attendance_Conferences</td>
</tr>
<tr>
<td>9 Conference_Proceedings</td>
</tr>
<tr>
<td>10 Online_Databases</td>
</tr>
<tr>
<td>11 Internet</td>
</tr>
<tr>
<td>12 Official_Web_Pages_CPL</td>
</tr>
<tr>
<td>13 Internet_Groups</td>
</tr>
<tr>
<td>14 Newspapers_Magazines</td>
</tr>
<tr>
<td>15 TV_Show_CSI_NY</td>
</tr>
<tr>
<td>16 Library_Inside</td>
</tr>
<tr>
<td>17 Library_Outside</td>
</tr>
<tr>
<td>18 Personal_Files_Folders</td>
</tr>
<tr>
<td>19 Personal_Knowl._Exp</td>
</tr>
<tr>
<td>20 My_Team_Commander</td>
</tr>
<tr>
<td>21 Other_Teams_Commanders</td>
</tr>
<tr>
<td>22 Colleagues_in_my_team</td>
</tr>
<tr>
<td>23 Colleagues_in_other_teams</td>
</tr>
<tr>
<td>24 Colleagues_in_other_bureaus</td>
</tr>
<tr>
<td>25 Commanders_in_other_bureaus</td>
</tr>
<tr>
<td>26 Commander_of_the_shifts</td>
</tr>
<tr>
<td>27 Bureau_Commander</td>
</tr>
<tr>
<td>28 Deputy_Chief_of_Unit</td>
</tr>
<tr>
<td>29 Chief_of_Unit</td>
</tr>
<tr>
<td>30 Other sources (please explain)</td>
</tr>
</tbody>
</table>

Another variable is TV shows such as CSI LA. It could be interesting to know whether CS investigators are getting benefit from these types of TV episodes to stay
current in the field.

Q.11 When was the latest course you have taken related to CSI?

Analysis method: Qualitative.

The reason to ask this question is to understand whether or not CSI units, including the central unit, do frequently provide related CSI courses to their personnel to keep them current in the field. If a CS investigator has not taken a course for several years, it may be possible that he or she is not current in the field.

4.13.2.1 Conducting Task

Q.12 Based on your position and role(s), while conducting a crime scene investigation tasks, among the following possible information sources please indicate the appropriate sources that you use, apply, and consult with…


Respondents are asked to rank their usage frequency of information sources by marking on a seven-point Likert scale. The frequency levels of the variables are:

1 = never  2 = rarely  3 = sometimes  4 = often  and 5 = always

Recall that the study has two contexts. One is “while doing CSI related tasks,” and the other is “to keep current in the field.” In this question, the context is keeping current.

The usage of the information sources varies from case to case, and role to role. While lower-ranked field officers of CSI are consulting with victim(s); the higher-ranked CS investigators may be talking with the prosecutors. The variables of this question are listed in Table 4.2.
Table 4.2

*List of Variables of Task Related Information Sources*

<table>
<thead>
<tr>
<th>TASK-RELATED INFORMATION SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Departmental Manual Guides CSI</td>
</tr>
<tr>
<td>2. Official Circulars Memos CSI</td>
</tr>
<tr>
<td>3. Legal Documents Codes CSI</td>
</tr>
<tr>
<td>4. System Databases CSI</td>
</tr>
<tr>
<td>5. Internet CSI</td>
</tr>
<tr>
<td>6. Forms_Scetch CSI</td>
</tr>
<tr>
<td>7. Personal Know. Exp. CSI</td>
</tr>
<tr>
<td>8. My_Team_Commander CSI</td>
</tr>
<tr>
<td>9. Other_Teams’ Commanders CSI</td>
</tr>
<tr>
<td>10. Colleagues_in_my_teamCSI</td>
</tr>
<tr>
<td>11. Colleagues_in_other_teamsCSI</td>
</tr>
<tr>
<td>12. Colleagues_in_other_bureausCSI</td>
</tr>
<tr>
<td>13. Commanders_in_other_bureausCSI</td>
</tr>
<tr>
<td>14. Shift_CommanderCSI</td>
</tr>
<tr>
<td>15. Bureau_CommanderCSI</td>
</tr>
<tr>
<td>16. Deputy_Chief_of_UnitCSI</td>
</tr>
<tr>
<td>17. Chief_of_UnitCSI</td>
</tr>
<tr>
<td>18. First_Responders_CSI</td>
</tr>
<tr>
<td>19. Police_Station_Officer_CSI</td>
</tr>
<tr>
<td>20. Prosecutor_CSI</td>
</tr>
<tr>
<td>21. Resp_Police_Unit_CSI</td>
</tr>
<tr>
<td>22. Forensic_Personnel_CSI</td>
</tr>
<tr>
<td>23. Morgue_Personnel_CSI</td>
</tr>
<tr>
<td>24. Paramedics_CSI</td>
</tr>
<tr>
<td>25. Health_Care_Unit_Personnel_CSI</td>
</tr>
<tr>
<td>26. Firefighters</td>
</tr>
<tr>
<td>27. Scuba_Forensic_Divers</td>
</tr>
<tr>
<td>28. Municipal_Utility_Workers</td>
</tr>
<tr>
<td>29. Victims_CSI</td>
</tr>
<tr>
<td>30. Witness_CSI</td>
</tr>
<tr>
<td>31. Friends_Victims_CSI</td>
</tr>
<tr>
<td>32. Suspects_CSI</td>
</tr>
<tr>
<td>33. Media_CSI</td>
</tr>
<tr>
<td>34. And other sources.</td>
</tr>
</tbody>
</table>
4.13.3 Part III: Barriers

Returning to the contexts of this study, the information behavior of CSIs in TNP not only may be affected while conducting CSI related tasks and keeping current in the field of CSI but also may change in the context of barriers. Respondents were asked to indicate problems they faced in acquiring information for performing CSI as service providers along with learning, teaching, and doing research in terms of keeping current in their field.

Twelve of the variables in question were directly adapted from Aksakal’s (2006) study. The rest of the variables below have been found via pilot-test telephone interviews with colleagues, the CSI books that mentioned possible problems, and finally personal experience. Respondents were asked to rank them using a five-point Likert scale.

Q.13 To what extent do the following elements as barriers and excuses for your tasks provide barriers when you need information?

Analysis method: Descriptive and bivariate analysis: The most common variables will be determined and descriptively explained.

It should be noted that the findings on this question will not be deeply explained and shared with the readers. I will be only testing one hypothesis related to this question. The chair of my dissertation committee and I agree that these findings should be reported to the police organization.

Respondents are asked to rank their agree level using a five-point Likert scale.

1 = never  2 = rarely  3 = sometimes  4 = often  5 = always  0 = not applicable.

The variables of this question listed in Table 4.3 are as follows:
Table 4.3

List of Variables of Task Related Information Sources

<table>
<thead>
<tr>
<th>BARRIERS AFFECTS ISB of the CSIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Laws_Codes</td>
</tr>
<tr>
<td>2. Regualtions</td>
</tr>
<tr>
<td>3. Regularity_DPCL</td>
</tr>
<tr>
<td>4. Bureaucracy</td>
</tr>
<tr>
<td>5. Dprtmtn_Structure</td>
</tr>
<tr>
<td>6. Personal_Safety</td>
</tr>
<tr>
<td>7. Stress_level</td>
</tr>
<tr>
<td>8. Family</td>
</tr>
<tr>
<td>9. Inadequate_Personal</td>
</tr>
<tr>
<td>10. Inadequate_Other</td>
</tr>
<tr>
<td>11. Lack_Textbooks</td>
</tr>
<tr>
<td>12. Lack_Web_sites</td>
</tr>
<tr>
<td>13. dontknow_sites</td>
</tr>
<tr>
<td>14. Language</td>
</tr>
<tr>
<td>15. Supervisors</td>
</tr>
<tr>
<td>16. Seniors</td>
</tr>
<tr>
<td>17. Subordinates</td>
</tr>
<tr>
<td>18. Juniors</td>
</tr>
<tr>
<td>19. Chain_of_Command</td>
</tr>
<tr>
<td>20. Work_Hours</td>
</tr>
<tr>
<td>21. Overload_Work</td>
</tr>
<tr>
<td>22. Equipment_Failure</td>
</tr>
<tr>
<td>23. Higher_Ranking_at_CS</td>
</tr>
<tr>
<td>24. Prosecutor</td>
</tr>
<tr>
<td>25. Media</td>
</tr>
<tr>
<td>26. People_at_CS</td>
</tr>
<tr>
<td>27. FirstResponders</td>
</tr>
<tr>
<td>28. Investigative_Unit</td>
</tr>
<tr>
<td>29. Paramedics</td>
</tr>
<tr>
<td>30. Suspects</td>
</tr>
<tr>
<td>31. Victims</td>
</tr>
<tr>
<td>32. Witness</td>
</tr>
<tr>
<td>33. Friend_Victim</td>
</tr>
<tr>
<td>34. And other barriers.</td>
</tr>
</tbody>
</table>

The survey is over.
4.14 Limitation of the Questionnaire

Even though the survey participants were assumed to be bona fide, the survey was offered only to those who are currently serving in the Turkish National Police. As mentioned in previous chapters, since I am an insider, the CSIs may want to participate in my survey in a manner that is different from the “my boss syndrome,” which leads the responders into a bias state to some degree. To manage this syndrome, the researcher assured the participants that the results of the survey would not negatively or positively affect the responders’ current or future situations in the job environment.

