

T.C.

OKAN UNIVERSITY

INSTITUTE OF SOCIAL SCIENCE

**AWARENESS OF FORENSIC ACCOUNTING
SERVICES IN TURKEY AND COMPARISON
WITH USA**

MOHAMED ISSA M ISSA

DOCTORAL DISSERTATION

**DEPARTMENT OF BUSINESS
ADMINISTRATION**

PhD OF BUSINESS ADMINISTRATION

SUPERVISOR

ASST. PROF. DR. ALİ ALTUĞ B İÇER

ISTANBUL, OCTOBER 2017

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DATE: 10.10.2017

SUPERVISOR:

Asst. Prof. Dr. Ali Altuğ Biçer Istanbul Commerce University

Jury Members:

Asst. Prof. Dr. Bülent Günceler Okan University

Assoc. Prof. Dr. Figen Yildirim Istanbul Commerce University

Assoc. Prof. Dr. Hakan Taştan Okan University

Assoc. Prof. Dr. Murat Azaltun Okan University

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Mohamed Issa

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List of Abbreviations

AAT:	Association of Accounting Technicians
AICPA:	American Institute of Certified Public Accountants
ACFE:	Association of Certified Fraud Examiners
CAAT:	Computer Assisted Audit Techniques
CAQ:	The Center for Audit Quality
CFA:	Certified Fraud Accountant
CFE:	Certified Fraud Examiners
CFF:	Certified in Financial Forensics
CG:	Corporate Governance
CPA:	Certified Public Accountant
FA:	Forensic Accounting
FBI:	Federal Bureau of Investigation
GAAP:	Generally Accepted Accounting Principles
GAAS:	Generally Accepted Auditing Standards
GAS:	Governmental Accounting Standards
IFAC:	International Federation of Accountants
IFRS:	International Financial Reporting Standards
ISA:	International Standard on Auditing
ISMMMO:	İstanbul Serbest Muhasebeci Mali Müşavirler Odası (Istanbul Chamber of Certified Public Accountants)
NACFE:	National Association of Certified Fraud Examiners
SAS:	Statements of Auditing Standards
SPSS:	Statistical Package for Social Science
RSF:	Relative Size Factor
TÜRMOB:	Yeminli Mali Müşavirler Odaları Birliği (Turkey Association of Certified Public Accountants and Chartered Accountants)
USİUD:	Uluslararası Suistimal İnceleme Uzmanları Derneği (Association of International Abuse Review Experts)
PCAOB:	Public Company Accounting Oversight Board

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Abstract

In the latest development in the business, that led to create new financial matters. These matters in the field need a profession to take care of them, such as forensic accounting profession.

The aim of this study is to examine the level of awareness of forensic accounting services in Turkey and to compare the profession in Turkey with USA. Specific objectives were (i) to measure the awareness of the education path of a forensic accountant, (ii) to measure the awareness of the expected benefits of a forensic accountant, (iii) to measure the awareness of traits and characteristics of a forensic accountant, (iv) to measure the awareness of core skills of a forensic accountant. The questionnaire served as the survey instruments to collect the data. These data were collected from four sets of populations, CPA trainees, Sworn in CPAs, CPAs and graduate students. Finally, this study concluded that the level of awareness of forensic accounting services in Turkey was high but the application of forensic accounting in Turkey is still very weak and the services were not clearly specified in Turkish law to the profession of forensic accounting.

Key words: forensic accounting; fraud; financial issue; auditing; accounting; witness expert; deterrence; regulatory examination.

Özet

Günümüzde iş hayatında yaşanan en son gelişmeler yeni finansal sorunlara yol açmıştır. Bu sorunlarla başedilebilmesi için adli muhasebe uzmanlığı gibi bir mesleğe olan ihtiyaç ortaya çıkmıştır.

Bu çalışmada Türkiye’de adli muhasebe hizmetlerine olan ihtiyaç konusundaki farkındalığın incelenmesi ve bu mesleğin Türkiye ve ABD uygulamalarının karşılaştırılması olarak incelenmesi amaçlanmıştır. Çalışmada özellikle adli muhasebe uzmanlarının; (i) kendi alanındaki eğitim ihtiyacına olan farkındalığının ölçülmesi, (ii) kendi alanında ileriye dönük olarak elde edeceği faydalar konusundaki beklentilerinin belirlenmesi, (iii) kendi mesleki ve kişisel özellikleri konularındaki farkındalıklarının ölçülmesi, (iv) mesleğini yapabilmesi için gerekli olan temel donanım ve yetenekler konusundaki farkındalıklarının belirlenmesi konuları üzerinde durulmuştur. Çalışmada kullanılan bilgiler, SMMM stajyerleri, SMMM’ler, YMM’ler ile ilgili üniversitelerden mezun olanlardan oluşan dört ana gruptan anket yöntemi kullanılarak toplanmıştır. Sonuç olarak, Türkiye’de adli muhasebe hizmetlerine olan ihtiyaç konusundaki farkındalığın yüksek seviyede olduğu, ancak halihazırda adli muhasebe uygulamalarının yetersiz kaldığı ve adli muhasebecilik mesleğinin ne şekilde yapılacağı konusunun Türk hukukunda henüz yeterli açıklık ve netlikte düzenlenmediği tespitlerine ulaşılmıştır.

Anahtar kelimeler: adli muhasebe; hile; finansal sorun; denetim; muhasebe; bilirkişi; caydırıcılık; yasal denetim.



Chapter One

Introduction

1.1 Introduction

Forensic accounting is collecting and analysis of data to rebuild, detect, or support a claim of a financial issue. Forensic accounting includes of litigation support and investigative accounting techniques. Litigation support provides assist of all kinds of existing or pending litigation. Moreover, litigation support deals mostly with issues related with quantitative economic damages, while investigative accounting deals with the investigation of criminal matters. The main steps in forensic analytics are (i) data collection, (ii) data preparation, (iii) data analysis, and (iv) reporting, therefore, investigating corporate fraud cases is one of the highest priorities of forensic accountants (Nigrini, 2011).

Recently, forensic accounting becomes more important to control the practices, and responsibilities. In addition, it looks for the wrong doings and making strict control on that place to prevent happening of such events.

Forensic accounting is widely acknowledged as a major solution for investigation about fraud case. Forensic accounting is necessary for every firm, because it provides a safeguard the property that ensures that the firm is running in the right direction and running well. (Renzhou, 2011)

It is universally considered that forensic accounting goal is to give the expert accounting evidences, through investigations or identification. After the examination, the evidence of expert is collected as referee evidence in the courtroom. To determine whether the fraudulent action is happened or not. Expert advice is an important litigation support. Forensic accounting is similar to the term, lawsuit accounting.

A forensic accountant can be hired in matrimonial litigation as expert. In many divorce cases, a forensic accountant is hired to help for locating and bringing to light hidden assets to make a fair share of the divorce settlement. A good forensic accountant should have a broad background in both general and forensic accounting, and in criminal law and family law. Nowadays, experts on forensic accounting are very important for lawyers and court, because they provide them with evidences about different financial cases.

Historically in Turkey, forensic accounting education has not been applied yet. There is no provided programs for forensic accounting but there were a few courses. That would make Turkey ready for the application of the profession. It supposes to be a profession and trained in Turkey.

However, Turkey issued a criminal law No 5237 (2004), this law provides the definition of the basic principles for criminal responsibility and types of crimes, punishments and security precautions. Moreover, a law on mediation in civil disputes No 6325 (2012) was made to regulate the principles and procedures applicable in resolving civil disputes by mediation. Both of which are made in the matter of business fraudulent and forensic accounting, also to make a step forward in this field. In USA, there is a standard about forensic accounting services, it provides information about definitions, responsibilities and professional matters.

1.2 Literature Review

1.2.1 Forensic Accounting

Forensic accounting is generally known as the science of gathering and presenting financial information about a financial issue in the court against perpetrators of economic crimes (Renzhou, 2011).

Many analysts, academicians and experts have debated the necessity and level of influence of the thought of forensic accounting in many parts of financial, legal and social efforts. The debate also went to features of the benefit of forensic accounting for individuals, institutions and societies in the developed and developing countries.

The Association of Certified Fraud Examiners (ACFE) (2012) refers to this definition of forensic accounting as “fraud examination”. Yet, the terms of the fraud examination (fraud auditing) is a subset of forensic accounting.

In 2008, DiGabriele said that forensic accountants should have diverse combinations of skills and knowledge in the field of accounting, auditing, law, and investigation techniques.

i. The Necessity of a Forensic Accountant

The necessity of forensic accounting has increased based on the reasons below (Akyel, 2012, 79):

1. Individuals and institutions litigations have gradually increased as a result of more complex commercial transactions.

2. The relationship between individuals and institutions started to cause problems.
3. Fraud detection and prevention have become harder.
4. Management failure increases gradually.
5. Lawyers and courts need expert reviews more than ever.

ii. Type of Forensic Accounting

Forensic Accounting has three major aspects (Akyel, 2012, 81-83):

1. **Litigation Support Consulting:** It is described as professional or accounting support for case. The below points describes it,
 - To collect necessary documents to support or refute case.
 - To revise the related documents to make examination of case and the statements.
 - To report the strong and weak points
2. **Fraud Examination (Investigative Accounting):** A typical investigative accounting assignment would be an investigation of employee theft. The different types of complex fraud due to the technology and complicated business transactions, therefore it seems impossible for a non-expert to detect and prevent them. They can be solved by experts and have occupational knowledge on the subject.

3. Expert Witness: an expert witness is a specialist who has special knowledge, skills, training or experience to provide testimony about financial matters that exceeded the knowledge of ordinary people.

1.2.2 Profession

A profession means conducting and fulfilling the rightful responsibilities in an ethical manner in every case and in every time (Huber, 2012). “Often, “profession” is simply used to refer to the work that an individual does for a living” (Shivers, 2004, 250). In addition, the social, economic, and political forces contribute to create and institute accounting profession. However, these are the fundamental principles for a profession (AAT Council, 2014, 9; IFAC, 2014):

1. Integrity: it means that a professional should be straightforward and honest in all steps of his/her business relationships.
2. Objectivity: it means that a professional does not have bias toward any one or firm and he/she does not have a conflict of interest. In addition, there is no an influence affect his/her professional judgments.
3. Professional competence and due care: it means that a professional has to reinforce his/her knowledge and skills to assure to the client or employer the provided services. A professional should work hardly according to the technical and professional standards or laws when providing professional services.
4. Confidentiality: it means that a professional must respect the confidentiality of a client or employer and do not discloses any information to third parties without

permission from a client or employer. Confidential information must not be used for the personal advantage.

5. Adopt professional behavior: it means that a professional should obey the relevant laws and regulations. Also, he/she avoids any action that affects his/her profession.

1.3 Practical Studies

DiGabriele (2008) studied the implementation of the Statement on Auditing Standards No. 99 (SAS 99) and the possibility for adding forensic accounting skills to the auditing process. The survey was conducted a random sample of accounting academics, forensic accounting practitioners and auditors. The survey resulted that all three groups were agree with the survey statements and whatever differences were found fell within the range of agreement.

Yücel (2011) studied potential and development of forensic accounting in Turkey. Also, the author analyzed and assessed the present situation of forensic accounting in Turkey and suggestions for development of profession. The study concluded that the present audit system infrastructure required for forensic accounting and education system is insufficient to educate forensic accountants.

Elitaş (2012) examined the necessity of accounting profession and legal basis of the forensic accounting subjects in Turkey. The study evaluated intuitively how forensic accounting would be in the framework of selected samples. The samples of the study were Utica College and West Virginia University. It was tried to show the material of forensic accounting education, then suggestion was made for Turkey. The study resulted

that there are no forensic accounting courses in the universities in Turkey, also this is a drawback for development of forensic accounting education and profession.

Akyel (2012) analyzed the forensic accounting to propose a training model fit with Turkey environment. This study used USA and Canada system for forensic accounting and evaluated the subject from the perspective of Turkey. It concluded that forensic accounting must be initiated by TURMOB and it would be an asset for Turkey to start a necessary rehabilitation in the education system.

Kurt (2013) made his study to introduce the difference between fraud and error in Turkey based on commercial code 6102. Also, it was studied the scope and development of forensic accounting in Turkey. Thus, it concluded that the Turkish Commercial Code No. 6102 mentioned the independent auditor and the auditor can function such as forensic accountants.

Enofe and others (2013) examined the effect of forensic accounting on fraud detection in Nigerian firms. Also the study aimed to determine the relationship between fraud detection and forensic accounting. However, the data were collected from a prepared questionnaire in three sections. The questionnaire was distributed in fifteen firms in Benin City Edo State. The collected data from questionnaire were analyzed by using descriptive statistics, regression and Chi-square. Finally, the study resulted that the application of forensic accounting services on firms has affected the level of fraudulent activities.

Salleh and Ab Aziz in 2014 made an empirical study and the main objective of it is to investigate the perception of professionals in Malaysia. This study focused on

forensic accounting services about the essential skills, traits, basic and ethical values of public sector forensic accountants. A questionnaire was distributed over the users of forensic services such as auditors and academicians. Thus, the study resulted that there was promotion for ethical practices for forensic accountants in the public sector for anti-corruption and anti-fraud programmers.

1.4 Research Rationales and Motivations

Forensic accounting has gained a great deal of attention across the world, empirically and academically. Also, the attention has increased to the services that forensic accountants provide in the benefit of fair economy. However, this study will focus on forensic accounting services in Turkey and comparing it with USA.

This study is a discovering study about the knowledge of forensic accounting services in Turkey and a comparative study between systems in Turkey and USA about enforcing a code of ethics and the motive for profits, because the system in USA for forensic accounting as profession is the best and the preferable until now.

The previous studies in Turkey have uncovered significant factors about the forensic accounting services that make it as profession. Therefore, the purpose of this study is trying to answer the question, are CPA trainees, Sworn in CPAs, CPAs and graduate students aware of forensic accounting services in Turkey?

1.5 Importance of the Research

The application of forensic accounting is a crucial requirement to direct, control and establishes stability of the public and private sectors. When the level of disclosure

and transparency increase, then investors and other interested parties think that there was justice in the financial statements. Therefore, the investors have called for way to make sure that all information in the financial statements are right and do not have fraudulent information.

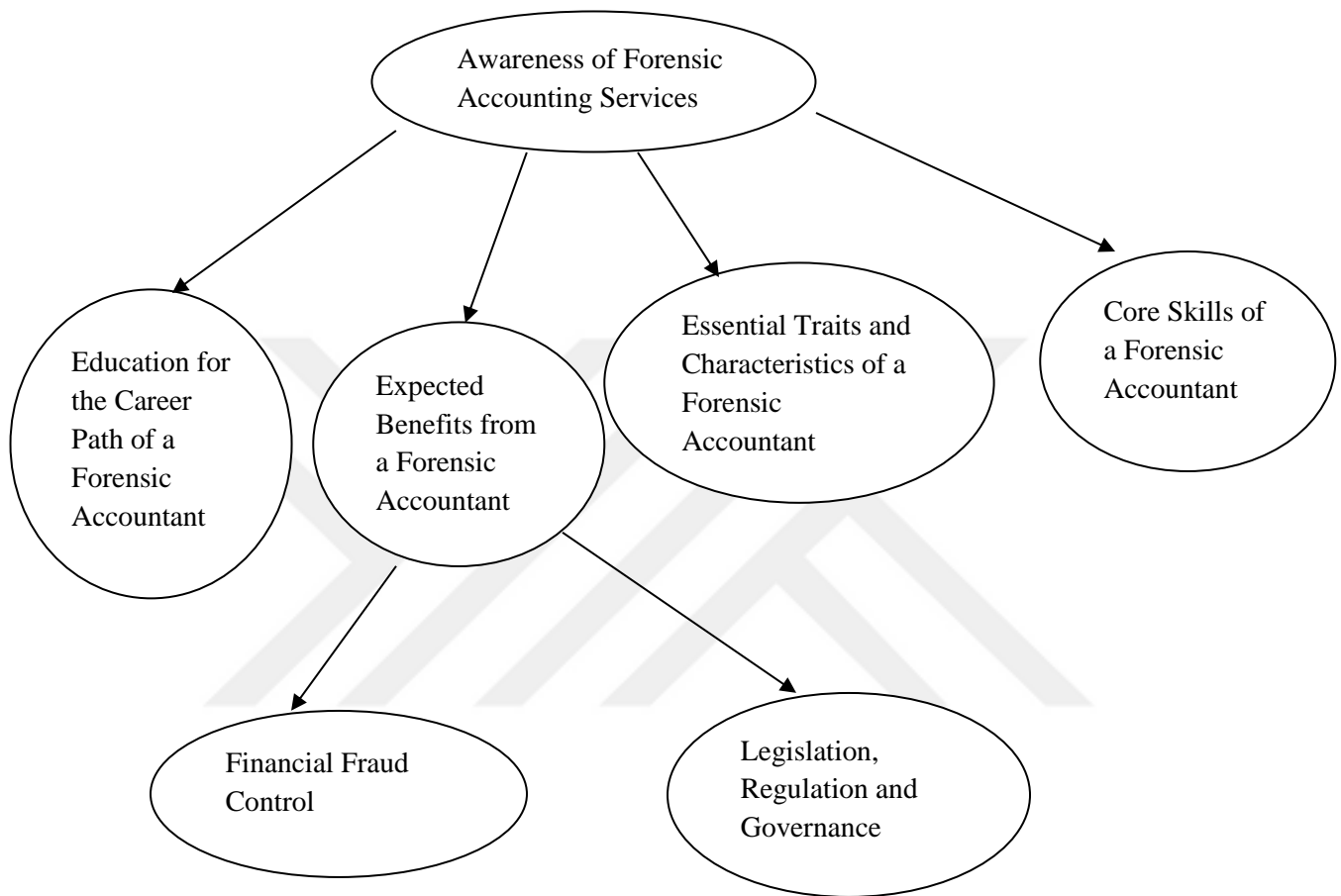
Studying the services associated with a profession of forensic accounting will help to identify feature of forensic accounting as a profession in Turkey. Therefore, it is expected that this study will contribute to the knowledge with several issues regarding the current situation of forensic accounting.

1.6 Research Methodology

To reach the objective of this study, it was designed a questionnaire in a certain way to serve the purpose of the study. The data was collected from CPA trainees, Sworn in CPAs, CPAs and graduate students in Istanbul. This study used judgmental sampling*, because the CPAs' office was selected in Istanbul (Istanbul has the biggest number of professions in Turkey). For analysis purpose, it was used descriptive statistic, T test, F test and two way ANOVA to determine whether there was a significant knowledge associated with these variables.

However, the analysis seeks to cover all aspects of forensic accounting services and how they are understood in Turkey. Thus, these are the dimensions of the study:

* Judgmental sampling is a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment.



1.7 Hypotheses Formulation

To achieve our primary objective, the following four propositional hypotheses are formulated and statements made:

H₀: Survey participants are aware of the forensic accounting services.

H₁: Survey participants are not aware of the forensic accounting services.

H1a: Survey participants are not aware of the education path of a forensic accountant in Turkey.

H1b: Survey participants are not aware of the expected benefits of a forensic accountant in Turkey.

H1b1 Survey participants are not aware of the financial fraud control of a forensic accountant in Turkey.

