USER ACCEPTANCE OF NORTH CENTRAL TEXAS FUSION CENTER SYSTEM BY LAW ENFORCEMENT OFFICERS

Mehmet Odabasi, B.A., M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2010

APPROVED:

Brian C. O’Connor, Major Professor
Jiangping Chen, Committee Member
Sandra L. Terrell, Committee Member
Linda Schamber, Program Coordinator and Interim Chair of Department of Library and Information Sciences
Herman L. Totten, Dean of the College of Information
James D. Meernik, Acting Dean of the Robert B. Toulouse School of Graduate Studies.
Odabasi, Mehmet. User acceptance of North Central Texas Fusion Center system by law enforcement officers. Doctor of Philosophy (Information Science), December 2010, 143 pages, 20 tables, 8 figures, references, 103 titles.

The September 11 terrorist attacks pointed out the lack of information sharing between law enforcement agencies as a potential threat to sound law enforcement in the United States. Therefore, many law enforcement agencies as well as the federal government have been initiating information sharing systems among law enforcement agencies to eradicate the information sharing problem.

One of the systems established by Homeland Security is the North Central Texas Fusion Center (NCTFC). This study evaluates the NCTFC by utilizing user acceptance methodology. The unified theory of acceptance and the use of technology is used as a theoretical framework for this study. Within the study, user acceptance literature is examined and various models and theories are discussed. Furthermore, a brief information regarding the intelligence work done by law enforcement agencies are explained. In addition to the NCTFC, several major law enforcement information systems are introduced.

The data for this study comes from the users of the NCTFC across the north central Texas region. Surveys and interviews are used to triangulate data. It is found in this study that performance expectancy and effort expectancy are important indicators of system use. Furthermore, outreach and needs assessment are important factors in establishing systems. The results of the study offer valuable input for NCTFC administrators, law enforcement officials, and future researchers.
ACKNOWLEDGEMENTS

It is a pleasure for me to thank those who made this dissertation study possible. First, I would like to thank my dissertation chair, Dr. Brian O’Connor, for his guidance and supervision during the dissertation study. His encouragement and direction helped me complete this study in a timely manner. I believe that every PhD candidate should have such a mentor. I also thank Dr. Jiangping Chen, who was there with me since the first day I started working on this study. Her valuable advice prepared me for the challenges of the dissertation. I also would like to thank Dr. Sandra Terrell, who helped me in my most difficult times in the dissertation journey. Without her support, I would not be able to finish this study. I also would like to thank Dr. Yoder who greatly mentored and prepared me for this magnitude of academic studies. Although, we lost his physical body in this world, he will remain in our memories forever.

I would like to show my gratitude to Dean Herman Totten and his special assistant Paula King. They always made me feel exceptional and they created such a great environment for me to develop my research skills and finally get to the point where I can accomplish works, such as this dissertation study.

I also would like to thank Dr. Linda Schamber and the UNT LIS faculty for their mentoring and assistance in the interdisciplinary PhD program. Their guidance during the coursework shaped this dissertation study.

I would particularly like to thank my lovely wife Songul, my son Burak, and my daughter Zulal for their understanding, patience, and support. They faced all the challenges of the dissertation with me and they never complained for the times that I left them alone while trying to conduct research and complete my dissertation.
I am also indebted to Turkish National Police. The completion of my doctoral education could not have been possible without the sponsorship of the Turkish National Police.

Lastly, I offer my regards and blessings to all of those who supported me in any respect during the completion of the dissertation.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>iii</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>viii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>ix</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>x</td>
</tr>
</tbody>
</table>

## Chapters

1. Introduction
   - Research Questions                                                           2
   - Importance of the Study                                                        3
   - Organization of the Following Chapters                                         4

2. Literature Review
   - Introduction to the Chapter                                                   6
   - User Acceptance                                                                6
   - Theories and Models                                                            8
     - Technology Acceptance Model                                                  9
     - Theory of Reasoned Action                                                     10
     - Theory of Planned Behavior                                                   11
     - Task Technology Fit Model                                                     12
     - Innovation Diffusion Theory                                                  13
     - Unified Theory of Acceptance and the Use of Technology (UTAUT)               14
   - Rationale for the Theoretical Model                                            17
   - Intelligence and Information Sharing                                           18
     - Intelligence Process                                                          23
   - Research Studies with UTAUT as a Theoretical Framework                         32
     - Performance Expectancy                                                        33
     - Effort Expectancy                                                             34
     - Facilitating Conditions                                                       36
     - Social Influences                                                            37
Moderating Variables................................................................. 38
Police Information Sharing Systems......................................................... 45
ARJIS: Automated Regional Justice Information System.............. 45
COPLINK ..................................................................................... 46
FINDER: Florida Integrated Network for Data Exchange and Retrieval................................................................. 48
POLNET: An International Perspective ........................................ 49
The Study System: North Central Texas Fusion Center (NCTFC)........... 50
NCTFC: Brief Information about the System and the Users ...... 50
The Service Structure.................................................................. 51
Online Tools.................................................................................. 51

3. METHODOLOGY ............................................................................................... 54
   Mixed Methods Research Approach......................................................... 54
   Quantitative Methodology ........................................................................ 55
       Population and Sample .................................................................. 55
       Operationalization of the Variables .............................................. 56
       Survey Instrument ........................................................................ 59
       Reliability ...................................................................................... 59
       Validity ......................................................................................... 60
       Data Analysis and Results ............................................................ 60
       Data Analysis Process ................................................................... 61
   Qualitative Methods ................................................................................ 62
       Sample .......................................................................................... 63
       Interview Process .......................................................................... 63
       Analysis of Interview Data ........................................................... 64
       Validity and Reliability .................................................................. 65

4. RESULTS AND FINDINGS ................................................................................ 66
   Descriptive Statistics................................................................................. 66
       Sample Characteristics .................................................................. 66
   Theoretical Model..................................................................................... 71
       Quantitative Analysis of Intention ................................................ 71
       Qualitative Analysis of Intention..................................................... 73
Quantitative Analysis of Performance Expectancy ...................... 74
Qualitative Analysis of Performance Expectancy ........................ 77
Quantitative Analysis of Effort Expectancy ................................. 80
Qualitative Analysis of Effort Expectancy ................................. 82
Quantitative Analysis of Facilitating Conditions .......................... 84
Qualitative Analysis of Facilitating Conditions ............................ 86
Quantitative Analysis of Social Influences ................................. 89
Qualitative Analysis of Social Influences ................................. 91
Additional Findings ...................................................................... 93

5. DISCUSSION ....................................................................................................... 98
   Summary of the Study .............................................................................. 98
   Performance Expectancy of the NCTFC System ......................... 100
   Effort Expectancy of the System ................................................ 100
   Facilitating Conditions ................................................................ 101
   Social Influences ......................................................................... 102
   Implications for Theory ...................................................................... 102
   Implication for Practitioners .............................................................. 105
   Information Technology and Police ............................................ 107
   Implications for Future Research .......................................................... 107

Appendices

A. UNIVERSITY OF NORTH TEXAS IRB LETTER ................................................. 111
B. CONSENT NOTICE FORM FOR INTERVIEW PARTICIPANTS .................. 113
C. CONSENT NOTICE FOR SURVEY PARTICIPANTS ................................ 116
D. SURVEY ON NORTH CENTRAL TEXAS FUSION CENTER .................... 119
E. INTERVIEW GUIDE ......................................................................................... 123
F. PERMISSION TO USE THE SURVEY .......................................................... 126
G. PERMISSION TO USE FIGURES ................................................................. 129

REFERENCES ........................................................................................................................... 132
LIST OF TABLES

Table 1 Research Studies with UTAUT ....................................................................................... 40
Table 2 Mean Age Scores ............................................................................................................. 67
Table 3 Age Distribution of Survey Respondents ................................................................. 67
Table 4 Age Distribution of Interview Respondents ............................................................... 68
Table 5 Frequency Distribution of Gender ................................................................................... 68
Table 6 Education Distribution of Survey Respondents ........................................................... 69
Table 7 Education Distribution of Interview Respondents ........................................................ 69
Table 8 Mean Scores for Years Spent in Law Enforcement ......................................................... 70
Table 9 Mean Scores for Years Spent in Current Agency ............................................................ 70
Table 10 Mean Scores for Fusion System Usage ......................................................................... 71
Table 11 Mean Scores for Intention .............................................................................................. 72
Table 12 Frequency Distribution of Intention .............................................................................. 72
Table 13 Mean Scores for Performance Expectancy .................................................................... 75
Table 14 Frequency Distribution of Performance Expectancy ..................................................... 76
Table 15 Mean Scores for Performance Expectancy .................................................................... 81
Table 16 Frequency Distribution of Effort Expectancy ............................................................... 81
Table 17 Mean Scores for Facilitating Conditions ....................................................................... 85
Table 18 Frequency Distribution of Facilitating Conditions ........................................................ 86
Table 19 Mean Scores for Social Influences ................................................................................ 89
Table 20 Frequency Distribution of Social Influences ................................................................. 89
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Technology acceptance model.</td>
<td>10</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Theory of reasoned action.</td>
<td>11</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Theory of planned behavior.</td>
<td>12</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Task technology fit model.</td>
<td>13</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Unified theory of acceptance and the use of technology.</td>
<td>17</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Intelligence process.</td>
<td>24</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Information collection methods.</td>
<td>25</td>
</tr>
<tr>
<td>Figure 8</td>
<td>NCTFC query screen.</td>
<td>53</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ANOVA</td>
<td>Analysis of variance</td>
<td></td>
</tr>
<tr>
<td>ARJIS</td>
<td>Automated Regional Justice Information System</td>
<td></td>
</tr>
<tr>
<td>CIA</td>
<td>Central Intelligence Agency</td>
<td></td>
</tr>
<tr>
<td>DIA</td>
<td>Defense Intelligence Agency</td>
<td></td>
</tr>
<tr>
<td>EM</td>
<td>Electronic marketplace</td>
<td></td>
</tr>
<tr>
<td>FBI</td>
<td>Federal Bureau of Investigations</td>
<td></td>
</tr>
<tr>
<td>FINDER</td>
<td>Florida Integrated Network for Data Exchange and Retrieval</td>
<td></td>
</tr>
<tr>
<td>HUMINT</td>
<td>Human-source intelligence</td>
<td></td>
</tr>
<tr>
<td>IDT</td>
<td>Innovation diffusion theory</td>
<td></td>
</tr>
<tr>
<td>IMINT</td>
<td>Imagery intelligence</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>Information technology</td>
<td></td>
</tr>
<tr>
<td>MASINT</td>
<td>Measurement and signature intelligence</td>
<td></td>
</tr>
<tr>
<td>MM</td>
<td>Motivational model</td>
<td></td>
</tr>
<tr>
<td>MPCU</td>
<td>Model of PC utilization</td>
<td></td>
</tr>
<tr>
<td>NCTC</td>
<td>North Central Texas Fusion Center</td>
<td></td>
</tr>
<tr>
<td>OSINT</td>
<td>Open-source intelligence</td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>Personal computer</td>
<td></td>
</tr>
<tr>
<td>POLNET</td>
<td>Police network</td>
<td></td>
</tr>
<tr>
<td>SCT</td>
<td>Social cognitive theory</td>
<td></td>
</tr>
<tr>
<td>SIGINT</td>
<td>Signal intelligence</td>
<td></td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical pack for the Social Sciences</td>
<td></td>
</tr>
<tr>
<td>TAM</td>
<td>Technology acceptance model</td>
<td></td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>TDEx</td>
<td>Texas Data Exchange</td>
<td></td>
</tr>
<tr>
<td>TFFM</td>
<td>Task technology fit model</td>
<td></td>
</tr>
<tr>
<td>TNP</td>
<td>Turkish National Police</td>
<td></td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of planned behavior</td>
<td></td>
</tr>
<tr>
<td>TRA</td>
<td>Theory of reasoned action</td>
<td></td>
</tr>
<tr>
<td>UTAUT</td>
<td>Unified theory of acceptance and the use of technology</td>
<td></td>
</tr>
<tr>
<td>VOIP</td>
<td>Voice over Internet protocol</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

The new millennium started with a new challenge for law enforcement agencies. The issue of information sharing and interagency cooperation came under scrutiny particularly after the 9/11 terrorists attacks, when Al Qaeda militants targeted the World Trade Center and indiscriminately murdered over 3000 innocent people. This shocking incident raised many questions in regard to the security deficits that might have permitted those terrorists to commit such a suicide mission. According to Liu and Chetal (2005), the investigations that were held after the attacks determined that the lack of necessary information sharing was the major reason for the failure of law enforcement agencies. Particularly, the 9/11 Commission pointed out the lack of cooperation within the intelligence community and urged the government to make it a high priority to create an information sharing system (Falkenrath, 2004).

After the main security deficit was identified, several initiatives were created in order to establish a sound law enforcement system. These initiatives range from federal-level initiatives, such as the foundation of the Department of Homeland Security, to local and regional-level initiatives, such as creating regional information sharing databases. Despite the differences between these initiatives, they all share one common attribute; that is, the use of information technology. As Zaworski (2004) asserts, the post-9/11 efforts toward better information sharing were centered on the promises of technology.

Today, advancements in technology make it possible to create virtual networks that connect people and organizations. For this reason, many police administrators have been raising questions about the possibility of creating a network between law enforcement agencies so that they can share information. However, considering the complexity of the criminal justice system,
which has over 17,000 different law enforcement agencies, it would seem to be impossible to create a national information sharing system. Therefore, many law enforcement agencies developed initiatives in which a limited number of agencies would participate. In other words, the new information sharing programs are based on regional systems that include several agencies from the surrounding areas, such as COPLINK of Phoenix and ARJIS of San Diego.

In the Dallas-Forth Worth region, many law enforcement agencies are using the North Central Texas Fusion Center system (NCTFC). NCTFC was created in 2006 in order to address the information sharing needs of Texas law enforcement agencies. This system incorporates information from law enforcement in addition to that from fire departments, private security agencies, and health departments. This dissertation focuses on the NCTFC system and thoroughly evaluates it, by applying the user acceptance methodology. The purpose of the study is to see whether the system meets the needs of its users, particularly law enforcement agencies, in terms of intelligence gathering and sharing.

Research Questions

In any environment, users constitute the core of a system. Considering the importance of the users’ perspective and the need for an information sharing system among law enforcement agencies, this study seeks to answer the following research questions.

1. What are the factors that influence users’ intentions to use the NCTFC system?

2. Do demographic characteristics of the users make a difference in their intentions to use the NCTFC system?
Importance of the Study

This study evaluates a law enforcement information sharing system by using user acceptance methodology. Therefore, this study makes contributions both to the fields of information science and criminal justice.

First, this study contributes to the body of knowledge in the field of information science, particularly the user acceptance literature. User acceptance literature became especially important after the paradigm shift from data-centered systems to user-centered systems. Although it is presented in detail in the literature review section, the basic concept is that systems that are built taking into account the needs of their users give better results. Prominent scholars such as Davis, Ajzen, Goodhue, Thompson, and Venkatesh have been producing user acceptance studies, in order to guide those who make decisions about system design and technology investments. This particular study would be included amongst the studies conducted by those prominent scholars.

Secondly, this study tests the unified theory of acceptance and the use of technology (UTAUT) which is a user-acceptance model developed by Venkatesh, Morris, Davis, and Davis in 2003. By testing this model, this study provides invaluable insight for future studies.

This study is also important for criminal justice scholars and practitioners because this study investigates a major problem in the field of criminal justice. Successful information sharing systems are deemed significant in the fight against increasing threats posed by terrorist organizations and organized and individual criminals. While many information sharing systems have been designed in the aftermath of the 9/11 attacks, the lack of user acceptance criteria exists in most, if not all, of the information sharing systems. This study helps to close that gap in the field of criminal justice, by providing a research study and encouraging future researchers.
Furthermore, this study provides suggestions to those who make technology decisions for their respective departments, particularly law enforcement executives. Law enforcement agencies should consider conducting an assessment of user acceptance prior to purchasing and applying a new technology. Considering the fact that the implementation of a new technology often costs a great deal of money, such assessments would eliminate the possibility of choosing a nonfunctional system and wasting taxpayer money. Scott (2006) argues that it is impossible for police administrators to make logical decisions regarding new systems without having adequate information about them. This study can enlighten police administrators as it demonstrates a user acceptance assessment.

Organization of the Following Chapters

Chapter 2 is composed of five parts. First, the concept of user acceptance is examined and the major underlying theories and models are identified. Second, the concept of criminal intelligence and information sharing is defined and the intelligence process is elaborately described. Third, information sharing systems, including the North Central Texas Fusion Center, are detailed. The fourth and fifth parts review the previous research studies regarding the studies about fusion centers and the variables of the theoretical model, respectively.

Chapter 3 details the methodology that is used to carry out this research study. The unit of analysis, sampling strategy, sample characteristics, and the operationalization of the variables are explained.

Chapter 4 presents the results of the data analysis. The data is collected through interviews and surveys in order to offer a mixed method research design. The findings from both quantitative analyses and qualitative analyses are reported in this chapter.
Chapter 5 provides ground for critical thinking about the study. In particular, the implications of the study's findings are discussed and the results are examined thoroughly. Finally, this chapter provides suggestions and recommendations for future research.
CHAPTER 2
LITERATURE REVIEW

Introduction to the Chapter

This chapter gives readers a background to understanding the subject matter in detail. It starts with a broad discussion of the user acceptance concept, followed by an extensive description of law enforcement intelligence activities and information sharing. These two subsections are complemented by an overview of several law enforcement information sharing systems and databases. After enlightening readers about these important concepts, the body of research literature about both police information sharing systems and the application of the theoretical model in various settings are presented.

User Acceptance

Considering the paradigm shift from data-centered to user-centered systems, understanding user behavior has become more critical. A new system or technology that is shaped with the needs of users in mind would play an important role in bringing advancements to any organization, such as a police department. These needs can be best assessed by applying user acceptance theories and models. Acceptance can be defined as “an individual’s psychological state with regard to his or her voluntary and intended use of a technology” (Lin, Hu, & Chen, 2005, p. 24). In its elementary meaning, user acceptance means approval; that is, complying with the requirements of the projected system. Therefore, user acceptance is important in understanding the users’ perceptions of a new system or a new technology. By understanding these perceptions, system developers or technology implementers would be able to understand the deficits of the new system. These deficits would be eliminated in order to gain the real acceptance of users. Besides eliminating the deficits of the system, new revisions can be made by
examining the user’s behavioral intentions. User acceptance theories and models present various variables that influence behavioral intentions which, in turn, affect the acceptance or the rejection of a new technology. Understanding which of these variables create problems with user acceptance would enable organizations to manipulate those variables by doing revisions to the new system. In addition to these advantages, there are also several benefits in conducting prior user acceptance studies. We can summarize these as: gaining the sympathy of the users, time benefits, and cost benefits.

First, user sympathy is gained when the users of a system believe that the organization considers them as an important part of the organization. They feel that their opinions are important; therefore, their decisions about a new technology or a new system can shape the organization’s future. By gaining this sympathy, the organization can boost the users’ work performance.