4.15 Data Analysis and Results

First, descriptive analyses have been used to indicate the central tendencies and standard deviations of the variables used in the analysis. Then, binary logistic regression was used to analyze the effects of the explanatory variables on the dependent variable because binary logistic regression analysis predicts the values on one dependent variable from one or more independent variables when the dependent variable is dichotomous. SPSS 17.0 for Windows was used for the analysis.

4.16 Conclusion

In terms of using a logical research method, a study should be valid and reliable. No matter how carefully done, face validity is clearly subjective in nature (Sullivan, 2001, p. 131). To strengthen confidence in validity (including content and face), a researcher should apply other researchers’ opinions. Although it is still subjective, gathering comments via a jury opinion makes a method less biased.

To obtain important feedback, the pre-tested questions made the questionnaire-
based survey very effective. The demography of the survey was such that the participants were evenly distributed among the crime scene investigators. Furthermore, the study did not exclude non-ranking police officers, but included them along with the highest ranking chiefs of CSI units. The researcher could not calculate the exact response rate among the participants. In terms of avoiding biases, this rate should be an acceptable number to minimize critiques on reliability of the study. The questionnaire has adequate contents to measure the research question and test hypotheses.
CHAPTER 5
DATA ANALYSIS AND FINDINGS

5.1 Introduction

This chapter presents the hypotheses of the study that test the theoretical foundation of the study within the context of information seeking behavior of crime scene investigators in the Turkish National Police. Descriptive statistics of the demographic characteristics of the CSIs in TNP are utilized in the first section of the chapter. The variables to be analyzed in the first section are: city, age, level of education, years in police service, years in CSI service, rank, and work position.

5.2 Descriptive Statistics

After reviewing the collected data, the total number of acceptable responses to the survey is 216. Of these, 102 responses were taken via hand-out hard copies of the survey from Samsun (8), Diyarbakir (12), Malatya (16), Izmir (31), and Ankara (35); 114 responses were gathered via an online survey tool.

5.2.1 Demographic Characteristics of the Respondents

Demographic characteristics in the survey are (1) gender, (2) rank, (3) position, (4) age, (5) service year in policing, (6) service year in CSI units, (7) education, (8) type of team, and finally (9) city.

In the next section, the independent variables’ characteristics are described and summarized along with the tables.
5.2.1.1 Gender

Parallel with the researcher’s strong expectation on the results of gender as a control variable, data yielded that among 216 respondents, only 2 of them were female. There is no equity of gender distribution among the unit of analysis. Thus, it is technically not possible to compare the means of the gender along with other variables. This independent variable has to be removed from the study.

5.2.1.2 Rank

Table 5.1

*Rank Distributions among the CSIs*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Response</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Police Officer</td>
<td>84.2%</td>
</tr>
<tr>
<td>2</td>
<td>Police Sergeant</td>
<td>1.4%</td>
</tr>
<tr>
<td>3</td>
<td>Lieutenant</td>
<td>1.9%</td>
</tr>
<tr>
<td>4</td>
<td>Captain</td>
<td>3.8%</td>
</tr>
<tr>
<td>5</td>
<td>Police Major</td>
<td>5.7%</td>
</tr>
<tr>
<td>6</td>
<td>4th Degree Chief of Police</td>
<td>2.4%</td>
</tr>
<tr>
<td>7</td>
<td>3rd Degree Chief of Police</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td><strong>Answered question</strong></td>
<td><strong>99.9%</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Skipped question</strong></td>
<td></td>
</tr>
</tbody>
</table>

Ranks distribution in the survey has 7 categories. Please notice that regarding the rank classification system, due to the personnel policy of TNP, police officers are not put into the rank list. A police officer is accepted as a non-ranking police employee. As shown above in Table 5.1, among 209 respondents, 84.2% are police officers. The data has only one 3rd degree chief of police. The researcher was very excited to have this respondent. From the TNP’s organizational structure, this police chief should be in one of the biggest cities, such as Istanbul, Ankara, or Izmir. Five 4th degree of chiefs of
Police responded to the survey, which is a higher number that indicates the interest level of top-level police managers in the survey. In addition, 12 police majors from different cities, 8 captains, 4 lieutenants, and 3 police sergeants are the ranked respondents of the survey. The reason not to have much more lower-ranking policemen including police sergeants and lieutenants could be that TNP has decreased the number of entrants to the Police Academy over the last 10 years. Thus, there has begun to be a scarcity of lower rankers in the TNP. The total of 7 responses from the 4 lieutenants, and only 3 police sergeants are consistent with the big picture of TNP.

![Ranks of the Respondents](image)

**Figure 5.1.** Rank distributions among the CSIs.

Since the differences among the percentages of police officers and other ranks are very high, the best chart to illustrate the rank distribution is a pie chart (see Figure 5.1 above).
The following variable is the positions of the CSIs in TNP. In general, positions are assigned consistent with the ranks.

5.2.1.3 Positions

The crime scene investigation bureaus of CSI units are responsible for collecting data from the field. Please notice that not the whole CSI unit but the bureau generally has seven (7) positions (see Table 5.2).

Table 5.2

<table>
<thead>
<tr>
<th>Position</th>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chief</td>
<td>5.5%</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Deputy Chief</td>
<td>3.0%</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>CSI Bureau Commander</td>
<td>3.5%</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Shift Commander(s)</td>
<td>3.0%</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Team Commander</td>
<td>18.4%</td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td>Team Member</td>
<td>62.7%</td>
<td>126</td>
</tr>
<tr>
<td>7</td>
<td>Dispatch Center Officer</td>
<td>4.0%</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Other-please indicate</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>answered question</td>
<td></td>
<td>201</td>
</tr>
<tr>
<td></td>
<td>skipped question</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

On the other hand, due to several factors such as the number of available personnel and city size, the number of these 7 positions can be reduced.

Figure 5.2 is the graphical illustration of the positions’ distribution. As seen in the figure, among 201 respondents, 18.4% are team commanders working with 62.7% team members.
5.2.1.4 Age

Entrance year to the police schools of TNP as a police student is minimum 18 and maximum 27 for men and 26 for women. To be deployed in a CSI unit, a policeman or policewoman should have at least three years of experience in policing. A police officer cannot work in the same city until his or her retirement. The police officers in TNP are subject to be assigned to different geographical places in Turkey. For instance, an
officer who has been working in the western side of Turkey is subject to being assigned to work in the eastern part for a particular year. After graduating from the police schools, police officers are assigned to the cities located in the western side of Turkey. After working some years in the western cities, such as cities with populations over 1 million, where an officer can work up to eight years, the officer is required to work in the eastern part of the Turkey for a while. Thus, the police officers working in the western part of Turkey are younger than the ones working in the eastern side of the country.

A police officer can deserve to be retiring after 20 years of police services. However, if he or she does not want to be retired, the maximum age to be allowed for police services is 63 for ranking police and 57 for non-ranking police officers.

![Age distribution among the CSIs.](image)

*Figure 5.3. Age distribution among the CSIs.*

According the data for age, there are 27 missing values among 216 responses. The ratio is 12.5%, which is acceptable to treat a transformation for replacing missing
values with series mean. Thus, the treatment is applied to age data. New AGE_1 data shows that the mean is 36.15, the median is 36, and mode is 35 years.

The youngest CSI officer is 24 and the oldest CSI officer is 49 years old. The age difference between the youngest and oldest is thus 25 years. Figure 5.3 above is a graphic illustration of the frequency distribution of ages.

5.2.1.5 Service Years in Policing

The reason to measure this variable is to show the experience level of the CSIs in TNP. The experience is consistent with age, service years in policing, and service years in CSI units.

As seen below in Table 5.3, the mean of years in policing is slightly over than 13 years. The mode which is the most frequently repeated case is 15 years. Interestingly, the youngest case who has been serving as a policeman is 1 year or less than 1 year. On the other hand, the oldest case is 25 years.

Table 5.3

*Descriptive Statistics for the Frequencies of Year in Policing*

<table>
<thead>
<tr>
<th></th>
<th>Years_in Policing</th>
<th>Policing_Year Categorized</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>Valid</td>
<td>216</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>13.34</td>
<td>3.47</td>
</tr>
<tr>
<td>Median</td>
<td>15.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Mode</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Minimum</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>4</td>
</tr>
</tbody>
</table>

To analyze the year-in-policing data, the range of the years is categorized in 4
different values as follows:

1. Lowest through 5 years in policing
2. 6 through 10 years in policing
3. 11 through 15 years in policing
4. 16 through highest.

Table 5.4

*The Frequencies of Categorized Year in Policing*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest through 5</td>
<td>14</td>
<td>6.5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>6 through 10</td>
<td>11</td>
<td>5.1</td>
<td>5.1</td>
<td>11.6</td>
</tr>
<tr>
<td>11 through 15</td>
<td>50</td>
<td>23.1</td>
<td>23.1</td>
<td>34.7</td>
</tr>
<tr>
<td>16 through Highest</td>
<td>141</td>
<td>65.3</td>
<td>65.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The mode of the years in policing is 15 (see Figure 5.4 below). Please remember that the reason why the year 15 is so much higher is that, first of all, it is the mode; second it includes the missing values, as well.

*Figure 5.4. Years in policing. Mode is 15, which includes the added missing values.*
5.2.1.6 Service Years in CSI Units

The service years in CSI units is another indicator of experience. Since related literature highlights the importance of experience as a personal source of information, for this study's unit of analysis, CSIs, it is better to know the service years of the CSIs.