H1b2 Survey participants are not aware of the Legislation, Regulation and Governance of a forensic accountant in Turkey.

H1c: Survey participants are not aware of traits and characteristics of a forensic accountant in Turkey.

H1d: Survey participants are not aware of core skills of a forensic accountant in Turkey.

1.8 Proposed Structure of Research

Chapter 1: Introduction

Chapter 2: Literature Review

Part I: Forensic Accounting

Part II: Accounting

Part III: Auditing

Part IV: Profession

Chapter 3: Study design and Methodology

Chapter 4: Integrated Findings and Discussion (Analyzing the data)

Chapter 5: Conclusion and Recommendations.





Chapter Two

Part I: Forensic Accounting

Part II: Accounting

Part III: Auditing

Part IV: Profession

Forensic Accounting has a connection with many fields such as investigation, law, auditing and accounting. Forensic Accountant utilizes an understanding of business information, financial reporting systems, accounting and auditing standards, evidence gathering, investigation techniques and litigation procedures to fulfill their specialized role.

2.1 Forensic Accounting

Forensic accounting is perceived to have evolved in financial issues that are unknown by business or non-business people. There are many scandals that have rocked many firms in the world and there are many conflicts related to financial cases which they have brought the field of forensic accounting to the front line. The increasing sophistication of financial issues and financial fraud requires that forensic accounting must be one of the necessary tool that would be used to bring the successful investigation and report about financial issues.

2.1.1 The Definition of Forensic Accounting

Forensic accounting is one of the oldest careers that had a history in the ancient Egypt. However, the most known cases that had been checked by forensic accountants was in the middle of 20th century in World War II and it proved its worth (Ozkul and Pamukcu, 2012). The term 'forensic accounting' was officially made on 1946 by Maurice E. Peloubet (Rasey, 2009). Forensic accounting became an important field in the last few decades after the increase in complexities in financial markets, tax system and globalization.

Recently, forensic accounting has become popular in the field of accounting after reports on frauds that has caused of crashing many economies. There are many corporate financial statement frauds in multinational firms such as Enron and WorldCom or huge Ponzi schemes such as the Madoff scam that set a new record for losses associated with a fraud (Singleton and Singleton, 2006). In addition, forensic accounting provides reports and solution about financial cases.

The increase of financial scandals at the end of the twentieth century in developed countries was associated with increased fraud incidence and awareness; thereby forensic accounting was initially introduced in these countries such as the USA, UK, and European countries. However, forensic accountants were used by the government agencies (such as, FBI, CIA, etc.) to discover and investigate frauds. After that, they became financial detectives and were independent experts (Manning, 2011). Moreover, they were employed by management or owners to discover fraudulent financial statements and embezzled assets, to combat frauds effectively and solve other financial issues in any case such as divorce case or inheritance. The forensic accountant needs the active support of government at every stage from authorization until reporting about the case.

According to Popoola, Ahmad and Samsudin (2015) "*forensic accounting is the application of accounting, information technology, investigative and analytical skills for the purpose of resolving financial issues in a manner that meets the standards required by courts of law or public debate*".

The science of accounting has many special areas and one of these areas is forensic accounting. Forensic accounting contains of two areas, accounting and law together made what is called certified forensic accountants (CFA) (Golden, Skalak, and Clayton, 2006). The CFA must be part accountant and part detective in financial issues to find the details and any complex financial information (Manning, 2011).

Moreover, forensic information or forensic document means all of the information or documents that can be used in court of law or public discussions. To understand the forensic accounting investigator's role in deterring, detecting and investigating financial issues as distinct from the CPA's role as a financial statement examiner, we have to understand what services comprise. However, there are three major aspects within forensic accounting services: (1) Litigation support services that are known of CFE role as an expert or consultant in fraud cases to detect and investigate these cases, (2) investigative services which used to discover the fact and (3) expert witness which a forensic accountant provides testimony about a matter that he/she has a special knowledge about it.

a. Litigation Support Service

It provides assistance in a matter involving litigation. Litigation support is the most important reason to hire a forensic accountant to provide consultation and advice to attorneys in financial case. Forensic accountants are engaged in legal action where financial information requires critical analysis by using their skills in the field (Okoye and Ndidika, 2009). Moreover, the forensic accountant provides support to legal advice

in the form of analysis with relevant documentation into the allegation about the financial dispute.

However, forensic accountants ought to be hired from outside the business. Thus, they can be neutral and to provide objective analysis of firms' financial data. The forensic accountant does not win or lose the case but seek the truth by using their skills and report the results in unbiased way and objective manner (Okoye and Ndidika, 2009).

b. Investigative Service

Forensic accounting involves skills that are from law and different field in business such as accounting, auditing, finance and quantitative methods (Popoola, Ahmad and Samsudin, 2015). A forensic accountant has to have skills in collecting, analyzing, evaluating and interpreting findings. In addition, a forensic accountant must be opened to examine all alternatives and test the fine details. *“Investigative service is the act of determining whether criminal matters such as employee theft, securities fraud (including falsification of financial statements), identity theft and insurance fraud have occurred”* (Zare, 2013, 2). Moreover, forensic accountant may recommend steps that can be taken to lower future risk of loss. Investigation may also occur in civil matters; such as divorce cases.

There are more skills that are important for forensic accountant to be effective in the profession such as, to respond quickly and to provide the financial information clearly and concisely in a courtroom for non-business people.

c. Expert Witness

An expert witness is a specialist who has special knowledge, skills, training and experience in specific field which he can be used to provide testimony about matters that exceed the common knowledge of ordinary people (Akyel, 2012). A good forensic accountant should have a broad background in both general and forensic accounting, and in criminal law and family law.

Forensic accountants can determine the damages and losses in numbers to the court. Also, forensic accounting professional can assist in resolving disputes, even before taking it to the court. If a dispute gets in the courtroom, then a forensic accountant may testify as an expert witness. Expert witnessing helps to prepare analysis to approve or disprove the testimony in the investigation (Akyel, 2012).

An effective forensic accountant (expert witness) can have a significant impact on showing the fact. Complexities in the business arise the need of an expert who is able to successfully defend and explain the work (Akyel, 2012). Forensic accountants generally have the skills that made them capable to undertake and perform the quantitative analysis necessary to develop evidence required in complex commercial disputes.

An accountant acting in the role of expert witness must be independent to be a credible witness. Also, AICPA Code of Professional Conduct defines Independence in the following points (AICPA, 2016):

1. Independence of mind - the state of mind that permits for not having being affected by influences that affect a forensic accountant professional judgment; and

2. Independence in appearance - a forensic accountant should avoid any kind of facts and circumstances that informed third party who has knowledge about system in the firm. That would reasonably affect the professional skepticism.

Expert witness has a different situation from ordinary witnesses. The evidence that are provided by an expert differs from the ones that are provided by an ordinary witness. An expert witness testifies the evidence and he/she is permitted to express his/her opinion in the court room, due to his qualifications and experience. Thus, his/her interpretation of the facts is important to explain and justify his/her view about the case, but ordinary witness provides his/her words about a case that he/she knows without testifying any evidence.

2.1.2 Techniques of Forensic Accounting

The mechanisms of forensic accounting include mainly the conventional accounting and auditing tools such as ratios, cash flow mechanism, and standard statistical tools. Currently, the forensic accountant has technology to obtain, sort and analysis big amount of data. Some of the mechanisms involved in forensic accounting to examine the financial issues. Also, these mechanisms with other accounting and auditing techniques are used in the financial cases. Some cases do not have any kind of fraudulent action, therefore, it is used traditional accounting techniques or auditing techniques or other kind of techniques to get a conclusion about the financial issues. However, these mechanisms are well known in the field of forensic accounting as they are mentioned in these books; Gara, 2004, Coderre, 2009; Mantone, 2013; ACFE, 2007. These mechanisms are illustrated below:

2.1.2.1 Benford's Law

The Benford's Law technique has been used in detecting accounting fraud since 1938 after its innovation. *“Benford's Law is named for Frank Benford, a General Electric scientist whose paper was the first modern article about it”* (Pike, 2008, 11).

However, Benford's Law was originally applied to the first-digit. However, each integer from 1 to 9 has its distribution in a large data set. Benford's law shows that the digit 1 has approximately 30 percent of the time in the data set and other digits have less frequency, the number 9 occurs around 5 percent of the times. In table 2.1 shows the Benford's empirical results of collected data from different sources to include various types of data sets. *“Benford analyzed either the entire population or, in the case of large data sets, he worked to the point where he felt that he had a fair average”* (Nigrini, 2012, 3).

However, Benford's Law provides a new way to investigate and assess the analogy and quality of natural data sets. This type of analysis enables one to observe any kind of variations in large data sets with sufficient dynamic range. Also, Benford's Law appears for analysis and detection when the data is generated from statistical mixtures or normal transactions.

Benford's Law would not be applied for data that is generated according to a simple random process. Moreover, it does not have any predictive power, and does not tell everything about the future. It is a tool for detection, more than prediction about what is going to happen after any error or change.

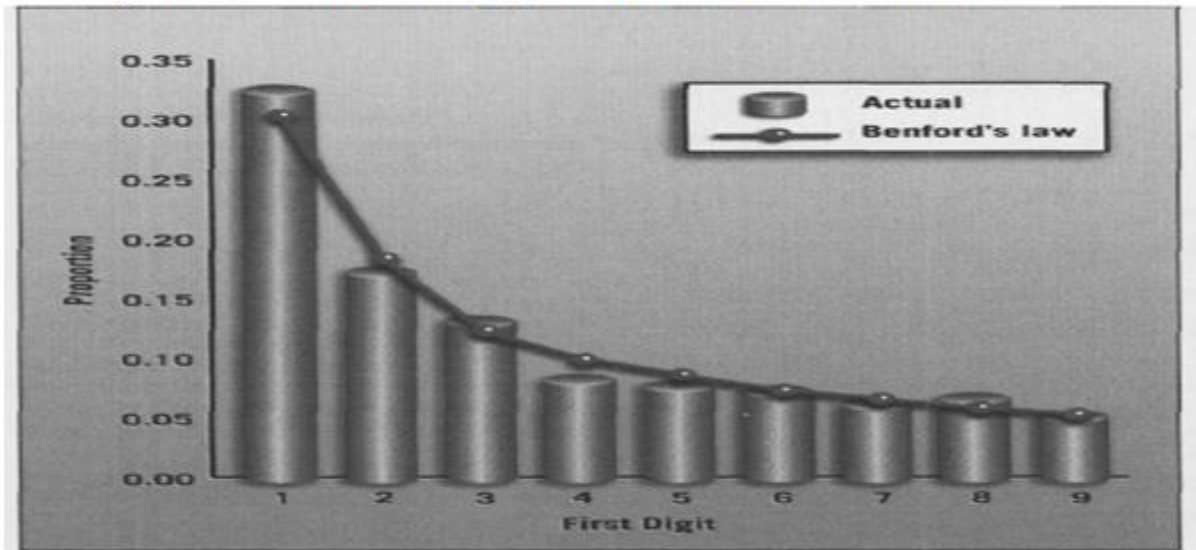
TABLE 2.1 Benford’s 1938 Analysis with the Descriptions, the Number of Records, and the Results of the Analysis

Group	Description	Count	First Digit								
			1	2	3	4	5	6	7	8	9
A	Rivers, Area	335	31.0	16.4	10.7	11.3	7.2	8.6	5.5	4.2	5.1
B	Population	3,259	33.9	20.4	14.2	8.1	7.2	6.2	4.1	3.7	2.2
C	Constants	104	41.3	14.4	4.8	8.6	10.6	5.8	1.0	2.9	10.6
D	Newspapers	100	30.0	18.0	12.0	10.0	8.0	6.0	6.0	5.0	5.0
E	Spec. Heat	1,389	24.0	18.4	16.2	14.6	10.6	4.1	3.2	4.8	4.1
F	Pressure	703	29.6	18.3	12.8	9.8	8.3	6.4	5.7	4.4	4.7
G	H. P. Lost	690	30.0	18.4	11.9	10.8	8.1	7.0	5.1	5.1	3.6
H	Mol. Wgt.	1,800	26.7	25.2	15.4	10.8	6.7	5.1	4.1	2.8	3.2
I	Drainage	159	27.1	23.9	13.8	12.6	8.2	5.0	5.0	2.5	1.9
J	Atomic Wgt.	91	47.2	18.7	5.5	4.4	6.6	4.4	3.3	4.4	5.5
K	n^{-1}, \sqrt{n}, \dots	5,000	25.7	20.3	9.7	6.8	6.6	6.8	7.2	8.0	8.9
L	Design	560	26.8	14.8	14.3	7.5	8.3	8.4	7.0	7.3	5.6
M	<i>Digest</i>	308	33.4	18.5	12.4	7.5	7.1	6.5	5.5	4.9	4.2
N	Cost Data	741	32.4	18.8	10.1	10.1	9.8	5.5	4.7	5.5	3.1
O	X-Ray Volts	707	27.9	17.5	14.4	9.0	8.1	7.4	5.1	5.8	4.8
P	Am. League	1,458	32.7	17.6	12.6	9.8	7.4	6.4	4.9	5.6	3.0
Q	Black Body	1,165	31.0	17.3	14.1	8.7	6.6	7.0	5.2	4.7	5.4
R	Addresses	312	28.9	19.2	12.6	8.8	8.5	6.4	5.6	5.0	5.0
S	$n1, n2 \dots n!$	900	25.3	16.0	12.0	10.0	8.5	8.8	6.8	7.1	5.5
T	Death Rate	418	27.0	18.6	15.7	9.4	6.7	6.5	7.2	4.8	4.1
	Average	1,011	30.6	18.5	12.4	9.4	8.0	6.4	5.1	4.9	4.7
	Probable Error		±0.8	±0.4	±0.4	±0.3	±0.2	±0.2	±0.2	±0.2	±0.3

Source: "Applications for Forensic Accounting, Auditing, and Fraud Detection", by M. Nigrini, 2012, page 4.

The Table 2.1 shows that it can be used the second, the third and forth digit Benford’s Law in to test for anomalies and frauds.

Figure 2.1 : First Digits of Census Data



Source: "I've Got Your Number", by M. Nigrini, 1999, page 81.

Figure 2.1 shows comparison between actual number and Benford's Law distribution.

Benford's Law is a good candidate for numerical analysis, after knowing the distribution is expected to comply with the accounting data. Benford's Law is a statistical technique used to detect fraud, which relies on identifying differences between the data distribution and Benford's Law distribution (Mebane, 2013). It has been applied to different sets of financial data, such as income tax, stock exchange rate, corporate expenses and sales, demographic and scientific data (Schraepfer, 2010). It is used to determine the repetition of the numbers in data sets, which it helps to identify abnormal digit. Forensic accountants have begun to apply Benford's law to corporate accounting to find out the pattern of anomalies and frauds.

Usually the falsified data reveal prominent patterns and do not follow the expected distribution. Nigrini (2012) proved that Benford's Law successfully identified fraudulent financial data.

Benford's law is a very useful tool when a financial case is required investigation and assessment. If the first significant digit proportions come from a process that encoded numbers from a uniform distribution, then the financial case may be present or it may require more investigation.

Sometimes, the Benford's law faces difficulty to be used. When the data are coded such as ID number, zip codes, the price of goods and services and phone numbers because they are distributed with a certain code or numbers that are affected by mental ideas.

2.1.2.2 Theory of Relative Size Factor (RSF)

It helps to highlight all unusual fluctuations. These fluctuations may be the result of fraud or anomalies (Yadav and Yadav, 2013). Moreover, RSF test is defined as the ratio of the largest number to the second largest number of the given set. The RSF test is a test, which facilitates a forensic accountant to spot out of the irregular or exceptional transactions that could stem from manipulative or fraudulent intentions or genuine errors (Mehta and Mathur, 2007).

In practice, there are limits for each firm in their daily business such as vendor, customer, employee, etc. For instance, consider transactions with firm that supplies paper and computer accessories to a printing office. The firm is range of its invoices between 2,000 and 3,000 in any given period with the office. If the annual ledger of the

firm's account shows invoices of amounts such as 2300, 2456, 2576, 2109, 2873, 38,500, 2112, then it is obvious that the payment of 38,500 is the extraordinary or anomalous payment. There could be three possibilities in this regard. First, this invoice amount could be for a large placed order. Second, it could be an error of accounting. Third, it could be a fictitious or fraudulent invoice payment in the firm. Thus, this method helps in better discovery of anomalies or outliers.

This forensic analytics test has the most usage in the large numbers in various data sets. Forensic investigators can adapt this formula to bring attention to decimal point error in accounts and determine the location of the error when the firm has more than one branch.

This theory is actually quite difficult to use. This program (software program) sorts the data by subset and by amount descending and delete all small numbers (Mehta and Mathur, 2007).

2.1.2.3 Computer Assisted Auditing Tools (CAATs)

Computers assist the forensic accountants in performing their examination in computerized data. CAATs (software program) are important tools for the forensic accountants in gathering information from software and test data (Chakrabarti, 2014). Every firm has its own system therefore different firms have different systems. Every system of the firm has different hardware, software, different data structure and record formats. Thus, a forensic accountant would not be able to gather all needed evidence without a software tool and analyze the data (Jaksic, 2009).

a. CAATs Services

CAATs can provide services to forensic accountants to perform various examination procedures. These are examples of the services that CAATs can provide (Chakrabarti, 2014),

- i. Test all transactions and balances,
- ii. Find any kind of significant fluctuations or obvious deviates,
- iii. Test all applications in the computer systems as well as the control system,
- iv. Take a sample from the programs to elicit information to help in the audit testing,
and
- v. Repeat the calculations that were done already by the accounting systems of the firm.

b. Tools and techniques of CAAT's (Types of CAAT's)

CAATs have many types of tools and techniques. These are the common tools and techniques,

- i. Generalized Audit Software (GAS), it is the most widely used of CAATs' tools. GAS's packages are computer programs that contain general modules to read existing files and perform perfectly the examination tasks (Singleton, 2006). Also, GAS includes mathematical computations, statistical analysis, sequence checking, duplication checking and re-computations that would help the auditors to analyze data swiftly (Debreceeny, 2003).

- ii. Utility software, it is the subset of software. It provides evidence to the forensic accountant about how the system control is effective (Auditnet, 2003).
- iii. Test data, it helps the forensic accountants to evaluate the errors in the set of data whether the errors are logic in a program and they are not made up. Also, it evaluates the program, if it meets its objectives (Auditnet, 2003). It will provide information about structure of the internal control system.
- iv. The audit-expert system, it will give direction and appropriate information to all levels of forensic accountants while he/she carries out the examination because the inquiry is made based on the knowledge of the senior auditors or managers (Auditnet, 2003).

This program gives the total amount of each account individually in every day in a particular period. A forensic accountant can agree or not with the total amount for accounts posted in ledger control for each account. Also, it helps to detect unreasonable items such as very high discount or a fake account. (Pedrosa and Costa, 2012)

The type of software has very high cost to be used in investigation and understanding the firm's files. It is not suitable for small systems and for small computers. (Pedrosa and Costa, 2012)

2.1.2.4 Data Mining Techniques

Data mining can use several programs for that, which it contains a computerized set of techniques. This set was designed to mine large volumes of inserted data for new or hidden information (Chakrabarti, 2014). Sometimes, the data mining is called or

known as knowledge discovery in data bases. It helps to analyze the huge volumes of transactions and billing data and seek out patterns.