Second, in any organizational setting, when a new technology or a new system is considered, a cost-benefit ratio must be calculated. The advancements, innovations, or convenience that the new technology offers must be compared with the existing technology that will be replaced. It is especially the case when we consider the huge investment required in implementing a new technology. Before spending that huge amount of money, we should really consider a prior assessment of users’ opinions regarding the new technology. According to Venkatesh et al. (2003), information technology has received the biggest share of investment money for the last two decades. There is no doubt that this huge amount of money is invested with high expectations. User acceptance studies offer investors the opportunity to foresee the results of the new system and whether these results meet their expectations.
Finally, organizations should consider time issues. As with any innovation in an organization, the application of a new technology requires a long period of time for complete implementation. An unsuccessful attempt at such an implementation will result in a substantial loss of time for the organization. This lost time includes the time spent on designing and implementing the new technology and the time necessary to restore the previous technology.

Police agencies do not differ from other organizational settings when considering the effects of all these factors. In one sense, they are even more prone to implementation of technological advancements. Kraemer and Dedrick (1997) assert that there is a common belief among many law enforcement officers that new technologies are being used as substitutes for manpower. In other words, by employing new technologies, police agencies can eradicate the need for new police personnel. Moreover, Hughes and Love (2004) underline the importance of using technological advancements in police agencies and urge police managers to make a move toward increased technological consciousness. While police administrators are influenced by these opinions, reinforcement for the use of new technologies gets support from many sources, such as the Omnibus Crime Control and Safe Streets Act of 1968 (Northrop, Kraemer, & King (1995). Northrop et al. (1995) explain one of the recommendations of this act as promoting the use of new technologies by law enforcement agencies for the purpose of better policing.

Theories and Models

Many theories and models deal with user acceptance. Some of these theories include the theory of reasoned action (TRA), theory of planned behavior (TPB), technology acceptance model (TAM), task technology fit model (TTFM), innovation diffusion theory (IDT), motivational model (MM), model of PC utilization (MPCU), and the unified theory of acceptance and the use of technology (UTAUT). For the purpose of this study, UTAUT is used
to provide a theoretical background. In order to offer an overall understanding of user acceptance theories and models, the most frequently cited ones are detailed in the following section. Throughout this literature review, behavioral intentions or usage of a new technology are identified as the dependent variables, whereas other constructs are identified as independent variables, and all of these variables are explained in detail for better understanding of the theories and models.

Technology Acceptance Model

TAM was developed by Davis (1989). This is the most widely cited or used model in assessing user acceptance (Colvin & Goh, 2005). Similar to TPB, TAM is also adopted from TRA (Hu et al., 2005). However, the constructs that are utilized in TAM differ from both TRA and TPB. There are five constructs in TAM; these are perceived usefulness, perceived ease of use, attitude toward using, behavioral intention, and system use.

Perceived ease of use and perceived usefulness are two external variables that are not included in TRA and TPB. Davis (1989) explains perceived ease of use as a person’s perception of the complexity or simplicity of the new system. The core question of perceived ease of use is: how easy or how difficult is it to use the new system? Konradt, Christophersen, and Schaeffer-Kuelz (2006) argue that system use is directly associated with the ease of use of the system and that users will only use the system if they perceive it as easy to use. On the other hand, perceived usefulness can be explained as a person’s perception of how the new system will contribute to that person’s job performance (Kim, 2006). These two variables form the attitudes toward behavior that consequently creates behavioral intention. Behavioral intention is the factor that guides actual behavior, which in this case is system use. Figure 1 depicts the model and the relationship between dependent and independent variables (Perez et al., 2004).
Figure 1. Technology acceptance model (Perez et al., 2004).

Theory of Reasoned Action

The theory of reasoned action (TRA) is one of the earliest models of user acceptance. This theory was first developed by Fishbein and Ajzen (1975). There are four constructs in this model. The first two, identified as dependent variables, are attitudes toward behavior and subjective norms. The last two constructs are behavioral intention and the behavior itself (Lin, Chan, & Wei, 2006).

Woon and Kankanhalli (2006) explain attitudes toward behavior with regard to a person’s positive or negative viewpoint of that specific behavior. This viewpoint is identified with the person’s overall assessment of the subject behavior.

According to Lin et al. (2006), subjective norms are social factors that affect people in deciding whether or not to display the subject behavior. Woon and Kankanhalli (2006) describe subjective norms as a type of social pressure that influences how people assess a behavior. In the process of making a decision, people generally refer to their significant others’ opinions. Significant others include people who are friends, relatives, or supervisors. The degree to which people value their significant other’s opinions constitutes subjective norms.
According to TRA, attitudes toward behavior and subjective norms constitute behavioral intention. In other words, a person’s evaluation of a behavior, together with his/her perception of social norms, forms his/her behavioral intention. The actual behavior is then influenced by this behavioral intention (Hansen, Jensen, & Solgaard, 2004). Figure 2 illustrates the schema of the model and the relationship between dependent and independent variables (Fishbein & Ajzen, 1975).

![Diagram of Theory of Reasoned Action](image)

Figure 2. Theory of reasoned action (Fishbein & Ajzen, 1975).

Theory of Planned Behavior

Ajzen (1991) extended TRA and developed the theory of planned behavior (TPB). Hsu et al. (2006) characterized the purpose of TPB as being an indicator of a person’s acceptance or rejection of information technology. Ajzen formulated TPB by adding a fifth construct, perceived behavioral control, to the existing TRA (Lin et al., 2006). Perceived behavioral control is another independent variable which constitutes behavioral intention. Like TRA, TPB assumes that behavioral intention guides behavior and that behavioral intention is formed by three independent variables: attitudes towards behavior, subjective norms, and perceived behavioral control. The only difference between TRA and TPB is perceived behavioral control, a factor which is not included in TRA.
According to Ajzen and Madden (1986), perceived behavioral control is one of the factors that influence a person’s decision in determining whether to perform a behavior. People evaluate a situation and assess the accessibility of support functions in a given organization. The degree of availability of necessary resources to the person forms that person’s perceived behavioral control. The schema of the model that shows the relationships between dependent and independent variables is shown in Figure 3 (Ajzen, 1991).

**Figure 3. Theory of planned behavior (Ajzen, 1991).**

**Task Technology Fit Model**

The task technology fit model (TTFM) was developed by Goodhue and Thompson (1995). This model aids researchers in examining the relationship between the tasks and the technological tools that assist in conducting those tasks. Goodhue and Thompson proposed this model, asserting that a new system, which provides the necessary resources for carrying out the requirements of the tasks that the user must conduct, would be accepted and would be successful. This model can aid organizations in understanding whether a proposed system is suitable for their particular needs. There may be instances where organizations fail to make proper
assessments regarding technological tool decisions. Establishing high-speed Internet connections in offices where the computers are needed only for the purpose of typing is a good example of such a faulty decision.

There are several constructs in this model. These are: task characteristics, technology characteristics, task-technology fit, and utilization of the system (Dishaw, Strong, & Bandy, 2002). Figure 4 illustrates the schema of the TTF model and the relationship between dependent and independent variables (Goodhue, 1998).

Figure 4. Task technology fit model (Goodhue, 1998).

Innovation Diffusion Theory

Innovation diffusion theory (IDT) dates back to the 1960s. Perhaps the most prominent person to contribute to this theory is Everett Rogers (Fitch, 2005). This theory posits that innovations are not adopted immediately; instead, they require a period of time for diffusion. An innovation can be described as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 1995, p. 11). According to Rogers, innovations are adopted in a process which starts with a knowledge stage. The process then continues with persuasion, decision, implementation, and confirmation stages.
Like the innovation adoption process, the actual adoption of a new technology by the people in an organization is also a process. Some people are likely to adopt an innovation immediately, whereas some people only adopt it after a longer period of time. Basically, people’s responses to an innovation may be classified into five different categories. These responses are: early adopters, early majority, late majority, late adopter, and laggards. Early adopters are the first people to adopt an innovation. These people are highly educated and have a higher socio-economic status. According to Rogers, education and socio-economic levels are lower among late adapters or laggards (Diffusion of innovations, 2005).

The constructs in this theory are: relative advantage, compatibility, complexity, trialability, and observability (Fitch, 2005). Relative advantage is the degree of advantage that a person can have by using the new system instead of the existing or old system (Agarwal & Prasad, 1997). Compatibility refers to the closeness of a match between the new system and the old system. Rogers (1983) defines it as the degree of consistency between the two systems. It is important to have a new system that is consistent with the existing system for several reasons. Perhaps the most important reason is the ability to transfer the existing data or knowledge from the old to the new system. Complexity, on the other hand, measures the level of ease in using the new system. According to Agarwal and Prasad (1997), the probability of adoption of a new system is highly dependent on its ease of use. Observability refers to the opportunity of the possible new users to observe the innovation, whereas trialability refers to the opportunity of the possible new users to try the proposed innovation before actual adoption.

Unified Theory of Acceptance and the Use of Technology (UTAUT)

The unified theory of acceptance and the use of technology (UTAUT) is one of the latest user acceptance theories. This theory was developed by Venkatesh et al. (2003). In developing
UTAUT, these researchers did extensive research on user acceptance theories and compared and contrasted several models, including TRA, TPB, TAM, IDT, TTF, motivational model (MM), social cognitive theory (SCT), and model of PC utilization (MPCU). My own review of the literature mirrored closely the findings of Venkatesh et al. Most user acceptance theories operationalize behavioral intention or use of the system as the dependent variable. Furthermore, the independent variables are also quite similar to those used by Venkatesh et al., but with different naming. These researchers reclassified these independent variables and gathered similar constructs under one variable name. As a result of their study, they came up with four main and five mediating variables.

The main variables are: performance expectancy, effort expectancy, social influence, and facilitating factors. Venkatesh et al. (2003) explain performance expectancy as the degree of performance gain after using a new system or a technology. This is an important variable in predicting user behavior. Considering the fact that many people take in-service training courses in order to pursue career enhancement opportunities, it is logical to offer them something new that would contribute to their job performance. Therefore, high performance expectancy can encourage possible users to adopt the new technology or the new system. Because of its importance, many theories have adopted this construct in different ways. When we examine TAM, we can see performance expectancy being measured as perceived usefulness. Furthermore, the relative advantage variable, used in the IDT, also resembles the performance expectancy variable employed in the UTAUT. Other variables that measure similar characteristics from other theories are “extrinsic motivation of MM, job-fit of MPCU, and outcome expectations of SCT (Venkatesh et al., 2003, p.447)”.

15
The second main variable is effort expectancy. This variable measures the degree of effort that a person needs to put forth when using a new technology or a new system. Research has shown that users are more likely to adopt or use new technologies if they require a relatively minimal amount of effort (Agarwal and Prasad, 1997; Konradt et al., 2006). It is likely that resistance can be expected from the users, when employing a new technology, if the new system requires them to work hard in order to learn it. It is a well known fact that many people do not resist an innovation itself, but do resist learning a new thing that requires effort instead of using a well known system. Therefore, this variable is also important in predicting user behavior in terms of accepting or rejecting a new technology. Effort expectancy groups several constructs from other theories or models. These constructs are “perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT)” (Venkatesh et al., 2003, p. 450).

The third variable in the UTAUT is social influences. Social influences are the external and internal factors that effect people when making a decision or displaying a behavior. In other words, the degree that the people value significant other’s opinions constitutes social influences. Some people may feel pressure to comply with the proposed behavior, which in this case can be the use of a new technology, while others may not. Social influence is used as an independent variable in many models such as the “subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT” (Venkatesh et al., 2003, p.451).

Finally, facilitating conditions is the last main variable in UTAUT. Venkatesh et al. (2003) describes facilitating conditions as the state of readiness of the technological environment with regards to its support for the user. Users may need support such as technical help in using the new system or the new technology. If the technological environment offers such support, users will be more likely to be in favor of using it. On the other hand, if the system does not offer
such support, it would be more difficult to encourage users to adopt the new system or technology. Like the previous variables, facilitating conditions is included in earlier models and theories, but in different formats. One example of this variable in a different format is the perceived behavioral control variable used in TPB. This variable is also used in TAM. Other variables used in existing theories are facilitating conditions (MPCU) and compatibility (IDT). The moderating variables are gender, age, experience, and voluntariness of use, which are all self-explanatory. The relationship between variables is illustrated in Figure 5.

![Figure 5. Unified theory of acceptance and the use of technology (Venkatesh et al. 2003).](image)

**Rationale for the Theoretical Model**

There are several reasons for using the UTAUT model instead of other user acceptance theories. The major one is the fact that the UTAUT model is a multi-dimensional theory. Most of the other user acceptance theories explain particular constructs and do not take into account several other important constructs (Venkatesh et al., 2003). This issue was clearly identified in the Venkatesh et al.’s study and the reasons for creating a unified theory were justified.
The strength of UTAUT in explaining variance also gives favorable support to this theory. In general, user acceptance theories explain between 15 to 50% of the variance in intention by the independent variables, whereas UTAUT explains up to 70% of the variance in intention by independent variables (Marchewka, Liu & Kostiwa, 2007; Venkatesh et al., 2003).

This study examines the NCTFC system which is a new technology used by law enforcement agencies for information retrieval and sharing purposes. The UTAUT model has been found to have explanatory powers in innovative technology (Camacho, 2009). Therefore, a good fit of the research can be achieved by employing this theory in this research study.

Intelligence and Information Sharing

Intelligence, or in other words information gathering, is extremely important in all aspects of life. Whether it is for civilian purposes such as market research, or for law enforcement purposes such as apprehending criminals or national security issues, intelligence is the most efficient tool in creating strategies for success in these fields.

In terms of law enforcement, intelligence activities serve two main purposes. First, they serve as a mechanism that triggers preventive tactics, and second, they serve as a tool that helps us understand the basic facts of past events.

In many countries, intelligence activities are carried out by various organizations and agencies. The United States is a good example of a country in this situation. The intelligence community that consists of Air Force Intelligence, Army Intelligence, the Central Intelligence Agency, Coast Guard Intelligence, Defense Intelligence Agency, Department of Energy, Department of Homeland Security, Department of State, Department of the Treasury, Drug Enforcement Administration, Federal Bureau of Investigation, Marine Corps Intelligence, National Geospatial-Intelligence Agency, National Reconnaissance Office, National Security
Agency, and Navy Intelligence all participate in intelligence activities (Members of the Intelligence Community, 2006). In addition to these agencies, local and state police departments carry out intelligence activities. As the number of the intelligence agencies increase, the need for cooperation between these agencies also increases. The lack of such collaboration may result in unfortunate events such as September 11. Hoover and Chabrow (2005) point out this issue, claiming that September 11 was a result of insufficient intelligence cooperation and information sharing. In the United States, because as many as 17,000 different law enforcement agencies carry out policing activities, the need for an effective means of information sharing seems unavoidable. Actually, the United States is not the only country that experiences this problem. Rogerson (2004) claims that the police departments in England and Wales experience severe problems in terms of sharing intelligence information. He bases his claims on the Bichard Report, which is a result of an inquiry into the murders at Soham Village College. According to the report, none of the 43 police departments in England and Wales has a common intelligence sharing system. The report contains many recommendations, one of which is the creation of a common IT system which would help all police departments share their intelligence-based information. Actually, having such a system should be a requirement for all countries. Even countries with highly centralized law enforcement structures need these systems. For example, Turkey has a centralized law enforcement structure; however, intelligence activities are conducted by at least three different organizations. These are the National Intelligence Agency, Turkish National Police, and the Army Intelligence Service. Although all three of these organizations are highly centralized, they do not have a real, common information sharing system. It would be recommended that these agencies create a shared information database and comply with the necessary rules attached to such a system.
Nevertheless, in the United States, policymakers who realize the importance of intelligence sharing seek better ways to improve policing from the present situation. The term intelligence-led policing is one of the fruits of this kind of thinking. Ratcliffe (2003) describes four objectives of intelligence-led policing. He states that intelligence-led policing involves targeting wrongdoers, managing places with high levels of criminal activities and social disorders, investigating offenses, especially those that are linked to each other, and finally, implementing preventive techniques with the support of local law enforcement officers. In other words, police have a proactive role in intelligence-led policing. This proactive approach distinguishes police activities in intelligence-led policing from those in the traditional approach of policing.

Although the term intelligence-led policing is relatively new, intelligence activities in law enforcement officials may be traced back to the beginning of police authority. In the United States, the first intelligence-gathering activities were the recorded activities of certain people, such as convicted ones (Carter, 2005). However, these recordings were not limited to ex-offenders but, were also expanded to would-be criminals. In fact, law enforcement officers recorded personal information about these people over a long time period. The factors that led law enforcement officers to determine which people should be monitored were closely associated with the social events of their time. In fact, each era was defined by new trends and intelligence officers monitored people who were involved in activities linked to those trends. Carter (2005) illustrates this situation by giving examples from different eras such as the bootleggers of the 1930s and the communists of the 1950s. Law enforcement officers of the 1930s recorded the activities of people who might be involved in bootlegging, while law enforcement officers of the 1950s recorded the activities of people who might be supporting communism. In the early years
of the 20th century, law enforcement officers continued to use this strategy. However, during the latter years, misuse of official power was demonstrated by the recording of such information. With the increased activities of Civil Rights advocates and the rising number of lawsuits filed against law enforcement officers, many intelligence activities were shown to be illegal actions of law enforcement officers. This was especially the case when the records of many innocent people came to light and many of these files were subsequently removed from the custody of law enforcement. During the 1970s, two major committee inquiries occurred: the Rockefeller Committee of 1975 and the Church Committee of 1976. These commissions expressed recommendations that resulted in major changes in the intelligence community.

The Rockefeller Committee was created by President Gerald Ford in order to investigate CIA activities (Rockefeller Commission, n. d.). The Committee was chaired by Vice President Rockefeller and elucidated many issues. One of the findings of the Committee was the illegal interception of mail communications by the CIA, as stated in chapter 9 of the final report. Like these improper activities, the CIA’s illegal operations were revealed in another report from a group commonly known as the Church Committee. Headed by Senator Frank Church, the Committee found that the CIA employed covert personnel in over 100 academic institutions (Church Committee, 2004). All these findings blackened the reputation of the CIA and consequently the CIA was prohibited from conducting domestic intelligence activities (Carter, 2004).

One of the committees that had an historical role in American Intelligence is the Warren Commission of 1964. This committee’s recommendations were generally for the promotion of cooperation between local, state, and federal intelligence agencies. The National Advisory Commission also supported the Warren Commission’s recommendations in 1973 (Carter, 2004).
The findings of numerous committees, from the National Advisory Commission to the September 11 Commission, echo a greatly increased concern about the lack of cooperation between intelligence agencies. The need for increased collaboration may have resulted in Carter’s (2004) intelligence guide for local, state, tribal, and federal agencies.

Crime analysis, on the other hand, has a broader description than intelligence. Reuland (1997) categorizes the concept of crime analysis into three functions. First, crime analysis involves making assessments of current crime trends in order to draw a road map for police administrators, in terms of personal and equipment allocation. Second, it involves examining the root causes of crime and finding permanent solutions, in terms of early prevention. Finally, it involves providing useful information to investigation officers by the thorough examination performed in certain crime cases.

Intelligence and crime analysis have common objectives. When we examine intelligence activities we have two main objectives. As mentioned previously, the first objective of intelligence activities is early prevention. Therefore, in approaches to modern policing, such as community policing and target-oriented policing, the main goal is to find the root causes of crime and follow up those crimes in a proactive way. Like the analysis of intelligence activities, crime analysis is important in guiding police departments in achieving success; that is, the understanding of root causes results from an in-depth analysis of the committed crimes. Some crimes may not have a pattern and are committed randomly. However, some crimes may follow a pattern, occurring in specific areas of the city and may be connected to each other. Understanding the root causes may help identifying those patterns and permit law enforcement agencies to take necessary precautions. Secondly, intelligence activities help us to understand
past events and crimes. The same goal also applies to crime analysis. A proficient crime analyst can also explain the motive behind a crime.