As shown in Figure 5.5, among the respondents, 10 of them had only 1 year of experience in the service of CSI, whereas 52 of them had the mode score, which is 10 years. The maximum score of the service years is 21. Please notice that the mode, 10 years, also includes added missing values.

![Figure 5.5. Year distribution among the CSIs.](image)

5.2.1.7 Type of Team

As can be seen in Figure 5.6, among the respondents, 16% reported that their team is responsible for felony types of crimes (i.e., homicide, arson, rape, etc.), whereas
10% of the CSIs work in the teams that are responsible for theft crimes. The majority of the respondents (56%) reported that their teams are responsible for any types of crimes.

![Figure 5.6. Types of CSI teams.](image)

**5.2.1.8 Education**

As is shown in Figure 5.7, there are five categories of education as an independent variable. Among the respondents, there are only 3 CSIs holding doctoral degrees; whereas 12 of them had master’s degrees. That means 15 of the respondents are holding graduate degrees. In particular, these three Ph.D. degrees are the indicator of the fact that the TNP has a serious policy on assignment criteria for the chiefs of CSI units across the country.
Figure 5.7. Half of the CSIs had 2-year college diplomas.

In this organization, it is assumed that the CSI units are one of the important doors that open to the new social developments. Thus, it is seen that TNP wants these units to evaluate and transfer newly emerged issues via the available chiefs who hold graduate degrees.

Consistent with the general picture of TNP members, the majority of the CSIs (47%) had completed a 2 year-college program. Please notice that this percentage (47%) includes the added missing values, as well.

Of the respondents, 42% had a university degree. It is said that in coming years’ the majority of the educational level will be a four-year university degree. Compared with the U.S. policing policies, one could think that a four-year university degree is over-qualified for a policeman or policewoman. Turkey has a very young population, and
among this population, most of the youngest have a four-year university degree. This is an opportunity for the TNP. Please notice that TNP does not ask a four-year diploma to apply for policing exams. In fact, a high school diploma is enough. Finally, only 10 of the CSIs (4.6%) had only finished high school (see above Figure 5.7).

5.2.1.9 Geographic Location (Cities)

The geographic location in the study is defined as the cities of Turkey. Please notice that Turkey has 81 cities and that the 216 respondents are from 29 different cities. According to city population, the cities are categorized into a new variable, which is composed from 4 types of city sizes (see Figure 5.8).

![City_Categorizing](image)

*Figure 5.8.* The 29 cites were categorized into 4 different types according to their populations.
• Type 1 Cities

As seen in the Table 5.5, Type 1 cities are defined as cities that have more than 2 million population. While coding into a new variable, these cities are given a value of 4.

Table 5.5

Type 1 Cities

<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Responses</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Istanbul</td>
<td>36</td>
<td>12,915,158</td>
</tr>
<tr>
<td>2</td>
<td>Ankara</td>
<td>49</td>
<td>4,650,802</td>
</tr>
<tr>
<td>3</td>
<td>Izmir</td>
<td>35</td>
<td>3,868,308</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>21,434,268</td>
</tr>
</tbody>
</table>

Note. Type 1 Cities are the most crowded cities of Turkey.

• Type 2 Cities

Type 2 cities are defined as cities that have a population of 1 million to 2 million. To make a correct comparison, while coding into a new variable, these cities are given a value of 3.

Table 5.6

Type 2 Cities

<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Responses</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bursa</td>
<td>1</td>
<td>2,550,645</td>
</tr>
<tr>
<td>2</td>
<td>Antalya</td>
<td>4</td>
<td>1,919,729</td>
</tr>
<tr>
<td>3</td>
<td>Gaziantep</td>
<td>6</td>
<td>1,653,670</td>
</tr>
<tr>
<td>4</td>
<td>Diyarbakir</td>
<td>13</td>
<td>1,515,011</td>
</tr>
<tr>
<td>5</td>
<td>Manisa</td>
<td>1</td>
<td>1,331,957</td>
</tr>
<tr>
<td>6</td>
<td>Samsun</td>
<td>16</td>
<td>1,250,076</td>
</tr>
<tr>
<td>7</td>
<td>Balikesir</td>
<td>2</td>
<td>1,140,085</td>
</tr>
<tr>
<td>8</td>
<td>Kahramanmaras</td>
<td>1</td>
<td>1,037,491</td>
</tr>
<tr>
<td>9</td>
<td>Van</td>
<td>3</td>
<td>1,022,310</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>47</td>
<td>13,420,974</td>
</tr>
</tbody>
</table>
• Type 3 Cities

Type 3 cities are defined as cities that have a population of 500 thousand to 1 million (see Table 5.7).

While coding into a new variable, these cities are given a value of 2.

Table 5.7

Type 3 Cities

<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Responses</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Denizli</td>
<td>2</td>
<td>926 362</td>
</tr>
<tr>
<td>11</td>
<td>Mugla</td>
<td>2</td>
<td>802 381</td>
</tr>
<tr>
<td>12</td>
<td>Tekirdag</td>
<td>1</td>
<td>783 310</td>
</tr>
<tr>
<td>13</td>
<td>Erzurum</td>
<td>5</td>
<td>774 207</td>
</tr>
<tr>
<td>14</td>
<td>Eskisehir</td>
<td>1</td>
<td>755 427</td>
</tr>
<tr>
<td>15</td>
<td>Malatya</td>
<td>19</td>
<td>736 884</td>
</tr>
<tr>
<td>16</td>
<td>Sivas</td>
<td>1</td>
<td>633 347</td>
</tr>
<tr>
<td>17</td>
<td>Tokat</td>
<td>2</td>
<td>624 439</td>
</tr>
<tr>
<td>18</td>
<td>Adiyaman</td>
<td>1</td>
<td>588 475</td>
</tr>
<tr>
<td>19</td>
<td>Elazig</td>
<td>2</td>
<td>550 667</td>
</tr>
<tr>
<td>20</td>
<td>Corum</td>
<td>1</td>
<td>540 704</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
</tbody>
</table>

• Type 4 cities

Type 4 cities are defined as cities that have a population of less than 500 thousand. While coding into a new variable; these cities are given a value of 1.

Table 5.8

Type 4 Cities

<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Responses</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Mus</td>
<td>2</td>
<td>404 484</td>
</tr>
<tr>
<td>22</td>
<td>Bitlis</td>
<td>4</td>
<td>328 489</td>
</tr>
<tr>
<td>23</td>
<td>Sirt</td>
<td>1</td>
<td>303 622</td>
</tr>
<tr>
<td>24</td>
<td>Bingol</td>
<td>1</td>
<td>255 745</td>
</tr>
<tr>
<td>25</td>
<td>Batman</td>
<td>3</td>
<td>188 449</td>
</tr>
<tr>
<td>26</td>
<td>Artvin</td>
<td>1</td>
<td>165 580</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>
The above 4 categorizations of 26 cities across Turkey is tested via a barrier-related hypothesis. It is assumed that the city size affects the ISB of CSIs. Thus, the researcher had to have this geographic distribution of the cities along with their populations. The researcher believes that this is the appropriate way to measure what he wants to know. Table 5.9 presents the overall picture of these 4 categories.

Table 5.9

*Cities Categorized into 4 Groups*

<table>
<thead>
<tr>
<th>Population Categories</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 500 thousand</td>
<td>12</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>500 thousand to 1 million</td>
<td>37</td>
<td>17.1</td>
<td>17.1</td>
<td>22.7</td>
</tr>
<tr>
<td>1 million to 2 million</td>
<td>47</td>
<td>21.8</td>
<td>21.8</td>
<td>44.4</td>
</tr>
<tr>
<td>More than 2 million</td>
<td>120</td>
<td>55.6</td>
<td>55.6</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>216</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

5.2.2 Dependent Variables

In this section, the descriptive results of dependent variables are explained.

The study examined ISB in two different contexts: (1) sources used while conducting CSI tasks and (2) sources used to keep current.

Other than these two contexts, “barriers” that affect sources used by CSIs are also determined in terms of information seeking behavior situations with the following dependent variables.
5.2.2.1 Source Used while Conducting CSI Tasks

Respondents were asked about the frequency of use of information sources during their CSI tasks. The frequency categories are assigned as never = 1, whereas always = 5. The most frequently used sources (always or often) include personal knowledge and experience (4.35 out of 5), legal documents (4.09), and departmental manuals and guides (3.92).

On the other hand, the least frequently applied source while conducting a CSI task was reported as media (1.37).

5.2.2.2 Sources Used to Keep Current

CSIs are asked about the information sources used to stay current in their field. The results indicated that personal knowledge and experience, legal documents including codes, personal files and folders, and textbooks related to their fields are as the most frequently used information sources to stay current, respectively (see Figure 5.9).

![Figure 5.9. Most frequently used sources to keep current.](image-url)
On the other hand, the least-reported information source used to stay current in the field was, amazingly, libraries (1.8, rarely out of 5). This issue is discussed in the conclusion chapter.

5.2.2.3 Barriers

CSIs were asked to report the barriers that prevent them from reaching information sources. The frequency categories are assigned as never = 1, whereas always = 5. Unwanted people at the crime scene (3.45 out of 5), higher-ranking policemen at the crime scene (3.34), and excessive work hours (3.25) were the most frequently reported barriers that affect CSIs’ ISB.

![Barriers](image)

*Figure 5.10.* The most frequently reported barriers.