Fortunately, forensic accountants are able to detect the hidden information that were made by firms and individuals. The data mining facilitates for the forensic accountants to discover the hidden thefts. (Bronner, 2013).

However, fraudulent activities have been increased with more complexes. Therefore, many forensic accountants have used data mining software and digital analysis techniques, which they provide effective tools to fight against fraud.

The data mining helps a forensic accountant to make a decision. Also, it provides prediction about the future. In addition, it helps to find the needed information the system and to detect errors in the system. The data mining hurts privacy and security of the firm's system. Also, it is costly. Moreover, it may cause of misusing the data of the firm. (Yahia and El-taher, 2010)

2.1.2.5 Ratio Analysis

An accounting ratio is an index computed from two or more accounting values which they are indication for the health of a firm, also the analysis ratios help to locate the fraud by identifying possible symptoms of fraud (Chakrabarti, 2014).

Financial ratios help the forensic accountant to describe all aspects of financial performance, profitability, solvency, leverage, liquidity and managerial performance.

The ratio analysis makes the financial statements easy to be understood. Also, it helps to compare the firms with different sizes. It highlights some points for a forensic accountant to give him/her a lead about the situation.

The results of the ratios are based on financial accounting information and the information is affected by estimates, policies and assumptions of accountants. Also, the ratios focus on past information while the most important thing is the current event which under the investigation or assessment.

In conclusion, all the previous techniques are not perfect, but the forensic accountants have been using them to justify any error or fraudulent action. Every one of these techniques has advantages and disadvantages as mentioned above. Therefore, the result for each one cannot be used to draw the ultimate decision.

2.1.2.6 Typical Types of Fraud Test

There are many different techniques that have been used for data analysis. However, these are some types of fraud commitments that are illustrated in the table 2.2. These types of fraud are used to hide a fraudulent action. A forensic accountant tests the records based on the following examples of fraud detection tests.

Table 2.2: Fraud Detection Using Data Analysis

Type of Fraud	Tests Used to Discover This Fraud
Fictitious vendors	<ul style="list-style-type: none"> • Run checks to uncover post office boxes used as addresses and to find any matches between vendor and employee addresses and/or phone numbers. • Be alert for vendors with similar sounding names or more than one vendor with the same address and phone number.
Altered invoices	<ul style="list-style-type: none"> • Search for duplicates. • Check for invoice amounts that do not match contracts or purchase order amounts.
Fixed bidding	<ul style="list-style-type: none"> • Summarize contract amount by vendor, and compare vendor summaries for several years to determine whether a single vendor is winning most bids. • Calculate days between close for bids and contract submission date by vendor to see whether the last bidder consistently wins the contract.
Goods not received	<ul style="list-style-type: none"> • Search for purchase quantities that do not agree with contract quantities. • Check whether inventory levels are changing in relation to supposed delivery of goods.
Duplicate invoices	<ul style="list-style-type: none"> • Review for duplicate invoice numbers, duplicate dates, and duplicate invoice amounts.
Inflated prices	<ul style="list-style-type: none"> • Compare prices across vendors to see whether prices from a particular vendor are unreasonably high.
Excess quantities purchased	<ul style="list-style-type: none"> • Review for unexplained increases in inventory. • Determine whether purchase quantities of raw materials are appropriate for production level. • Check to see whether increases in quantities ordered compare similarly to previous contracts or years or compare to other plants.
Duplicate payments	<ul style="list-style-type: none"> • Search for identical invoice numbers and payment amounts. • Check for recurring requests for refunds for invoices paid twice.
Carbon copies	<ul style="list-style-type: none"> • Search for duplicates within all company checks cashed. • Conduct a second search for gaps in check numbers.
Duplicate serial numbers	<ul style="list-style-type: none"> • Determine whether high-value equipment a company already owns is being repurchased by checking for duplicate serial numbers and for the involvement of the same personnel in both purchasing and shipping processes.
Payroll fraud	<ul style="list-style-type: none"> • Check whether a terminated employee is still on payroll by comparing the date of termination with the pay period covered by the paycheck, and extract all pay transactions for departure date less than the date of the current pay period.
Accounts payable	<ul style="list-style-type: none"> • Find transactions that do not match contract amounts by linking accounts payable files to contract and inventory files and examining contract date, price, ordered quantity, inventory receipt quantity, invoice quantity, and payment amount by contract.

Source: *Computer Aided Fraud Prevention and Detection: A Step-by-Step Guide*⁹, by David Coderre.

2.1.3 Forensic Accountant

Forensic accountants are needed in the business world today due to series of financial services that are not related to the field of auditing or traditional accounting. Therefore, forensic accountants became into light, because of the increase in complicated financial issues, financial frauds and white-collar crimes*. The major responsibility of forensic accountants is to find out the result for any financial issue and the offenders of the fraud in firms as well as tracing money laundering (Nunn, McGuire and others, 2006).

Forensic accountants have to have the skills that make them capable to effectively interview and extract the information from people who may not be willing to give the right information (Bhasin, 2013). Therefore, skepticism is an important characteristic for forensic accountants to deal with the people who are not willing to provide the truthful information.

However, there are differences between an accountant and a forensic accountant, an accountant looks over entries, numbers and financial statements whereas a forensic accountant looks beyond these practices and penetrate into events. Therefore, forensic accounting can be described as the use of auditing practices and investigative skills together to examine financial statements in preparation to be used in a court. (Tabani, 2014)

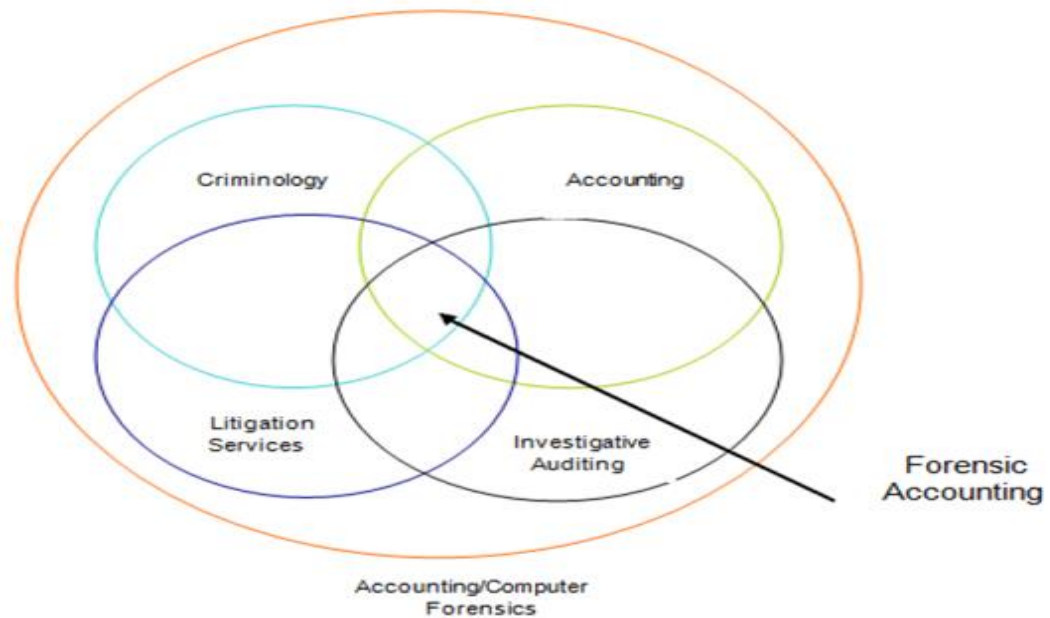
* White-collar crime refers to financially motivated nonviolent crime committed by business and government professionals, within criminology, it was first defined by sociologist Edwin Sutherland in 1939 as "a crime committed by a person of respectability and high social status in the course of his occupation.

2.1.4 Forensic Accountant Skills

Forensic accountants should have skills that help them in different tasks such as auditing skills, critical/strategic thinker, effective oral communicator, effective written communicator, identify key issues, investigative ability, investigative intuitiveness, organize an unstructured situation, research skills, legal skills, simplify the information, solve structured problems, solve unstructured problems, synthesize results of discovery and analysis, tell the story, think like the wrongdoer, understand the goals of a case, psychology skills and sociology skills (Smith and Crumbley, 2014).

Figure 2.2 shows the foundational skills of a forensic accountant that should have from different areas. The Figure 2.2 includes four main areas accounting, criminology, litigation services and investigative auditing.

Figure 2.2: Skill Sets in Forensic Accounting



Source: "Defining a Forensic Audit", Smith and Crumbley, 2014, page 68.

It is clear that forensic accountants are more than just traditional accountants and he/she must have set of skills in order to fulfill the work. The level of success for every forensic accountant is specified based on the set of knowledge, skills and abilities that he/she has. Because, the performance for every one relies on his characteristics.

2.1.5 Characteristic of Forensic Accountant

To understand the roles of the forensic accountant, it is critical to understand the different areas that should have knowledge about them. However, it is quite hard to specify the qualifications that a forensic accountant needs to have (Akyel, 2012). It is known that a forensic accountant should have characteristics as following beside skills that must have (AICPA, 2009):

1. Adaptive
2. Analytical
3. Confident
4. Detail-oriented
5. Ethical
6. Evaluative
7. Function well under pressure
8. Generate new ideas and scenarios
9. Inquisitive
10. Insightful
11. Intuitive
12. Make people feel at ease
13. Persistent

14. Responsive
15. Skepticism
16. Team player

It can be named the parties that can ask for a forensic accountant services, such as lawyers, police forces, insurance firms, banks, courts, business world, government representatives and corporate bodies (Elitaş, Karakoç and Görgülü, 2011) As a result, for person who wants to be a forensic accountant it is not sufficient to have just an intense accounting knowledge.

2.1.6 Forensic Accounting Services

Forensic accounting is one of the area in the accountancy profession which shows the steps for engagements that occur as result of actual disputes or litigation (Singleton and Singleton, 2010). Forensic accountants are trained to work and think beyond the numbers and published details with analysis techniques, interpretation, summarization and presentation of financial and business issues (Okoye, 2009). In every matter of law that involves money (or financial issue), it requires an expert who has a professional certification and experience in the field. These are an examples of services that are provided by forensic accountants as follows (Munday and Wilkinson, 2011):

1. Evaluating Business
2. Disputes related divorce issue or matrimonial issue
3. Claims for any kind of personal injury or fatal issue (accident, mistake...etc)
4. Professional neglect

5. Claims for insurance evaluations
6. Arbitration
7. Corporation disputes
8. Stock holder disputes
9. White-collar crime and fraud investigations.

2.1.7 Forensic Accounting Education

The education of a forensic accountant should cover all skills, knowledge, and abilities needed to effectively discharge the expected duties. Forensic accounting is known as a practice that uses technology and techniques to investigate, assess and expose, financial issues and fraudulent activities involved in the areas of accounting, finance, management and other areas where illegal financial acts or financial disputes might take place. Understanding the role and expectations of a forensic accountant is fundamental to the design of an appropriate educational program.

The knowledge and skills that forensic accountants (or trainees) should have when they concentrate on issues associated with financial issues, illegal acts and forensic accounting include the following (Narveson and Jones, 2007, 12-13) (Brooks, Labelle, 2006):

1. Basic accounting concepts
2. Transaction processing cycles and control environment
3. Business law
4. Civil law
5. Matrimonial law

6. General business communications skills and business ethics
7. Basic Computer Skills
8. Basic auditing concepts
9. Criminology

The education system in Turkey has been improved in the last decade. There is an innovation in the field of accounting which is the profession of forensic accounting. Many countries in the world have worked to meet the new change in the field, because there is a need for that. The profession of forensic accounting has been initiated, taught and applied in USA. To become a Certified Fraud Examiner (CFE) in USA, one must meet the following requirements (ACFE, 2014):

- Be an associate member of the ACFE.
- Meet minimum academic and professional requirements (Undergraduate Degree + Master's degree or Professional Designation(s) and Professional Experience).
- Be of high moral character.
- Agree to abide by the by laws and Code of Professional Ethics of the Association of CFE.

The profession in Turkey has not been initiated and applied but there have been training courses and sessions in some schools. In the main purpose of the study, a questionnaire of study aimed to measure the awareness of this profession that has not been taught and applied yet in Turkey. On the other side, there are many training sessions about forensic accounting have been given in Turkey. In addition, USİUD is a

member of ACFE but it is just for a certification not as a profession. The movement toward applying forensic accounting is increasing in Turkey.

2.1.8 Fraud

Nowadays, the biggest problem in the business field is fraud. Kou, Lu, and Sinvongwattana (2004) stated that fraudulent cases are mostly identified as the availability of huge data sets to be used by a person for his/her interest. Therefore, the collected data through records can be a great advantage to be utilized for fraud or any other kind of schemes.

Fraud is a very complicated phenomenon which it is mixture of social, political and economic factors that affects all countries. Fraud weakens firms, economic development and causes of governmental instability. Fraud destroys the financial foundation of firms and makes fragile by giving wrong information about the real situation of the firms. Moreover, it perverts the application of rule of law and creating distortive information. Economic development is undermined by the fraud because it makes an obstruction the ways for firms and countries to overcome the start-up costs.

2.1.8.1 Definition of Fraud

Fraud is a big threat that undermines the economy, development and social stability of firms and countries. Fraud is also comprehended as the intent acts of using power by a higher position for personal gain in a manner that breaks the rules of the law (Nguyen and Dijk, 2012).

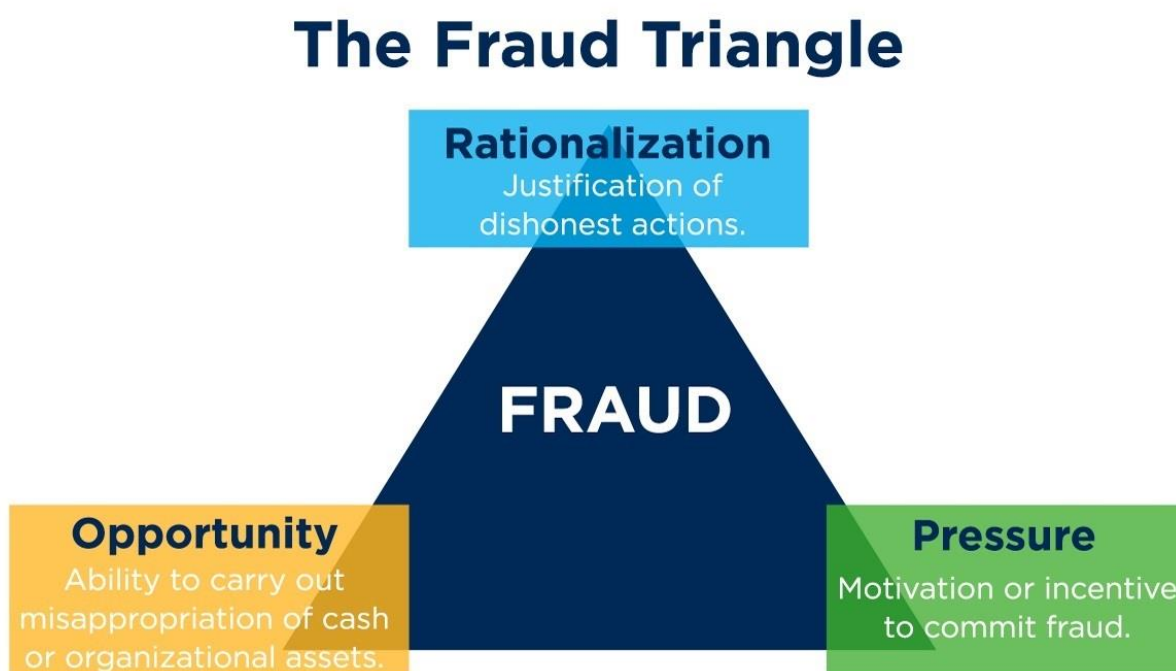
International Professional Practices Framework (IPPF) (2014) defines fraud as:

“any illegal act characterized by deceit, concealment, or violation of trust. These acts are not dependent upon the threat of violence or physical force. Frauds are perpetrated by parties and organizations to obtain money, property or services; to avoid payment or loss of services; or to secure personal or business advantage”.

2.1.8.2 Fraud Triangle

Every fraud has its own motivation to be committed. However, fraud can be committed in different forms, yet it is often committed in a financial form. In addition, the main desire of committing fraud is to increase the wealth or profits, and there are three reason of committing fraud and they are shown in the figure 2.3.

Figure 2.3: Fraud Triangle



Source: "Forensic Fraud", Turvey, 2013, page 24

To increase the effort for preventing and detecting financial statement fraud, the International Federation of Accountants (IFAC) has specifically issued an International Standard for Auditing ISA 240. This standard was issued to show the auditor's responsibility to consider fraud in an audit of financial statement. The ISA 240 is actually reflection of US's Statement on Auditing Standard No 99 (SAS 99) which has been developed and issued by the Auditing Standards Board of the American Institute of Certified Public Accountants (AICPA) in 2002. AICPA (2002) reports about SAS No. 99, which introduced the concept of a "Fraud Triangle".

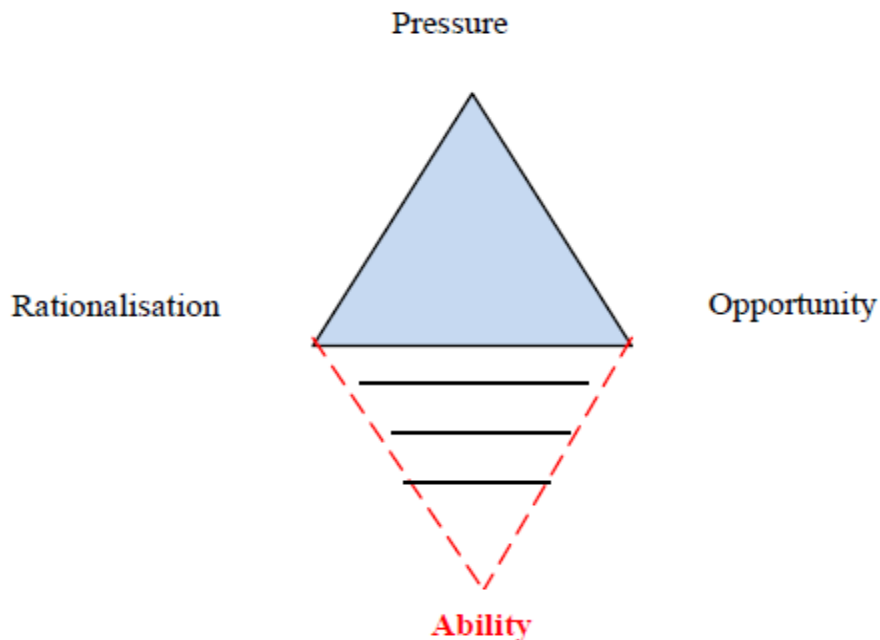
Moreover, the issuance of SAS No. 99 increased the awareness of the risk of fraud risk factors and the reasons behind fraud. However, the concept of fraud triangle theory was initially introduced by Donald R. Cressey (1950) (Kassem and Higson, 2012). Three basic concepts of fraud triangle, pressure, opportunity and rationalization:

1. Pressure, it is the beginning that motivates the individual to commit the crime. When the individual has a financial issue and he could not solve it in legitimate way, then he/she starts to consider committing an illegal action.
2. Rationalization, everyone who commits a fraud thinks himself/herself as honest person. In addition, fraudster always justifies the crime to himself/herself in a way that makes it an acceptable or justifiable act.
3. Opportunity, it is the ability to commit fraud. It means the ways that can be used by fraudster to commit his fraud. An individual can use (abuse) his/her position and trust to solve his financial issue with low level of risk.