Intelligence Process

The intelligence process can be likened to a factory. Factories get products in a raw condition, work on those products using their equipment, and finally produce the desired outcomes from those raw products. Likewise, intelligence workers receive raw and undeveloped information, extensively work on it, and produce useful outcomes that can be used by the intelligence society (The National Criminal Intelligence Plan, 2003). Therefore, the intelligence process is a series of actions that need to be taken in a given order. Notwithstanding the differences between various agencies that collect and compile information, the intelligence process should be institutionalized in an organized and planned manner.

Basically, the intelligence process can be categorized into six different topics. As shown in Figure 6, the topics can be summarized as planning, collection, processing, analyzing, dissemination, and feedback (Directorate of Intelligence, n.d.). The following section summarizes each activity in the intelligence process.
Planning

The intelligence process starts with planning. Actually, planning is a process, also, which must be incorporated into all the other steps, because any activity without proper planning is subject to failure. In general terms, we can refer to planning as a way of thinking before acting. In terms of intelligence gathering, we can define planning as the determination of the tasks to be performed and personnel required in collecting, analyzing, and disseminating the information. During the initial stage, planning determines the answers to questions such as what to collect, where to collect and how to collect, while also, arranging the distribution of all other tasks.
(Planning and scheduling, 2005). The intelligence community performs both long-term planning activities, such as strategic planning, and short-term, day-to-day planning, activities in order to fulfill their duties effectively.

Collection

Once the planning part of the intelligence process is completed, the collection part should be initiated. Collection of intelligence can be conducted by a number methods such as surveillance, wiretapping, forensic evidence, and informant information. Figure 7 illustrates a more detailed picture of these methods.

![Information collection methods](adopted from Carter, 2004).

In the intelligence process, the collection phase is the most problematic phase in terms of maintaining legal grounds. Most of the techniques used in the collection phase require warrants or similar documents giving legal permission. Before conducting a collection activity, intelligence officers need to make the distinction between what is private and what is public. Without knowing this distinction, intelligence officers cannot make sound decisions regarding
the need for legal permission. For example, surveillance of someone, while he/she is in a public place, by undercover intelligence officers may not necessarily invade the right to privacy and therefore, may not require any kind of warrant. On the other hand, any type of wiretapping definitely requires legal permission.

Nevertheless, law enforcement agencies may utilize one or more of these methods depending on the type of intelligence activity they conduct. For example, collecting information about drug dealers may require undercover work, whereas collecting information about terrorists may require the interception of communications. Notwithstanding the method they use, law enforcement agencies should adhere to the applicable laws. Since one of the main reasons for the existence of police agencies is to ensure quality of life through legal means, a breach of this policy by law enforcement officials may result in distrust by the citizens towards the officials who police them. All of the information gathered from often diverse sources are subject to an analysis process, since it may not have a significant, stand-alone meaning (Carter, 2004).

Information is drawn from collection processes within national boundaries, in the case of criminal intelligence. If intelligence is collected for national security purposes, then the collection process is extended to five additional, major sources. These are signal intelligence (SIGINT), imagery intelligence (IMINT), measurement and signature intelligence (MASINT), human-source intelligence (HUMINT), open-source intelligence (OSINT), and geospatial intelligence (Collection, 2005).

Signal intelligence (SIGINT) can be defined as the collection of information by utilizing signals that are transmitted by the targets. These signals have three sources. These sources are communication such as e-mail messages, electronic signals which are not sent for communicative purposes, and signals from foreign instrumentation sources (Sigint Collection, n.
d.). In the United States, the National Security Agency (NSA) is in charge of conducting SIGINT activities (Collection, 2005).

Measurement and signature intelligence (MASINT) is the collection of data concerning dynamic targets by using sensors (MASINT introduction, n. d.). MASINT activities are carried out by the Defense Intelligence Agency (DIA), (The Defense Intelligence, 2005).

Imagery intelligence (IMINT) is the collection of imagery information via various sources such as satellite images (The National Geospatial-Intelligence Agency, 2005). Once the images are obtained, they can be transmitted to electronic devices that are capable of presenting reproduced electronic data. IMINT activities in the United States are conducted by The National Geospatial-Intelligence Agency (Collection, 2005).

Human-source intelligence (HUMINT) is collected quite differently from other methods. Actually HUMINT entails gathering information from persons in the target’s area (Richelson, 2001). HUMINT operations are not necessarily covert operations. It is a well-known fact that many intelligence agencies employ personnel in target countries in order to gather information; however, most of the HUMINT activities are conducted overtly by diplomats. HUMINT operations are performed by the Central Intelligence Agency, the Department of State, the Department of Defense, and the Federal Bureau of Investigation (Collection, 2005).

Open-source intelligence (OSINT) is the most convenient way of collecting information. This method is similar to overt SIGINT operations and involves the collection of any kind of information that is available for public use. According to Mercado (n.d.), OSINT has been made very easy with the latest technological developments such as the use of Internet, considering that almost all governmental institutions have websites. By simply navigating those websites, intelligence officers may collect valuable information regarding those institutions. Umphress
(2005) illustrates this by giving an example from the US Air Force website. He claims that any person can get detailed information about the US Air Force simply by navigating the pages of its website, and he emphasizes its vulnerability. On the other hand, non-governmental websites that have forum pages may include information that is important to many intelligence agencies. Therefore, intelligence agencies focus on such websites and collect much valuable information from them. Furthermore, even individuals who are willing to contribute to national intelligence agencies may take part in OSINT operations. Jerome and Bane (2004) give an example of an individual, Shannen Rossmiller, a municipal court judge from Montana who participated in an OSINT operation. According to the authors, Shannon Rosemiller identified several Al Qaeda militants by simply participating in a Web-based forum, pretending that she was a supporter of Al-Qaeda. The information she provided resulted in the arrest of several terrorist militants, including one of the members of the US Army at Washington Fort Lewis Army Base.

Processing

Prior to analysis, information must be uploaded onto intelligence systems in a manner that makes it possible for analysts to access that information (Carter, 2004). The information should be entered in an electronic format such as a word processor, or a special form of data such as Memec software. In this phase of information collection, intelligence agencies should employ competent people who are capable of entering the data into the system. Moreover, intelligence agencies should train their officers in data entry procedures. There are two reasons for this training. First, data entry personnel are furnished with the skills necessary to enter intelligence-related data into the system. Second, differences in data entry methods are avoided by training all the data entry personnel with the same methods. This would ensure that all data entry personnel
follow the same procedure and enter the same types of data that are desired by the intelligence agencies.

Nevertheless, the work of data entry personnel is not limited to just entering the information into the database. These personnel also facilitate the translation of foreign language documents and the decryption of documents that are written using encrypted language (Directorate of intelligence, n.d.). Furthermore, data entry personnel must evaluate the information before they enter it into the intelligence database. Evaluation of the information prevents both data overloading as well as the entry of unreliable information.

Analysis

In this phase, analysts work on the mass of collected information and try to infer different meanings from the data (Gill, 1998). The end result of the data analysis is to produce theses concerning the possible outcomes that are suggested by the information. These theses are continuously produced, the results are assessed, and new theses are formed if necessary. This task must be completed by competent people because misleading analyses would negate all the efforts expended by intelligence workers. It is important that each type of crime be analyzed within its context. Furthermore, the way that information is collected is also governed by the type of the crime. The following is an example of the type of information that analysts require for counterterrorism purposes.

In order to effectively fight terrorism, intelligence activities must be focused on gathering the following information. First of all, terrorist groups must be identified and categorized according to their missions, ideologies, and views (O'Connor, 2005). Following categorization, historical events associated with each group must be noted and members of these groups must be watched carefully during the anniversary of such events. Financial information concerning these
groups must be closely monitored. Major changes in their assets, such as an increase or decrease in the amount of cash on hand, may indicate that an activity is planned. Creating a list of members of the group may be useful, if these lists are carefully prepared and include the names of the leaders, rather than the would-be supporters. In these times, civil rights should be taken into account and intelligence officers should avoid including the names of innocent parties. The physical layout of the groups and the location of its members should also be monitored. Finally, the prior activities of each group must be analyzed and each groups underlying philosophy must be identified.

Dissemination

Dissemination is the transmission of intelligence to suitable customers (Gill, 1998). This phase is significant for decision-makers. Based on the information disseminated to them, decision-makers will use their authority to tackle problems with appropriate methods. On the other hand, the information gathered and the intelligence produced may comprise a wide subject area; thus, the recipients of this intelligence must be selected accordingly. Disclosure of intelligence to inappropriate customers may result in both liability and non-confidence for the intelligence agency.

In consideration of the sensitivity of the information, all intelligence agencies follow guidelines in disseminating the analyzed information that are framed by laws. For example, the state of New Jersey has published a guideline by the Attorney General on the collection, handling, storage and dissemination of intelligence in New Jersey (Attorney General, 2004). According to this guideline, intelligence information can only be disseminated to law enforcement agencies with the proper documentation showing the necessity of dissemination. Furthermore, in order to receive intelligence information, the law enforcement agency must
agree to follow the procedures that are dictated in this guideline. However, the guideline also includes exceptions for federal agencies and even for non-criminal agencies with adequate justifications.

Like state agencies, federal agencies also follow guidelines in order to disseminate intelligence information. Federal agencies disseminate intelligence information to a variety of customers. For example, the Federal Bureau of Investigation presents intelligence data to the Attorney General and the President, as well as to many local and state law enforcement agencies (Directorate of intelligence, n.d.). On the other hand, some of the information is also disseminated to the public. The Central Intelligence Agency (CIA) disseminates a wide array of information to the public under the guidelines of Executive Order 12958 (Clinton, 1995).

As in the United States, the process of dissemination of intelligence information in many countries is mandated by laws. For example, in Great Britain, law enforcement agencies have to follow the codes that are mandated in The Recording and Dissemination of Intelligence Material code of practice (The recording and dissemination, n.d.). This code applies not only to police agencies, but also to other law enforcement agencies such as the National Crime Squad and the National Criminal Intelligence Service. According to this code, any intelligence officer from one of those agencies may disseminate intelligence information to another intelligence officer, as specified within the legal boundaries mandated by this code and the Data Protection Act of 1998.

Feedback

Feedback may, literally, be defined as the evaluation of one’s work by others. In terms of the intelligence process, feedback refers to the evaluation of intelligence data by all the law enforcement agencies that received disseminated intelligence. Therefore, feedback is an extremely important part of the intelligence process. Considering the fact that many law
enforcement agencies conduct operations based on intelligence information, the success or failure of such operations depends greatly on the reliability of the intelligence information. It is the responsibility of law enforcement agencies to provide feedback to intelligence disseminators regarding the reliability and usability of the intelligence information that is provided by them. Furthermore, law enforcement agencies may make recommendations for future operations. In this manner, all elements of the intelligence-gathering process may be shaped in accordance with the recommendations derived from the feedback. Moreover, feedback helps in eliminating mistakes by establishing what works and what doesn’t. Feedback should also be provided in positive situations where the recipients of intelligence information are satisfied with the disseminated information. In these cases where the intelligence received is satisfactory, positive feedback may increase job satisfaction for intelligence officers and encourage them in their future work assignments.

Although feedback is the last part of the intelligence process, it is actually a connecting point in the intelligence cycle. The intelligence process works continuously by cycling between all the elements detailed in this section.

Research Studies with UTAUT as a Theoretical Framework

Although UTAUT is quite a new theory, dating to 2003, the literature review revealed hundreds of research studies that use UTAUT as a theoretical background. This is an indicator of the high degree of acceptance of UTAUT by scholars from many disciplines. In the following section, some of these studies are detailed, providing information regarding variables used in the model and their level of significance in the respective studies.
Performance Expectancy

This variable is considered to be the most important one in the UTAUT model. Actually, in most user acceptance studies, performance-related variables such as perceived usefulness attract the most attention. In order to determine whether this variable is indeed the most important variable, results from studies in different disciplines are listed below.

Anderson et al. (2006) applied the UTAUT model to understanding the perceptions of university faculty toward tablet personal computer (PC) usage. They surveyed 50 faculty members by using web-based survey methods. As a result of their study, Anderson et al. found that performance expectancy was the “strongest predictor” (2006, p.430). According to their study, performance expectancy positively affected the usage of the tablet PC. In other words, the faculty who believed that using a tablet PC increased their work performance tended to use the tablet PC more than the faculty who thought otherwise.

Performance expectancy produced similar results in Wang and Shih’s study of information kiosk systems (2009). In their study, Wang and Shih explored the perceptions of 244 Taiwanese users in their use of an E-Government information kiosk. Wang and Shih operationalized performance expectancy as the increased gain in accessing government related information and concluded that their intention to use the information kiosks was heavily influenced by their level of performance expectancy (2009). Therefore, increasing the performance expectancy level of the users guaranteed a high usage of the E-government kiosks.

In addition to the E-Government and academic environments, performance expectancy was also found to be the most influential factor in adopting technology in business settings. Wang, Archer, and Zheng examined the use of electronic marketplace (EM) applications and the perceptions of their intended users (2006). They associated performance expectancy with greater
economic benefits, such as increased customer contact and improvement of business processes. They assumed that a system which increases the ability of a company to contact buyers and sellers would be acceptable to that company. Furthermore, if the system resulted in an improvement in business processes, it would attract more users. Employing a case study methodology with UTAUT as the theoretical background, Wang et.al. determined that performance expectancy was a major variable in inducing the business sector to use EM. In other words, the results of their study confirmed the significant affect of performance expectancy on the intention to use the EM.

In another study, Bandyopadhyay and Fracastoro used the UTAUT model in order to understand the perceptions of users towards prepayment metering systems (2007). The researchers hypothesized that consumers would prefer to use the prepayment meter technology over traditional payment methods, if they believe it is a useful system for managing their electricity usage (2007). The results of the study confirmed this hypothesis in the finding of a significant relationship between performance expectancy and the intention to use the system. In other words, people who thought that using the prepayment metering system would be helpful in electricity account management intended to use the system more than people who thought otherwise. Furthermore, like many other scholars, Bandyopadhyay and Fracastoro determined that performance expectancy was the strongest variable within the theoretical model (2007).

Effort Expectancy

Like performance expectancy, effort expectancy is considered to be an important determinant of user intentions. In the user acceptance literature, most of the studies found a significant relationship between effort expectancy and intention. However, the relationship was not as strong as with performance expectancy.
Lin and Anol (2008) studied online social support and network IT usage among 317 Taiwan university students by employing the UTAUT. They operationalized effort expectancy as the degree of easiness in using the network IT. An analysis of the survey revealed a significant relationship between effort expectancy and user intentions. Students who found the system easy to use were more likely to use the system than those who found the system difficult to use.

Wu, Tao, and Yang (2007) also used UTAUT as a theoretical background in their research study. They studied the perceptions of users of 3G mobile communication systems and hypothesized that effort expectancy would play a major role in increasing the intention scores of the users. The researchers surveyed 394 users, by using an online questionnaire. Using structural equation modeling, Wu et al. found a significant relationship between effort expectancy and the intention to use 3G mobile technologies. Therefore, they demonstrated their hypothesis about effort expectancy boosting user intentions to be correct.

Im, Hong, and Kang studied mp3 player and internet banking technologies in two different settings, namely Korea and the United States (2007). They wanted to compare the perceptions of users from both countries to see whether there were any differences. Im et al. collected data from 501 users including Korean college students and US undergraduate students. They defined effort expectancy as the easiness of using the mp3 players and internet banking. Notwithstanding the differences in nationality, the results demonstrated a significant relationship between effort expectancy and user intentions for both Korean and US students. Users who found using both the mp3 players and Internet banking easy had high intention scores.

Although a majority of the studies demonstrate a significant relationship between effort expectancy and user intentions, there are a limited number of studies that show otherwise. Anderson, Schwager, and Kerns studied the perceptions of college faculty in their use of tablet
They hypothesized that the ease of use of the tablet PCs would positively affect user intentions. In other words, they expected to see higher intention scores from users who found the tablet PC easy to operate. However, the study did not produce any significant results in terms of effort expectancy, and their hypothesis was rejected.

Facilitating Conditions

Facilitating conditions include the support function of the technology implementations. Depending on the complexity of the systems, facilitating conditions can affect intention to use a system. Research findings from different studies display varying results for facilitating conditions. While some studies report significant relationships, other studies found no significant relationship between facilitating conditions and intention to use a system.

One of the studies that produced significant results was conducted by AlAwadhi and Morris in 2008. The researchers examined E-government services in Kuwait and surveyed 880 university students in order to obtain their data. AlAwadhi and Morris operationalized facilitating conditions by two measures: first, having the knowledge to use the e-government services and second, getting support when needed (2008). The results of their study indicate that facilitating conditions is a significant determinant in using a new system.

Wills, El-Gayar, and Bennett also found a significant relationship between facilitating conditions and intention to use a new system in their study of electronic medical records (2008). In this study, Wills et al. studied professionals working in the field of healthcare. They defined healthcare professionals as “registered nurses, physician assistants or certified nurse practitioners in the state of South Dakota” (2008, p398). They surveyed 52 healthcare professionals in order to obtain their data. As noted earlier, the results demonstrated a significant relationship between facilitating conditions and intention to use electronic medical records.
Al-Gahtani, Hubona, and Wang (2007) used the UTAUT model in order to understand the perceptions of Saudi Arabian users in terms of IT acceptance. Al-Gahtani et al. surveyed 1190 workers from companies that are located in four major cities. They hypothesized that facilitating conditions would positively affect users’ behaviors in terms of using computer systems. However, the study did not produce significant results and their hypothesis was rejected.

Social Influences

Marchewka et al. (2007) examined the Blackboard application which is a type of educational software widely used by the university community. Their sampling frame was university students both at the graduate and undergraduate levels. After surveying 132 university students, they concluded that there was a significant relationship between social influences and intention to use the Blackboard system. According to the results, students are affected by their significant others’ opinions in terms of their use of the Blackboard system. If they believe that they are encouraged by those people, they were more likely to use the system.

Armida (2008) used UTAUT as a theoretical framework for her study on VOIP systems. She hypothesized that social influence scores would positively affect users’ intention to use the VOIP systems. In other words, users would decide whether to use the system based on the opinions of people whom they consider important. Armida surveyed 475 respondents from various states in order to conduct her study. After statistical analysis, Armida concluded that social influences were a significant predictor of intention to use the VOIP systems.

Neufeld, Dong, and Higgins investigated the relationship between charismatic leadership and the adoption of information technology (2007). Neufeld et al. collected a sample of 207 respondents from 7 organizations. and hypothesized that social influence was a determinant of IT
adoption. An analysis of their data resulted in positive scores for social influences. In other words, the results supported their hypothesis and found a significant relationship between social influences and intention to use the new IT system.

Moderating Variables

Many studies have explored the affects of moderating variables on user intentions. Koivumaki, Ristola, and Kesti studied user perceptions towards mobile services (2008). The researchers tested the University of Oulu’s SmartRotuuar2 program on 243 people. The results indicated that experience played a major role in determining user intentions. Experience positively moderated performance expectancy and effort expectancy. On the other hand, facilitating conditions was negatively moderated by experience. Particularly, Koivumaki et al. noted that skilled users found the system useful and easy to use (2008).