5.2.3 Data Recoding

Some of the independent variables have been re-coded into different variables by producing new variables.
5.2.3.1 Re-coding Age

Age has categorized into a new variables, “age-groups” as follow:

- 1 = Lowest through 28
- 2 = 29 through 34
- 3 = 35 through 39
- 4 = 40 through highest

![Categorized-Age Distribution](Image)

Figure 5.11. Categorized age distribution of the CSIs.

5.2.3.2 Re-Coding Years in CSI

Years in CSI has been categorized into a new variable as “Year_on_CSI.” The new assigned categories are as follows:

- 1 = Lowest to 4
- 2 = 5 to 8
• 3 = 9 to 12
• 4 = 13 to highest

The above categorization is shown in Figure 5.12, below.

![Categorized Years in CSI Service](image)

*Figure 5.12. Categorized year in CSI services distribution of the CSIs.*

5.2.3.3 Re-Coding Years in Policing

Years in policing has been categorized into a new variable, “Year_on_CSI” as follows.

- 1 = Lowest to 5
- 2 = 6 to 10
- 3 = 11 to 15
- 4 = 15 to Highest
Please notice that re-coding of the above variables is used to make correlation between the information sources’ use and experience, which comprises age, year in CSI services, and years in policing. Figure 5.13 shows the categorized years for police services for the CSIs in TNP.

![Figure 5.13. Categorized years in police services distribution of the CSIs.](image)

5.2.3.4 Re-Coding Team Types

According to the related literature, use of information sources could change with associated tasks.

Team types has been categorized into a new variable, “Team_Types,” as follows.

- 0 = "All other CSI tasks"
- 1 = "Any types of crimes"
- 2 = "Theft types"
- 3 = "Felony type crimes"

This categorization is shown Figure 5.14.
5.2.3.5 Re-Coding Ranks

According to Leckie et al. (1996), associated positions and work tasks are related factors that affect the ISB of professionals.

Rank has been categorized into a new variable, “Rank-Non-Ranking” as follows.

- 0 = "Ranker-CSIs"
- 1 = "Non-Ranking CSI Officers"

The new categorization of ranks is shown in Figure 5.15.
5.2.3.6 Re-Coding Cities

As mentioned above under geographic location as the characteristics of the independent variables, 29 different cities have been categorized into a new variable, “Cities,” as follows.

- 1 = "Less than 500 thousand"
- 2 = "500 thousand to 1 million"
- 3 = "1 million to 2 million"
- 4 = "More than 2 million"

Please see Figure 5.16 to see the distribution of the new categorized cities.
5.2.3.7 Re-Coding Sources in the Context of CSI Task

The CSIs were asked about use of sources while conducting CSI tasks. The variables of the sources in the survey were adapted from the literature of IB. These categorizations are consistent with the literature of ISB of professionals. The variable has been categorized into four new categories. The following sources are combined into four new variables named as:

- CSI written sources
- CSI colleagues as sources
- CSI other colleagues as sources
- CSI other people

Please see Table 5.10 for the overall distribution of the categorized information sources in the context of conducting CSI tasks.
Table 5.10  
Categorized Information Sources While Conducting CSI Tasks

<table>
<thead>
<tr>
<th>Categorized Information Sources Related to CSI Tasks</th>
<th>CSI_Written</th>
<th>CSI_Colleagues</th>
<th>CSI_Other_Colleagues</th>
<th>CSI_Other_People</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>18.53</td>
<td>30.53</td>
<td>8.97</td>
<td>38.75</td>
</tr>
<tr>
<td>Mode</td>
<td>19</td>
<td>33</td>
<td>9</td>
<td>35</td>
</tr>
<tr>
<td>Minimum</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>50</td>
<td>15</td>
<td>75</td>
</tr>
</tbody>
</table>

5.2.3.8 Re-Coding Sources in the Context of Keeping Up-To-Date  

CSIs were asked about the use of sources for keeping current in their field. The variables in this context have been categorized into 8 new categories as follows.

1. Fresh_Personal
2. Fresh_Colleagues
3. Fresh_Written
4. Fresh_Legal & Official
5. Fresh_Academic
6. Fresh_Libraries
7. Fresh_Internet
8. Fresh_Media

As is shown in Figure 5.17, the most used information sources regarding keeping up-to-date are personal sources, including personal files and folders and personal experience and knowledge (80%). The second-most used sources in this category are legal document sources (69%), followed by other written sources (68%).
To see the descriptive scores of all of the newly coded variables, please also review the following table.

Table 5.11

New Categories of Use of Sources in the Context of Keeping Up-To-Date

<table>
<thead>
<tr>
<th>Re-Coded Sources in the Context of Keeping Up-to-Date</th>
<th>PERSONAL</th>
<th>COLLEAGUES</th>
<th>WRITTEN</th>
<th>LEGAL_OFFICIAL</th>
<th>ACADEMIC</th>
<th>LIBRARIES</th>
<th>INTERNET</th>
<th>MEDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
<td>216</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Median</td>
<td>8</td>
<td>30</td>
<td>10</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Mode</td>
<td>9</td>
<td>31</td>
<td>10</td>
<td>14</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Minimum</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>10</td>
<td>50</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
5.3 Testing Hypotheses

The dependent variable of the study is “information source use.” The contexts of the study are:

1. Conducting CSI related task
2. Keeping up-to-date in the field of CSI
3. Barriers affecting the ISB of CSIs in TNPs.

The study has the following independent variables:

1. Age
2. Year in CSI
3. Year in policing
4. Rank
5. Education
6. City (actually sizes of the cities)

Please notice that as a control variable “gender” is not used in this study due to the fact that only 2 of the respondents were female.

The hypotheses tested for this study are described in the next section.

5.3.1 Performing a CSI-Related Task

In this section, the contexts of information use related to performing CSI tasks are tested with 3 independent variables.

The literature of ISB suggests that professionals are mostly tending to rely on their personal experience and knowledge as a primary information source while performing their tasks.
Operationalizing of experience is composed of age, years in policing, and CSI services.

For the upcoming 3 hypotheses, it is assumed that if (1) years of age, (2) service years in CSI, and (3) service years in policing are higher, the use of personal knowledge and experience will be higher, too. To test the hypothesis, a crosstab technique is applied.

The following hypotheses are tested in this category.

H1: Age will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

Age of CSIs is an indicator of their experience. It is assumed that the older people have more experience than younger ones. Related to the topic, the researcher assumed that the older CSIs are more likely rely on their personal knowledge and experiences regarding performing CSI-related tasks.

As seen in Figure 5.18, the result showed that there is a strong positive relationship between the use of experience and age. CSIs who are over 35 years old are most likely “always” relying on their personal experience and knowledge while conducting CSI-related tasks.
Regarding statistical analysis of age of CSIs, the crosstab results show that the totality of responses of CSIs over 35 years old is 19.9% often, and 39.9% always among all respondents. On the other hand, only 3.8% of CSIs who are younger than 29 had a response rate of often or always. That means that, CSIs who are older are more likely to rely on their personnel knowledge and experience (21.8%) as compared with younger CSIs, (3.8%) (Please see the table 5.12 below).

The results proved the hypothesis that the greater the age, the more the use of personal knowledge and experience while conducting CSI-related tasks.

Figure 5.18. Age vs. experience and knowledge use.
Table 5.12

*Categorized Groups for Age as the Independent Variable vs. Personal Knowledge and Experience Use in CSI-Related Tasks*

<table>
<thead>
<tr>
<th>Personal_Knowledge_and_Exp._CSI</th>
<th>Age_Categorized</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lowest thru 28</td>
<td>29 thru 34</td>
</tr>
<tr>
<td>Never</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>0.00%</td>
</tr>
<tr>
<td>Rarely</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>0.00%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>Count</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>11.10%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>0.50%</td>
</tr>
<tr>
<td>Often</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>44.40%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>1.90%</td>
</tr>
<tr>
<td>Always</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>44.40%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>1.90%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>% within Age_Categorized</td>
<td>100.00%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>4.20%</td>
</tr>
</tbody>
</table>
H2: Years in policing will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

The assumption in this hypothesis is that if the years of policing services of a policeman, currently working in a CSI unit, is higher, the use of personal knowledge and experience will be higher, too.

To test the hypothesis the crosstab technique is applied. As seen from Figure 5.19, the increase of the years in policing is strongly positively related to use of experience and knowledge as an information source while conducting CSI-related task.

![Age vs. experience and knowledge use](image)

*Figure 5.19. Age vs. experience and knowledge use.*

According to the crosstab result, Table 5.13 shows that policemen who have more than 10 years of policing services are most likely relying on their experience and knowledge as a source of information in the context of CSI-related tasks. Of CSIs responding, 24.1% answered as often, and 51% of them answered as always. The totals answers of always and often are 75.7%.
On the other hand, those who are in the category of less than 10 years are less likely relying on their experience and knowledge (total answer of often and always are only 10.2%). As a conclusion, I can say that the more the years of policing, the more the usage of experience and knowledge as a source of information in the context of conducting CSI-related tasks.