In 2004, Wolfe and Hermanson introduced another fraud dimension “ability” to the previous fraud triangle, therefore it was renamed to Fraud Diamond Theory. In addition, they believed that fraud would not be committed without the right person with the right capability to make the fraud. Moreover, they suggested four traits for committing fraud and they are (Kassem and Higson, 2012):

- i. Authoritative position,
- ii. Capacity to comprehend and to penetrate the accounting systems and internal control weaknesses,
- iii. Confidence to commit and escape from being caught, and
- iv. Capability to deal any stress happened when person commits bad acts.

Figure 2.4: Fraud Diamond



Source: Wolf and Hersmanson, "The Fraud Diamond: Considering the four elements of fraud", *The CPA Journal*, 2004, Page 4

4. Ability, it describes the personal characteristics of the fraudster. It means if the fraudster is confident and has the power to make a direct decision for the fraud, then committing fraud will be easier.

2.1.8.3 Types of Frauds

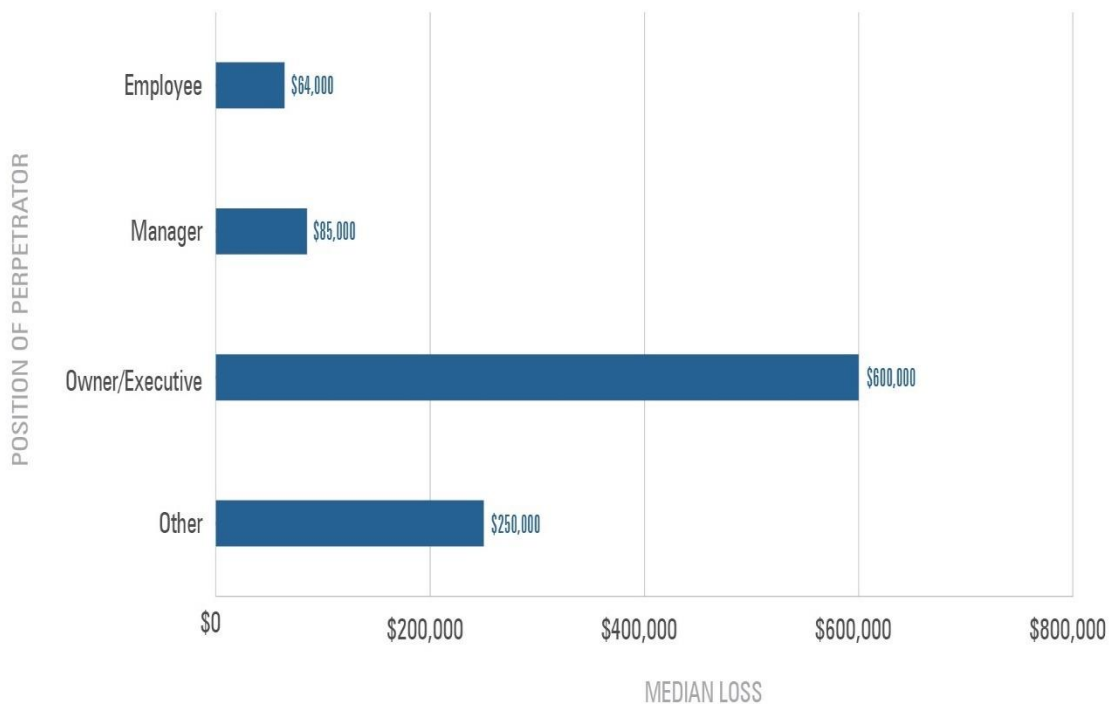
Fraud has different forms of actions. Moreover, there is a type of fraud is called cyber fraud, however, it occurs online and the most common form of cyber fraud is online credit card theft. These are well known frauds (Chaudhary, Mallick, and Yadav, 2012):

1. **Credit card fraud** is committed by using credit card and it is divided into two types:
Offline fraud and On-line fraud.
2. **Offline fraud** is committed by using a stolen physical card.
3. **On-line fraud** is committed by sing internet or phone without credit card.
4. **Telecommunication fraud** is committed by using telecommunication services.
5. **Computer intrusion** is committed by accessing to get information that may be used illegally.
6. **Bankruptcy fraud** is committed by using or taking others money and properties have not been returned.
7. **Theft fraud** is committed by sealing money or assets that is not yours.
8. **Application fraud** is committed by applying a payment with false information.
9. **Behavioral fraud** is committed by entering details of legitimate transaction have been obtained for fraudulent reasons.

10. **Financial statement fraud** is intentional acts of misrepresentation the data of financial statement, which the purpose of it to mislead the readers and create a false impression to hide the occurred fraud in the firm.

Moreover, there is fraud committed by high mangers and it is called white-collar crime. However, it was first defined by sociologist Edwin Sutherland in 1939 as "*a crime committed by a person of respectability and high social status in the course of his occupation*". ACFE (Association of Certified Fraud Examiners) made a study (2014) shows the most position in the firm commit fraud, and the figure below shows that:

Figure 2.5: Median Loss Based on Position of Perpetrator — United States (626 Cases)



Source: "Report to the Nations on Occupational Fraud and Abuse", ACFE, 2014, page 43

Figure 2.6: Median Loss Based on Position of Perpetrator — Eastern Europe and Western/Central Asia (73 Cases)



Source: "Report to the Nations on Occupational Fraud and Abuse", ACFE, 2014, page 44

Figure 2.5 and 2.6 show respectively the median loss of committed cases in USA and Eastern Europe and Western /Central of Asia based on the fraudster's position. It was found that the big number of losses were committed by higher levels of authority in USA. While the costly frauds committed by managers were in Europe and Western /Central of Asia. The discrepancies occurred between these regions, because of the culture, political system and economic system in them. Overall, there is a strong correlation between costs of the fraud and positions in the firms.

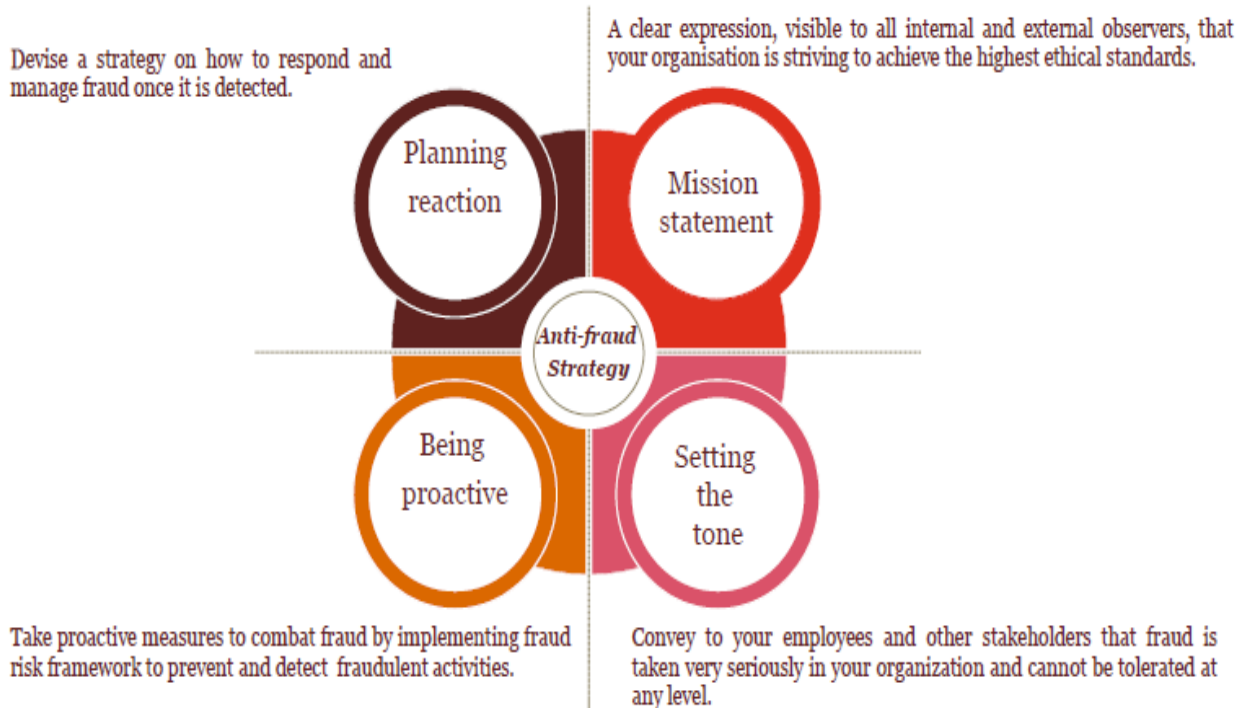
Fraud has become very complex and even more difficult to detect, therefore, there are many firms and individuals have created techniques to be used to deal with it and to make the examiners are sophisticated and highly aware of all the tricks. In the Center for Audit Quality (CAQ) 2010 report mentioned that firms should follow few steps to deter and detect fraud. The first step is to have a strong communication between managers and between the managers and employees and ask questions related to the system that may elicit indications or concerns. The second step is to enhance knowledge of the firm and possible risks of financial reporting fraud. The third step is to deter fraud by having clear regulations in the firm to detect fraudulent activities that have occurred. In addition, CAQ recommended that the firm should have outside informers that would provide the firm with useful information that may help it to discover the fraud.

2.1.8.4 Proactive Fraud Investigations

It comes to the light a new term called a proactive approach, it means to identify, measure or test a firm at risk of fraud when there is no clear symptoms of fraud occurred (Coderre, 2009). Therefore, the proactive fraud investigation is based on the degree of risk that the firm at it. While the term reactive begins when they have discovered indications that fraud may be existent (Coderre, 2009).

Creating culture that is based on an anti-fraud ideas is key for both deterring potential fraud and maximizing the actions to fight fraud within a firm. In the figure 2.7 show the anti-fraud strategic approaches in both proactive and reactive.

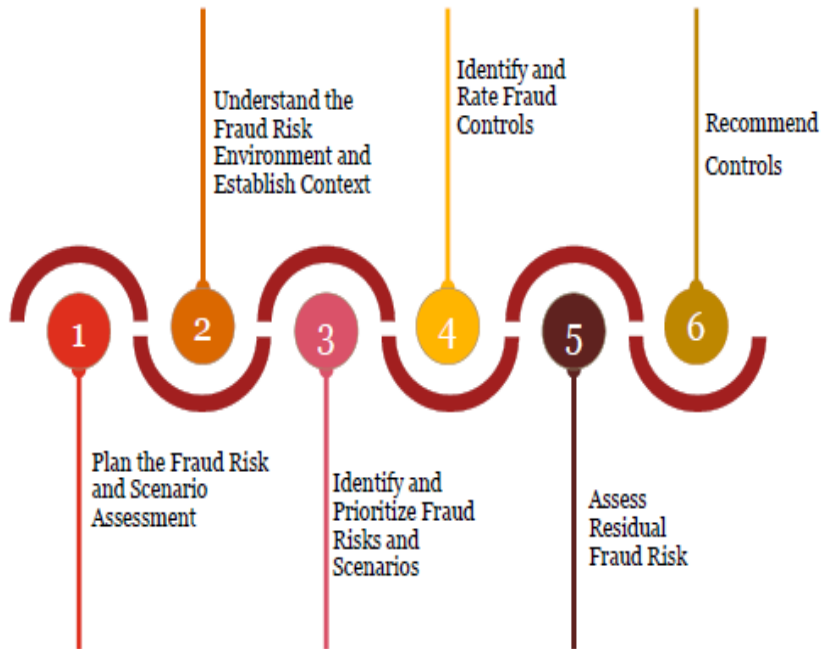
Figure 2.7: Anti-Fraud Strategic Approach: Proactive and Reactive



Source: Fabiana & Smith, "Strategic Proactive Fraud Risk Management and Scenario Assessment", ACFE, 2014, Page 7

Any firm wants to implement highly a proactive approach must understand the fraud scenario that helps to identify, measure, and/or test compliance with established policies, procedures or internal controls. In the figure 2.8 shows the steps that should be followed for fraud scenario assessment.

Figure 2.8: Fraud Scenario Assessment



Source: Fabiana & Smith, "Strategic Proactive Fraud Risk Management and Scenario Assessment", ACFE, 2014, Page 13

A proactive approach is the first step in fraud investigation when there is hunch or a belief that something might be wrong within the firm. Therefore, it is used to guide the firm to deter and prevent fraud and improve the internal control system.

Moreover, there is what is called whistle-blower which means public employees are able to report about fraud, waste, and abuse in firms to a specific agency. Also, there are some countries such as USA issued laws to protect public employees from retaliation and to encourage them to do so.

2.2 Accounting

Accounting was established since the money was created. Yet, the practices of accounting since then was not as nowadays, because in the ancient time the number of transactions were so small and environment was uncomplicated. However, the double entry bookkeeping was developed in 14th century in Italy (Alexander, 2002).

Since the beginning twentieth century, accounting has had many changes, improvements and establishments of new branches such as corporate governance, forensic accounting ...etc. Therefore, this part is added to identify the principles of forensic accounting that is based on traditional accounting.

Accounting is a social science and it is affected by many factors. These factors have been shaping the accounting practices over time. These factors are culture, legal system, education system, politics and economic infrastructure. The Accounting practises has gotten very complicated because of overlapped these factors.

The accounting science has many tools that have been used to facilitate the business process. Moreover, accounting science provides treatments and techniques for different business issues such as liabilities, current and fixed assets, inventory management, financial planning, long and short term investment decisions and profit and dividend projections...etc. Accounting also provides information about the current position for firms and firms' performance for the interested parties.

Accounting has been termed as the language of the business. It reports the results of firm's operations to various parties who have direct or indirect communication with the firm such as, creditors, investors, government and other agencies. The Committee

of the American Accounting Association (AAA) has defined financial accounting as (Lewis and Pendrill, 2004, 3):

“The process of identifying, measuring and communicating economic information to permit informed judgements and decisions by users of the information.”

The American Institute of Certified Public Accountants has defined financial accounting as (Hermanson, Edwards, and Maher, 1998, 15):

“the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which in part at least of a financial character and interpreting the results thereof.”

These definitions show that accounting, it is not just for recording transactions but also for transferring data to information to be useful for decision makers, but sometimes these steps cause some issues related to complexity in the business or are used to commit a financial scheme. Thus, it is required a profession to deal with these issues, that what brought to the surface what is called forensic accounting.

2.2.1 Accounting Objective

Objective of accounting may differ from sector to sector based on business environment and based on specific requirements in the sector, but it is still the basic foundation for forensic accountants to start a mission in any firm. However, the following are the general objectives of accounting (Rice, 2003) (Carmichael, Whittington and Graham, 2007):

1. Systematic records.

2. Calculating the firm's profitability.
3. Determining the firm's financial position of the business.
4. Ensuring business properties.
5. Providing information to decision makers.
6. Providing non-financial data.

2.2.2 Forensic Accounting versus Traditional Accounting

Traditional accounting has to do with preparing the financial statements based on Generally Accepted Accounting Principles (GAAP) or the International Financial Reporting Standards (IFRS) or other local standards or laws and checking the mathematical accuracy of the financial statements and the accounting process.

All the financial reports that are prepared by the financial accountant are utilized for a wide range of interests and purposes by different business audiences. However, these audiences include owners, management, auditors, stock holders, investors, suppliers, banks and financial institution.

Forensic accounting, the main goal of forensic accounting is to investigate in litigation or fraudulent case to provide the court room with important information about case, also, to investigate other financial issues and provide a report about the issues.

The forensic accountant uses the historical data from the firm's financial statements as a start. Then the forensic accountant will move to other procedures based

on the financial issue. Every forensic accounting case is conducted differently, based on the requirements of the case and the related laws to the case.

Moreover, forensic accounting looks behind the financial numbers to find out what is deviated from the right line. Forensic accounting applies many approaches more than traditional accounting. Because forensic accounting uses these approaches (investigative approaches) in solving financial problems which does not require a structured plan as available for the traditional accounting.

However, forensic accountants are often asked to serve as expert witnesses for lawsuits or criminal cases in a court, also, it provides a report about financial issue to the concerned person. The forensic accountant applies techniques and methods to provide facts or evidence which are typically needed in private investigation or assessment.

In conclusion, the growing of financial incidences and issue have given boost to the field of forensic accounting, specialty after illegal practices in the field of business. The practices of forensic accounting involve an assessment of a firm's internal control system and accounting system. Also, the forensic accountant can take processes to determine whether or not the numbers in the financial statements reflect reality. Thus, forensic accounting is not like financial accounting, because it is not implemented in a routine basis.

2.3 Auditing

The main point of needing auditing is a credibility gap. The managers have full authority in their firms and they understand their business and the context that they work under. However, the independent auditor examines the financial reports and gives credibility to the financial statements. Without the independent auditor's report, the financial statements of the firm would be meaningless, because the users would have no confidence on the financial statements issued by the firm. The gap in this case would be very high because, the doubt of fairness of the managers.

However, it is illustrated here the main foundation of auditing to compare with forensic accounting foundation (previously explained), due to misunderstanding between two fields. The main function of the CPA is to add integrity and credibility to the financial statements (Julkaisuja, 2010). While a forensic accountant shows and provides solution about the financial issues in the firm's system, based on compliance made by owners, creditors, management, and other users.

Auditing has grown tremendously over the last decades to reflect its new position in providing services in the business sector, because the growth of economic life is getting more complicated. Therefore, the nature of auditing has changed as a result of environmental changes. In addition, the main service of a CPA is to provide assurance about the accuracy and reliability of the information in the financial statements. Also, CPA assures that the financial statements are prepared according to the local standards or international standards or other rules (Pickett, 2005).

CPA has a crucial role in financial reporting. There are international standards provide guidelines to the CPAs about responsibilities, risks, independence and audit documentation (ISA 200, 2009).

The American Accounting Association Committee on Basic Auditing Concepts has defined auditing as follows (Messier, Glover and Prawitt, 2008, 11):

“Auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic action and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users”

This definition comprises of several points. The main point is the phrase “systematic process”. It shows the auditing process; it should have strong plan. In addition, this definition involves that independent auditor plays a crucial role in financial reporting and the users of financial statements expect that the CPA provides to the reporting process, technical competence, integrity, credibility and objectivity.

The last important phrase is communication and it is the result of the auditor and the main concern of the users. The users are concerned with the type of report that the auditor provides. In the auditor’s report about the financial statements, the types of reports are determined by the auditor’s findings and the way of communication the users is determined by auditing standards or laws. The report should contain all the details that are needed by the users to make the decision. Thus, the auditing process has the communication between a firm and its business environment.