Wang and Shih’s study of 244 Taiwanese users of E-Government information kiosks also produced significant results in terms of moderating variables (2009). According to the results, effort expectancy was greater for old versus young users. Moreover, gender was significant in determining user intentions. Wang and Shih found that performance expectancy was stronger for men than women. Furthermore, social influences were stronger for women than men.

Park, Yang, and Lehto (2007) examined the adoption of mobile technologies by consumers in China. In their study, they surveyed 221 Chinese people in order to understand their perceptions regarding mobile communication technologies. The results of their analysis revealed the role that gender plays in terms of affecting user intentions. Park et al. assert that male users were more influenced by performance expectancy than female users. In other words, male users were more focused on increasing their gains from mobile technologies than female users. This finding is consistent with Wang and Shih’s 2009 study. On the other hand, effort
expectancy was higher for females than males. Interestingly, experience did not significantly affect user intentions in this study.

Wang, Wu, and Wang investigated the acceptance of mobile learning technologies and focused on gender and age issues to see whether they make a difference in users’ perceptions (2009). In contrast to previous studies, Wang et al. did not find age or gender to have a significant moderating effect on performance expectancy. On the other hand, both gender and age significantly moderated effort expectancy and social influences. Wang et al. (2009) reported that effort expectancy was more important for older users than younger ones. While this finding was not unexpected, as older users tend to look for less complex systems to operate, the moderating affect of gender differences on social influences was really unanticipated. Interestingly, male users’ social influences scores were higher than that of female users; that is, male users were more affected by the opinions of significant others than female users.
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Performance Expectancy</th>
<th>Effort Expectancy</th>
<th>Facilitating Conditions</th>
<th>Social Influences</th>
<th>Gender</th>
<th>Experience and Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Gahtani, Hubona, &amp; Wang (2007)</td>
<td>Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Not significant with use</td>
<td>Significant with intention</td>
<td>Gender did not moderate performance expectancy, effort expectancy, or subjective norms (social influences).</td>
<td>Age did not moderate performance expectancy or effort expectancy. Age moderated subjective norms (social influences) and facilitating conditions</td>
</tr>
</tbody>
</table>
Table 1 (continued).

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Performance Expectancy</th>
<th>Effort Expectancy</th>
<th>Facilitating Conditions</th>
<th>Social Influences</th>
<th>Gender</th>
<th>Experience and Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, J. E., Schwager, P. H., &amp; Kerns, R. L</td>
<td>The drivers for acceptance of tablet PCs by faculty in a</td>
<td>Significant with intention</td>
<td>Not significant with intention</td>
<td>Not significant with intention</td>
<td>Not significant with intention</td>
<td>Not tested</td>
<td>Not tested</td>
</tr>
<tr>
<td>Im, I., Hong, S., &amp; Kang, M. S. (2007)</td>
<td>An international comparison of technology adoption</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with use</td>
<td>Significant with intention</td>
<td>Not tested</td>
<td>Not tested</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 1 (*continued*).

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Performance Expectancy</th>
<th>Effort Expectancy</th>
<th>Facilitating Conditions</th>
<th>Social Influences</th>
<th>Gender</th>
<th>Experience and Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lin, C., &amp; Anol, B. (2008)</td>
<td>Learning online social support: An investigation of network information technology based on UTAUT</td>
<td>Significant with IT usage intention.</td>
<td>Significant IT usage intention.</td>
<td>Not significant with online social support</td>
<td>Significant with IT usage intention</td>
<td>Significant with IT usage intention</td>
<td>Not tested</td>
</tr>
<tr>
<td>Marchewka, J. T., Liu, C., &amp; Kostiwa, K. (2007)</td>
<td>An application of the UTAUT model for understanding student perceptions using course management software</td>
<td>Not significant with intention</td>
<td>Significant with intention</td>
<td>Not significant with intention</td>
<td>Significant with both online social support and IT usage</td>
<td>Significant with IT usage intention</td>
<td>Significant with IT usage intention</td>
</tr>
<tr>
<td>Neufeld, Dong, &amp; Higgins (2007)</td>
<td>Charismatic leadership and user acceptance of information technology</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Not tested</td>
</tr>
</tbody>
</table>

*(table continues)*
### Table 1 (continued).

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Performance Expectancy</th>
<th>Effort Expectancy</th>
<th>Facilitating Conditions</th>
<th>Social Influences</th>
<th>Gender</th>
<th>Experience and Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park, J., Yang, S., &amp; Lehto, X. (2007)</td>
<td>Adoption of mobile technologies for Chinese consumers</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Not significant with intention</td>
<td>Significant with intention</td>
<td>Males were more influenced by performance expectancy than females. Effort expectancy was higher for females than males.</td>
<td>Not significant as a moderator</td>
</tr>
<tr>
<td>Wang, S., Archer, N. P., &amp; Zheng, W. (2006)</td>
<td>An exploratory study of electronic marketplace adoption: A multiple perspective view</td>
<td>Performance expectancy is the most important determinant for buyers.</td>
<td>Effort expectancy is the least important determinant for buyers/sellers.</td>
<td>Facilitating conditions are important for sellers but facilitating conditions are not important for buyers.</td>
<td>Social influences are important for sellers but they are not important for buyers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
<td>Performance Expectancy</td>
<td>Effort Expectancy</td>
<td>Facilitating Conditions</td>
<td>Social Influences</td>
<td>Gender</td>
<td>Experience and Age</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wang, Y., &amp; Shih, Y. (2009)</td>
<td>Why do people use information kiosks? A validation of the unified theory of acceptance and use of technology</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Performance expectancy was stronger for men than women; social influences were stronger for women than men.</td>
<td>Effort expectancy was stronger for older users than younger ones.</td>
</tr>
<tr>
<td>Wang, Wu, &amp; Wang (2009)</td>
<td>Investigating the determinants of age and gender differences in the acceptance of mobile learning</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Significant with intention</td>
<td>Males were more influenced by social influences.</td>
<td>Older users were more influenced by effort expectancy</td>
</tr>
<tr>
<td>Wu, Y., Tao, Y., &amp; Yang, P. (2007)</td>
<td>Using UTAUT to explore the behavior of 3G mobile communication users</td>
<td>Significant with both intention and use of 3-G services.</td>
<td>Not significant with intention</td>
<td>Significant with both intention and use of 3-G services.</td>
<td>Significant with both intention and use of 3-G services.</td>
<td>Not tested</td>
<td>Not tested</td>
</tr>
</tbody>
</table>
Law enforcement agencies have been improving their information sharing systems constantly, especially after the 9/11 terrorist attacks. These improvements have resulted in the establishment of a great number of information sharing networks all over the country. In her study of information sharing systems, Wagner (2006) listed 266 information sharing systems that are either operating or in the development stage throughout the United States. Taking into consideration the low response rate in her study (13%), we can clearly estimate a greater figure for the total number of information sharing systems. This study will examine several of these information sharing systems, particularly the ones which were studied by scholars and practitioners in academic institutions.

ARJIS: Automated Regional Justice Information System

The Automated Regional Justice Information System (ARJIS) is a law enforcement information sharing system which is based in California and serves over 1100 agencies in San Diego and the Imperial Counties. The ARJIS system provides various types of information regarding crime cases such as arrest data, criminals’ photographs, and gang-related information. Principally, all of the information is provided by the participating agencies and gathered in the ARJIS database. By pooling this information, participating agencies can create and access a database which is far richer than their own local databases.

Zaworski (2004) studied the ARJIS system and adopted a comparative approach to assess the outcome of the system. Basically, Zaworski identified two police departments, one of which is using the ARJIS system (San Diego Police Department) and the other one is using traditional means of information retrieval (Broward Police Department). To obtain data, he surveyed 588 police offices. His main research question concerned the possible impact of the ARJIS system on
police performance. In other words, Zaworski sought to determine whether using ARJIS increased the performance of the police officers. He used the Task Technology Fit Model as a theoretical background for his research study and, therefore, used the constructs proposed in this model. Zaworski operationalized the individual characteristics with effectiveness, job performance, individual productivity, arrests, case clearances, investigations, and in-custody linkages. Moreover, he operationalized task characteristics with level and detail of data, locatability of data, data accessibility, consistency among sources of data, data synthesis, system reliability, system problems, and data adequacy. On the other hand, Zaworski identified the independent variables as computer training, computer experience, user characteristics, and IT and information sharing.

Zaworski (2004) used both qualitative and quantitative means to answer the research questions. First of all, Zaworski used ANOVA in order to see whether there were any differences in the perceptions of police officers in terms of accepting technology as a remedy to improve their policing strategy. The results of the ANOVA revealed a statistical difference between the two police departments, indicating that the San Diego officers perceived technology as a remedy for improvement. However, there was no statistical significance between the perceptions of San Diego police officers and Broward police officers when it came to information-sharing technology. In other words, they perceived that using the ARJIS system was no different from using traditional means to share information, in terms of improving individual performance.

COPLINK

COPLINK was developed at the University of Arizona’s Artificial Intelligence Lab in response to the need for law enforcement information sharing, and the first users of COPLINK were the Tucson Police Department and the Phoenix Police Department (Chen et al. 2003). The
purpose of COPLINK is defined as “to develop knowledge management systems technologies and methodology that are appropriate for capturing, analyzing, visualizing, and sharing law enforcement related information” (Atabakhsh, Schroeder, Chen, Chau, Xu, Zhang, & Bi, 2001, p.1).

Hu, Lin, and Chen (2005) studied the COPLINK system and examined the perceptions of the law enforcement officers who were using the system. Hu et al. used the Technology Acceptance model as a theoretical background and conducted a survey questionnaire to obtain data from 280 police officers. Basically, the researchers hypothesized that TAM constructs would positively influence the intention of the law enforcement officers to use the COPLINK system. Based on their review of the literature, the researchers added the variables efficiency gain and availability to TAM. The results of the study demonstrated that perceived usefulness was the most important determinant for intention to use the COPLINK system. Considering that performance expectancy of the UTAUT model is a more complex version of perceived usefulness, we can conclude that the results are consistent with Venkatesh et al.’s findings from the 2003 study, as well as with other UTAUT studies. Furthermore, perceived ease of use, efficiency gain, and subjective norms had significant relationships. The only non-significant relationship was between availability and intention. In conclusion, the COPLINK system was accepted as an information-sharing system by its users.

Chen et al. (2003) conducted a usability study of the COPLINK system. Instead of applying a user acceptance theory and observing the relationship between intention and user acceptance constructs, Chen et al. followed a different approach and compared the COPLINK system with the previous database systems used by the Tucson Police Department. The researchers argued that the previous systems offered limited searching capabilities and police
officers had to do multiple searches in order to use multiple databases (Chen et al., 2003). The researchers hypothesized that creating one interface that was capable of searching multiple databases would increase user acceptance. Therefore, Chen et al. surveyed 52 police officers in order to determine whether using COPLINK increased their effectiveness, ease of use, and efficiency (2003). According to the results of the study, survey participants favored the COPLINK system over previous database systems, in terms of all measured constructs.

FINDER: Florida Integrated Network for Data Exchange and Retrieval

FINDER is a law enforcement information-sharing system located in the state of Florida that serves 121 local and state law enforcement agencies (Scott, 2006). Scott argues that FINDER has an exceptional status among the many information-sharing systems that have the capability of providing low-level police data. Scott classifies low-level police data as “traffic citations, field contact cards, criminal and non-criminal police reports, pawnshop records, and calls-for-service records” (2006, p.203).

In his study, Scott (2006) examined the FINDER system by using the Task Technology Fit Model as a theoretical framework. Unlike many user acceptance studies which employ user intentions as the dependent variable, Scott used user-level success and usage as the dependent variables. According to Scott, both usage and user-level success were available through the FINDER system logs; however, it is questionable whether all the user-level successes had been reported by participating police officers. Since it is optional for users to report user-level successes, the results might be inaccurate due to over- or underreporting.

Nevertheless, Scott conducted a study in 2006 and his research focused on establishing links between user-level success and the constructs of the Task Technology Fit Model. He
surveyed 402 FINDER users in addition to the data obtained from the FINDER system logs, for a total of about 1352 users.

Scott used regression analyses in order to test the study hypotheses. According to the results, FINDER’s task fit index significantly predicted both user success and the performance/efficiency index. These results demonstrated that users of the FINDER system who reported success revealed the importance of the system’s perceived usefulness and usability features (Scott, 2006). Similarly, the user’s job assignments and job descriptions significantly correlated with user success and the performance/efficiency index. On the other hand, computer expertise or training on the system did not have a statistically significant affect on user success. This is an interesting finding, because the reason for training is to increase user awareness of the system which should lead to optimal use of the system. A non-significant relationship might suggest that further analysis of training is needed and that system administrators should focus on the results of this further analysis.

POLNET: An International Perspective

Although this study has only, until now, examined an information sharing system in the United States, providing an international perspective can enhance this study. Therefore, one of the most effective police information sharing systems, POLNET (Police Network System) is included in the literature review.

POLNET is the main information-sharing system used in Turkey by the Turkish National Police. Having a centralized structure, the Turkish National Police is the only police agency in Turkey. Therefore, the POLNET system is used by all the police departments across the country. Confidentiality of information on POLNET is maintained via a secure intranet connection and the POLNET database is accessible to all of its users.
Yalcinkaya (2007) examined the POLNET system and conducted a research study to understand the perceptions of POLNET system users by employing user acceptance constructs. He constructed a conceptual framework using three user acceptance theories: the Technology Acceptance Model, Theory of Planned Behavior, and Diffusion of Innovation Theory. Furthermore, Yalcinkaya added two additional variables to his research model: facility and voluntariness. It is noted that voluntariness is used as a moderating variable in UTAUT.

The results of the study revealed significant relationships between the independent variables and intention to use the POLNET system. Particularly, subjective norms and behavioral control directly affected intention to use. On the other hand, perceived ease of use and perceived usefulness affected attitudes which, in turn, affected intention to use the system.

The Study System: North Central Texas Fusion Center (NCTFC)

This section presents an in-depth review of the NCTFC. In order to thoroughly review the NCTFC system, the director of the NCTFC system was interviewed. The information provided below is a summary of the transcripts from the interview.

NCTFC: Brief Information about the System and the Users

NCTFC is one of the three fusion centers that serve the North Texas Region. In addition to the NCTFC, the Dallas Fusion Center and Fort Worth Intelligence Section also operate in the North Texas area. While these two centers target only law enforcement agencies, NCTFC incorporates both law enforcement agencies in addition to other constituencies such as fire departments, emergency management, public health, and medical providers. Funded by the federal government, NCTFC has been in service since 2006.

Overall, the NCTFC serves 94 law enforcement agencies that are located in 16 counties. The number of users had reached 972 by March 2009 and this number is rapidly increasing. The
NCTFC provides membership, free of charge, to any law enforcement agency that wants to participate, since the system is funded by the government. However, law enforcement officers must attend a webinar in order to be certified to use the system. The system has a web-based interface and is accessible through any computer that has Internet service. Law enforcement officers are given a user account that includes secure login identification once they complete the webinar which is offered by the NCTFC. These webinars are offered throughout the year and they do not incur any monetary charges.

The Service Structure

The NCTFC is accessed through a secure Website. The homepage of the Website is composed of three parts. The first part includes links to several query screens, general information about fusion centers, and fusion center reports. The second part includes alerts and messages from the system, while the third part provides threat-level dashboards.

An information bulletin is the second part of the service structure. Users receive weekly information bulletins from the NCTFC.

Online Tools

The most important online tool is the search capability of the NCTFC. The query screens allow users to search more than 90 million data records stored in the system. These records are provided by the participating agencies. At first, it may seem to be a problem to organize the data provided by different agencies because some police agencies use different forms to create data. However, this is not a problem for the NCTFC system, as it has the capability to convert these data into a unique, standard form.

Keyword searches on query screens give users the ability to retrieve information from the 90+ million records. Users can type in a variety of information, such as the name of a person or
the number of a plate on a vehicle, to retrieve information. One advantage of the system is its ability to search multiple databases using a single keyword search. In practice, the system merges all the records coming in from different databases into one central database. Therefore, users do not need to perform different searches for different types of crimes such as terrorism-related or drug-related offenses.

Keyword searches produce a great deal of information regarding the search subject. For instance, if the user is searching for a person, the system provides detailed information about the person’s address and whereabouts as well as any incident reports that are recorded under the person’s name. The search results are displayed on the screen as text. Moreover, users can access map and link displays.

Link analysis is an important function of the system. When a keyword is chosen that relates to a person, link analysis provides link paths to any people related to the subject person. For instance, if a person named “Joe Doe” is searched by using link analysis, the system may bring several other people that are related to “John Doe”. These people may have been linked together through a previous committed crime. By this method, law enforcement agencies can discover the names of many criminals when only the name of one is known.

The map display is useful when searching for the whereabouts of the subject person or a vehicle. Like the link display, the map display finds links between the subject and any related people and provides a visual representation of their locations.

The NCTFC system has a secure interface that can be logged in with authentication. Figure 8 presents a sample query screen of the NCTFC.
Figure 8. NCTFC query screen
CHAPTER 3

METHODOLOGY

This study employs a non-experimental research design which explores cross-sectional data, collected using several different data gathering methods. In this section, the overall research design of the study will be presented.

Mixed Methods Research Approach

Researchers have long been using one of the two major research methods in order to study phenomena and conduct research studies. These two methods are quantitative and qualitative methods. While quantitative methods focus on the numbers, percentages, frequencies and other types of mathematical expressions to provide an understanding of the study subject with the aid of statistical analysis, qualitative methods focus on in-depth analysis of the subject phenomena (Rubin & Babbie, 2010). The proponents of each research method generally believe in the power of that particular research method when studying human behavior. There are, on the other hand, a growing number of researchers who believe in the power of merging these two methods into a new research methodology which is the mixed method research (Johnson, 2007). Johnson argues that mixed methods research is “recognized as the third major research approach or research paradigm” (2007). According to Johnson, one of the main purposes of mixed method research is to offer triangulation, a term introduced by Campbell and Fiske (2007). Campbell and Fiske state that using different methods would increase the validity of the method employed (1959). In other words, by employing triangulation, researchers will have a better understanding of the subject while reaching to more valid research findings.
As the mixed method research offers a synthesis of findings from quantitative analysis and qualitative meanings, this study will employ that strategy to better answer the research questions and understand the subject phenomenon.

Quantitative Methodology

This study employs a self-administered survey design in order to collect numerical data for statistical analysis purposes.

Population and Sample

The North Central Texas Fusion Center (NCTFC) serves 16 counties throughout the Dallas Fort Worth area. A total of 94 agencies, with a population of 972 officers, participate in information-sharing activities within the NCTFC system. The sample used in this study is drawn from this population of 972 police officers.

Before employing the sampling strategy, several sampling methods were examined. Particularly, non random sampling strategies depended on the ability of getting a list of all the users of NCTFC system. However, I was unable to get the list of all NCTFC users because some police departments did not agree with NCTFC system to divulge their officers’ information. For this reason, I asked the NCTFC system to distribute surveys to the users. This offer was accepted by the NCTFC. Following this, I searched for the best way to deliver the surveys to the users. In general, surveys are distributed to the sample either by electronic means or by paper. Both of these methods have strengths or weaknesses in terms of providing the best response rate for the researchers. Notwithstanding the overall strengths or weaknesses, the criterion used in this study with regards to the method of distributing the survey to everyone in the population was the practicality of the distribution. I did not have the list of all users with their mailing addresses; therefore, I heavily depended on the NCTFC system in order to distribute the survey. The
NCTFC system has the capability to email all of its users which is very practical for both the researcher and the NCTFC system management. I, therefore, prepared the survey online by utilizing the “surveymonkey” website. The link to the survey was emailed to all NCTFC system users by the director of the NCTFC system. After the email link was sent to the users, only five people responded to the survey which was a very low number. As a response to this, I contacted several law enforcement agencies to find ways to reach its users. As the survey was in process, I also conducted several interviews for data triangulation purposes. In one of these interviews, the interviewee who was a crime analyst assisted me by posting the survey to the crime analysts’ list server. The response rate dramatically increased after promoting the survey among crime analysts within that server.