Table 5.13

Crosstab Table of Policing Years in Categorized Variables

<table>
<thead>
<tr>
<th>Personal_Know._Exp._CSI</th>
<th>Count</th>
<th>% within Policing_YearCategorized</th>
<th>% of Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
<td>0%</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>6 thru 11</td>
<td>1</td>
<td>9.1%</td>
<td>.5%</td>
<td>.5%</td>
</tr>
<tr>
<td>12 thru 15</td>
<td>0</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>Highest</td>
<td>1</td>
<td>.7%</td>
<td>.5%</td>
<td>.9%</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>.9%</td>
<td>.9%</td>
<td>.9%</td>
</tr>
</tbody>
</table>

| Rarely                   | 0     | 0%                               | .0%        | .0%        |
| 6 thru 11                | 0     | 0%                               | .0%        | .0%        |
| 12 thru 15               | 8     | 2.0%                             | 2.8%       | 4.2%       |
| Highest                  | 9     | 5.7%                             | 6.0%       | 4.2%       |
| Total                    | 9     | 4.2%                             | 4.2%       | 4.2%       |

| Sometimes                | 1     | 7.1%                             | .5%        | .5%        |
| 6 thru 11                | 1     | 9.1%                             | .5%        | .9%        |
| 12 thru 15               | 6     | 12.0%                            | 2.8%       | 6.0%       |
| Highest                  | 13    | 9.2%                             | 6.0%       | 9.7%       |
| Total                    | 21    | 9.7%                             | 9.7%       | 9.7%       |

| Often                    | 9     | 64.3%                            | 4.2%       | 29.2%      |
| 6 thru 11                | 2     | 18.2%                            | .9%        | 18.5%      |
| 12 thru 15               | 12    | 24.0%                            | 5.6%       | 29.2%      |
| Highest                  | 40    | 28.4%                            | 18.5%      | 29.2%      |
| Total                    | 63    | 29.2%                            | 29.2%      | 29.2%      |

| Always                   | 4     | 28.6%                            | 1.9%       | 56.0%      |
| 6 thru 11                | 7     | 63.6%                            | 3.2%       | 56.0%      |
| 12 thru 15               | 31    | 62.0%                            | 14.4%      | 56.0%      |
| Highest                  | 79    | 56.0%                            | 36.6%      | 56.0%      |
| Total                    | 121   | 56.0%                            | 56.0%      | 56.0%      |

| Total                    | 14    | 100.0%                           | 6.5%       | 100.0%     |
| 6 thru 11                | 11    | 100.0%                           | 5.1%       | 100.0%     |
| 12 thru 15               | 50    | 100.0%                           | 23.1%      | 100.0%     |
| Highest                  | 141   | 100.0%                           | 65.3%      | 100.0%     |
| Total                    | 216   | 100.0%                           | 100.0%     | 100.0%     |
H3: Years in CSI services will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

The assumption of the hypothesis is that the years of CSI services of a CSI in TNP are positively related to use of personal knowledge and experience in the context of conducting CSI tasks. In other words, it is assumed that the higher the number of service years in CSI units, the higher will be the use of personal knowledge and experience use in the context of conducting CSI tasks. As seen from Figure 5.20, the increase of the years in CSI services has a very strong and positive relationship with the use of experience and knowledge as a source while conducting CSI-related tasks.

![Histogram](image.png)

**Figure 5.20.** Years in CSI services vs. use of experience and knowledge in the context of CSI-related tasks.

The results of crosstab showed that CSIs who have more than 5 to 8 years of CSI services had an always score of 18.1%; whereas CSIs who have less than 5 years
of service in CSI had an always score of only 6.9% (see Table 5.14).

Table 5.14

*Crosstab of Year in CSI Services and Personal Knowledge and Experience Use While Conducting CSI-Related Tasks*

<table>
<thead>
<tr>
<th>Personal_Know._Exp._CSI</th>
<th>Count</th>
<th>% within CSI_YearCategorized</th>
<th>% of Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>2.9%</td>
<td>.0%</td>
<td>1.2%</td>
<td>.0%</td>
</tr>
<tr>
<td>% of Total</td>
<td>.5%</td>
<td>.0%</td>
<td>.5%</td>
<td>.0%</td>
</tr>
<tr>
<td>Highest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>5.9%</td>
<td>2.9%</td>
<td>6.1%</td>
<td>.0%</td>
</tr>
<tr>
<td>% of Total</td>
<td>.9%</td>
<td>.9%</td>
<td>2.3%</td>
<td>.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>11.8%</td>
<td>7.2%</td>
<td>9.8%</td>
<td>12.9%</td>
</tr>
<tr>
<td>% of Total</td>
<td>1.9%</td>
<td>2.3%</td>
<td>3.7%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Often</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>12</td>
<td>23</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>35.3%</td>
<td>33.3%</td>
<td>20.7%</td>
<td>35.5%</td>
</tr>
<tr>
<td>% of Total</td>
<td>5.6%</td>
<td>10.6%</td>
<td>7.9%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Always</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>15</td>
<td>39</td>
<td>51</td>
<td>16</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>44.1%</td>
<td>56.5%</td>
<td>62.2%</td>
<td>51.6%</td>
</tr>
<tr>
<td>% of Total</td>
<td>6.9%</td>
<td>18.1%</td>
<td>23.6%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>34</td>
<td>69</td>
<td>82</td>
<td>31</td>
</tr>
<tr>
<td>% within CSI_YearCategorized</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>% of Total</td>
<td>15.7%</td>
<td>31.9%</td>
<td>38.0%</td>
<td>14.4%</td>
</tr>
</tbody>
</table>

As seen in Table 5.14, the difference between the less than 5 years and 5 to 8 years is almost three times. Thus, it is a proof of the hypothesis that the CSIs who are working in these services more than 5 years are most likely relying on their experience and knowledge as a source of information in the context of CSI-related task.

In sum, testing H3, the statistical analysis yielded that the more the years in CSI
services, the more relying on the usage of experience and knowledge as a source of information in the context of conducting CSI-related tasks.

5.3.2 Use of Information Sources for Keeping Up-To-Date

In this section, the context of information use related to keeping up-to-date is tested with 2 independent variables. These independent variables are as follows:

- Education
- Rank

Related these two independent variables, the following hypotheses are produced to test.

5.3.2.1 Education

CSIs in TNPs have 5 different levels of education.

![Bar Chart](image)

*Figure 5.21. Education vs. age among the CSIs in TNP.*
The least score of education level is high school. Among the respondents, 5% are holding a high school diploma. Please notice that those who have high school diplomas are the CSIs that are over 35 years old. It is seen that the TNP has changed its recruitment policy for the education level; this is seen by the fact that those who are younger than 35 years old do not hold a just a high school diploma.

H4: There is a positive relationship between the education level and use of colleagues as sources in the context of keeping up-to-date.

To test this hypothesis, a correlation statistical technique is applied by using SPSS 17. As seen from the table below, the result of the correlation yielded that there was a negative correlation between the variables. In other words, while the education level of the CSIs in TNP increases, the use of colleagues as a source in the context of keeping up-to-date was decreasing ($r = -0.164$, $p < 0.01$). Thus, H4 was rejected.

Table 5.15

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Education</th>
<th>FRESH_COLLEAGUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>216</td>
</tr>
<tr>
<td>FRESH_COLLEAGUES</td>
<td>Pearson Correlation</td>
<td>-.164**</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>216</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (1-tailed).

5.3.2.2 Rank

CSIs in TNP have 7 different levels of ranks, beginning from police officers, which are officially accepted as non-ranking policemen. The highest police rank in a CSI unit could be 3\textsuperscript{rd} degree of chief of police.
Since the ranker CSIs are responsible for the administrative tasks along with commanding the unit, they should know what is going on in terms of new codes, legal documents, and also other official circulars coming from other units. The following hypothesis is produced to test the above statement.

**H5:** There is a positive relationship between the rank level and use of “legal and official documents” as sources in the context of keeping up-to-date.

The statistical analysis of this hypothesis yielded the result that there is a positive, significant relationship between the rank level and “legal and official documents” as sources in the context of keeping up-to-date.

In other words, higher-ranking CSIs are most likely relying on “legal and official documents” to know the new changes and developments to be current in their field of CSI. Thus, the hypothesis failed to be rejected ($r = 0.162$, $p < 0.01$).

Table 5.16

*Correlation between Rank and Use of Legal and Official Documents to Keep Current in the Field of CSI in TNP*

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Rank</th>
<th>FRESH_LEGAL_OFFICIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>216</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Pearson Correlation</th>
<th>.162**</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (1-tailed)</td>
<td>.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>216</td>
<td>216</td>
<td></td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).
5.3.3 Barriers between the Information Source and CSIs in TNP

In this section, the context of barriers is tested with 1 independent variable, which is the city size.

The study was conducted in different geographical locations of Turkey. Of 29 cities, Istanbul, Ankara, and Izmir are the most crowded cities. As seen below in Table 5.17, the total population of these three cities is over 20 million. The categorizing criteria of the cities depended on the city size, which is population.

Table 5.17

<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Responses</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Istanbul</td>
<td>36</td>
<td>12 915 158</td>
</tr>
<tr>
<td>2</td>
<td>Ankara</td>
<td>49</td>
<td>4 650 802</td>
</tr>
<tr>
<td>3</td>
<td>Izmir</td>
<td>35</td>
<td>3 868 308</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
<td>21 434 268</td>
</tr>
</tbody>
</table>

H6: There is a positive relationship between the city sizes and work-related barriers of the CSIs in TNP.

It is highly possible that the CSI officers working in these big cities should have more problems than those CSI officers working in smaller-sized cities. Crowded cities should have more cases to solve than the less crowded cities. If the CSI officers are very busy with their daily tasks due to the case numbers, they cannot find the opportunity to reach the information sources that keep them current in the field of CSI.