2.3.1 Auditing Process

The main purpose of the CPA is to provide an auditor's report about the financial statements whether they have material misstatement or not. The auditing process is generally considered, it has three stages: planning, fieldwork, and the evaluation of audit evidence. The planning stage has an impact on other two stages, because it involves the evaluation of materiality and risk. The method of fieldwork stage is done in the way of the financial statements are made of (Pickett and Pickett, 2005).

2.3.2 Auditor Independence

A CPA has to be free from any kind of an external influence or bias. A CPA must also be seen as independent. However, that refers to the role of CPA to be able to make independently judgements and conclusions about the financial statements. CPAs have to follow all the professional ethical standards. In addition, the CPA must apply extensive requirements for independence both in mind and in appearance (Messier, Glover and Prawitt, 2008).

The perception of the users of independence of the auditor is actually made the value of auditing (Pickett and Pickett, 2005). The important factor supports the auditor independence in the public, it is the attitude of mind and how the auditor seems in the public, which are gained from the audit training, practice, and the culture of the audit firm.

2.3.3 Auditor Responsibility

Responsibility is the authority given to act within a defined field of operation. The management is responsible about preparing and the accuracy financial statements. The Sarbanes-Oxley Act (2002) confirms that CEOs and CFOs have full responsibility for their firm's financial statements and they should fairly present the financial conditions and operations. Moreover, they are responsible for the strength of internal control and they should maintain its strength or improve it. While the CPA's responsibility is to provide his/her report about the financial statements and express an opinion based on his/her view. The CPA's opinion is important, because it gives to the users' assurance about the fairness of the financial statements.

While CPAs have significant responsibilities about confirm the fairness of the financial statements, the management is fully responsible about the fairness of the firm's financial statements. The auditor responsibility has grown over time to include more than the determination of fairness of the financial statements.

The standard number ISA 240 defines the extension of auditor responsibilities to prevent and detect fraud but it is not as a main mission, also, the standard suggests about the need of professional skepticism to identify and assess the risks of fraudulent action. Moreover, the CPA should obtain enough and appropriate evidence about the fraud and make sure that the evidence is enough to assess the risks of misstatement due to fraud. In addition, the CPA have to respond timely to fraud or suspected fraud identified during the audit mission.

2.3.4 Forensic Auditors

This part is added to explain the term of forensic auditor that may cause of misperception with a forensic accountant. There are different types of auditors. The types of auditors can be categorized under four types which they are external auditors, internal auditors, government auditors and forensic auditors. (Messier, Glover and Prawitt, 2008)

However, the forensic auditors are hired by the management, owners and government agencies to provide investigative services about the firms. They are certified and qualified just in detecting, investigating and deterring fraud and white-collar crime. Forensic auditors investigate fraud case in varied forms, therefore, they collect evidence, take statements and write reports for this purpose. Moreover, they can use same external auditors' techniques to collect evidence. To use them as proofs when they provide the reports. The goal for external auditors is to collect evidence about the accuracy of the information in the financial statements, while the forensic auditors' goal is to collect evidence to investigate and solve the fraudulent case.

2.3.5 Forensic Accounting versus Auditing

Traditional auditors follow the generally accepted auditing standards (GAAS) that are issued by the Public Firm Accounting Oversight Board (PCAOB). The external auditors check whether a business entity is operating within the standards of Generally Accepted Accounting Principles (GAAP) or the International Financial Reporting Standards (IFRS) or other local standards or laws. Moreover, AICPA Auditing Standards Board issued an amendment (2016), under Statement on Auditing Standards

(SAS) No. 131 (Amendment to Statement on Auditing Standards No. 122 Section 700), clarifying the format of the auditor's report that should be used for an audit conducted according with the standards of the PCAOB.

However, an auditor mainly focuses on the fairness of the financial statements prepared by the firm and focuses on error identification and prevention. The auditor's report proves that the financial statements reflect the firm's financial position and enables financial market participants (investors, creditors, stockholders, and governments) to use the information in the financial statements for making a financial decision. The auditor's report is delivered to the public.

A forensic accountant mainly focuses on the financial statement frauds, tax fraud, bankruptcy fraud, litigations support, testimony and even divorce cases (in financial issue). The forensic accountant has many tools which are primary used by the auditor such as analytical procedures, sampling, confirmation and recalculation. Moreover, the forensic accountant also uses criminal investigation techniques, and statistical techniques. Forensic accounting report is delivered to the interested parties such as top management of the firm, stockholders of the firm and the court.

Commonly, forensic audit is referred as forensic accounting. Actually, the forensic audit is a part of forensic accounting, because it focuses on investigating, identifying, interpreting and reporting just fraudulent actions. Forensic auditing is a part of forensic accounting that is used in investigating allegation and fraudulent activities (financial crime) with auditing and investigative skills, but other financial issues such as tax issue, divorce issue, forensic auditors are not responsible about them.

2.4 Profession

2.4.1 Profession Definition

Profession is known as an occupation that has techniques to provide services and ethics of professional conduct. A profession is characterized by the authority and the justifications are made by the need in the society.

Larson (1977) defined a profession as “the main instrument of professional advancement is the capacity to claim esoteric and identifiable skills that is, to create and control a cognitive and technical basis” (West, 2003, 35).

Turner (1995) defined a profession as “specialized knowledge of the professional creates the basis for prestige and social distance between the expert and the client, since the client by definition is excluded from the esoteric knowledge of the professional association. The basis of professional knowledge is cognitive rationality whereby the privileged status of the profession is grounded in a scientific discipline” (West, 2003, 37).

These definitions provide that a profession contains essential characteristics and carries great responsibility. The profession member should have special skills and qualification based on a long period of theoretical and practical training.

2.4.2 Feature of Profession

There are features which are identified the shape of a profession. These are the features (Hurd, 1967, 78):

1. Every profession determines its own standards of education and training.

2. A professional trainee goes through more experience than learning the occupation.
3. A professional does his/her practices via legal license.
4. The boards that are responsible about licensing and admission are led by professions.
5. Legislation for profession is determined and shaped by professions.
6. The profession can have a high demand.
7. and get high income, also it has its power, and prestige.
8. The practitioners are free to practice their profession and make evaluation and control.
9. The standards of the profession, that lead the practices of the profession, are stringent more than legal controls.
10. Professionals are not members in any firm and they are identified and affiliated by their profession.
11. The professionals do not care about leaving the profession and they are likely to be terminal occupations.

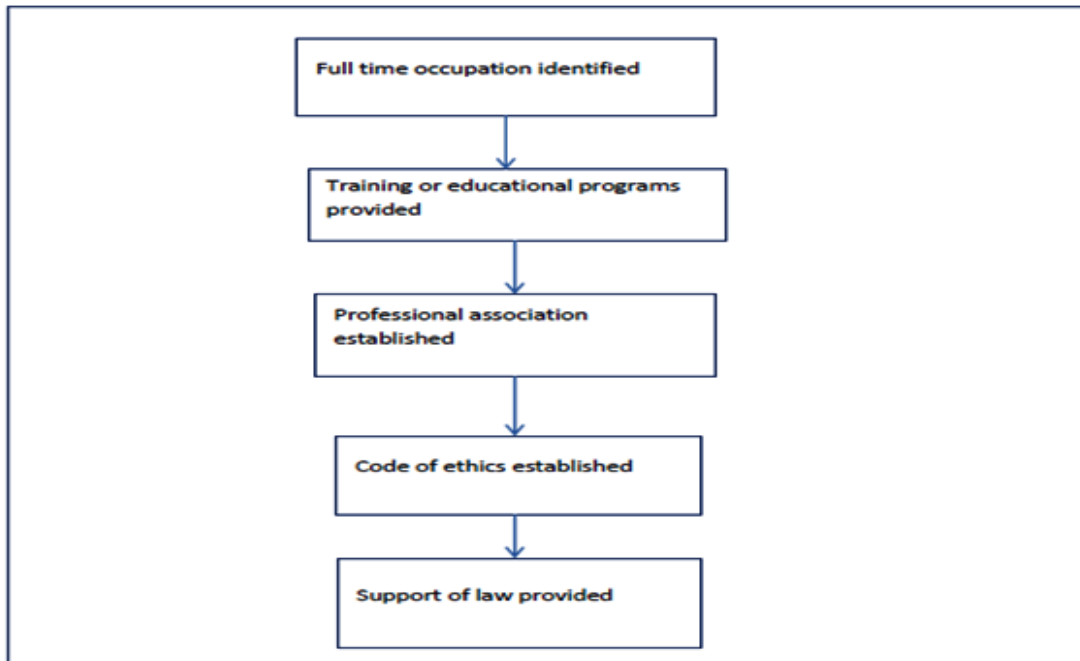
2.4.3 Profession Models

The literature proposes three categories of professional model which they offer different perspectives on the development of a profession. These models are identified as in the following criteria (Jekayinfa, 2014) (NICE, 2012):

- i. Attribute model, it was known as taxonomy model (Huber, 2012). The attribute model identify attributes, traits, categories, characteristics or dimensions of professions as something different than other occupations (Huber, 2012). Moreover, the criteria are developed first to be used in defining the professional standards. In this model, an occupation is not considered as a profession until it meets all criteria.

- ii. Process model, the process model has five stages. In this model, there is an effect for the stage on the previous stage. However, the first stage in the model process usually occurs when the full time of the occupation is identified. The second stage in the model process occurs when the training programs or educational programs have been established and this occupation is determined. After identifying educational curriculum in the second stage, the knowledge and skills would be determined and incorporated into a training programs. In the third stage, a professional association should be established to help in defining the profession characteristics. Then, it would help to determine the certifications and licenses in order to facilitate the services of the profession. In the fourth stage, the standards of the profession are developed and defined to facilitate the practice of the profession. The last stage, it speaks about gaining the support of law. Therefore, the profession can get the protection legally and politically and get the recognition of title of the work activities.

Figure 2.9: Process Model



Source: "A Historical View of How Occupations Become Professions", by NICE, 2012, page 5.

- iii. Power model, this model is known as the market model. Power model focuses on the motivations of the profession and how these motivations emerge. However, the regulation of entering the profession is determined by associations and local and state governments. Therefore, it is important for a profession to clearly determine the regulations of entry into the profession. That would improve the quality of services provided and the clients know what kind of services, they will receive.
- iv. Elements of a mature profession, in the profession's maturity can be measured by the number of elements that it has, the more elements applicable to a profession, the more mature the profession. However, every element is independent from another

element. Thus, a profession may have some of these elements and do not have others. These elements are list below:

1. **Initial Professional Education**, the education programs are provided by universities.
2. **Accreditation**, independent bodies oversee the programs in the universities.
3. **Skills Development**, there are necessary knowledge and skills are required for a profession.
4. **Certification**, to gain a certification of a profession the individual should pass a certain exam for the profession.
5. **Licensing**, the certification should be administrated by governmental body.
6. **Professional Development**, it should be a development program for a profession to improve the services.
7. **Professional Societies**, a group of individuals who should put the standards and laws of the profession.
8. **Code of Ethics**, it should impose behavioural standards to clarify all illegal practices that may lead the professionals to lose their licenses to practice for violating the code.

The profession of forensic accounting has different structure in USA and Turkey. In USA, the profession of forensic accounting has different institutions lead the field. The Association of Certified Fraud Examiners (ACFE) was established to improve

fraud examination education in universities and colleges. While the AICPA was established to provide CPAs with qualification to start their profession, the certification is called the Certified in Financial Forensics (CFF).

In USA, the person who wants to be CFF must be a CPA to be capable to have the certification of CFF, while the CPAs are not responsible about detecting fraud during an auditing mission of financial statements. The CFF can provide all services for a forensic accountant, these are the services, litigation support consultancy, expert testimony and fraud auditing/investigative accountancy, while the Certified Fraud Examiner (CFE) just focuses only on the aspects of fraud to prevent, detect, and report the fraud.

However, the system in Turkey is quite different from the USA. The code No. 6754 (2016) was issued to set the effective and efficient structure system for the experts for any fraudulent act by determining the principles and procedures regarding the qualifications, training, selection and supervision of the experts. The services that should forensic accountants do them are attributed to CPAs and the fraudulent cases are attributed to committee (there are different members from different fields such as a lawyer, one from interior ministry in the committee and one of it is an accountant as it mentioned the code). It means that all services of forensic accounting except fraudulent cases are attributed to the CPAs. Moreover, there are educational programs provided by TÜRMOB (which it is a member in IFAC) but it does not provide a license for that. While USİUD was established in 2007 as an association of ACFE in Turkey to provide certification (CFE).



Chapter Three

Study Design and Methodology

The techniques and procedures that should be implemented for collecting data and analyzing them are very important for a meaningful research and conclusion. However, this chapter presents the sampling technique, questionnaire structure and procedure used in the collection of data and analysis in the study.

As showed in previous chapter, there are differences between a forensic accountant and an auditor. Moreover, it was not compared the USA CPAs system with Turkey, just it was mentioned the techniques that CPAs use, because they are used by forensic accountants. When mixing the services of a forensic accountant with the auditors' services, that would mess with main role of the auditor which determination the information in the financial statements is correct or not. Thus, this study was made to expose the level of awareness of that in Turkey. The main aim of this study was about Turkey, the comparison was made with USA applications and legislations to be as base for the study. Therefore, it was compared the results of the profession in Turkey with USA that would help to draw the shape of profession in Turkey.

3.1 Research Design

The awareness of the services of forensic accounting profession is important, because it is needed nowadays in the field of business to deter and discover the wrong doings. This study aims to measure the level of awareness of forensic accounting services in Turkey, especially when it is certified by TÜRMOB.

This study conducted descriptive research on the awareness of forensic accounting services in Turkey. This study entitled “Awareness of Forensic Accounting Services in Turkey and Comparison with USA”. It is aimed at:

- i. Exploring the levels of awareness of education for the career path of forensic accounting.
- ii. Exploring the levels of awareness of the expected benefits of forensic accountants.
- iii. Exploring the levels of awareness of the core skills of a forensic accountant that should have.
- iv. Exploring the levels of awareness of the essential traits and characteristics of a forensic accountant that should have.

Moreover, it was compared between the Turkish forensic accounting system and USA system and it was added in the second chapter with the literature review. This part considers the main philosophical position and practices that underlie the designs of forensic accounting in both countries.

3.2 Study Population and Sample

This study has been taking a judgmental sample* of (250) participants and the information was obtained through a questionnaire on this sample. Population of this study is a collection of CPAs, CPA trainees, Sworn in CPAs and graduate students in Istanbul, these collections are considered related to the problem of the study. It was chosen Istanbul, because it has the biggest number of professions in Turkey.

* Judgmental sampling is a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment.

3.3 Sources of Data

The study used two techniques to collect data:

- a. Primary method, the questionnaire given in the appendix (one) was translated to Turkish and applied on participants to test their awareness about the forensic accounting services. The researcher has utilized the data to serve as the basis for answering the study question. The data are gotten from the questionnaire which cover all aspects addressed within the theoretical framework.
- b. Secondary method, this includes literature, books, articles studies and other material related to forensic accounting. In this method, the data would provide knowledge about the theoretical and conceptual framework about the study.

3.4 The Research Methodology Framework

The research strategy prepared a frame for designing questionnaire. That would help to address the study's goals, objectives, and questions. This section summarizes the overall study design.

The questionnaire divided to four parts to reach the goals of the study. First part, it is about the education path for a forensic accountant. The second part, it is about the benefits that are received by a forensic accountant, this part divided in two sections, one belongs to financial fraud control and the second belongs to legislation, regulation and governance.

In the third part, it is about the traits and characteristics of a forensic accountant that should have and gained through out educational period. In the fourth part, it is about

the skills of a forensic accountant. Table (3.1) shows the divisions of the questionnaire and the numbers of the questions related to each part in the questionnaire.

Table (3.1) Number of Questions Related to Dimensions

Field of study		Number	Item
General Questions		6	1, 2, 3, 4, 5, 6
Education Path		4	7, 8, 9, 10
Expected Benefits	Financial Fraud Control	8	11, 12, 13, 14, 15, 16, 17, 18,
	Legislation, Regulation and Governance	8	19, 20, 21, 22, 23, 24, 25, 26
Essential Traits and Characteristics		16	27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42
Core Skills		19	43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61

3.5 Internal Consistency Reliability

Cronbach alpha is one of the most popular reliability statistic test. It is a tool for estimating the internal consistency (average correlation) of questions in a questionnaire. When the alpha is higher, then the test is more reliable, however, usually 0.7 and above is acceptable result for Cronbach alpha (internal consistency) (Sekaran, 2003). Thus, the test is used to assess the internal consistency reliability related with

scores derived from scales of the questionnaire. As, is shows in the table above the questions were distributed among four categories of forensic accounting path of education, expected benefits, essential traits and characteristics and core skills. Table 3.2 shows the results of Cronbach alpha for each of the four dimensions and overall, and they are more than the minimum required level (0.7). Thus, it indicates a high level of internal consistency reliability about the questions.

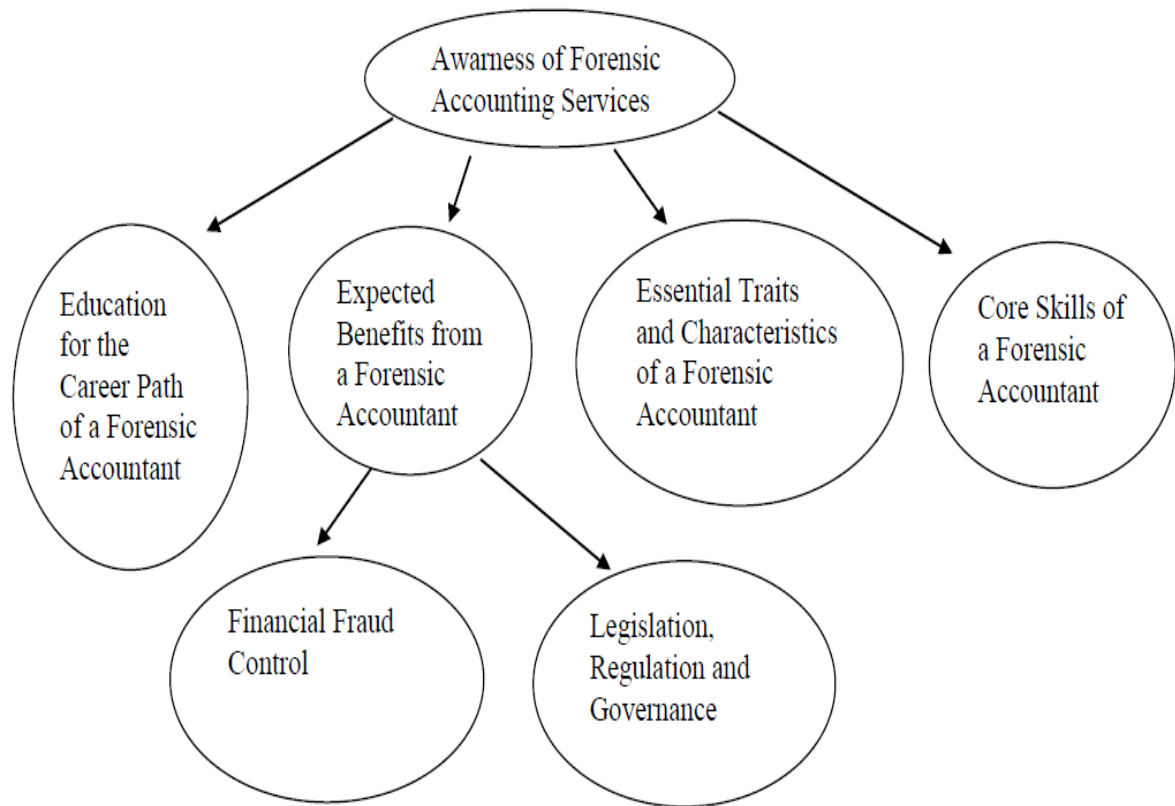
Table (3.2) Internal Consistency-Reliability Statistics

Field of study		Number	Cronbach Alpha	Item
Education Path		4	0.718	7, 8, 9, 10
Expected Benefits	Financial Fraud Control	8	0.732	11, 12, 13, 14, 15, 16, 17, 18,
	Legislation, Regulation and Governance	8	0.817	19, 20, 21, 22, 23, 24, 25, 26
Essential Traits and Characteristics		16	0.867	27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42
Core Skills		19	0.933	43, 44, 45, 46, 47,48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61

3.6 Period of the Study

Data was collected from samples in 2016. The questionnaires are distributed over CPAs, sworn in CPAs, employees in different levels in the auditing offices and graduate students in different schools in Istanbul.