Operationalization of the Variables

*Intention*

Most of the user acceptance theories assert that behavioral intention is the trigger variable that leads to actual use of a system. Therefore intention is operationalized as the intention to use the NCTFC system. In this study, three items tested intention to use the system within a 3 month time frame. Before determining 3 months to be the time frame, the literature was reviewed to see whether there were any criteria for selecting a time frame. However, the literature reviewed on this topic did not suggest any logical explanation for determining a time frame. Some studies simply used “n months” instead of determining a timeframe (Williams, 2009). Other studies used 3 months (Camacho, 2009; Moran, 2005) or 12 months (Cetron, 2007; Armida, 2008; Thomas, 2008) for measuring intention to use a system. Therefore, the overall workload of police officers and the possible need to use the system was considered in determining the time frame. As police officers have heavy workloads and they frequently need to
use databases to retrieve information regarding incidents, it was logical to use the shortest timeframe presented in the literature, which is 3 months. As a result, the following items were selected to measure intention to use the system.

I1: I intend to use the NCTFC system in the next 3 months.
I2: I predict I will use the NCTFC system in the next 3 months.
I3: I plan to use the NCTFC system in the next 3 months.

Performance Expectancy

This independent variable measured the expectations of users of a new system with regard to the new system’s ability to enhance the users’ work performance. In this study, performance expectancy was operationalized as the degree of expectancy of a police officer for the use of the NCTFC system. Four items tested performance expectancy.

PE1: I would find the NCTFC system useful in my job.
PE2: Using the NCTFC system enables me to accomplish tasks more quickly.
PE3: Using the NCTFC system increases my productivity.
PE4: If I use the NCTFC system, I will increase my chances of getting a raise.

Effort Expectancy

This is another independent variable that measured the degree of easiness in learning and using a new system. In this study, effort expectancy was operationalized as the effort expectancy of a police officer in using the NCTFC system. Four items tested effort expectancy.

EE1: My interaction with the NCTFC system will be clear and understandable.
EE2: It would be easy for me to become skillful at using the NCTFC system.
EE3: I will find the NCTFC system easy to use.
EE4: Learning to operate the NCTFC system is easy for me.
Facilitating Conditions

Another independent variable is facilitating conditions which gauged the availability of necessary resources in terms of supporting the use of the new technology. Hence, it was operationalized as the availability of facilitating conditions for the use of the NCTFC system. Four items tested facilitating conditions.

FC1: I have the resources necessary to use the system.
FC2: I have the knowledge necessary to use the system.
FC3: The system is not compatible with other systems I use.
FC4: A specific person (or group) is available for assistance with system difficulties.

Social Influences

This independent variable measured the effects that significant others have on influencing other people’s behaviors. In this study, social influences were operationalized with regard to their effects on the use of the NCTFC system. Four items tested social influences.

SI1: People who influence my behavior think that I should use the NCTFC system.
SI2: People who are important to me think that I should use the NCTFC system.
SI3: The senior management of this business has been helpful in the use of the NCTFC system.
SI4: In general, the organization has supported the use of the NCTFC system.

Demographic Variables

In addition to the major independent variables that are listed above, there are several mediating variables. Venkatesh et al. listed four moderating variables in the UTAUT model (2003). These are age, gender, experience, and voluntariness of use. This study includes three of those variables: age, experience, and gender. Considering that use of the NCTFC system is highly voluntary, this study does not include voluntariness of use in the analysis. Instead a fourth
variable was added to determine whether different divisions of the agency would have any affect on intention of use. Therefore, agency division was used as the fourth moderating variable.

Survey Instrument

In social science research, surveys are conducted in order to obtain information from the study population. According to Babbie (2007), a survey is the most appropriate method to use when the study population is not small enough to conduct direct observations. Considering the large sample size required for this study, it was appropriate to make use of a survey for data collection purposes. Furthermore, Babbie (2007) argues that surveys are very useful when the unit of analysis is a person, which is the case in this study.

This study uses the UTAUT model as a theoretical background. In their seminal study, Venkatesh et al. (2003) used a 39-item questionnaire for the purpose of validating UTAUT. This study uses the same questionnaire by reducing the number of questions to 27 and with employing minimal changes to reflect the use of a different study system. Before making such changes and using the questionnaire for the survey, permission was obtained from Venkatesh et al. in order to use the questionnaire. The survey instrument and the permission proof are presented in the appendix section.

Reliability

Reliability refers to the consistency in the responses of survey respondents (Shavelson, 1996). In other words, reliability requires similar measurement results for similar survey questions, when they are presented in different ways. There are several ways to determine reliability in social science surveys, such as test-retest or alternative-forms reliability (Shavelson, 1996). According to Kline (2005), most studies utilize Cronbach’s alpha as it is the most commonly used reliability measurement for social studies. Therefore, Cronbach’s alpha was used
in this study for the purpose of measuring the survey instrument’s reliability. Cronbach’s alpha scores of .70 or higher confirms the reliability of the survey instrument because this is accepted as a threshold value.

Validity

Validity refers to the extent that the survey questions correctly measure the study concepts. There are several ways to determine the validity of a survey instrument. For this particular study, two different approaches were used to confirm the validity of the survey instrument. First, the survey questions were discussed by three Turkish National Police members who are colleagues of the researcher, as promoted by Babbie (2001). According to Babbie, researchers should get opinions from their colleagues so that they will create a more valid survey instrument (2001). Therefore, this researcher reviewed the survey questions with Selcuk Zengin, PhD., Ramazan Yalcinkaya, PhD., and Murat Delice, PhD. These three police supervisors share three common characteristics that qualify them to make suggestions in studies like this one. First, they are police supervisors who have experience in police technology systems. Second, they have been involved in studies where police information sharing systems, such as POLNET was the subject matter. Third, they each received PhD degrees in the United States and they are familiar with academic research studies.

Data Analysis and Results

The data were analyzed by using descriptive statistics. Descriptive statistics were employed in order to give an overall picture of law enforcement officers’ demographics. Moreover, descriptive statistics enabled us to get a general overview of law enforcement officers’ perceptions regarding the use of the NCTFC system.
Data Analysis Process

Data analysis process is very important because the entire research study depended on the findings of the analysis. In order to conduct statistical analysis, researchers need to follow the criteria set forth for the implemented analysis method. As mentioned earlier, this study provides descriptive statistics. Therefore, the following steps were utilized in order to conduct data analysis.

Gathering data

The surveys were completed online through SurveyMonkey website. SurveyMonkey website has the ability to offer the responses in an Excel sheet downloaded to a personal computer. Therefore, the responses were downloaded into an Excel sheet and then transferred to SPSS version 17 for further analysis.

Data Screening

One of the most important things before running any type of analysis is to exercise data screening. Data screening starts with checking the data for accuracies and detecting any missing values. One of the most common methods to check missing data is to use frequencies in SPSS. Missing values: There are several methods for dealing with the missing values. Some scholars suggest doing pairwise or listwise deletion. In other words, they suggest taking out that particular subject from the sample if there are too many missing values. On the other hand, some scholars argue that that would be problematic and the researchers must use other methods to keep the subject in the study. Nevertheless, this study utilized both options. For the subjects that missed too many questions, the “take it out” option was used. For subjects that missed only several questions, the “mean substitution” approach was used.
**Scale Construction**

Most of the study variables were observed variables that could not be measured directly. Other than the demographic variables, several items were used to measure these observed variables. In order to offer a composite score for each observed variable, a scale computation process was used. In statistics, there are several methods that can be used for scale computation such as summing or averaging. In this study, averaging method was utilized for scale construction. Before implementing the averaging method, however, items were checked for reliability analysis. Any items that did not produce alpha scores over the threshold value of 0.7 were excluded from scale computation. Furthermore, items were checked to make sure that they were coded in the same direction. As the survey offers Likert type questions, responses vary from *strongly agree* to *strongly disagree*. However, in some questions, strongly agree might have a positive meaning while in some questions it has a negative meaning. This method is employed by many researchers in order to increase the reliability of the survey. Nevertheless, I reverse coded one survey question so that each item was in the same direction.

**Qualitative Methods**

As noted earlier, this research study employed qualitative methods in order to supplement in depth analysis in addition to the statistical analysis. The qualitative data was gathered via interviews. I personally conducted the interviews. I have been working as a police major for the Turkish National Police for 14 years. Also, I worked for the United Nations for one year as a civilian police officer. Therefore, I have the necessary professional background to understand law enforcement officers.
Sample

Similar to the surveys, the sample for the interviews was drawn within the 972 user population of the NCTFC system. The purposeful sampling strategy was used for these interviews. According to Isaac and Thomas (1995), purposeful sampling offers the chance to find subjects from whom rich information can be extracted to make in depth analysis for the research problem. Being guided with this idea, the researcher contacted with several law enforcement agencies in the North Texas Region in order to identify the users of the NCTFC system. The agencies were contacted at the chief level and the contacted law enforcement agencies provided the researcher with a list of NCTFC system users for their agencies. These users were then contacted and briefed about the purpose and the scope of the research and were invited to the interview part of the study. The researcher contacted approximately 30 law enforcement agencies in order to recruit users for the interview. However, because of the heavy workload of law enforcement agencies, only 11 users accepted to do interviews. Similar to the survey, these users were provided a consent note detailing the research study and that their participation is voluntary.

Interview Process

Consenting users were interviewed for about an hour each and the interview was recorded with a digital voice recorder. All of the interviewed users permitted the use of the digital voice recorder in order to help the researcher better comprehend their opinions. The researcher used a semi-structured interview method for collecting data. Using the same questions from the survey, the researcher asked interviewees to provide comments rather than fixed answers to the questions. In other words, the respondents described how they felt about the NCTFC system in terms of survey questions, rather than simply rating them on a Likert scale.
For example, in the survey the researcher asked the users to rate the extent the NCTFC system helps to accomplish tasks in terms of performance expectancy. In the interview, on the other hand, the researcher asked the interviewee to explain how the NCTFC system succeeds or fails to help accomplish tasks in terms of performance expectancy. Furthermore, the respondents were asked to provide their opinions about the NCTFC system with an open ended question at the end of the interview. In this way, the researcher was able to obtain valuable comments that were not covered by the interview questions. The interview questions are presented in the appendix.

Analysis of Interview Data

The analysis of interview data reflects the theory used for this study. The researcher used a variable-oriented approach in order to make sense of the interview data. Babbie (2007, p.379) defines variable-oriented analysis as “an analysis that describes and/or explains a particular variable”. The research model used included one dependent variable (intention) and four independent variables (performance expectancy, effort expectancy, social influences, and facilitating conditions). The analysis of the qualitative data was achieved by concentrating around these variables. The researcher asked questions similar to the interview questions which helped the researcher gain an in-depth understanding of the survey responses. Each respondent provided valuable input for the study variables. These comments and opinions were organized around patterns to reflect the most frequently used themes. The way these patterns are reflected in this study follows a unique design. For each variable, first the quantitative data analysis results are offered followed by the qualitative data analysis. Therefore, the readers will have a chance to get an in-depth explanation of the phenomena by looking at both quantitative and qualitative data findings.
Validity and Reliability

Validity and reliability differ significantly in qualitative research than in quantitative research (Golafshani, 2003). While it is easier to refer to validity and reliability in quantitative research by offering various tests and procedures, it is not that clear cut for qualitative research. Some researchers, such as Stenbacka, even argue that validity and reliability are not applicable to qualitative research (Golafshani, 2003). On the other hand, many researchers suggest using terms such as rigor and trustworthiness instead of validity and reliability in qualitative research (Morse, Barrett, Mayan, Olson, & Spiers, 2002). In order for a study to offer rigor, it must include several components, or in other words, it must be carried out in a way to meet the verification process. Shenton (2004) refers to the four components set forth by Guba and suggests that using these components might help meet the verification process. The four components offered by Guba are credibility, transferability, dependability, and confirmability. Two of the methods suggested by Shenton in terms of credibility were used for this study. First, the study agencies were visited several times before conducting interviews and a familiarity was established. Second, multiple methods were used to provide triangulation, such as observations and interviews themselves. Furthermore, surveys were used to compliment interview data which offered richness in data triangulation. In addition to credibility, this study also offered dependability, that is, the methods for employing the theoretical framework, sampling strategy, and data collection techniques are clearly identified which will enable future researchers to replicate the study.
CHAPTER 4
RESULTS AND FINDINGS

The results of both quantitative data analysis and qualitative data analysis are provided in this chapter. As noted in the first chapter, this study poses two research questions and uses the UTAUT model as a theoretical framework to identify the relationship between dependant and independent variables. The analysis focused on the four major UTAUT variables: performance expectancy, effort expectancy, facilitating conditions, and social influences. While the quantitative part of the analysis displays the frequencies and the measures of central tendency, the qualitative part offers in depth explanations. In order to create a flow in reporting the results, this chapter provides each major variable with both quantitative and qualitative analyses before proceeding to the next variable.

Descriptive Statistics

Initially, descriptive statistics are provided for both survey and interview sample. The statistics include demographic information of the sample. The descriptive statistics for the study variables are offered later in this chapter under the respective headings.

Sample Characteristics

Age

The study was conducted with 40 survey participants and 11 interview participants. The mean age of the survey participants was 43.94 years indicating that most Fusion system participants are in their early 40s. The youngest participant was 28 years old while the oldest participant was 59 years old. Similarly, the mean age of interview participants was 43.77 years. The youngest interview participant was 37 years old and the oldest interview participant was 53 years old. Table 2 illustrates the mean age scores for survey and interview participants.
After obtaining of mean scores, age was grouped into five categories by recoding the variable into another variable command in SPSS. The five categories was chosen with five year intervals as this is one of the most common used categorization of age in most research studies. This procedure was exercised for both the survey and interview participants. While interview participants were equally separated in the three oldest age categories, the survey participants were distributed into all five categories. However, the survey participants were concentrated in the older age categories and their overall distribution resembles that of the interview participants. Nevertheless, the frequency distribution of age for the participants is included in Table 3 for survey participants and Table 4 for interview participants.

Table 2

Mean Age Scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>40</td>
<td>43.94</td>
<td>28</td>
<td>59</td>
<td>8.08</td>
</tr>
<tr>
<td>Interview</td>
<td>11</td>
<td>43.77</td>
<td>37</td>
<td>53</td>
<td>6.22</td>
</tr>
</tbody>
</table>

Table 3

Age Distribution of Survey Respondents

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤30</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>8.6</td>
</tr>
<tr>
<td>31-35</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>17.1</td>
</tr>
<tr>
<td>36-40</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>28.6</td>
</tr>
<tr>
<td>41-45</td>
<td>11</td>
<td>27.5</td>
<td>3.4</td>
<td>60</td>
</tr>
<tr>
<td>46≤</td>
<td>14</td>
<td>35</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4

*Age Distribution of Interview Respondents*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>36-40</td>
<td>3</td>
<td>27.3</td>
<td>33.3</td>
<td>33.3</td>
</tr>
<tr>
<td>41-45</td>
<td>3</td>
<td>27.3</td>
<td>33.3</td>
<td>66.6</td>
</tr>
<tr>
<td>46≤</td>
<td>3</td>
<td>27.3</td>
<td>33.3</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>18.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Gender*

The distribution of gender is very close to being equal for the survey respondents. According to the results, 24 of the respondents were males constituting 60% of the sample while 16 of the respondents were females constituting the 40% of the sample. Interview respondents, on the other hand, are predominantly males. Out of 11 interview respondents, 7 of them were males and 4 of them were females. Table 5 illustrates the frequency distribution of respondents by gender.

Table 5

*Frequency Distribution of Gender*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>40</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Interview</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>63.6</td>
<td>63.6</td>
<td>63.6</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>36.4</td>
<td>36.4</td>
<td>100</td>
</tr>
</tbody>
</table>


*Education*

The education level of both survey and interview participants were considerately high. The mode of the education is 4 year degree which demonstrated that most Fusion users are highly educated people. Of the 40 respondents, only two respondents reported graduating from high school only without any college credits. On the other hand, the lowest education level was some college credits for the interview sample. Table 6 and 7 illustrate the frequency distribution by education for survey and interview participants respectively.

Table 6

*Education Distribution of Survey Respondents*

<table>
<thead>
<tr>
<th>Education level</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Some college</td>
<td>11</td>
<td>27.5</td>
<td>27.5</td>
<td>32.5</td>
</tr>
<tr>
<td>2 year degree</td>
<td>3</td>
<td>7.5</td>
<td>7.5</td>
<td>40</td>
</tr>
<tr>
<td>4 year degree</td>
<td>16</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>4</td>
<td>10</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>PhD Degree</td>
<td>4</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 7

*Education Distribution of Interview Respondents*

<table>
<thead>
<tr>
<th>Education level</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some college</td>
<td>1</td>
<td>9.1</td>
<td>9.1</td>
<td>9.1</td>
</tr>
<tr>
<td>2 year degree</td>
<td>2</td>
<td>18.2</td>
<td>18.2</td>
<td>27.3</td>
</tr>
<tr>
<td>4 year degree</td>
<td>4</td>
<td>36.4</td>
<td>36.3</td>
<td>63.6</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>3</td>
<td>27.3</td>
<td>27.3</td>
<td>90.9</td>
</tr>
<tr>
<td>PhD Degree</td>
<td>1</td>
<td>9.1</td>
<td>9.1</td>
<td>100</td>
</tr>
</tbody>
</table>
Experience

The participants displayed different characteristics in terms of experience scores. The researcher expected to see high law enforcement experience particularly for old users; however, this was not the case. Some of the respondents have changed professions through their lives and therefore, they became law enforcement personnel in their late careers. Nevertheless, the mean years spent in law enforcement is 15.40 years for survey respondents and 15.6 years for interview respondents. On the other hand, years spent in the same agency generally reflected the years spent in law enforcement. In other words, respondents have spent their law enforcement careers mostly in their current agency. Mean years spent in current agency is 10.98 years for survey respondents and 11.18 years for interview respondents. The mean scores for law enforcement career are presented in Table 8 while the mean scores for law enforcement career are presented in Table 9.

Table 8

Mean Scores for Years Spent in Law Enforcement

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>40</td>
<td>15.40</td>
<td>3</td>
<td>29</td>
<td>7.9</td>
</tr>
<tr>
<td>Interview</td>
<td>11</td>
<td>15.63</td>
<td>5</td>
<td>26</td>
<td>8.4</td>
</tr>
</tbody>
</table>

Table 9

Mean Scores for Years Spent in Current Agency

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>40</td>
<td>10.98</td>
<td>2</td>
<td>25</td>
<td>6.72</td>
</tr>
<tr>
<td>Interview</td>
<td>11</td>
<td>11.18</td>
<td>2</td>
<td>26</td>
<td>8.99</td>
</tr>
</tbody>
</table>
System Usage

The Fusion system was established in 2006. Then it was introduced to law enforcement agencies and agencies participated in the Fusion system in different levels. Most agencies have several personnel within the agency who have gone through the webinar and have user authentication. While the fusion system has been in practice for approximately 48 months, the survey respondents have been using the Fusion system only about 24.5 months in average. Table 10 details the usage of Fusion system by survey and interview respondents.