The work barriers comprised two variables, which are overload work and excessive work hours. As seen in the table below, there is a significant correlation between the work barriers and city size.
Table 5.18

Work-Barsriers and Large Cities have Significant Relationship

<table>
<thead>
<tr>
<th>Correlations</th>
<th>work_barriers</th>
<th>City_Categorizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>work_barriers</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>216</td>
<td>216</td>
</tr>
<tr>
<td>City_Categorizing</td>
<td>Pearson Correlation</td>
<td>.268*</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>216</td>
<td>216</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).

To test this hypothesis, correlation was applied between the “work barriers” and “city size.” The result of correlation is significant at the 0.01 level. That means the higher the population of a city, the higher the number of complaints about overload working by the CSIs in TNP ($r = 0.268, p < 0.01$).

5.4 Conclusion and Summary

In this chapter, “information use” as the dependent variable of the study is tested in three different contexts:

1. While conducting CSI related tasks
2. While keeping up-to-date
3. The barriers affecting ISB to CSIs in TNP.

These three contexts are tested with the following independent variables:

1. Age
2. Years in policing
3. Years in CSI services
4. Education level
5. Rank

6. Barriers (city-size)

Related to the above independent and dependent variables under three contexts, 6 hypotheses are tested.

H1: Age will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

Result: The researcher failed to reject H1.

H2: Years in policing will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

Result: The researcher failed to reject H2.

H3: Years in CSI services will be positively related to level of personal knowledge and experience use in the context of conducting CSI tasks.

Result: The researcher failed to reject H3.

H4: Education level will be positively related to level of “colleagues” use as an information source in the context of keeping up-to-date.

Result: The researcher rejected H4.

H5: The rank level will be positively related to “legal and official documents” use as an information source in the context of keeping up-to-date.

Result: The researcher failed to reject H5.

H6: Across the country, the city size will be positively related to level of complaints concerning work-related barriers of the CSIs in TNP.

Result: The researcher failed to reject H6.

In the next chapter, the general findings of the data analysis are discussed.
CHAPTER 6
DISCUSSION AND CONCLUSION

6.1 Introduction

This chapter is the final chapter of the dissertation. In the first part of the chapter, a brief summary of the findings derived from the data analysis is presented. In the second part, limitations of the study are discussed. The third part contains policy implementations and recommendations to the TNP. In particular, barrier-related findings are detailed here to show the most frequently reported barrier by the CSI in TNP. Finally, in the last section of the chapter, there is discussion about the question of whether information science has to find a general theory of professional information behavior. After the discussion, the researcher offers a proposed theoretical framework.

6.2 General Discussion of Findings

As many others have stated, Leckie et al. (1996) highlighted the fact that "professionals tend to rely on their own personal knowledge and experience first when they are faced with a work-related decision or problem" (p. 184). Consistent with the common literature of information seeking behavior, personal knowledge and experience, along with the legal codes and official documents are the most frequently applied information sources among the targeted population within the context of both keeping up-to-date and conducting the tasks related to crime scene investigation.

The initial findings of data analysis showed that due to their occupational circumstances, the crime scene investigators do not tend to rely on libraries as information sources to keep up-to-date.
Lack of knowledge of foreign languages is stated as an important barrier between the crime scene investigators and the information with regard to keeping up-to-date. Thus, following the new literature on CSI is difficult for the CSIs.

6.3 Limitations and Delimitations of the Study

One of the essential limitations of the study is that in terms of the generalizability issue in the methodology, the real number of the sampling size is not determined. Since I am one of the CSI chiefs of TNP, I am sure that the study has enough responses from the CSIs in TNP.

Since the study is done in Turkey, the results of the study may not reflect the ISB of CSIs in other countries’ police organizations.

Time as a limitation made the researcher minimize the study’s scope. If the researcher had enough time to conduct a comprehensive study, it would be better to make field observations, along with face-to-face surveys. Adding two more data collecting methods could make the study stronger than a cross-sectional survey design.

Some of the components of Leckie et al.’s (1996) general model of information seeking behavior of professionals are tested in this study. There is a need for a follow-up study to test the rest of the components of the model.

Finally, the constructs and survey instruments used in this study were adapted from literature written in English. Since the study was conducted in Turkey, it is slightly possible that some phrases could not be exactly translated into Turkish. On the other hand, the questionnaire was reviewed by persons who are very fluent in both Turkish and English.
6.4 Recommendation to the TNP and Policy Implementations

The researcher believes that this study has a significant potential to be a forerunner in terms of expanding the findings of the study for other units of the police organization, TNP.

6.4.1 Acceptance and Support for the Research

First of all, for this study, the sponsor of the researcher was TNP. Second, the approval for this research and data collection was approved by the TNP’s Directory of Central Police Laboratory’s related unit, which is the central crime scene investigation department. The chief of the unit was very excited when he reviewed the proposal of the study along with the questionnaire. The first thing that he stated was that “we do need this type of academic studies to improve our services” (Koc, F. 3rd degree Police Chief. Ankara. Telephone communication. November 15, 2009). In addition, the chief delivered an e-mail message to the e-mail groups of crime scene investigators. In the e-mail, the chief highlighted the importance of this type of academic research for the unit along with the police organization. He stated that “these studies are very important in terms of our organizations’ professional standards and being scientific” (Koc, F. 3rd degree Police Chief. Ankara. E-mail communication. November 20, 2009). His contribution to the study by this encouragement was greatly appreciated.

Another support came from the chief of the CSI unit of Istanbul. The chief is the only 3rd degree police chief that answered the survey questions. In addition, one of the deputy chiefs of the CSI unit of Istanbul, Police Major Mr. Fatih Yavuz e-mailed a
message to the e-mail group of CSI. Police Major Yavuz stated that “I know that this study is a well disciplined and scientific one. Since the CSI units are the forerunners of the police organization in terms of following and adapting the new emerged technologies, we should support this academic study by responding to the survey questions” (Yavuz, F. Police Major, December 1, 2009. E-mail communication).

Participation in the survey from the chiefs and deputy chiefs of the cities’ CSI units was very high. Eleven chiefs and 6 deputy chiefs from 17 cities is a signal that to some degree the study is important for them.

The central unit’s chief asked for the results of the study along with policy recommendations. The author of this dissertation is also assigned as a chief of a CSI unit in an eastern city of Turkey. The findings of the study will be reported to the central unit of CSI.

6.4.2 Policy Implication

One of the suggestions derived from the finding of the study is that in terms of keeping updated, CS investigators tend to rely on the knowledge and information coming from the central units’ courses and manuals along with the official memos and orders. Thus, the time between the courses should be shorter. Newly emerged techniques can be explained and demonstrated via the official Web site of the central unit. This online access to the course videos can prevent wasting of resources, including money and human effort.

Another issue is the barriers. The top-10 barriers determined via the data analysis should be put into the agenda of the central unit’s top-level bureaucrats. The
analyses of the data showed that, while the geographic location, regarding the city size, is changing, the reported top-10 barriers are also changing. Thus, each city’s chief of the CSI unit should be aware of their own most important problems.

Finally, this study will be accepted as a model to explore the CSI units’ information needs, information seeking behavior, and the barriers between the police officers and the information they need. As mentioned above, the acceptance and support for the study is significant. This demand is an indicator that the results of the data analysis along with the suggestions will be reviewed and hopefully accepted for implementation by the central unit of CSI in TNP.

The next stage of the study could be that the study’s unit of analysis can be changed to other police units. Using the same research strategy, similar and/or new variables can be determined for addressing in the questionnaire for other units. Each police unit could implement newly adapted surveys for their departments. In particular, the barriers between the information resources, and the best way to be kept fresh for the related units’ police officers should be determined with these surveys. The findings of data should be adapted for policy implementations to correct unproductive habits.

6.5 Directions for Future Research

In the context of professional information behavior, information science theorists have tried to produce theories and models that explain the theoretical framework of what is going on there. Although having a number of models of information behavior, we are still far away from having a common theory or model that fits and explains the occupational information behavior of professionals.
From the scope aspect, the theoretical approach to the phenomenon of information seeking behavior of professions should be criticized. In other words, the author would like to ask, “does information science have to find a general theory of professional information behavior?” Before answering this question, it is better to look at the definition of occupations by the Bureau of Labor.

According to the United States Department of Labor, Bureau of Labor Statistics, “an occupation is a set of activities or tasks that employees are paid to perform” (Occupational Employment Statistics, 2009, ¶ 3).

6.5.1 Major Groups of Occupations and Models Producing

Bureau of Labor Statistics accepts over 800 occupations “… which are classified by the 2000 Standard Occupational Classification (SOC) system, which is being adopted by all U.S. federal statistical agencies for reporting occupational data” (¶ 3). According to the data, there are 23 major groups of occupations, along with 96 minor groups, which are grouped into 449 broad occupations to consist of 821 detailed occupations (U.S. Department of Labor, 2010).

The 23 major groups of occupations are listed in Appendix C.

Returning to Leckie et al.’s (1996) general model of professionals’ information seeking behavior, among the 23 major groups of occupations, only 3 groups were analyzed to draw a general model for each profession.

In light of the above statistics and Leckie et al.’s study, it is time to ask the above question which is: “does information science have to find a general theory of professionals’ information behavior?” To me the answer is “not sure.”
From the theoretical perspective, producing a very general theory that fits and explains in general 23 major groups' and in detail 821 occupations' information seeking behavior looks like very difficult. The answer to the above question is “no” because of the fact that each profession has its own circumstances. Although both apples and oranges are fruits, they are different from each other. Thus, I conclude that theorists of information science may not be able to produce a general theory of information seeking behavior for each profession.