3.7 Study Model



3.8 Data Analysis and Hypotheses Testing Methods

The collected data were analyzed and the hypotheses of study were tested by the Statistical Package for the Social Science (SPSS) (IBM 23). These statistical tests have been used to test the hypothesis, these are below:

1. Descriptive Statistic, (making use of frequency distributions and measures of central tendency) were performed on all categories of data to show their general trends. Also, bar and pie charts were used to display the distribution of data.
2. Inferential Statistic, some inferential statistical tools were used in analyzing the data and also to assist in testing of hypotheses.
 - T test, this test was used to examine whether any significance awareness of forensic accounting services between groups (male and female). The t-test was used because it compares the means of groups, which should be approximately normal.
 - F test, there is significance variation in level of awareness among participants. The analysis of variance simply known as F test provides a method for testing the hypotheses. It is used to determine whether group means are equal.
 - Two Way ANOVA, this test is used to examine the means of two groups that are divided in two independents variables. The main purpose of a Two Way ANOVA is to understand if there is a reaction between the two independent variables on the dependent variable.

The significance level (α) was 5%. If the level of significance is below the 5%, it means there are statistically significant differences. Yet, if the level of significance is equal and more than 5%, it means there are no significant differences statistic.

3.9 Methodology

The tool of this study was made to test all the variables in the study model. In this study there is no scale for the questions associated with each variable in the questionnaire. This study has not adopted questions from questionnaires of previous studies, because there is no previous study tests the awareness of the forensic accounting services or any topic related to that.

It was used as guide lines the forensic accounting services and skills, traits and characteristics that are mentioned in the AICPA (2009) to write the related questions in the questionnaire.

In the questionnaire each question is scaled using 5 Likert scale ranging from strongly agree (5) and strongly disagree (1) for each statement.

3.10 Hypotheses

The null and the alternative hypotheses for this study are,

H₀: Survey participants are aware of the forensic accounting services.

H₁: Survey participants are not aware of the forensic accounting services.

$$\mathbf{H_0: \quad \mu \geq 3}$$

$$\mathbf{H_1: \quad \mu < 3}$$

In this study there are four dimensions for this study and there are as following:

- Education for the Career Path of a Forensic Accountant,

H1a: Survey participants are not aware of the education path of a forensic accountant in Turkey.

- Expected Benefits from a Forensic Accountant,

H1b: Survey participants are not aware of the expected benefits of a forensic accountant in Turkey.

H1b1 Survey participants are not aware of the financial fraud control of a forensic accountant in Turkey

H1b2 Survey participants are not aware of the Legislation, Regulation and Governance of a forensic accountant in Turkey.

- Essential Traits and Characteristics of a Forensic Accountant,

H1c: Survey participants are not aware of traits and characteristics of a forensic accountant to investigate economic and financial issues in Turkey.

- Core Skills of a Forensic Accountant,

H1a: Survey participants are not aware of core skills of a forensic accountant to investigate economic and financial issues in Turkey.



Chapter Four

Integrated Findings and Discussion

To address the proposed a question for this study, this chapter shows the empirical investigation. However, a detailed analysis of the awareness of forensic accounting services via SPSS (IBM 23) and it was used for analyzing the collected data and testing the study hypotheses.

4.1 Limitation

It seems that there may be a limitation because the majority of participants were CPA trainees in Istanbul. Yet, the majority of these CPA trainees have master degrees. Thus, they have a high level of education; therefore, they have high level of awareness about the new subjects in the field. Moreover, these participants who recently graduated, they have knowledge about the latest updates in the field. Also, when the courses were checked in the related departments, it was seen that a few of them have effective courses about the subject but these courses just considered on fraud and its examinations. In addition, as it exhibits in the table (4.4) below about experience, these CPA trainees have less experience, because they newly have started in the field, but their level of education is high. However, the less number of participants who are from the old generation, who may have less knowledge about the latest updates in the field.

4.2 Characteristics of Participants

In this part using descriptive analysis to analyze the demographic data. To show the characteristics of participants.

4.2.1 Primary Profession

	Frequency	Percent
CPA Trainee	106	42.4
Sworn CPA	41	16.4
Certified Public Accountant	27	10.8
Graduate Student	76	30.4
Total	250	100.0

Table 4.1 Characteristics of Participants According to Primary Profession

It shows in the figure (4.1) above that the majority of participants are CPA trainees with 42.4%. Then, it comes the number of graduate students, it is about 30.4%. And the percentage of the Sworn CPAs is 16.4%. While the percentage CPAs is 10.8%.

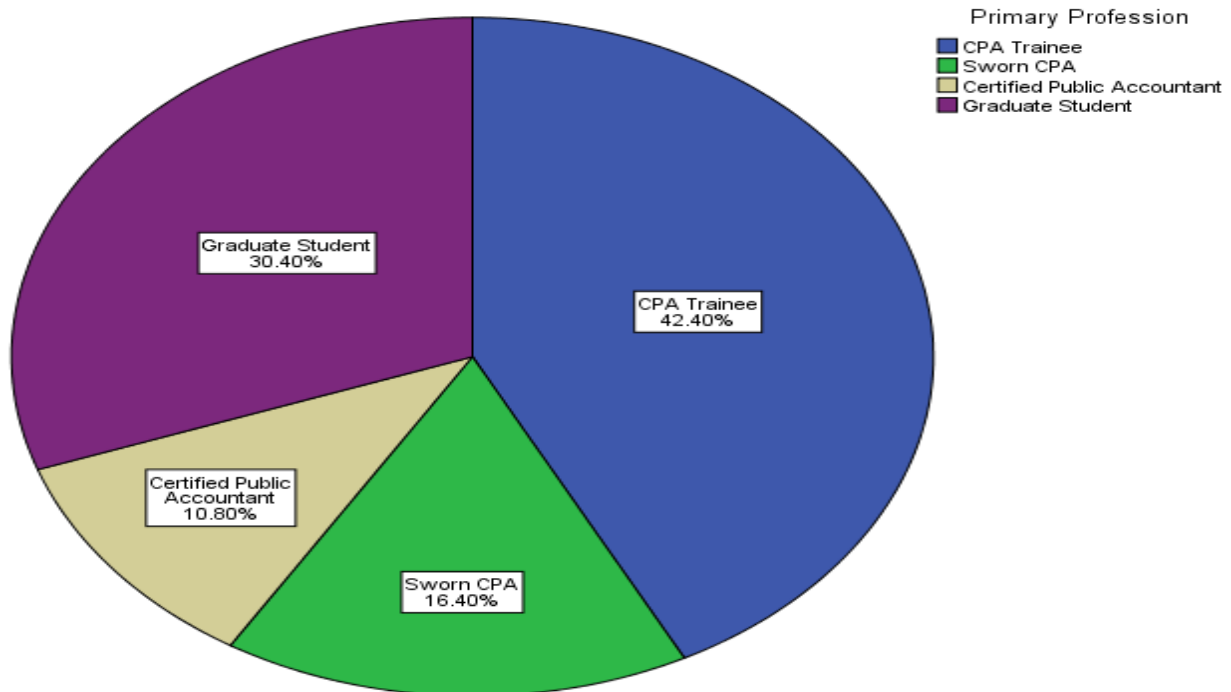


Figure 4.1 Characteristics of Participants According to the Primary Profession

4.2.2 Gender

	Frequency	Percent
Male	142	56.8
Female	108	43.2
Total	250	100.0

Table 4.2 Characteristics of Participants According to Gender

It was that 56.8% of the participants are males and the rest are females, and figure (4.2) Show this percentage.

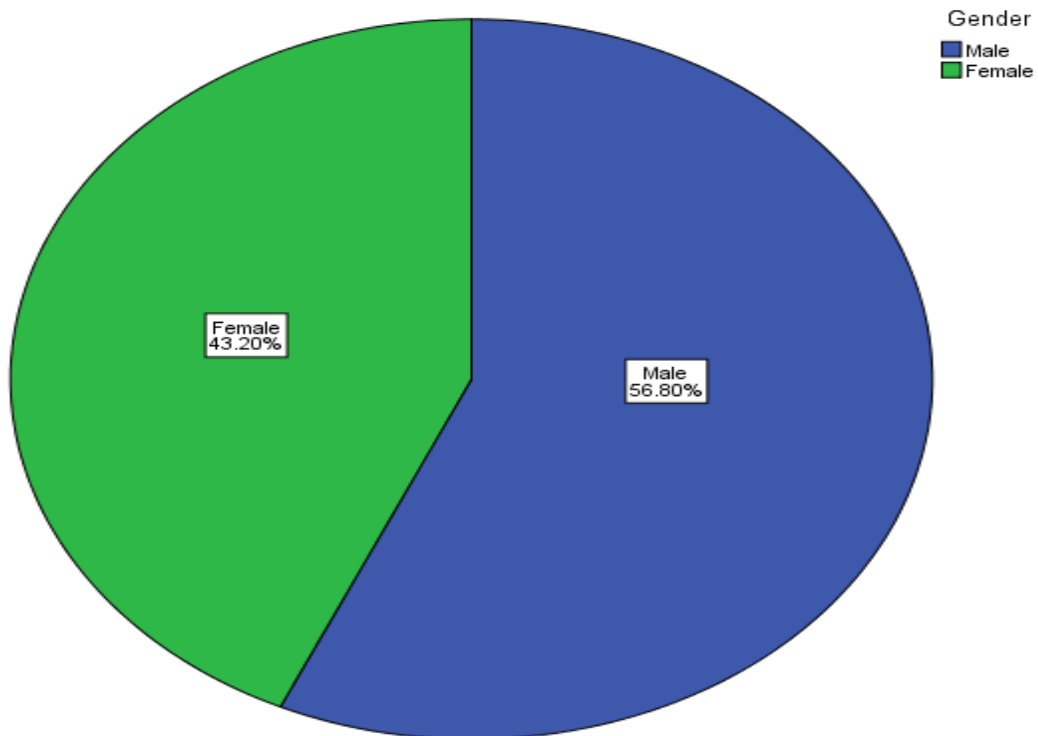


Figure 4.2 Characteristics of Participants According to Gender

4.2.3 Level of Education

	Frequency	Percent
Bachelor Degree	100	40.0
Master Degree	140	56.0
Doctorate Degree	8	3.2
Other	2	.8
Total	250	100.0

Table 4.3 Characteristics of Participants According to Level of Education

In the table (4.3), it shows that bachelor degree employees were 40% of the participants. While the master degree employees were the highest participant, they were 56%. The participants who had doctorate degree were 3.2% of them and the other participants who had different degree were 0.8%, figure (4.3) shows that.

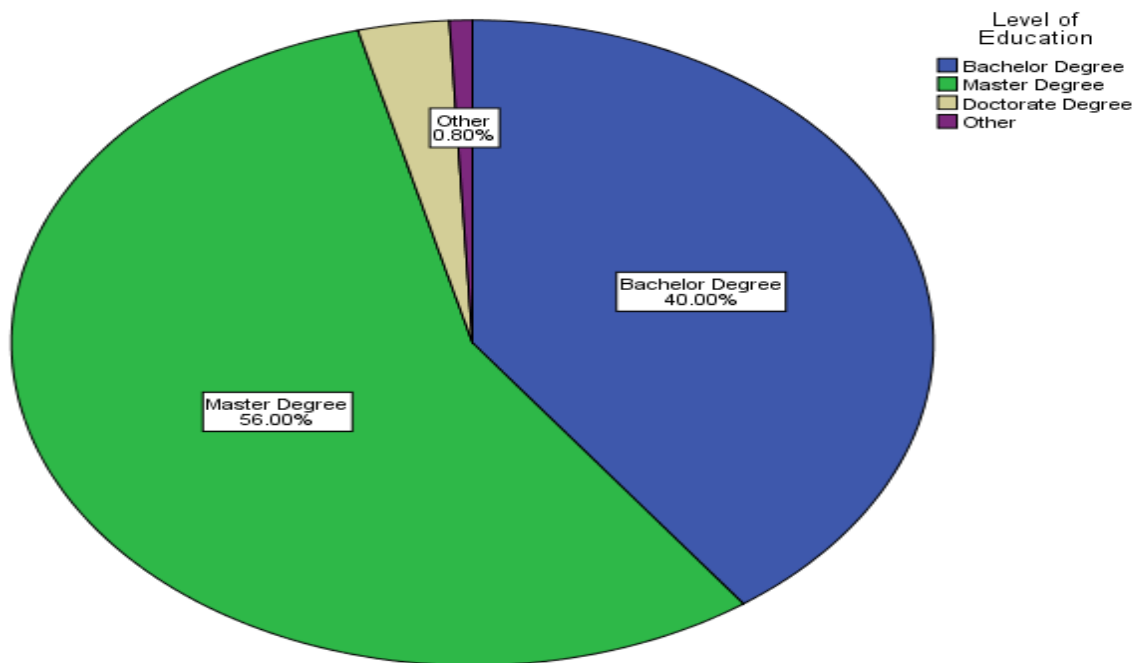


Figure 4.3 Characteristics of Participants According to Level of Education

4.2.4 Years of Experience

	Frequency	Percent
0-5 Years	132	52.8
6-10 Years	63	25.2
11-15 Years	30	12.0
More Than 15	25	10.0
Total	250	100.0

Table 4.4 Characteristics of Participants According to Years of Experience

As it shows in the table (4.4), %52.8 from the participants had an experience between 0-5 years. And 25.2% of the participants had an experience between 6-10 years. The Participants who had 11-15 years were 12% and the participants who had more than 15 years an experience were 10%.

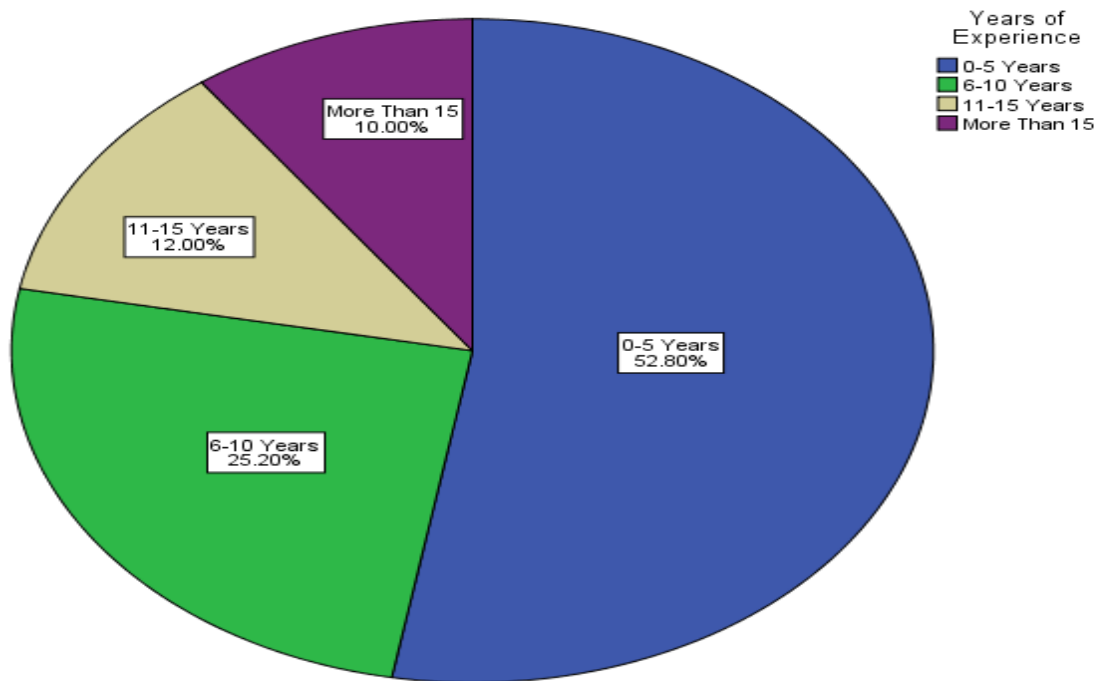


Figure 4.4 Characteristics of Participants According to Years of Experience

4.2.5 Professional Qualification

	Frequency	Percent
CPA	144	57.6
CFA	1	.4
Independent Forensic Accountant	4	1.6
CFE	2	.8
Other	99	39.6
Total	250	100.0

Table 4.5 Characteristics of Participants According to Professional Qualification

The CPA were more than half of the participants; they were 57.6% while CFA were 0.4%. Independent forensic accountants (it means a forensic accountant who investigates and analyses financial evidence and communicates complex financial and business related issues in the form of a report and/or testifying in court as an expert witness) were 1.6%. The participants who had CFE qualification were 0.8% and the participants who had different kind of qualifications were 39.6%.

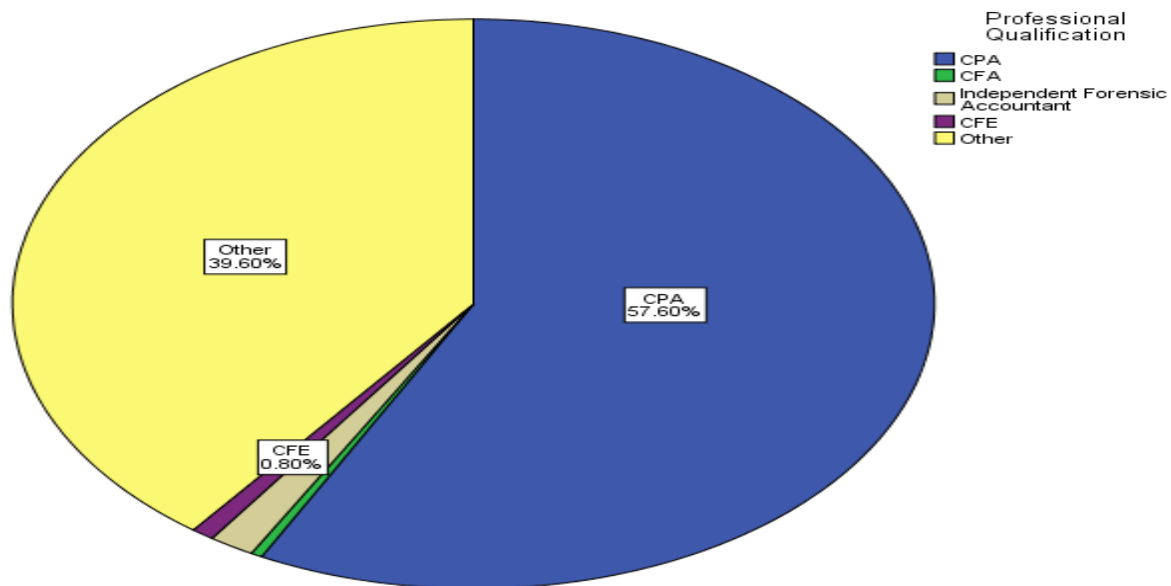


Figure 4.5 Characteristics of Participants According to Professional Qualification

4.2.6 Involvement in Forensic Accounting Services

	Frequency	Percent
I undertake services of forensic accountants	14	5.6
I consider myself a forensic accountant	6	2.4
I employ forensic accountants in my business	2	.8
I have no involvement	228	91.2
Total	250	100.0

Table 4.6 Characteristics of Participants According to Involvement in Forensic Accounting Services

The 91.2% of the participants, they did not have any involvement in any kind of activities related to forensic accounting while 5.6% of them have provided services related to the forensic accounting. The participants who considered themselves as forensic accountants were 2.4%, they may be the ones who attended the education program. And 0.8% of the participant have employed forensic accountants in their firms when they needed them.