Table 10
Mean Scores for Fusion System Usage

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>40</td>
<td>24.5</td>
<td>0</td>
<td>48</td>
<td>15.39</td>
</tr>
<tr>
<td>Interview</td>
<td>11</td>
<td>22.45</td>
<td>0</td>
<td>48</td>
<td>16.9</td>
</tr>
</tbody>
</table>

Theoretical Model

Quantitative Analysis of Intention

Intention scores of the users were measured by using three items in the survey. Users were asked whether they intend, plan, and/or predict that they will use the Fusion system. After obtaining the surveys, a reliability analysis was conducted in SPSS version 17. The reliability analysis indicated high Cronbach’s alpha score (9.7) indicating that the scale is reliable. Then the scale for intention was constructed by using the compute variable command in SPSS. The mean scores for intention scale are presented in Table 11.
Table 11

*Mean Scores for Intention*

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>3.88</td>
<td>1</td>
<td>5</td>
<td>1.09</td>
</tr>
</tbody>
</table>

The mean score of 3.89 indicates a positive attitude towards using the Fusion system considering that a score of 4 indicates that the user agrees with the statement that he/she is planning, predicting, or intending to use the system. Nevertheless, in order to offer a better understanding, the frequency distribution of each intention statement is offered in table 12. As can be seen in table 12, 17% of the respondents provided negative statements for the first two intention questions and only 11.5% of the respondents provided negative statements for the last intention question.

Table 12

*Frequency Distribution of Intention*

<table>
<thead>
<tr>
<th>Respondent intends to use the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>11</td>
<td>27.5</td>
<td>31.4</td>
<td>31.4</td>
</tr>
<tr>
<td>Agree</td>
<td>15</td>
<td>37.5</td>
<td>42.9</td>
<td>74.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>85.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>94.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>5</td>
<td>8.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
Table 12 (*continued*).

<table>
<thead>
<tr>
<th>Respondent plans to use the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>12</td>
<td>30</td>
<td>34.3</td>
<td>34.3</td>
</tr>
<tr>
<td>Agree</td>
<td>13</td>
<td>32.5</td>
<td>37.1</td>
<td>71.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>82.9</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>94.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>5</td>
<td>5.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent predicts using the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>12</td>
<td>30</td>
<td>34.3</td>
<td>34.3</td>
</tr>
<tr>
<td>Agree</td>
<td>15</td>
<td>37.5</td>
<td>42.9</td>
<td>77.1</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>88.6</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>97.1</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>2.5</td>
<td>2.9</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Qualitative Analysis of Intention

The interview transcripts complimented the survey results in terms of intention scores. All of the NCTFC system users indicated that they will use the system in the next three months. When talking about their intention to use the system, some users indicated that they plan to use the system while others plan or predict using the system. Nevertheless, in one way or another, users see themselves using the system in the near future. However, users also indicated that
NCTFC system is not the only system they would use. Actually, some of them mentioned that they would first use other systems, such as the Texas Data Exchange system (TDEx), before they would use NCTFC system. Some of the comments regarding the use of the system are provided below to offer an understanding of why they plan to use the system and how they perceive the system:

- I try to use it often when I am researching people, or vehicles, or older bulletins that are gone but out there.
- We use it now. We use it pretty much for a lot of things from resource deployment, tactical intelligence, and statistical information.
- I would explore that source of information just like any other source. It is an alternative to other sources of information we have.
- I would plan to use it in the next three months, but I normally initially go to a database called TDEx first before I would go to the Fusion center
- Fusion system is one way we check. We check our own records system, we check the Fusion system’s record system, we check the TDEx

Quantitative Analysis of Performance Expectancy

Performance expectancy aspect of the Fusion system was measured with four items. Before conducting analysis with the performance expectancy related questions, a reliability analysis was conducted using SPSS version 17. After conducting the reliability analysis, it was found that one of the items did not produce high Cronbach’s alpha score. Therefore, the statement “If I use the NCTFC system, I will increase my chances of getting a raise” was excluded from the analysis (Cronbach’s alpha= 0.5). After excluding this item, reliability analysis was conducted again and the Cronbach’s alpha was found 0.94 indicating that the
revised scale is reliable. Following the same procedures used in computing the intention scale, performance expectancy scale was constructed. The mean scores are listed in Table 13.

Table 13

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>3.47</td>
<td>1</td>
<td>5</td>
<td>1.13</td>
</tr>
</tbody>
</table>

The survey responses provided similar results as the intention scores. On average, users indicated that the Fusion system satisfies them in terms of performance expectancy. The 3.47 mean score is very close to the score of 4 which means that users agree positively with all performance related questions. The frequency distributions of each performance expectancy related statements provide better understanding of this variable. The results suggest that users particularly thought that the Fusion system is useful for their jobs. According to the frequency distribution, 74.3% of the respondents found the system useful for their jobs. On the other hand, users did not indicate favorable responses for accomplishing tasks quickly or increasing productivity. Based on the results, it can be concluded that users found the system useful for their job overall, but not necessarily think that it will increase their productivity by accomplishing the tasks more quickly. Nevertheless, the frequency distribution of performance related statements are provided in table 14.
Table 14

*Frequency Distribution of Performance Expectancy*

**Respondent thinks that the system is useful for the job**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>10</td>
<td>25</td>
<td>28.6</td>
<td>28.6</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>40</td>
<td>45.7</td>
<td>74.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>85.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>94.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>5</td>
<td>5.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Respondent thinks that system helps accomplish tasks quickly**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>6</td>
<td>15</td>
<td>17.6</td>
<td>17.6</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>25</td>
<td>29.4</td>
<td>47.1</td>
</tr>
<tr>
<td>Neutral</td>
<td>9</td>
<td>22.5</td>
<td>26.5</td>
<td>73.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>15</td>
<td>17.6</td>
<td>91.2</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.8</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
Table 14 (continued).

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>12.5</td>
<td>14.7</td>
<td>14.7</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>27.5</td>
<td>32.4</td>
<td>44.1</td>
</tr>
<tr>
<td>Neutral</td>
<td>9</td>
<td>22.5</td>
<td>26.5</td>
<td>73.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>12.5</td>
<td>14.7</td>
<td>88.2</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>4</td>
<td>10</td>
<td>11.8</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Qualitative Analysis of Performance Expectancy

Users provided comments regarding each question that measured performance expectancy. Consensus among users was found for the first question that measured the usefulness of the system; that is, every single user found the NCTFC system useful for their job. Below, is a list of several comments taken from the interview transcripts that show that respondents perceive the system as useful.

- The Fusion center is definitely useful because we can get information that we cannot get from other sources, through the Fusion center so definitely useful.
- I am thinking of different aspects of intelligence and investigation, they are gathering the information and sending it to us, compiled information so that’s been very useful.
- It is helpful in our jobs that we have the access to other police department’s information.
• Yes it is useful. Mostly if I am looking for someone, like for instance other agencies submitted information that is kept by the center, and I can search through the files if they have relevant for the investigation that I am working, mostly sharing information from other agencies. The system somehow helps.

Actually the following comment summarizes how users think about the system in terms of usability:

• I would agree with any system that aggregates data from multiple agencies and provides in one location to be a useful tool.

Although, all users indicated that they found the system useful, it should be noted that user statements also included some reservations. In general, users stated that they would find the system useful whenever they are able to complete their tasks with the findings from the NCTFC system. In other words, if the search provides fruitful results for them, they found the system useful. Below is one of the comments that actually reflect the overall attitude of the users.

• Yes I do find it useful. Whenever I am able to find a match on a name or whatever I am looking for.

The second question for performance expectancy examined how the users perceived the NCTFC system in terms of accomplishing tasks more quickly while the third question examined how users perceive the system in terms of increasing their productivity. Users mostly provided positive responses for both questions. The interview transcripts demonstrate that eight respondents provided positive statements while three respondents provided negative statements for both questions. The comments below provide the positive statements about NCTFC system.

• It definitely helps us accomplish tasks, we had a couple bank robberies not long ago, we got information from the fusion center, part of that helped solved that, or
at least I know we contact and definitely increases our productivity because it helps us accomplish our job which is putting criminals in jail and solve crimes and it definitely helps.

- Now if I want to get a real in-depth research on somebody and I don’t have time to do myself, I can notify the center, they will do it for you and they are very useful in that so that has been very beneficial

- It does help accomplish our tasks: I don’t know if its more quickly, but it is more precise, more accurate in the ability, just one more step in confirming our information

There were, on the other hand, some comments provided by users who thought that the system does not increase their productivity or reduce the time in accomplishing the tasks. In general, users found the layout of the system problematic, therefore not helping them to speed up their search process. Some of the comments included the following:

- That system itself is not designed for me to accomplish tasks quickly. That system is all unstructured.

- The system is more like a Google search which is actually more cumbersome than so many other systems that I use.

- It does enable me to accomplish tasks more quickly when I am able to find results there. Unfortunately often times, it is not able to find the matches so I have to use other information databases and resources like TDEX.

Finally, the last question was about the chances of getting a raise by using the NCTFC system. Similar to the first question, all users agreed on this question. Users noted that this system does not have any direct affect on getting a raise from their departments because they do
not have any relationship. Therefore, 10 out of 11 users provided negative statements for this question. Some of those comments are provided below.

- I would not say it gives me a raise. It is just another tool to assist me and maybe helps me do my job better.
- In getting a raise, I would strongly disagree with that, we have no financial reward system tied to use of a particular system.
- As far as using the Fusion center to get a raise, with our department structure I would have to disagree because our salary or raises are not tied to performance. However, one user noted that it might help them indirectly.
- I guess indirectly it could increase my chances of getting a raise just if I am successful in accomplishing the tasks I am given in that’s parts of many things and tools that I use to get results for the task that I was assigned. That would go towards a good performance evaluation.

Quantitative Analysis of Effort Expectancy

Effort expectancy was measured using four items. Before computing a scale in SPSS, reliability analysis for effort expectancy was conducted. The result of the reliability analysis showed a low alpha score for one item. Therefore, “It is easy to become skillful in using the system” was excluded from scale computation (Cronbach’s alpha =0.6). After excluding this item, reliability analysis was conducted to confirm the reliability of the scale. Cronbach’s alpha was found to be high (0.93) so the scale computation was done including the remaining three items. The mean scores are shown in Table 15.
As seen in Table 15, the mean score for effort expectancy scale is 3.22. Although it is not as high as intention and performance expectancy, it is still geared towards the positive side. However, it was difficult to come to a conclusion such as suggesting that the respondents think that the system is easy to operate. The individual items statistics are more useful in this situation in terms of explaining the user perceptions. According to the individual results, the users generally provided positive statements for learning to use the system. This item produced only 3 negative statements. Table 16 summarizes the individual item frequencies.

Table 16

*Frequency Distribution of Effort Expectancy*

<table>
<thead>
<tr>
<th>Respondent thinks that the interaction with the system is clear</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>12.5</td>
<td>15.2</td>
<td>15.2</td>
</tr>
<tr>
<td>Agree</td>
<td>8</td>
<td>20</td>
<td>24.2</td>
<td>39.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>8</td>
<td>20</td>
<td>24.2</td>
<td>63.6</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>17.5</td>
<td>21.2</td>
<td>84.8</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
<td>12.5</td>
<td>15.2</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
Table 16 (continued).

<table>
<thead>
<tr>
<th>Respondent thinks that system is easy to use</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>11.4</td>
</tr>
<tr>
<td>Agree</td>
<td>13</td>
<td>32.5</td>
<td>37.1</td>
<td>48.6</td>
</tr>
<tr>
<td>Neutral</td>
<td>9</td>
<td>22.5</td>
<td>25.7</td>
<td>74.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>15</td>
<td>17.1</td>
<td>91.4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent thinks that learning to use the system is easy</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>4</td>
<td>10</td>
<td>11.4</td>
<td>11.4</td>
</tr>
<tr>
<td>Agree</td>
<td>14</td>
<td>35</td>
<td>40</td>
<td>51.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>8</td>
<td>20</td>
<td>22.9</td>
<td>74.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>17.5</td>
<td>20</td>
<td>94.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>5</td>
<td>5.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Qualitative Analysis of Effort Expectancy

Effort expectancy questions were summarized into two questions for the interviewees. The first question asked whether the users find it easy to use the system while the second question asked whether it is easy to use the system. All of the users, except one, agreed that it is
easy to use the system and it is easy to be skilful in using the system. Some of the user comments are included below to demonstrate the perceptions of users in terms of effort expectancy.

- Yes, I took online training session that lasted about an hour and I found it fairly easy to use. I think anyone should be able to become skillful in using the system
- The training they set up like the webinars and that kind of thing have been very helpful
- For just some basic overview, or investigation, background information type of things, it is pretty easy to get there and find information. It is easy to go there and find photos like I said of suspect that I already know, that has been through Colin County Jail system.
- Once you have some practice on it, it is really easy to work on.
- The first part easy to be skilful yes, the more you use it the better you get with it and also they provided or at least have offered training

Although all users thought that it is easy to use the system, some users still argued that the system could be enhanced to work better. Particularly, some users mentioned the difficulty in formulating a query to find what they are looking for. For example, a user might be looking for a vehicle that is involved in an incident and it is difficult for the user to formulate a query to find exactly the type of vehicle involved in the incident. Typing just the make and model would bring numerous results while typing an exact model number with the extension such as Ford F150 instead of Ford truck would bring little or no information if the subject truck is F250 instead of F150. There were also redundancy issues. When users search a query, the system brings numerous results that are very similar in nature with only minimal differences. Furthermore, the system is unable to differentiate whether the search subject is a person, street, or a business. To
illustrate, if you type in “Black ” in the search box, the system brings in everything that has black in it, whether a person, a street name, or a business. The user comments that suggest revising the system are displayed below.

- I still think they need to work on when I want to drill down more and I have several specific categories that I want to use, I have tried to perform, I could not get results. I know there is information out there because I got it from another source.

- It still seems like it’s hard to get the data out there even if I know the data is in there. I know they tried to create some user interfaces. They have acknowledged that they still need some tweaking on the searching capabilities on the user end, I don’t know where they are progressive wise there, but I still use it because I do get some results, I just know that it could probably give me a lot more.

- I still need to go to the help file how to do a proximal search for two words or two ideas, the specific syntax. It does not take me much, but takes longer than it should.

- Also, for example, you are looking for a suspect’s name but the hit comes as a street name. This is not the hit that you want. This is reducing your efficiency and effectiveness. Because you are waiting through search results that are not relevant with what you are looking for.

Quantitative Analysis of Facilitating Conditions

Facilitating conditions address the resources necessary to utilize the NCTFC system as well as the technical support in terms of system difficulties. In the survey, four items measured facilitating conditions. One of the items (Facil3) was coded negatively in order to offer more
reliability to the survey. Before conducting the reliability analysis, this item was reverse-coded so the direction of the item matched with the rest of the scale items. After recoding that particular item, the reliability analysis of the facilitating conditions revealed very low Cronbach’s alpha scores for two items in the study (Facil3 and Facil4). Furthermore, these two items had the most missing values. Therefore, these two items were excluded from the scale and the computing of the scale was done by including Facil1 and Facil2. These two items together produced a Cronbach’s alpha score of 0.88. The mean score of the facilitating condition scale is presented in Table 17.

Table 17

<table>
<thead>
<tr>
<th>Mean Scores for Facilitating Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>40</td>
</tr>
</tbody>
</table>

The mean score of facilitating conditions is relatively high compared to other variables. The mean score of 3.75 is very close to the score of 4 which means that the respondents agreed with the facilitating conditions statements. Individual item statistics, which are provided below in Table 18, also reveal the same results. It can be said that most respondents think that they have the knowledge and the resources to use the NCTFC system.
Table 18

*Frequency Distribution of Facilitating Conditions*

<table>
<thead>
<tr>
<th>Respondents think that they have the necessary resources</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>4</td>
<td>10</td>
<td>12.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Agree</td>
<td>20</td>
<td>50</td>
<td>62.5</td>
<td>75</td>
</tr>
<tr>
<td>Neutral</td>
<td>7</td>
<td>17.5</td>
<td>21.9</td>
<td>96.9</td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>96.9</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>2.5</td>
<td>3.1</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondents think that they have the necessary knowledge</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>12.5</td>
<td>14.7</td>
<td>14.7</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>40</td>
<td>47.1</td>
<td>61.8</td>
</tr>
<tr>
<td>Neutral</td>
<td>10</td>
<td>25</td>
<td>29.4</td>
<td>91.2</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>5</td>
<td>5.9</td>
<td>97.1</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>2.5</td>
<td>2.9</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Qualitative Analysis of Facilitating Conditions

Facilitating conditions related questions were asked to understand whether the users have the necessary equipment to access the NCTFC system. The questions were asked in two parts to
understand first, the particular user’s capability to access the system and second, the capability of
the vehicles in the respected department in terms of accessing the system.

All of the users that were interviewed stated that they have computer systems in their
offices that have Internet connection capabilities; thus, they have the ability to access the
NCTFC system anytime they want. Furthermore, some users mentioned that they even have
extra computers in their workplaces that can be used if their own computers malfunction for any
reason. Some of the comments from respondents are as follows:

- I have connectivity in my computers. It is a web based application. It has a
windows authentication login. I enter my Fusion system assigned login and I can
access to the system.

- I do have a computer at my desk and even if something happens with my
computer, we have an extra computer that no one is sitting at that I can use. They
are connected to the Internet. I have never had a problem connecting to the Fusion
center.

- Yes, we have the computers and the network, Internet capabilities to use the
system.

- I do have the resources here we have the passwords and connectivity. For the
second one, I believe patrol has Internet connections and therefore they can get
into to the system if they have the passwords given to them.

In terms of using the NCTFC system from vehicles, the users again provided a consensus,
but this time in the opposite way. None of the users thought that their patrol officers can access
the Fusion system from their patrol vehicles. However, some users also mentioned that the
reason for the patrol officers’ inability to access the system was due to departmental policies and
not necessarily the incapability of the vehicles. They stated that their vehicles have computers mounted in the patrol vehicles which have Internet connections. The comments below actually summarize this exercise.

- Every single patrol car is equipped with computer that is accessible to the Internet. You need to be granted access to access the Fusion center. Patrol officers do not have access to the Fusion center.
- Our patrol cars can connect to the Internet but we do not like them to have all different passwords. I think that might be a problem. You know unless you can create a generic password and you end up losing some security in doing that.

One final question was asked to users about getting help in case of technical difficulties. Overall, users indicated that they never had a technical problem in terms of accessing the system, such as the system not responding. Only one user stated that they initially had several problems but they never had a problem once the system was settled. On the other hand, the users mentioned that there is a help feature in the system that can be useful when they have a problem. Several of those comments are listed below.