Regarding information behavior studies, not only the contexts and variety of people but also motivations and goals are different due to the degree of stakes that play a significant role and catch the attention of researchers. Case’s (2007) criteria to evaluate the importance of an information search clearly rely on “… their ultimate impact on our own feelings or well-being as humans” and “… numbers of people affected” (p. 10). The information needs and information seeking behavior of police cannot be the same as those of orchestral workers, or bank clerks. Thus, thinking of producing a model that illustrates information seeking behaviors of each occupation is a big challenge.

Before beginning to write my dissertation, I asked Professor Case which of the models would be best for my profession of interest, and his response was very interesting:

I honestly do not believe that any of the models, or theories, proposed for information seeking are testable. Certainly not that of Savolainen, which is aimed more at non-work concerns. Leckie, Pettigrew, and Sylvain's (1996) model of information seeking MAY be useful, but you cannot really test it. And it seems to me that your profession is quite different than most (Donald, O. Case, April 21, 2009. E-mail communication).
I have also found opportunity to discuss this issue with Michael Buckland (face to face personal communication, March 19, 2010). The professor emeritus confirmed my idea by stating that “yes, of course, it is almost impossible to make a model or theory that fits for each occupation.”

6.5.2 Theoretical Framework of Occupational Information Behavior

What about theoretical frameworks that could be helpful to understand phenomena regarding occupational information seeking behavior?

After reviewing the occupational information behavior literature, it can be seen that each theoretical or research-based professions’ information behavior studies have counted on some common core elements.

The core elements of information behavior, in general, include but are not limited to the following:

- Professional task
- Information
- Information need
- Information situation
- Information use environment
- Information seeking
- Information searching
- Information sources
- (Serendipitous) Information encountering
- Information need resolution
As a future recommendation, the author of this dissertation has come out with the idea that the above-mentioned core elements of information behavior could be framed in a proposed model.

According to this idea, the very first core element is the profession itself. The identity of the profession is the main determiner of the next stages of the information behavior in general. Back to the apples and oranges, the information needs and information seeking behavior of police and orchestral workers cannot be the same due to the differences of the concept and context.

Now, let us return to the discussion of what information is, and who is the asker, or who is the definer; while evidence is information for the CSI workers, notes of a song could be invaluable information for the orchestral workers.

If the logic beyond the first two core elements, profession and then information, is understood, all other stages are shaped by the context, which is the occupation itself. The author is suggesting a framework for the CSI workers. All of the core elements are explained consistent with the CSI environment.

I would like to name this idea as a “theoretical framework of occupational information behavior.” Since the main focus of the researcher is crime scene investigation as a profession, the framework suggestion regarding CSI could be as follows: *Theoretical framework of information-behavior concept in the context of crime scene investigation.*
## Theoretical Framework of Information Behavior Concept in the Context of Crime Scene Investigation

<table>
<thead>
<tr>
<th>PROFESSIONAL TASK</th>
<th>CRIME SCENE INVESTIGATION</th>
<th>SOLVING THE CRIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Evidence in many forms is information</td>
<td>Evidence</td>
</tr>
<tr>
<td>Information Need</td>
<td>Obtaining evidence to solve the crime</td>
<td>To obtain evidence</td>
</tr>
<tr>
<td>Information Situation</td>
<td>Context in which investigation occurs</td>
<td>Crime Scene</td>
</tr>
<tr>
<td>Information Use Environment</td>
<td>Evidence &amp; CSI reports will be used by the investigative police unit and the court</td>
<td>The police unit in charge &amp; court</td>
</tr>
<tr>
<td>Information Seeking</td>
<td>To obtain evidence CSI is performed</td>
<td>Crime Scene Investigation</td>
</tr>
<tr>
<td>Information Searching</td>
<td>Looking for which materials should be considered as potential evidence</td>
<td>Crime Scene Examination</td>
</tr>
<tr>
<td>Information Sources</td>
<td>Internal, External, Oral, Written, Personal Knowledge &amp; Experience</td>
<td>Location of evidence</td>
</tr>
<tr>
<td>(Serendipitous) Information</td>
<td>Collecting evidence or having new experience</td>
<td>Evidence or idea discovery</td>
</tr>
<tr>
<td>encountering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information need resolution</td>
<td>Completing reports, recording, saving, and handing over the materials</td>
<td>Outcome</td>
</tr>
</tbody>
</table>

*Figure 6.1. A proposed diagram of information behavior concept in the context of crime scene investigation.*

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Thinking about the above core elements of information behavior, and after constructing numerous tables, the researcher decided on the above final version of his framework.

Since I am a chief of a CSI unit in TNP and soon will be a Ph.D., I am confident that, at least on paper, this framework may explain what is going on. Without a doubt, there is still a need for more empirical field studies including observations, interviews, and new questionnaires to make the framework supported by the theorists of information behavior.

I also think that this framework could be testable for other street-level service providers such as fire fighters, paramedics, etc. If the name of the profession is changed and the CSI-related explanation from the framework is removed, one could test his or her occupational interest area.

Again, this proposed framework is still a draft. There is a need for more tests on the CSIs and different occupations. However, this difference must not be like apples and oranges. One could claim that testing the proposed framework did not work for my interest of a certain occupation. This is very normal. As stated before, there are hundreds of different occupations. Thus, each occupation could have its own information needs, information situations, and information environments. My effort is a suggestion that may be tested to reach a reliable, scientifically acceptable model that can be used as a theory in the long term.

6.5.3 Future Recommendations

As stated in Chapter 3, some of the variables of the components of the model are not consistent with the profession-related environment of crime scene investigation.
The following questions and models may be suggested as a follow-up study.

6.5.3.1 Follow-up Study

Does the general model of professionals’ information seeking behavior developed by Leckie et al. (1996) provide adequate theoretical framework for crime scene investigators in the Turkish National Police or in another police organization?

According to the researcher, using a review of only three professions to suggest a model that works for all other occupations does not work for the CSIs. There is a need for more studies on this issue to test the Leckie et al. (1996) model.

6.5.3.2 Other Information Models

This study may be tested via other models of IB and ISB. For instance, other workplace-related models of information seeking behavior may be suggested.

If we assume a hypothesis that the team type of CSI will be positively related to a number of information sources use, this hypothesis can be tested under the theoretical supervision of task complexity such as by Bystrom and Jarvelin (1995).

Another research question could be: which theory or model can explain forensic sciences technicians and/or crime scene investigators’ information seeking behaviors?

6.6 Conclusion

Information behavior-related literature has a very limited number of studies that address information need, information behaviors, and information seeking behaviors of police. Due to this scarcity, one who wants to examine unstudied occupational groups
can try police as a profession along with its sub-departments such as crime scene investigation units.

This dissertation is an exploratory research, and the very first one that focuses on information seeking behavior of crime scene investigators in the Turkish National Police.

In terms of geographical location and population size, the data were collected from 29 different cities. The overall population of these cities is slightly more than 44 million, as Turkey's 2009 population is 75.5 million. Regarding generalizability, the response number of 216 is accepted to apply demonstrated casual relationships to all the cities' police departments' CSI units in Turkey.

The information need of CSIs is evidence. Crime scene investigators try to collect evidence from the scenes in legal ways to make their evidence submission lawful and acceptable by the courts. While looking for information that is evidence, the CSIs are applying to and consulting from many sources. On the other hand, because of the specific task-related environment, CSIs are intentionally ignoring some sources that are very important and useful for other occupations.

The result of the research will be reported to the Turkish National Police. From the very beginning of the research, the central CSI unit of TNP has supported the researcher. In addition, their desire to have the results has been greatly appreciated. Since the researcher is currently a Police Major in TNP and has been assigned as a chief of the CSI unit of Hakkari, an eastern city in Turkey, policy implementation stages of the research will be done by him and his police colleagues who are the chiefs of CSI units in different cities of Turkey.
I already presented the initial findings of the research at the 2010 Academy of Criminal Justice Sciences Annual Meeting in San Diego, California. I will be submitting the study to the related academic journals of information sciences and criminal justice.

Along with the proposed theoretical framework of the information-behavior concept in the context of crime scene investigation, these initial findings derived from the descriptive analysis of the data will be the light or road map for the next stages of similar studies. Hopefully, the fruits of these efforts will be helpful in drawing a model that explains the information behavior of police in the streets.
APPENDIX A

IRB APPROVAL
Mehmet Demircioğlu  
Department of Information Science  
University of North Texas  

Re: Human Subjects Application No. 09329  

Dear Mr. Demircioğlu:  

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled “Information-seeking Behavior of Crime Scene Investigators in Turkish National Police.” The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol is hereby approved for the use of human subjects in this study. **Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, September 9, 2009 to September 8, 2010.**  

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.  

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications.  

Please contact Shelia Bourns, Research Compliance Administrator, or Boyd Herndon, Director of Research Compliance, at extension 3940, if you wish to make changes or need additional information.  