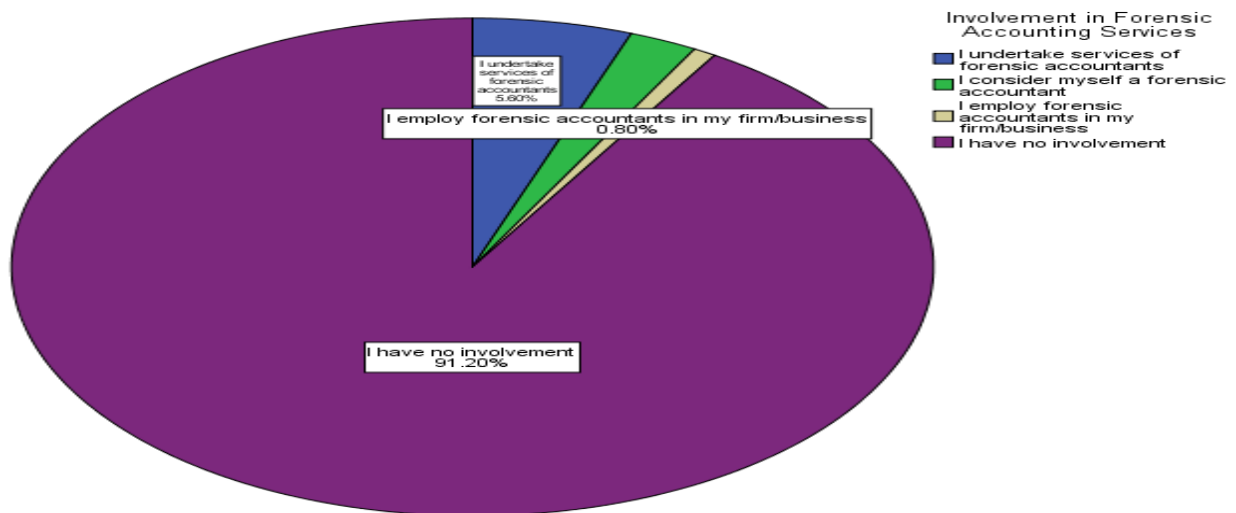


Figure 4.6 Characteristics of Participants According to Involvement in Forensic Accounting Services

4.3 Discussion of Results

This section discusses the major findings and ties them with the research main questions. This research addresses the following points, education for the career path of a forensic accountant, expected benefits from a forensic accountant, essential traits and characteristics of a forensic accountant and core skills of a forensic accountant. The following parts discuss and summarize the major findings of the study in order to determine the level of awareness of forensic accounting in Turkey. The scale that has been used in the questionnaire was completely agree (5), agree (4), neutral (3), disagree (2) and completely disagree (1).

4.3.1 Part One, Descriptive Statistic

4.3.1.1 Education for the Career Path of a Forensic Accountant

Table 4.7 shows mean and standard deviation for each question of this dimension and it is about the education path for a forensic accountant.

Question	N	Mean	Std. Deviation
7. What under-graduate degree major do you think is most appropriate for a FA?	250	4.73	1.546
8. What is the highest level of education that you think is needed to be a successful FA?	250	1.74	.739
9. Forensic accounting is a relatively new area of enquiry.	250	4.28	.694
10. The forensic accountant is different from an independent auditor.	249	3.94	.901
Average		3.673	.970

Table 4.7 Education for the Career Path of a Forensic Accountant

In the table 4.7, it shows that the mean average for thinking the appropriate education for the career paths of forensic accounting is **3.673**. The average of standard deviation was **0.970**. In addition, the average of the mean of the above questions were close to the side of agreement, therefore, there were positive attitudes toward these questions, because of their mean were greater than the mean of the scale **3**.

4.3.1.2 Expected Benefits from Forensic Accountant

4.3.1.2.1 Financial Fraud Control

Table 4.8 shows mean and standard deviation for each question of this dimension and it is about the expected benefits from a forensic accountant in financial fraud control.

Question	N	Mean	Std. Deviation
11. Fraud detection programs?	249	4.10	.628
12. Forensic accounting can be used to locate diverted funds or assets?	249	3.86	.775
13. Forensic accounting can Identify misappropriated assets?	248	3.50	.834
14. Reinforce the credibility of financial statements?	249	4.08	.723
15. Satisfies the request for showing the truth about fraud?	248	4.00	.691
16. Make financial information more reliable?	248	4.19	.691
17. Prepare a report about litigation support consulting?	248	4.01	.779
18. Internal control evaluation?	249	4.08	.677
Average		3.978	.725

Table 4.8 Expected Benefits from a Forensic Accountant in Financial Fraud Control

The table 4.8 shows the mean average for the answers of the Participants was **3.987** and it was about the expected benefits from a forensic accountant in financial fraud control. In addition, the average standard deviation was **0.725**. As shown in table 4.8, there were positive attitudes toward the above questions because the mean average for all questions were on the side of acceptance.

4.3.1.2.2 Legislation, Regulation and Governance

Table 4.9 shows mean and standard deviation for each question of this dimension and it is about the expected benefits from a forensic accountant in legislation, regulation and governance.

Question	N	Mean	Std. Deviation
19. Business valuations and cost estimates?	247	3.80	.831
20. Compliance with applicable laws and regulations?	249	4.10	.647
21. Estimate the management income?	248	3.54	.890
22. Evaluate corporate governance system?	249	3.81	.783
23. Ability of writing effective report?	249	3.78	.865
24. Financial expert in divorce case?	249	3.56	.919
25. Expert in tax issues?	249	3.95	.702
26. Attend the court as expert witness?	249	4.10	.630
Average		3.830	.783

Table 4.9 Expected Benefits from a Forensic Accountant in Legislation,
Regulation and Governance

In the table 4.9, it shows that the mean average for the answers of the participants was about the expected benefits from a forensic accountant in legislation, regulation and governance was **3.830**. The standard deviation was **0.783**. However,

there were positive attitudes toward the above questions because the mean average for the questions were greater than the mean of the scale 3.

4.3.1.3 Essential Traits and Characteristics of a Forensic Accountant

Table 4.10 shows mean and standard deviation for each question of this dimension and it is about the essential traits and characteristic of a forensic accountant.

Question	N	Mean	Std. Deviation
27. Adaptive	249	4.08	.722
28. Analytical	250	4.31	.558
29. Confident	250	4.26	.538
30. Detail-oriented	249	4.35	.557
31. Ethical	250	4.36	.572
32. Evaluative	249	4.35	.493
33. Function well under pressure	250	4.32	.630
34. Generate new ideas and scenarios	249	4.14	.732
35. Inquisitive	249	4.29	.571
36. Insightful	249	4.04	.726
37. Intuitive	250	4.24	.613
38. Make people feel at ease	249	3.78	.923
39. Persistent	249	3.96	.782
40. Responsive	249	3.95	.697
41 Skepticism	249	4.22	.511
42. Team player	250	4.07	.719
Average		4.17	.647

Table 4.10 Essential Traits and Characteristics of a Forensic Accountant

In the table, the mean average of the essential traits and characteristic of a forensic accountant was **4.17** based on the Participants' answers. The standard deviation was **0.647**. Therefore, this result shows there was positive attitudes toward the above questions, because of their mean were on the side of agreed part.

4.3.1.4 Core Skills of Forensic Accountants

Table 4.11 shows mean and standard deviation for each question of this dimension and it is about the core skills of forensic accountants.

Question	N	Mean	Std. Deviation
43. Auditing skills	250	4.36	.557
44. Critical/strategic thinker	250	4.26	.555
45. Effective oral communicator	250	4.12	.641
46. Effective written communicator	250	4.20	.543
47. Identify key issues	250	4.37	.516
48. Investigative ability	250	4.39	.489
49. Investigative intuitiveness	250	4.35	.542
50. Organize an unstructured situation	249	4.07	.656
51. Research skills	249	4.35	.535
52. Legal skills	249	4.37	.540
53. Simplify the information	249	4.29	.556
54. Solve structured problems	249	4.37	.516
55. Solve unstructured problems	248	4.16	.558
56. Synthesize results of discovery and analysis	248	4.27	.581
57. Tell the story	249	4.16	.496
58. Think like the wrongdoer	250	4.12	.656
59. Understand the goals of a case	250	4.13	.533
60. Psychology Skills	249	4.18	.623
61. Sociology Skills	249	4.12	.639
Average		4.24	.565

Table 4.11 Core Skills of Forensic Accountants

The table 4.11 shows how the mean average of the answers about the core skills of forensic accountants was **4.24** and it is on the side of agreed. The standard deviation was **0.565**. Therefore, this result shows there was positive attitudes toward the above questions, because of the mean was greater than the mean of the scale **3**.

4.3.2 Part Two, T Test (Independent Samples T-Test)

In this part, it was used the gender as demographic variable for all dimensions with level of significance (α) set at 0.05 (5%). Also, it was assumed that the variances are equal and with two tails test. This is the null hypothesis and the main alternative hypothesis for the study:

H₀: Survey participants are aware of the forensic accounting services.

H₁: Survey participants are not aware of the forensic accounting services.

4.3.2.1 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Gender

Table 4.12 shows T test for this dimension and it is about the education path for a forensic accountant based on demographic variable of gender. This is the alternative hypothesis for this dimension:

H_{1a}: Survey participants are not aware of the education path of a forensic accountant in Turkey.

Question	Mean		Std. Deviation		T Test	Sig	Accept/ Reject
	Male	Female	Male	Female			
7. Appropriate Degree for Forensic Accountants	4.76	4.69	1.762	1.212	0.381	0.703	Accept
8. Necessary Level of Education for FA	1.74	1.74	0.731	0.753	-0.014	0.689	Accept
9. Forensic Accounting is New Area of Enquiry	4.24	4.32	0.753	0.609	-0.955	0.341	Accept
10. Forensic Accountant is Different from an independent Auditor	4.07	3.78	0.848	0.945	2.585	0.01	Reject

Table 4.12 Education for the Career Path of a FA Based on Demographic Variable of Gender

As in the table 4.12, the level of significance was ($P < 0.05$) about the forensic accountant is different from an auditor for a forensic accountant. While the level of significance was ($P > 0.05$) about the appropriate undergraduate degree for a forensic accountant, level of education for a forensic accountant and forensic accounting is a new area of enquiry. The results showed that the percentage of accepting is more than percentage of rejecting, then we fail to reject the null hypothesis.

4.3.2.2 Expected Benefits from a Forensic Accountant Based on Demographic Variable of Gender

In this part, it was divided in two sub-hypotheses to get a result for this dimension. This is the main alternative hypothesis for this dimension:

H_{1b}: Survey participants are not aware of the expected benefits of a forensic accountant in Turkey.

4.3.2.2.1 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Gender

The first sub-hypothesis for the expected benefits of a forensic accountant is about financial fraud control of a forensic accountant. This is the sub-hypothesis for this dimension:

H1b1 Survey participants are not aware of the financial fraud control of a forensic accountant in Turkey.

Table 4.13 shows T test for this sub-hypothesis and it is about financial fraud control for a forensic accountant based on demographic variable of gender.

Question	Mean		Std. Deviation		T Test	Sig	Accept/Reject
	Male	Female	Male	Female			
11. Fraud detection programs	4.00	4.22	.619	.619	-2.831	.005	Reject
12. FA for locating diverted funds or assets	3.84	3.88	.778	.774	-.408	.684	Accept
13. FA identifies misappropriated assets	3.45	3.58	.864	.792	-1.166	.245	Accept
14. Reinforce the credibility of financial statements	3.99	4.19	.756	.662	-2.276	.024	Reject
15. Satisfy the request for showing the truth about fraud	3.98	4.03	.722	.651	-.556	.579	Accept
16. Make financial data more reliable	4.17	4.22	.743	.617	-.540	.590	Accept
17. Preparing reports about litigation support consulting	4.07	3.93	.762	.797	1.462	.145	Accept
18. Evaluating internal control system	4.09	4.06	.664	.695	.423	.673	Accept

Table 4.13 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Gender

As in the table 4.13, the level of significance was ($P < 0.05$) about the fraud detection programs for a forensic accountant and reinforcing the credibility of financial statements. Yet, the level of significance was ($P > 0.05$) about the forensic accounting can be used to locate diverted funds or assets, forensic accounting can identify misappropriated assets, satisfying the request for showing the truth about fraud, making financial information more reliable, preparing a report about litigation support consulting and internal control evaluation for a forensic accountant. In conclusion, the results showed that the percentage of accepting is more than percentage of rejecting, then we fail to reject the null hypothesis.

4.3.2.2.2 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Gender

The second sub-hypothesis for the expected benefits of a forensic accountant is about legislation, regulation and governance of a forensic accountant. This is the sub-hypothesis for this dimension:

H_{1b2} Survey participants are not aware of the legislation, regulation and governance of a forensic accountant in Turkey.

Table 4.14 shows T test for this sub-hypothesis and it is legislation, regulation and governance for a forensic accountant based on demographic variable of gender.

Question	Mean		Std. Deviation		T Test	Sig	Accept/ Reject
	Male	Female	Male	Female			
19. Business valuation and cost estimates	3.72	3.90	.863	.780	-1.623	.106	Accept
20. Compliance with laws and Regulation	4.11	4.07	.645	.651	.476	.635	Accept
21. Estimate the management income	3.52	3.57	.938	.825	-.458	.647	Accept
22. Evaluating CG	3.78	3.85	.863	.667	-.715	.475	Accept
23. Ability of writing effective report	3.72	3.84	.934	.763	-1.078	.282	Accept
24. Financial expert in divorce case	3.50	3.65	.990	.812	-1.293	.197	Accept
25. Expert in tax issues	3.94	3.96	.748	.640	-.298	.766	Accept
26. Attend the court as expert witness	4.12	4.07	.660	.591	.576	.565	Accept

Table 4.14 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Gender

As in the table 4.14, the level of significance was ($P > 0.05$) about the business valuation and cost estimates, evaluating corporate governance, ability of writing effective report, financial expert in divorce case for a forensic accountant, compliance with laws and regulation, estimate the management income, expert in tax issues and attend the court as expert witness for a forensic accountant. The results show that we fail to reject the null hypothesis.

4.3.2.3 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Gender

Table 4.15 shows T test for this dimension and it is about essential traits and characteristics of a forensic accountant based on demographic variable of gender. This is the alternative hypothesis for this dimension:

H_{1c}: Survey participants are not aware of traits and characteristics of a forensic accountant in Turkey.

Question	Mean		Std. Deviation		T Test	Sig	Accept/ Reject
	Male	Female	Male	Female			
27. Adaptive	4.09	4.07	.716	.732	.196	.845	Accept
28. Analytical	4.30	4.32	.532	.593	-.298	.766	Accept
29. Confident	4.27	4.24	.521	.562	.493	.623	Accept
30. Detail-oriented	4.34	4.37	.571	.540	-.420	.675	Accept
31. Ethical	4.44	4.25	.553	.582	2.682	.008	Reject
32. Evaluative	4.40	4.27	.507	.466	2.169	.031	Reject
33. Function well under pressure	4.36	4.28	.623	.639	1.012	.312	Accept
34. Generate new ideas and scenarios	4.10	4.20	.720	.746	-1.116	.265	Accept
35. Inquisitive	4.28	4.30	.587	.551	-.269	.788	Accept
36. Insightful	3.97	4.12	.774	.652	-1.608	.109	Accept
37. Intuitive	4.20	4.29	.614	.612	-1.058	.291	Accept
38. Make people feel at ease	3.79	3.75	.922	.929	.375	.708	Accept
39. Persistent	4.00	3.91	.775	.792	.926	.355	Accept
40. Responsive	3.91	3.99	.732	.648	-.851	.396	Accept
41. Skepticism	4.21	4.23	.517	.506	-.341	.733	Accept
42. Team player	4.04	4.11	.723	.715	-.749	.454	Accept

Table 4.15 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Gender

As in the table 4.15, the level of significance was ($P < 0.05$) about the evaluative characteristics for a forensic accountant and ethical. Yet, the level of significance was ($P > 0.05$) about the adaptive, analytical, confident, detail-oriented, function well under pressure, generate new ideas and scenarios, inquisitive, insightful, intuitive, make people feel at ease, persistent, responsive, skepticism and team player for a forensic accountant. In the table 4.15, the percentage of results that show accept is more than percentage of results that show reject, then we accept the null hypothesis.

4.3.2.4 Core Skills of Forensic Accountant Based on Demographic Variable of Gender

Table 4.16 shows T test for this dimension and it is about the core skills of a forensic accountant based on demographic variable of gender. This is the alternative hypothesis for this dimension:

H_{1a}: Survey participants are not aware of core skills of a forensic accountant in Turkey.