- I have never had a problem like it does not return results so I never contacted them.
- I can’t recall experiencing technical problems. I know they have a help desk, email and phone number to contact and I also can talk to analysts that work up there.
- As far as problems, couple years ago there was serious problems in getting response from Fusion center but recently with some new personnel up there it seems to got away.
- If I had a problem I would call them but I never had a problem.
Quantitative Analysis of Social Influences

Social influence is the final variable of the study. This variable examined whether the organizations or significant others support and/or encourage participants in using the NCTFC system. Similar to the previous variables, 4 items measure the social influences. The reliability analysis of the scale produced a low Cronbach’s alpha score for “Senior management thinks I should use the system”. Therefore, this item was excluded from scale computation. The remaining items produced a 0.85 Cronbach’s alpha score indicating a reliable scale. The mean score of the items are displayed in Table 19.

Table 19

<table>
<thead>
<tr>
<th>Participant</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>3.26</td>
<td>1</td>
<td>5</td>
<td>0.89</td>
</tr>
</tbody>
</table>

The results suggest that survey respondents found support from their organization and their colleagues and friends in using the NCTFC system. Table 20 provides individual item frequencies for better understanding of this support.

Table 20

Frequency Distribution of Social Influences

<table>
<thead>
<tr>
<th>People who influence me think I should use the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>5</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>27.5</td>
<td>31.4</td>
<td>37.1</td>
</tr>
</tbody>
</table>

(table continues)
Table 20 (continued).

<table>
<thead>
<tr>
<th>People who influence me think I should use the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>12</td>
<td>30</td>
<td>34.3</td>
<td>71.4</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>17.5</td>
<td>20</td>
<td>91.4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People who are important think I should use the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>5</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Agree</td>
<td>9</td>
<td>22.5</td>
<td>25.7</td>
<td>31.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>15</td>
<td>37.5</td>
<td>42.9</td>
<td>74.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>15</td>
<td>17.1</td>
<td>91.4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>7.5</td>
<td>8.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent thinks that the agency supports using the system</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>7</td>
<td>17.5</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>40</td>
<td>45.7</td>
<td>65.7</td>
</tr>
<tr>
<td>Neutral</td>
<td>7</td>
<td>17.5</td>
<td>20</td>
<td>85.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>12.5</td>
<td>14.3</td>
<td>100</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Qualitative Analysis of Social Influences

Social influences related questions were asked in two parts. First, the users were asked to describe the approach of their organization in terms of supporting the NCTFC system. Second, users were asked to explain how their significant others view their use of NCTFC system. In other words, users were asked to identify if their organization or friends and coworkers encouraged them to use the NCTFC system. The consensus about the first part of the question was that the organizations support the use of any system that helps them do their jobs better. In other words, their organizations support the use of NCTFC system, but they do not ask the users to particularly use the NCTFC system. This finding suggests that most organizations enjoy the idea of multiple tools for accomplishing tasks; however, they do not necessarily favor one tool or one system over another. Nevertheless, seven respondents stated that their organization encourages them to use the NCTFC system. Some of the comments from users are written below to offer an in-depth understanding of the issue.

- Yes, they actually were the ones that brought us here and that’s how we started to use it.
- Yes, our organization supports it. We also both in using it and contributing to it. The agency is pretty proactive in terms of information sharing, not afraid to do it, try not to discourage because it’s not a good practice but unfortunately it exists in law enforcement
- Our agency does support using the Fusion system. They do encourage sharing information.
• The organization does not encourage or discourage any system. Having said that, the organization does not prefer using one system over another.

• Nobody encourages me to use the Fusion system. If I use it, it is because I want to use it.

Similarly, users also commented the same way for the second part of the question as they did for the first part. Almost all of the users stated that their friends, particularly other crime analysts or law enforcement officers, support using the NCTFC system. However, as they argued for the first part, this support was not a direct encouragement for most of them. Users indicated that they were never discouraged by their friends or other users. This finding also suggests that the use of the NCTFC system is seen as another way to accomplish tasks by law enforcement officers, but not necessarily the favorable tool over other systems. Below is a list of comments provided by the users for this question.

• As far as colleagues and everything, I have guys come to me, do you know any analysts there, ask me to get information out there. They know its out there, they just cant make a connection so yes.

• I never hear anyone say “do not use the Fusion system”. I have never heard from any of my colleagues. They are all in support of sharing information. Mostly because they think that it helps us, it makes our jobs easier.

• For other colleagues, I do not know of anybody who prefers the Fusion system over alternatives, such as TDEx. Other resources like INDEx are much more popular. They are more efficient to use, more focused results. So by and large, I never met anyone who preferred Fusion system over other systems.
• I can say it is encouraged and supported within my unit and within the whole department

• They don’t encourage me to use the Fusion system. Neither actually does. It’s just something that it is just another tool as an analyst. It is not like they are standing over you and watching what you do. But I do use it, I don’t use it all the time but it is utilized.

Additional Findings

The interview data offers invaluable information regarding the opinions of Fusion system users on many aspects. Besides the variables offered in the UTAUT, the respondents were asked to provide comments regarding the Fusion system in general. These comments became the basis for additional findings that offer more insight into the NCTFC as well as many other Fusion systems. The subheadings are created by following the patterns in the interviews that concentrate on highly focused issues.

Needs Assessment

The idea behind conducting a needs assessment is to offer the best practice possible for the targeted organization. In other words, when an organization conducts needs assessment before they implement a system, they would be able to find out what is missing from the previous systems and what is currently needed for the organization. According to some of the users, this piece was missing from the Fusion initiative. While the users did not speak definitely of needs assessment as never been done because they do not know exactly how NCTFC system was established, they at least argue not witnessing it. Therefore, some of the users thought that the NCTFC system is just duplicating what some other systems are doing. Although, having multiple tools is always an advantage for law enforcement agencies, it would not be a smart
investment for governments to establish two systems offering the same outputs. Nevertheless, some of the comments suggesting the lack of needs assessment are provided below.

• As far as I can tell, I do not know they ever did needs assessment or they ever identified what the consumers that they are servicing actually needed before building the system. When they introduced the system to use they just came and showed what they had and they did not ask what we really need out of a fusion center.

• It was not like they came in, they talked the users about what they need.

• Their priority should be set by the people they serve. For example, they focus on mapping but for most agencies in Metroplex, mapping is not a problem, so why do they expend their resources on that when their users do not really need it.

**Outreach**

One of the issues that was brought to attention during the interviews is the need for outreach. Many organizations carry out outreach activities which connect them to the outside world of their organizations. In terms of the NCTFC system, it was expected that the NCTFC connects law enforcement agencies and keeps the communication channels open, while introducing some of the new concepts established at the NCTFC system. Outreach activities would create an environment where NCTFC system personnel and the organizations they serve get together and discuss the current state of the NCTFC system and how it can be improved to better serve the law enforcement agencies. The comment below actually summarizes this need:

• They did not develop a relationship they just sort of set up and they expect you to be their buddy. They also don’t have any outreach. They never stop by and ask if we need anything from them. They expect us to visit them in their palace. They
need to go out from their office and meet people in other departments or fusion systems. I don’t know if they go talk to different agencies.

Problems with sharing certain data

One of the problems police agencies face in terms of sharing their information is the legal restrictions. One of the interviewees mentioned some type of documents that would cause problems for the law enforcement agencies once they are shared with other agencies or data sharing systems. Some citizens are eligible for orders of expunction once they are granted by the courts. In those cases, the records for that citizen which include that particular incident should be removed from police records. However, once shared with other agencies, it is difficult for the law enforcement agency to remove those records from all agencies who received a copy of the original incident report by information sharing systems. This is also valid for the NCTFC system. Once they include crime data in the system, it is shared by all participating agencies and easily copied to the departments. If the NCTFC system cannot remove those records from their system, it would be problematic for the law enforcement agency that prepared the incident report. This is only one aspect of the issue. A second aspect is that the NCTFC system must find all agencies that received a copy of that incident report and ask that agency to clear those records. Considering the difficulty of this process and retaining from the risk that is involved, some agencies do not share certain information with the NCTFC system. Below is part of the comment that briefly explains this problem.

- There is a difference as far as, for example we share pretty much all information with TDEx but the chief does not want to share certain information with Fusion centers and it’s just because there are different requirements for information as far
as what is accessible what is not accessible, how you handle orders of expunctions.

Other systems

One of the major issues with using the NCTFC system is the existence of other information sharing systems such as TDEx and Dallas Fusion Center. Furthermore, law enforcement agencies have their own data systems within the agency and law enforcement personnel refer to those sources when they search people or vehicles. Although each additional source is assisting law enforcement officers to accomplish their tasks, sometimes it may be a deterrent to use other systems. This happens when one system provides a more user-friendly interface, thus leading to more use and more findings. Most respondents reported that they used other systems prior to using the NCTFC system. Among those systems, TDEx was the most reported one. Several comments are included below to demonstrate this finding.

- It has to do with system design. It’s not a system like, Texas Data Exchange (TDEx) where you can go in, run a quick search, get back the result, verify that there is no information relevant and move on. You would go to Fusion system, run a query, dig through each result, look at it, evaluate it, look at the next one, it’s very laborious.

- The other big system that we use on a regular basis is TDEx. It is run by the state, it’s pulling in data from all these agencies, arrests, offense, tickets, everything like that. When you go in there you can do search it has a much friendly interface, it is lot easier to do wild card searches and plus it’s got national capabilities, too, not just for the Texas.
I think, the Fusion is just North Central Texas agencies, so its broader in scope. I don’t know that could be probably another reason, too. Some agencies think I can get from TDEx why would I need to go join the Fusion system to get the same things, even maybe not even the same things.
CHAPTER 5
DISCUSSION

This chapter provides critical thinking of the research problem. The organization of the chapter is designed in a way to provide an overall evaluation of the NCTFC system through the analysis of both survey and interview data. During this evaluation, a revisit to the literature review is offered in order to compare and contrast the research results to see how this research is related to the existing research. Finally, implications for theory, practitioners, and future research are presented followed by the limitations of the study.

Summary of the Study

As detailed in the problem statement, new technologies, such as the NCTFC system were introduced by Federal Government as a remedy to the lack of information sharing between law enforcement agencies. Actually, the broader picture represents effectively fighting with crime, as the information sharing approach is one of the ways to accomplish this task. As noted earlier in the first chapter, NCTFC system was established in 2006 by Homeland Security. The Federal government initiated the Fusion system idea, so that law enforcement agencies could start talking to each other through the use of the system. This talking was supposed to occur in terms of sharing their crime data as well as intelligence data. Moreover, NCTFC system would be a great help when it comes to analyzing crime data and accessing databases which individual police agencies are unable to do so. Whether it is the analytical support through their crime analysts or the offering of a compiled crime data through various sources, such as data from other law enforcement agencies, federal sources, and open source information, NCTFC system pledges to assist law enforcement agencies in their fight against crime. However, to what extent this effort is appreciated by law enforcement agencies was not validated. In other words, a through
evaluation of the NCTFC system was not available through the users’ perspective. Therefore, this research study was conducted in order to understand the perceptions of law enforcement officers on their use of North Central Texas Fusion System.

This research study utilized UTAUT as a theoretical framework to understand user perceptions. UTAUT was introduced to user acceptance literature by Venkatesh et al in 2003 and employs four major independent variables alongside with four moderating variables. As intention to use the system is the dependant variable, the major independent variables used are performance expectancy, effort expectancy, facilitating conditions, and social influences. From the moderating variables, age, gender, and experience were used in the data collection process, but, were not used in the statistical analysis process because of the low response rate in the survey data. Nevertheless, the interview data, which is complimented by survey data, enabled us to draw conclusions about perceptions of law enforcement users on their use of the NCTFC system.

The data for the study consisted of 40 surveys and 11 interviews. The sample of the study was drawn from the 972 users of the NCTFC system. Surveys were distributed online using the surveymonkey website. The NCTFC system emailed all the users of the NCTFC system the link to complete the survey online. Moreover, the researcher contacted as many as 35 law enforcement agencies via emails, phone calls, and personal visits in order to promote the surveys as well as recruiting users for the interview. Despite all the efforts, the sample size for the survey was limited to 40. This low response rate was attributed to the fact that law enforcement intelligence is a critical issue and many law enforcement agencies are not open to discuss this matter from outsiders. Nevertheless, the presence of interview data permitted the researcher to conduct analyses by triangulating the results of the qualitative analysis with survey responses.
Performance Expectancy of the NCTFC System

The NCTFC system was shown to be a useful tool in terms of helping law enforcement agencies carry out their duties in a better way. All of the interview respondents and a majority of the survey respondents stated that the NCTFC helps them in their work environment when they are searching for a name, a vehicle, or an incident report. Although there are some other tools, such as the TDEx and Dallas Fusion Center, it is always useful to have an additional tool, where they can find information that does not exist in other systems. Even in cases where they can find information in other systems, the NCTFC system is helpful in confirming the results they obtained from other sources. Therefore, the data suggests that the NCTFC is indeed a remedy to information sharing problems between law enforcement agencies. However, the system is not yet the perfect match for law enforcement agencies. Some users reported that the NCTFC system does not necessarily help them accomplish their tasks quickly. This finding indicate that the system provides useful information when users are trying to get information for intelligence or investigation purposes but the time spent on getting the results is not as short as expected. In other words, while the NCTFC system provides the users with what they are looking for, it requires the users to spend a considerable amount of time in doing that. Therefore, the system can be labeled as an effective but yet to be an efficient system.

Effort Expectancy of the System

New technologies generally face the barrier of resistance from users because people do not easily give up their every day activities and start learning and using new technologies. Considering that law enforcement agencies are among the organizations that have the most resistance in terms of a change in the organization, it was expected that users would find the NCTFC system difficult to use. Moreover, users were expected to provide negative comments on
learning the new system notwithstanding that they use it anyway. Surprisingly, this was not the case for NCTFC system. Nine out of 11 respondents stated that they find the NCTFC system easy to use. Furthermore, the same number of users agreed that it is easy to become skilful in using the NCTFC system. Although the survey data does not exactly compliment the interview data, it can still be stated that the effort expectancy aspect of the system is not problematic in the eyes of the users. The survey data suggests that only 33.3 % of the users found the system difficult to use. It was, however, difficult to distinguish whether those particular users find the system difficult to use for an average user or for a computer literate user. In many interviews, users stated that they are more computer literate than an average police officer; therefore, it may be the fact that they are referring to an average user when they indicated the system as difficult to use. Nevertheless, the system can still be accepted as an easy to use and easy to become skilful system based on the data obtained through interviews and the surveys.

Facilitating Conditions

Facilitating conditions related questions provided two findings that are very important in understanding the accessibility of the NCTFC system. First, all of the survey users and 74.9% of the interview users indicated that they have the necessary resources to access the NCTFC system. This finding indicates that law enforcement agencies include spending on technology out of their budget which indicates having the resources to access the NCTFC system. Secondly, users suggested that the NCTFC system works smoothly without having any issues. None of the interview respondents reported having a technical problem when using the NCTFC system recently. The minor problems reported by several users are those related to departmental policies, such as IT department not allowing users to download certain files. Therefore, it can be said that the NCTFC system is very successful in offering a problem free interface for its users.
Moreover, the users stated that there is a help function in the system interface in addition to the live help that they can get once they call the center. The comments received from interviewees suggest that the NCTFC system personnel are very friendly when it comes to providing assistance with the system.

Social Influences

Social influences related questions showed two different faces of law enforcement agencies. Although none of the agencies discourage using the NCTFC system, some of the agencies did not clearly suggest their personnel to use the NCTFC system. It is understood that some agencies are actively engaged in information sharing activities and believe in the importance of such systems by encouraging their personnel to use systems like the NCTFC. On the other hand, some agencies are just interested in the end results and do not necessarily focus on the means to achieve those ends. In other words, some agencies ask their personnel to accomplish tasks with any system they perceive useful without necessarily pointing out a particular system.

Similar results were obtained for significant others: people who influence the users’ behaviors. Users did not provide too many examples demonstrating that they are encouraged by their colleagues, other law enforcement personnel, or their supervisors. Most users argued that they use the system because they believe in the importance of the system. Therefore, this aspect of the social influences did not really produce significant impact on the users.

Implications for Theory

The UTAUT model proved to be a good fit for examining the perceptions of law enforcement officers about the NCTFC system. However, it is difficult to make concrete conclusions, particularly in terms of quantitative analysis due to the lack of sufficient sample size.
for this study. Nevertheless, the frequencies of the variables along with the qualitative data made it possible to at least offer an understanding of the study.

First of all, as explained in most user acceptance studies, performance expectancy was found to be the most important variable for this model. Looking at the literature presented in Chapter 2, it is clear that performance expectancy positively affects the intention of the users (Andersen et al., 2006; Im et al., 2007, Neufeld et al., 2007). The same affect was found in this study. The interviews suggest that the NCTFC users use the Fusion system mainly because of its affect on their performance. In other words, users believe that they can find relevant information for their investigations in the NCTFC system which would enable them to accomplish their tasks.

Effort expectancy variable also confirmed the teachings of the existing body of literature as being one of the most important factors in users’ use of the new systems. Most research studies found a significant relationship between effort expectancy and intention to use a system (AlAwadhi & Morris, 2008; Al-Gahtani et al., 2007). In particular, the interviews suggested that most users of the NCTFC system believe that the system is easy to use and easy to be skilful. On the other hand, some users argued that the use of the system is complex and requires formulating complex search queries thus leading them to use other systems such as TDEx.

Facilitating conditions and social influences related questions also drew similar results from the current research literature. Based on the literature, it can be concluded that social influences and facilitating conditions are not major factors in affecting the intentions of users. In other words, user acceptance studies reported mixed results for these variables. Some studies reported significant results for both facilitating conditions and social influences (Wang et al., 2009), some studies reported one variable significant and the other variable as not significant
(Marchewka et al, 2007), and some studies reported that none of these two variables suggest significant findings (Andersen et al., 2006). Based on the data, it can be said that facilitating conditions does not have an affect on the intentions of NCTFC system users as all of the users have the necessary resources to use the system, but do not necessarily use the system in the same way. On the other hand, social influences have somewhat affect on the intention to use the system.

Several modifications can be made to the theory so that it helps researchers understand research phenomenon better. One thing to note was the relationship between getting a raise and the use of the system. Responses from this study found that, using a system does not directly benefit a user in terms of getting a raise or a promotion. Therefore, several questions can be formulated to reflect the indirect gain by using the subject system. It is believed that many respondents would provide a positive answer if the model included an indirect link between getting a raise and using a particular system.

A second implication for the theory includes adding the geographical location as a determinant of system use. Observations during the interviews suggest that geographical location has an affect on the perceptions of users about the NCTFC system. Agencies that are geographically closer to the NCTFC perceive the Fusion system more useful compared to the agencies that are further in distance. Furthermore, agencies that are close in distance seek more direct assistance from the NCTFC compared to agencies with more distant locations. This observation suggests that geographical location might play an important role in determining user perceptions. It is suggest that this requires attention.
Implication for Practitioners

The results of the study have significant implications for the practitioners. The term practitioner is used to address both NCTFC system administrators and law enforcement personnel. The 9/11 events showed the importance of information sharing between law enforcement agencies as a necessary requirement in the fight against all criminal activities. Therefore, it is the responsibility of practitioners to do their best to create an environment where all law enforcement agencies actively take a role working in harmony. Considering that criminals do not discriminate against jurisdictions when it comes to committing crimes, the same should be done by law enforcement agencies and personnel; that is, they should not discriminate in sharing information with other agencies in preventing crimes, and apprehending criminals.