Sincerely,  

Patricia L. Kaminski, Ph.D.  
Associate Professor  
Chair, Institutional Review Board  

CC: Dr. Brian O’Connor
APPENDIX B

QUESTIONNAIRE: SURVEY QUESTIONS
Information Seeking Behavior of
Crime Scene Investigators in the Turkish National Police

Thank you very much for agreeing to read this survey invitation. This survey is being conducted by Mehmet Demircioglu, Graduate Student at the University of North Texas College of Information. The purpose of this research study is to understand information seeking behavior, information needs, information sources, and information barriers of crime scene investigators who work in the field. This survey will take approximately 10–15 minutes to complete. Participation is voluntary. If you give permission by completion of the survey, no individual responses will be reported to anyone and your responses will be strictly confidential. If you have any questions regarding this study, please contact candidate Mehmet Demircioglu at (940) 595-XXXX, dem........@yahoo.com or Dr. Brian O'Connor, UNT College of Information, (940) 206-XXX. This research project has been reviewed and approved by the UNT Institutional Review Board, (940) 565-3940. Contact the UNT IRB with any questions regarding your rights as a research subject. This survey tests a model of professional information seeking behavior by Leckie et al. (1996). Please try to complete the questionnaire in its entirety. Your contribution is appreciated.

Background Information

If you are not working in a CSI bureau of the department, please do not answer this survey. Thank you for your understanding.
Demographics
Please answer the following questions related to your background information.

Q1- What is your gender?

☐ Female
☐ Male

Q2- What is your age?

........................................ years old.

Q3- What is the highest level of your education completed?

☐ Middle School
☐ High School
☐ Two-year College
☐ University
☐ Master’s
☐ Doctorate

Q4- Which city are you working in?

........................................

Q5- What is your rank as a police officer in the Turkish National Police?

☐ Police Officer
☐ Police Sergeant
☐ Lieutenant
☐ Captain
☐ Police Major
☐ 4th degree chief of police
☐ 3rd degree chief of police

Q6- How long have you been working in the police force?

........................................

Q7- How long have you been working in the CSI units?

........................................

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Q8- What is the type of your current crime scene team?

<table>
<thead>
<tr>
<th>Felony Crimes, e.g. homicide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theft Crimes</td>
</tr>
<tr>
<td>Each types of crimes</td>
</tr>
<tr>
<td>Dispatch Center</td>
</tr>
<tr>
<td>Other administrative tasks in the bureau of CSI</td>
</tr>
<tr>
<td>Not collecting evidence due to rank/position</td>
</tr>
<tr>
<td>Not working in the CSI bureau</td>
</tr>
</tbody>
</table>

Work Roles and Associated Tasks

In this part, you will be asked some questions regarding your position, roles, and associated tasks in the unit. Please notice that here role does not mean either rank or position.

Q9- What is your current position as a crime scene investigator in the department’s organizational structure?

☐ CSI Dispatch Center Officer
☐ CSI Team Member
☐ CSI Team Commander
☐ CSI Shift commander(s)
☐ CSI Commander of shifts
☐ CSI Bureau commander
☐ Deputy Chief of the department
☐ Chief of CSI Department
☐ Other:

Q-10 When was the latest course(s) you have taken related to CSI?

<table>
<thead>
<tr>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I took the latest in-service training course within the unit.</td>
</tr>
<tr>
<td>I took the latest in-service training course given by Department of Criminal Police Laboratories.</td>
</tr>
</tbody>
</table>

Characteristics of Information Sources

Staying Current in the field
Q-11 How often do you use the following resources as a source of information to stay current in your field? Please choose the appropriate response for each item and mark all that may apply.

<table>
<thead>
<tr>
<th>No</th>
<th>Source types</th>
<th>NEVER</th>
<th>RARELY</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
<th>ALWAYS</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Textbooks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2</td>
<td>Books</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3</td>
<td>Printed journals</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4</td>
<td>Departmental manuals and guides</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5</td>
<td>Official circulars and memos</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6</td>
<td>Legal documents (codes)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>Other bureaus’ commanders</td>
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<td>29</td>
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</table>
Information Sources to use for CSI-related tasks

Q12- Based on your position, role(s), and associated tasks, while conducting a crime scene investigation task, among the following possible information sources please indicate the appropriate sources that you use, apply, and consult with. Please choose the appropriate response for each item and mark all that may apply.

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<tr>
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<td>2</td>
<td>Official circulars and memos</td>
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<tr>
<td>3</td>
<td>Legal documents (codes)</td>
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<td>4</td>
<td>System databases such as AFIS for Identification</td>
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<td>6</td>
<td>Forms such as sketch forms</td>
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<tr>
<td>23</td>
<td>Responsible investigation unit’s officers such as homicide detectives</td>
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<td>Morgue personnel including religious comissary/chaplain</td>
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<td>Relative(s) / friend(s) of victim(s)</td>
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<tr>
<td>29</td>
<td>Journalist /correspondent</td>
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**Barriers**

In this section, you will be asked questions related to problems that you encounter both in keeping current in your field and in conducting CSI. It is known that there is no pure work environment that is problem-free. However, struggling with these problems could some extent affect the results of tasks. Please choose the appropriate response for each item and mark all that may apply.
Q-13 To what extent do following elements constitute barriers when you need information regarding your tasks including keeping current in your field?

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<td>1</td>
<td>The Law(s) provide barrier for my job.</td>
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<td>The regulation(s) and implementations coming from justice provide barrier for my job.</td>
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<tr>
<td>3</td>
<td>Regularity orders coming from central Department of Police Crime Labs.</td>
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<td>The bureaucracy provides barrier for my job.</td>
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<td>The inter-department structure provides a barrier for my job.</td>
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<td>My personal safety provides a barrier for my job.</td>
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<td>My personal stress level provides a barrier for my job.</td>
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<td>8</td>
<td>My family provides a barrier for my job.</td>
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<td>9</td>
<td>Inadequate personal skills and knowledge.</td>
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<tr>
<td>10</td>
<td>The inadequate skills and knowledge of other CS investigators provides a barrier for my job; e.g., an inexperienced one could contaminate potential evidence.</td>
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<td>The lack of textbooks provides a barrier for my job.</td>
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<td>12</td>
<td>The lack of Internet sites that teach new and currently used techniques.</td>
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<td>13</td>
<td>The foreign language provides barrier (e.g., reading prescriptions and the manual of the chemicals and other tools in foreign languages) provides a barrier for my job.</td>
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<td>The supervisory officers provide a barrier for my job.</td>
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<td>The chain of command provides a barrier for my job.</td>
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<td>Excessive work hours provide a barrier for my job.</td>
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<td>The overload work provides a barrier for my job.</td>
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<td>Equipment failure provides a barrier for my job.</td>
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<td>The higher-ranking police officers on the scene provide a barrier for my job.</td>
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<td>Correspondents/police journalists.</td>
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<td>The unnecessary/unwanted people on the scene provide a barrier for my job.</td>
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<td>First responders provide a barrier for my job.</td>
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<td>24</td>
<td>Responsible investigation unit’s officers such as homicide detectives.</td>
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<td>Emergency Medical Service personnel provide a barrier for my job.</td>
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<td>The suspect(s) who destroy the scene provide a barrier for my job.</td>
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<td>27</td>
<td>Victim(s).</td>
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<td>Witness(es).</td>
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</tbody>
</table>
The politicians provide a barrier for my job.

Other

THE SURVEY IS OVER!

Thank you very much for your patience and for sharing your invaluable time for this survey. Knowing CS investigators’ information needs and information problems is very important. I have a very strong feeling that the results of this survey will be helpful to suggest new and appropriate policies to top-level administrators of the police organization.
APPENDIX C

NAMES OF THE MAJORS OCCUPATIONS
<table>
<thead>
<tr>
<th>No</th>
<th>Names of the Major Occupations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management Occupations</td>
</tr>
<tr>
<td>2</td>
<td>Business and Financial Operations Occupations</td>
</tr>
<tr>
<td>3</td>
<td>Computer and Mathematical Science Occupations</td>
</tr>
<tr>
<td>4</td>
<td>Architecture and Engineering Occupations</td>
</tr>
<tr>
<td>5</td>
<td>Life, Physical, and Social Science Occupations</td>
</tr>
<tr>
<td>6</td>
<td>Community and Social Services Occupations</td>
</tr>
<tr>
<td>7</td>
<td>Legal Occupations</td>
</tr>
<tr>
<td>8</td>
<td>Education, Training and Library Occupations</td>
</tr>
<tr>
<td>9</td>
<td>Arts, Design, Entertainment, Sports, and Media Occupations</td>
</tr>
<tr>
<td>10</td>
<td>Healthcare Practitioner and Technical Occupations</td>
</tr>
<tr>
<td>11</td>
<td>Healthcare Support Occupations</td>
</tr>
<tr>
<td>12</td>
<td>Protective Service Occupations</td>
</tr>
<tr>
<td>13</td>
<td>Food Preparation and Serving Related Occupinations</td>
</tr>
<tr>
<td>14</td>
<td>Building and Grounds Cleaning and Maintenance Occupations</td>
</tr>
<tr>
<td>15</td>
<td>Personal Care and Service Occupations</td>
</tr>
<tr>
<td>16</td>
<td>Sales and Related Occupations</td>
</tr>
<tr>
<td>17</td>
<td>Office and Administrative Support Occupations</td>
</tr>
<tr>
<td>18</td>
<td>Farming, Fishing, and Forestry Occupations</td>
</tr>
<tr>
<td>19</td>
<td>Construction and Extraction Occupations</td>
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<tr>
<td>20</td>
<td>Installation, Maintenance, and Repair Occupations</td>
</tr>
<tr>
<td>21</td>
<td>Production Occupations</td>
</tr>
<tr>
<td>22</td>
<td>Transportation and Material Moving Occupations</td>
</tr>
<tr>
<td>23</td>
<td>Military Specific Occupations (not surveyed in OES)</td>
</tr>
</tbody>
</table>
REFERENCES