Having said that, the first thing law enforcement agencies should do is to encourage more of their personnel to actively engage with the NCTFC system. It was observed during visits to law enforcement agencies that most small scale law enforcement agencies are only concentrated in their surrounding cities and do not necessarily believe in the importance of large scale information sharing. Officers from at least five different small scale law enforcement agencies that were visited during the interview recruitment process confirmed this observation. It may be true to a point that law enforcement agencies mostly deal with criminals originating from their surrounding cities; however, large scale organized criminal groups operate in larger geographical areas and require the attention of all law enforcement agencies.

While it is important for law enforcement agencies to have the willingness to become a part of the NCTFC system, mainly it is the responsibility of the NCTFC system to make themselves known to the law enforcement community. Observations, again from the interview recruitment process, suggested that there are still many law enforcement agencies that are not
even aware of the accessibility of the Fusion system. Some law enforcement agencies in the North Central Texas region stated that they do not know the existence of the NCTFC system while some others demonstrated their lack of knowledge in accessing the system from their departments. While the survey interview recruitment process helped those agencies get acquainted with the system, it is the responsibility of the system to reach all law enforcement agencies and describe their operating procedures to those agencies. This can be done by electronic communication as well as offering formal visits to the center. By this way, the user base of the system can be improved substantially.

One recommendation can be made to NCTFC about the user interface of the system. As of now, the NCTFC system offers a Google like search capability where users type in several words or narratives to retrieve information. Many law enforcement personnel are used to creating search queries in a more structured fashion. Therefore, the interface of the system can be redesigned in a way to offer more structured searching capabilities to the system. In this manner, the time spent on doing the search queries can be shortened significantly thus creating an increase in the use of the system.

Finally, law enforcement agencies personnel should not hesitate contacting the NCTFC system when they are in need of assistance. It was evident from the interviews that some law enforcement agencies have never contacted the NCTFC system and are unaware of the assistance they can provide when it comes to research on crimes and criminals. Although the number of crime analysts working at the NCTFC may not be deemed sufficient, this was not evident from the interview transcripts. There were suggestions from some respondents that the number of analysts were low, however, those users failed to provide solid examples in which the NCTFC analysts were not able to provide the assistance they needed. Therefore, before making their
judgments, law enforcement personnel should contact the NCTFC when they are in need of assistance.

Information Technology and Police

In the discussion part, it is necessary to comment on the affects of information technology, if any, on the effectiveness of law enforcement agencies. Considering that the Fusion System is an information technology mechanism introduced to law enforcement agencies, it would be relevant to mention the affect of information technology on overall policing practices. Examining those affects can provide valuable input for police administrators who are planning to do investments on information technologies.

The body of literature on the affect of information technology on effective policing frequently reported positive relationships. However, some researchers argued that the effectiveness was due to increased level of skilled officers rather than the information technology alone (Garicano & Heaton, 2010). Garicano and Heaton state that many police agencies increased the criteria, such as requiring college credit hours, for policing so that new officers have the necessary skills to use the new information technologies (2010). Still, the increase in effectiveness can be attributed to the information technology, as it is the reason for increasing the skills of the police applicants. Notwithstanding the reasons for increasing effectiveness, these studies suggest law enforcement agencies do make use of information technology. Therefore, agencies should concentrate bringing in the positive affects of information technology by utilizing the NCTFC system.

Implications for Future Research

This research study offered an understanding of the NCTFC system by utilizing a mixed method methodology. The data included in this study was obtained through 40 surveys and 11
interviews. Although these numbers are low compared to most research studies, the difficulty in getting these many people to consent to a research study was actually a success for the researcher. Future researchers can obtain the list of all participating agencies by formally requesting the list of agencies from the NCTFC with the help of Open Public Records Act. This would help future researchers save a substantial amount of time trying to figure out the target population.

As this research study demonstrated the usefulness of the NCTFC system, future research can focus on how the system helps practitioners accomplish their tasks by conducting field observations with the Fusion system users. This method would provide a deeper understanding of all the details of the NCTFC system and act as a guide to the law enforcement community. Particularly, future researchers can find out the success stories associated with the system use to point out the effectiveness of the system.

Furthermore, future research can concentrate on the possibility of merging numerous data sharing systems, such as TDEx and Dallas Fusion center, with NCTFC or another organization so the law enforcement agencies in that region get the most out of those systems.

Finally, future researchers can conduct a research study with quantitative analysis using the structural equation modeling (SEM). SEM has been widely used by many researchers working with observed variables. SEM is particularly the most preferred method when conducting user acceptance studies. This is mainly due to the fact that the variables employed in user acceptance models are mostly observed variables. SEM allows researchers to conduct confirmatory analysis. Furthermore, SEM allows researchers to demonstrate the direct and indirect relationships between exogenous (independent) and endogenous (dependent) variables.
Having such explanatory power, SEM can be very useful in understanding the perceptions of users regarding their use of the new systems.

Limitations

The research study provides invaluable findings regarding the NCTFC system as well as Fusion systems overall. However, like most research studies, there are several limitations of this study. These are simply the sample size and the representativeness of the study.

The first and major limitation of the study is the relatively low sample size, particularly for the quantitative part of the study. Researchers who have worked with law enforcement agencies can easily attest to the difficulty of finding volunteers for participating in surveys and interviews. This research study is no different than most other research studies that faced the difficulty of finding volunteers to participate. Most law enforcement agencies have limited number of crime analysts in their agencies. Therefore, these analysts are occupied with high workloads and duties finding it very difficult to spare time for these types of academic studies. The researched used several means of promoting the survey among the users of the NCTFC system, such as having the director of the fusion center email all the users, using several crime analysts email groups for the awareness of the survey, and asking assistance from the chiefs of police of agencies that utilize the Fusion system. Notwithstanding all the efforts, the sample size remained relatively low, which according to a crime analyst who wanted to have this comment anonymous, is an indicator of how much law enforcement people value the Fusion system.

The second limitation of the study is the representativeness of the sample. This limitation has two aspects: first, the representativeness of the sample in terms of NCTFC system and second, the representativeness of the sample in terms of fusion systems overall. The first aspect has a problem since the sample size is relatively low and the sample does not reflect random
sampling. This occurred because the law enforcement agencies did not consent to having the NCTFC system to release the list of their users to researchers. Since the researcher was unable to obtain a list of all users, it was not possible to conduct random sampling. The second aspect of the study may have problems with the overall representativeness of the study in terms of fusion systems in the United States. Each Fusion system works differently, serves different types of people, and has different types of law enforcement culture. Therefore, these differences might create a problem for this study in terms of generalizability.
APPENDIX A

UNIVERSITY OF NORTH TEXAS IRB LETTER
October 27, 2009

Mehmet Odabasi  
College of Information Science  
University of North Texas  

RE: Human Subjects Application No. 09-388  

Dear Mehmet:

In accordance with 45 CFR Part 46 Section 46.101, your study titled “User acceptance of North Central Texas Fusion Center system by law enforcement officers” has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

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

No changes may be made to your study’s procedures or forms without prior written approval from the UNT IRB. Please contact Jordan Smith, Research Compliance Analyst, ext. 3940, if you wish to make any such changes. Any changes to your procedures or forms after 3 years will require completion of a new IRB application.

We wish you success with your study.

Sincerely,

[Redacted]

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

PK js  

CC: Dr. Jiangping Chen
APPENDIX B

CONSENT NOTICE FORM FOR INTERVIEW PARTICIPANTS
Dear Colleague:

You are being invited to participate in a research study which is designed to understand the perceptions of police officers about North Central Texas Fusion Center. This study is being conducted by Mehmet Odabasi, a doctoral candidate at the University of North Texas, whose background is in Criminal Justice and Information Science. You are selected as a possible participant as you are one of the users of the North Central Texas Fusion Center.

Participating in this research study is strictly voluntary. There are no known risks for your participation in this research study. The information collected may not directly benefit you. However, the information learned in this research study may be helpful to all users of North Central Texas Fusion Center. The information you provide will be useful to improve the benefits from the use of North Central Texas Fusion Center.

If you agree to participate in this research study, the researcher will interview you and ask 27 questions. The interview will take approximately 1 hour to complete. You do not have to answer any questions that make you uncomfortable. You may choose not to take part at all. If you decide to be in this study you may stop taking part at any time. If you decide not to be in this study or if you stop taking part at any time, you will not lose any benefits for which you may qualify.

The interview does not include any identifiable personal information. Therefore, you will not be asked to provide your name or any other personal information. The interview transcripts will be kept in a secure place for three years from the completion of the study. Any publication as a result of this research study will include only the results and will not divulge any personally identifiable information regarding the participants.
This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

You can also contact the researcher or the faculty at any time by the following contact information.

Researcher Name: Mehmet Odabasi

Faculty Name: Jiangping Chen
APPENDIX C

CONSENT NOTICE FOR SURVEY PARTICIPANTS
Dear Colleague:

You are being invited to participate in a research study which is designed to understand the perceptions of police officers about North Central Texas Fusion Center. This study is being conducted by Mehmet Odabasi, a doctoral candidate at the University of North Texas, whose background is in Criminal Justice and Information Science. You are selected as a possible participant as you are one of the users of the North Central Texas Fusion Center.

Participating in this research study is strictly voluntary. There are no known risks for your participation in this research study. The information collected may not directly benefit you. However, the information learned in this research study may be helpful to all users of North Central Texas Fusion Center. The information you provide will be useful to improve the benefits from the use of North Central Texas Fusion Center.

If you agree to participate in this research study, you will be asked to fill in the attached survey which consists of 27 questions. The survey will take approximately 15 minutes to complete. You do not have to answer any questions that make you uncomfortable. You may choose not to take part at all. If you decide to be in this study you may stop taking part at any time. If you decide not to be in this study or if you stop taking part at any time, you will not lose any benefits for which you may qualify.

The survey does not include any identifiable personal information. Therefore, you will not be asked to write your name or any other personal information. The surveys will be kept in a secure place for three years from the completion of the study. Any publication as a result of this research study will include only the results and will not divulge any personally identifiable information regarding the participants.
This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

You can also contact the researcher or the faculty at any time by the following contact information.

Researcher Name: Mehmet Odabasi

Faculty Name: Jiangping Chen
APPENDIX D

SURVEY ON NORTH CENTRAL TEXAS FUSION CENTER
PART A User Characteristics

GENDER: □ Male □ Female

AGE: _______ (Please indicate in years)

EDUCATION: Please check the highest level completed

□ High School □ Some college credits □ 2 year degree
□ 4-year degree □ Master’s Degree □ PhD

EXPERIENCE: Please indicate how many years you have worked in your current agency and how many years you have worked as a law enforcement officer separately.

YEARS IN CURRENT AGENCY: _______ (Please indicate in years)

YEARS AS LAW ENFORCEMENT: _______ (Please indicate in years)

TIME USING THE NORTH CENTRAL TEXAS FUSION CENTER: _______ (Please indicate in months)

ACTUAL USE OF NORTH CENTRAL TEXAS FUSION CENTER SYSTEM: Assuming that you have completed a webinar to use the North Central Texas Fusion Center and you were given a user account, please indicate which best describes your use of the system.

□ Yes. I have actually used the system.
□ No. I have a user account but I have not yet tried to use the system

AGENCY DIVISION: □ Patrol □ Investigations □ Narcotics □ Intelligence
□ Traffic □ Internal Affairs □ Other ____________________
PART B User Perceptions

Please read each statement below regarding the use of North Central Texas Fusion Center system. You will rate each statement by following a scale of 1 through 5. 1 is that you strongly disagree and 5 is that you strongly agree with the statement.

<table>
<thead>
<tr>
<th>BEHAVIORAL INTENTION TO USE THE SYSTEM</th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Neutral 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 I intend to use the NCTFC system in the next 3 months</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>12 I predict I will use the NCTFC system in the next 3 months.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>13 I plan to use the NCTFC system in the next 3 months.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERFORMANCE EXPECTANCY</th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Neutral 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE1 I would find the NCTFC system useful in my job</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>PE2 Using the NCTFC system enables me to accomplish tasks more quickly</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>PE3 Using the NCTFC system increases my productivity.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>PE4 If I use the NCTFC system, I will increase my chances of getting a raise</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EFFORT EXPECTANCY</th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Neutral 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE1 My interaction with the NCTFC system will be clear and understandable</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>EE2 It would be easy for me to become skillful at using the NCTFC system.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>EE3 I will find the NCTFC system easy to use.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>EE4 Learning to operate the NCTFC system is easy for me.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
</tbody>
</table>
### FACILITATING CONDITIONS

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC1</td>
<td>I have the resources necessary to use the system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>FC2</td>
<td>I have the knowledge necessary to use the system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>FC3</td>
<td>The system is not compatible with other systems I use.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>FC4</td>
<td>A specific person (or group) is available for assistance with system difficulties.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### SOCIAL INFLUENCES

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>People who influence my behavior think that I should use the NCTFC system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>S2</td>
<td>People who are important to me think that I should use the NCTFC system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>S3</td>
<td>The senior management of this business has been helpful in the use of the NCTFC system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>S4</td>
<td>In general, the organization has supported the use of the NCTFC system.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

You have completed the survey. Thank you for your time.

Please return the completed survey in the postage-paid envelope.
APPENDIX E

INTERVIEW GUIDE
Before starting the interview, I would like to verify that you have read the consent notice which details this research study.

1. User characteristics: I would like to start with your demographic information. Referring to the user characteristics in the interview guide, would you please provide your demographic information?

☐ Age:

☐ Education:

☐ Experience in agency

☐ Experience in law enforcement

☐ Time using the Fusion system in months

☐ Have you ever actually used the system?

☐ Agency division

2. User Perceptions: I will ask three questions regarding your intention to use the Fusion system. Would you please tell me if you intend, plan, or predict to use the Fusion system in the next 3 months?

3. Performance Expectancy: The next questions are about the performance expectancy aspect of the Fusion system. Do you find NCTFC system useful for your job? Does the use of NCTFC system enable you to accomplish your tasks more quickly? Does the use of NCTFC system increase your productivity? Do you think you might increase your chances of getting a raise by using the NCTFC system?
4. **Effort Expectancy:** The next questions will address effort expectancy aspect of Fusion system. Do you think it is easy to be skillful in using the NCTFC system? Do you think it is easy to use the NCTFC system?

5. **Facilitating Conditions:** The next questions are about facilitating conditions. Do you personally have the resources to use the system? Do your patrol cars have laptops connected to Internet that can use the system? And my second question is: If you experience a problem, is there any specific person available in the Fusion system in terms of system difficulties?

6. **Social Influences:** Finally, I have questions about social influences. First, does your organization support or suggest using the Fusion system? Do other people, like your colleagues, other crime analysts encourage using the Fusion system?

7. Other than all the questions asked, is there anything else that you want to mention about the Fusion system?
APPENDIX F

PERMISSION TO USE THE SURVEY
Email sent to Dr. Viswanath Venkatesh, asking permission to use the survey instrument:

From: MehmetOdabasi

Sent: Thursday, May 07, 2009 10:33 AM

To: vvenkatesh@vvenkatesh.us

Subject: survey instrument

Dear Dr. Viswanath Venkatesh,

I am a PhD student at the College of Information, University of North Texas. For my dissertation, I am planning to use the Unified theory of acceptance and the use of technology in order to understand the user perceptions of North Central Texas Fusion Center. Therefore, I intend to use the survey instrument that you and your colleagues developed for your 2003 study with minimal changes: Venkatesh, V., Morris, M.G., Davis, F.D., and Davis, G.B. "User Acceptance of Information Technology: Toward a Unified View," MIS Quarterly (27:3), 2003, 425-478

I would appreciate if you provide me permission to use this survey instrument.

Thank you

Mehmet Odabasi

Phd Student

College of Information

Library and Information Science Interdisciplinary Program

University of North Texas
Email received from Dr. Viswanath Venkatesh to use the survey instrument:

From: Viswanath Venkatesh [vvenkatesh@vvenkatesh.us]

Sent: Friday, May 08, 2009 11:05 AM

To: MehmetOdabasi

Cc: Xiao Jun Zhang

Subject: RE: survey instrument

You have my permission to use the instrument with the appropriate cites in all works. You may also find other useful papers at:

http://vvenkatesh.com/Downloads/Papers/fulltext/downloadpapers.htm

--vv

Sincerely,

Viswanath Venkatesh

Professor and George and Boyce Billingsley Chair in Information Systems

Walton College of Business

University of Arkansas

Fayetteville, AR 72701

Phone: 479-575-3869; Fax: 479-575-3689

Email: vvenkatesh@vvenkatesh.us; Website: http://vvenkatesh.com
APPENDIX G

PERMISSION TO USE FIGURES
Email sent to Dr. David Carter asking permission to use figures from his publication:

**From:** mehmet odabasi <mehmetodabasi73@yahoo.com>

**Date:** Wed, 30 Jun 2010 18:53:09 -0700 (PDT)

**To:** <carterd@msu.edu>

**Subject:** Permission to use materials for my dissertation

Dear Dr. Carter

I am a PhD student at University of North Texas and I am writing a dissertation about Fusion systems. In my literature review, I am planning to use some of the images from the Law Enforcement Intelligence Guide that you prepared in 2004. Of course, I will be citing the source but I just wanted to make sure that you also permit me using some of the images in that guide.

Thank You in advance

Mehmet Odabasi

College of Information-UNT

Email received from Dr. David Carter

From: "davidecarter.msu@gmail.com" <davidecarter.msu@gmail.com>

To: mehmet odabasi <mehmetodabasi73@yahoo.com>

Sent: Wed, June 30, 2010 9:31:38 PM

Subject: Re: Permission to use materials for my dissertation

Mehmet -

Yes, you may use the materials with attribution.

There is a second edition of the Intelligence Guide which has far more information on fusion centers.. Go to http://intellprogram.msu.edu - you'll see a link in the lower left corner of the page
to download the new edition. There is also a toll free number to order a hard copy at no charge.

You might also be interested in a dissertation on fusion centers by Rene Graphia from Rutgers University completed earlier this year.

Best of luck.
REFERENCES


November 15, 2005 from the George Washington University website:
http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB46/

matters.com/archive/contents/church/ contents_church_reports_rockcomm.htm


http://www.ccsr.cse.dmu.ac.uk/ resources/ general/ ethicol/ Ecv14no4.html

Brooks/Cole Pub Co.

examination of Florida's FINDER system (Ph.D. dissertation). Retrieved May 14, 2009,
from Dissertations & Theses: A&I database. (Publication No. AAT 3242470).

MA: Allyn & Bacon.


Education for Information, 22(2), 63-75. Retrieved from Academic Search Complete
database.

learnmore.html

The Defense Intelligence Agency (2005). Retrieved August 02, 2006 from the United States
Intelligence Community website: http://www.intelligence.gov/1-members_dia.shtml

from the United States Intelligence Community website: http://www.intelligence.gov/1-
members_nima.shtml

The recording and dissemination of intelligence material (n. d.) Retrieved November 15, 2005
from http://www.bichardinquiry.org.uk.edgesuite.net/
10663/full_evidence/0089/00890042.pdf

Thomas, P. (2008) Information systems success and technology acceptance within a government
@ University of North Texas. (Publication No. AAT 3352145).


technology: toward a unified view. MIS Quarterly, 27(3), 425-478. Retrieved Tuesday,
March 27, 2007 from the Academic Search Premier database.

January 7, 2009, from Justice Research and Statistics Association Web site:


Zaworski, M. J. (2004). Assessing an automated, information-sharing technology in the post "9-11" era: Do local law enforcement officers think it meets their needs? (Ph.D.
(Publication No. AAT 3130424).