Question	Mean		Std. Deviation		T Test	Sig	Accept/ Reject
	Male	Female	Male	Female			
43. Auditing skills	4.42	4.28	.536	.577	1.946	.053	Accept
44. Critical/strategic thinker	4.25	4.28	.525	.593	-.342	.733	Accept
45. Effective oral communicator	4.14	4.09	.669	.604	.589	.557	Accept
46. Effective written communicator	4.21	4.18	.556	.526	.509	.611	Accept
47. Identify key issues	4.42	4.31	.536	.486	1.531	.127	Accept
48. Investigative ability	4.44	4.32	.499	.470	1.925	.055	Accept
49. Investigative intuitiveness	4.42	4.27	.522	.557	2.141	.033	Reject
50. Organize an unstructured situation	3.99	4.18	.671	.624	-2.199	.029	Reject
51. Research skills	4.38	4.31	.530	.541	.997	.320	Accept
52. Legal skills	4.43	4.31	.538	.538	1.745	.082	Accept
53. Simplify the information	4.34	4.21	.571	.530	1.800	.073	Accept
54. Solve structured problems	4.42	4.31	.523	.502	1.718	.087	Accept
55. Solve unstructured problems	4.22	4.07	.599	.490	2.042	.042	Reject
56. Synthesize results of discovery and analysis	4.34	4.19	.597	.549	2.134	.034	Reject
57. Tell the story	4.17	4.14	.462	.538	.494	.622	Accept
58. Think like the wrongdoer	4.11	4.14	.653	.662	-.312	.755	Accept
59. Understand the goals of a case	4.13	4.14	.531	.538	-.178	.859	Accept
60. Psychology Skills	4.20	4.15	.563	.695	.632	.528	Accept
61. Sociology Skills	4.16	4.07	.593	.693	1.091	.276	Accept

Table 4.16 Core Skills of Forensic Accountant Based on Demographic Variable of Gender

As in the table 4.16, the level of significance was ($P < 0.05$) about investigative intuitiveness, organizing an unstructured situation, solving unstructured problems and synthesize results of discovery. Yet, the level of significance was ($P > 0.05$) about the auditing skills, critical/strategic thinker, identifying key issues, investigative ability, simplify the information, solving structured problems, analysis for a forensic

accountant, effective oral communicator, effective written communicator, research skills, legal skills, telling the story, thinking like the wrongdoer, understanding the goals of a case, psychology skills and sociology skills for a forensic accountant. Therefore, the percentage of accept is more than percentage of reject as it shows in the table above, then we fail to reject the null hypothesis.

4.3.3 Part Three, F Test (One Way ANOVA)

In this part, it was used the primary profession and level of education as demographic variable for all dimensions, because they are related directly to forensic accounting services, with level of significance (α) set at 0.05 (5%).

First Demographic Variable, Primary Profession

4.3.3.1 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Primary Profession

In the table 4.17, it shows the result of F test for this dimension and it is about education for the career path of a forensic accountant based on the demographic variable primary profession.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
7. Appropriate Degree for Forensic Accountants	Between Groups	19.341	3	6.447	2.753	0.043	Reject
	Within Groups	576.163	246	2.342			
	Total	595.504	249				
8. Necessary Level of Education for FA	Between Groups	3.22	3	1.073	1.987	0.116	Accept
	Within Groups	132.88	246	0.54			
	Total	136.1	249				
9. Forensic Accounting is New Area of Enquiry	Between Groups	0.759	3	0.253	0.522	0.667	Accept
	Within Groups	119.197	246	0.485			
	Total	119.956	249				
10. Forensic Accountant is Different from an independent auditor	Between Groups	3.647	3	1.216	1.507	0.213	Accept
	Within Groups	197.566	245	0.806			
	Total	201.213	248				

Table 4.17 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Primary Profession

Indicate F test in table 4.17, the level of significance was ($P < 0.05$) about the appropriate degree for forensic accountants. Yet, the level of significance was ($P > 0.05$) about the level of education for a forensic accountant, forensic accounting is a new area of enquiry and a forensic accountant is different from a CPA. As the results showed that the percentage of accept is more than percentage of reject, then we fail to reject the null hypothesis.

4.3.3.2 Expected Benefits from a Forensic Accountant Based on Demographic Variable of Primary Profession

In this part, it was divided in two sub-hypotheses to get a result for this dimension.

4.3.3.2.1 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Primary Profession

The first sub-hypothesis for the expected benefits of a forensic accountant is about financial fraud control of a forensic accountant.

Table 4.18 shows T test for this sub-hypothesis and it is about financial fraud control for a forensic accountant based on demographic variable of primary profession.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
11. Fraud detection programs	Between Groups	0.082	3	0.027	0.069	0.976	Accept
	Within Groups	97.604	245	0.398			
	Total	97.687	248				
12. FA for locating diverted funds or assets	Between Groups	1.752	3	0.584	0.973	0.406	Accept
	Within Groups	147.044	245	0.6			
	Total	148.795	248				
13. FA identifies misappropriated assets	Between Groups	1.915	3	0.638	0.916	0.434	Accept
	Within Groups	170.081	244	0.697			
	Total	171.996	247				
14. Reinforce the credibility of financial statements	Between Groups	5.391	3	1.797	3.546	0.015	Reject
	Within Groups	124.159	245	0.507			
	Total	129.55	248				

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
15. Satisfy the request for showing the truth about fraud	Between Groups	1.878	3	0.626	1.316	0.27	Accept
	Within Groups	116.122	244	0.476			
	Total	118	247				
16. Make financial data more reliable	Between Groups	4.169	3	1.39	2.977	0.032	Reject
	Within Groups	113.923	244	0.467			
	Total	118.093	247				
17. Preparing reports about litigation support consulting	Between Groups	0.788	3	0.263	0.429	0.732	Accept
	Within Groups	149.196	244	0.611			
	Total	149.984	247				
18. Evaluating Internal Control System	Between Groups	1.481	3	0.494	1.079	0.359	Accept
	Within Groups	112.07	245	0.457			
	Total	113.55	248				

Table 4.18 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Primary Profession

F test in table 4.18 indicates that the level of significance was ($P < 0.05$) about reinforcing the credibility of financial statements and making the financial data more reliable. Yet, the level of significance was ($P > 0.05$) about the fraud detection programs, a forensic accountant locates diverted funds or assets, a forensic accountant identifies misappropriated assets, satisfy the request for showing the truth about fraud, preparing reports about litigation support consulting and evaluating internal control system. Thus, results showed that the percentage of accept is more than percentage of reject, then we fail to reject the null hypothesis.

4.3.3.2.2 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Primary Profession

Table 4.19 shows T test for second sub-hypothesis and it is about legislation, regulation and governance for a forensic accountant based on demographic variable of primary profession.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
19. Business valuation and cost estimates	Between Groups	4.027	3	1.342	1.967	0.12	Accept
	Within Groups	165.851	243	0.683			
	Total	169.879	246				
20. Compliance with laws and regulation	Between Groups	1.439	3	0.48	1.149	0.33	Accept
	Within Groups	102.248	245	0.417			
	Total	103.687	248				
21. Estimate the management income	Between Groups	8.207	3	2.736	3.562	0.015	Reject
	Within Groups	187.39	244	0.768			
	Total	195.597	247				
22. Evaluating CG	Between Groups	4.9	3	1.633	2.718	0.045	Reject
	Within Groups	147.229	245	0.601			
	Total	152.129	248				
23. Ability of writing effective report	Between Groups	5.651	3	1.884	2.567	0.055	Accept
	Within Groups	179.755	245	0.734			
	Total	185.406	248				

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
24. Financial expert in divorce case	Between Groups	13.873	3	4.624	5.798	0.001	Reject
	Within Groups	195.412	245	0.798			
	Total	209.285	248				
25. Expert in tax issues	Between Groups	4.259	3	1.42	2.946	0.034	Reject
	Within Groups	118.062	245	0.482			
	Total	122.321	248				
26. Attend the court as expert witness	Between Groups	0.378	3	0.126	0.315	0.815	Accept
	Within Groups	98.112	245	0.4			
	Total	98.49	248				

Table 4.19 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Primary Profession

As in the table 4.19, the level of significance was ($P < 0.05$) about the estimating the management income, evaluating corporate governance, financial expert in divorce case and expert in tax issues. Yet, there is no statistically significant ($P > 0.05$) awareness about business valuation and cost estimates, compliance with laws and regulation, ability of writing effective report and attend the court as expert witness. In this part, the results are equal between accept and reject.

4.3.3.3 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Primary Profession

Table 4.20 shows F test for this dimension and it is about essential traits and characteristics of a forensic accountant based on demographic variable of primary profession.

		Sum of	df	Mean	F	Sig.	Accept/ Reject
		Squares		Square			
27. Adaptive	Between Groups	2.329	3	0.776	1.499	0.215	Accept
	Within Groups	126.9	245	0.518			
	Total	129.229	248				
28. Analytical	Between Groups	0.636	3	0.212	0.677	0.567	Accept
	Within Groups	77.028	246	0.313			
	Total	77.664	249				
29. Confident	Between Groups	0.926	3	0.309	1.066	0.364	Accept
	Within Groups	71.174	246	0.289			
	Total	72.1	249				
30. Detail-oriented	Between Groups	0.95	3	0.317	1.021	0.384	Accept
	Within Groups	75.95	245	0.31			
	Total	76.9	248				
31. Ethical	Between Groups	0.81	3	0.27	0.822	0.483	Accept
	Within Groups	80.79	246	0.328			
	Total	81.6	249				
32. Evaluative	Between Groups	0.74	3	0.247	1.014	0.387	Accept
	Within Groups	59.558	245	0.243			
	Total	60.297	248				
33. Function well under pressure	Between Groups	2.354	3	0.785	2.003	0.114	Accept
	Within Groups	96.402	246	0.392			
	Total	98.756	249				
34. Generate new ideas and scenarios	Between Groups	1.053	3	0.351	0.653	0.582	Accept
	Within Groups	131.742	245	0.538			
	Total	132.795	248				
35. Inquisitive	Between Groups	2.031	3	0.677	2.107	0.1	Accept
	Within Groups	78.724	245	0.321			
	Total	80.755	248				
36. Insightful	Between Groups	0.986	3	0.329	0.621	0.602	Accept
	Within Groups	129.689	245	0.529			
	Total	130.675	248				
37. Intuitive	Between Groups	1.593	3	0.531	1.419	0.238	Accept
	Within Groups	92.007	246	0.374			
	Total	93.6	249				
38. Make people feel at ease	Between Groups	9.702	3	3.234	3.928	0.009	Reject
	Within Groups	201.704	245	0.823			
	Total	211.406	248				
39. Persistent	Between Groups	1.802	3	0.601	0.982	0.402	Accept
	Within Groups	149.796	245	0.611			
	Total	151.598	248				
40. Responsive	Between Groups	2.67	3	0.88	1.853	0.138	Accept
	Within Groups	110.552	248				
	Total	113.222	251				
41. Skepticism	Between Groups	0.412	3	0.137	0.522	0.667	Accept
	Within Groups	64.439	245	0.263			
	Total	64.851	248				
42. Team player	Between Groups	2.626	3	0.875	1.708	0.166	Accept
	Within Groups	126.078	246	0.513			
	Total	128.704	249				

Table 4.20 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Primary Profession

The level of significance was ($P < 0.05$) about the making people feel at ease. However, the level of significance was ($P > 0.05$) about the adaptive, analytical, confident, detail-oriented, ethical, evaluative, function well under pressure; generate new ideas and scenarios, inquisitive, insightful, intuitive, persistent, responsive, skepticism and team player. Results showed that the percentage of accept is more than percentage of reject, then we fail to reject the null hypothesis.

4.3.3.4 Core Skills of a Forensic Accountant Based on Demographic Variable of Primary Profession

Table 4.21 shows F test for this dimension and it is about core skills of a forensic accountant based on demographic variable of primary profession.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
43. Auditing skills	Between Groups	1.879	3	0.626	2.042	0.109	Accept
	Within Groups	75.437	246	0.307			
	Total	77.316	249				
44. Critical/strategic thinker	Between Groups	1.84	3	0.613	2.018	0.112	Accept
	Within Groups	74.736	246	0.304			
	Total	76.576	249				
45. Effective oral communicator	Between Groups	4.56	3	1.52	3.822	0.011	Reject
	Within Groups	97.84	246	0.398			
	Total	102.4	249				
46. Effective written communicator	Between Groups	2.948	3	0.983	3.432	0.018	Reject
	Within Groups	70.448	246	0.286			
	Total	73.396	249				
47. Identify key issues	Between Groups	1.211	3	0.404	1.523	0.209	Accept
	Within Groups	65.193	246	0.265			
	Total	66.404	249				
48. Investigative ability	Between Groups	2.065	3	0.688	2.944	0.034	Reject
	Within Groups	57.519	246	0.234			
	Total	59.584	249				

49. Investigative intuitiveness	Between Groups	3.332	3	1.111	3.921	0.009	Reject
	Within Groups	69.692	246	0.283			
	Total	73.024	249				
50. Organize an unstructured situation	Between Groups	2.967	3	0.989	2.336	0.074	Accept
	Within Groups	103.732	245	0.423			
	Total	106.699	248				
51. Research skills	Between Groups	0.783	3	0.261	0.912	0.436	Accept
	Within Groups	70.117	245	0.286			
	Total	70.9	248				
52. Legal skills	Between Groups	0.183	3	0.061	0.207	0.891	Accept
	Within Groups	72.082	245	0.294			
	Total	72.265	248				
53. Simplify the information	Between Groups	3.42	3	1.14	3.808	0.011	Reject
	Within Groups	73.336	245	0.299			
	Total	76.755	248				
54. Solve structured problems	Between Groups	1.492	3	0.497	1.889	0.132	Accept
	Within Groups	64.516	245	0.263			
	Total	66.008	248				
55. Solve unstructured problems	Between Groups	0.057	3	0.019	0.061	0.98	Accept
	Within Groups	76.81	244	0.315			
	Total	76.867	247				
56. Synthesize results of discovery and analysis	Between Groups	1.228	3	0.409	1.216	0.305	Accept
	Within Groups	82.127	244	0.337			
	Total	83.355	247				
57. Tell the story	Between Groups	0.452	3	0.151	0.611	0.608	Accept
	Within Groups	60.439	245	0.247			
	Total	60.892	248				
58. Think like the wrongdoer	Between Groups	0.444	3	0.148	0.341	0.795	Accept
	Within Groups	106.712	246	0.434			
	Total	107.156	249				
59. Understand the goals of a case	Between Groups	0.817	3	0.272	0.959	0.413	Accept
	Within Groups	69.827	246	0.284			
	Total	70.644	249				

60. Psychology Skills	Between Groups	1.87	3	0.623	1.618	0.186	Accept
	Within Groups	94.355	245	0.385			
	Total	96.225	248				
61. Sociology Skills	Between Groups	0.504	3	0.168	0.409	0.747	Accept
	Within Groups	100.637	245	0.411			
	Total	101.141	248				

Table 4.21 Core Skills of a Forensic Accountant Based on Demographic Variable of Primary Profession

The level of significance was ($P < 0.05$) about the effective oral communicator, effective written communicator, investigative ability, investigative intuitiveness and simplify the information. However, the level of significance was ($P > 0.05$) about the auditing skills, critical/strategic thinker, identify key issues, investigative ability, organize an unstructured situation, research skills, solve structured problems, solve unstructured problems, synthesize results of discovery and analysis, tell the story, think like the wrongdoer, understand the goals of a case, psychology skills and sociology skills for a forensic accountant. As the results showed that the percentage of accept is more than percentage of reject, then we fail to reject the null hypothesis.

Second Demographic Variable, Level of Education

4.3.3.5 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Level of Education

In the table 4.22, it shows the result of F test for this dimension and it is about education for the career path of a forensic accountant based on the demographic variable level of education.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
7. Appropriate degree for forensic accountants	Between Groups	16.696	3	5.565	2.365	0.072	Accept
	Within Groups	578.808	246	2.353			
	Total	595.504	249				
8. Necessary level of education for FA	Between Groups	16.929	3	5.643	11.649	0.00	Reject
	Within Groups	119.171	246	0.484			
	Total	136.1	249				
9. Forensic accounting is new area of enquiry	Between Groups	10.503	3	3.501	7.869	0.00	Reject
	Within Groups	109.453	246	0.445			
	Total	119.956	249				
10. Forensic accountant is different from independent auditor	Between Groups	7.201	3	2.4	3.031	0.03	Reject
	Within Groups	194.011	245	0.792			
	Total	201.213	248				

Table 4.22 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Level of Education

Indicate F test in table 4.22, the level of significance was ($P > 0.05$) about the appropriate undergraduate degree for forensic accountants. Yet, the level of significance was ($P < 0.05$) about the necessary level of education for a forensic accountant, forensic accounting is new area of enquiry and a forensic accountant is different from auditor,

then we reject the null hypothesis. Results showed that the percentage of reject is more than percentage of accept, then we reject the null hypothesis.

4.3.3.6 Expected Benefits from a Forensic Accountant Based on Demographic Variable of Level of Education

In this part, it was divided in two sub-hypotheses to get a result for this dimension.

4.3.3.6.1 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Level of Education

The first sub-hypothesis for the expected benefits of a forensic accountant is about financial fraud control of a forensic accountant.

Table 4.23 shows F test for this sub-hypothesis and it is about financial fraud control for a forensic accountant based on demographic variable of level of education.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
11. Fraud Detection Programs	Between Groups	0.459	3	0.153	0.386	0.763	Accept
	Within Groups	97.227	245	0.397			
	Total	97.687	248				
12. FA for locating diverted funds or assets	Between Groups	1.868	3	0.623	1.039	0.376	Accept
	Within Groups	146.927	245	0.6			
	Total	148.795	248				
13. FA identifies misappropriated assets	Between Groups	3.151	3	1.05	1.518	0.21	Accept
	Within Groups	168.845	244	0.692			
	Total	171.996	247				
14. Reinforce the credibility of financial statements	Between Groups	3.007	3	1.002	1.941	0.124	Accept
	Within Groups	126.543	245	0.517			
	Total	129.55	248				
15. Satisfy request for the showing the truth about fraud	Between Groups	3.378	3	1.126	2.397	0.069	Accept
	Within Groups	114.622	244	0.47			
	Total	118	247				
16. Make financial data more reliable	Between Groups	2.564	3	0.855	1.805	0.147	Accept
	Within Groups	115.528	244	0.473			
	Total	118.093	247				
17. Preparing reports about litigation support consulting	Between Groups	2.351	3	0.784	1.295	0.277	Accept
	Within Groups	147.632	244	0.605			
	Total	149.984	247				
18. Evaluating internal control system	Between Groups	0.129	3	0.043	0.093	0.964	Accept
	Within Groups	113.421	245	0.463			
	Total	113.55	248				

Table 4.23 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Level of Education

F test in the table 23 shows that the level of significance was ($P > 0.05$) about the fraud detection programs, a forensic accountant locates diverted funds or assets, a forensic accountant identifies misappropriated assets, reinforce the credibility of financial statements, satisfy the request for showing the truth about fraud, financial data more reliable, preparing reports about litigation support consulting and evaluating internal control system, then we fail to reject the null hypothesis.

4.3.3.6.2 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Level of Education

Table 4.24 shows F test for second sub-hypothesis and it is about legislation, regulation and governance for a forensic accountant based on demographic variable of level of education.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
19. Business valuation and cost estimates	Between Groups	7.448	3	2.483	3.714	0.012	Reject
	Within Groups	162.431	243	0.668			
	Total	169.879	246				
20. Compliance with laws and regulation	Between Groups	3.36	3	1.12	2.735	0.044	Reject
	Within Groups	100.327	245	0.409			
	Total	103.687	248				
21. Estimate the management income	Between Groups	2.723	3	0.908	1.148	0.33	Accept
	Within Groups	192.873	244	0.79			
	Total	195.597	247				
22. Evaluating CG	Between Groups	11.065	3	3.688	6.406	0	Reject
	Within Groups	141.063	245	0.576			
	Total	152.129	248				
23. Ability of writing effective report	Between Groups	10.973	3	3.658	5.137	0.002	Reject
	Within Groups	174.432	245	0.712			
	Total	185.406	248				
24. Financial expert in divorce case	Between Groups	3.46	3	1.153	1.373	0.252	Accept
	Within Groups	205.825	245	0.84			
	Total	209.285	248				
25. Expert in tax issues	Between Groups	3.16	3	1.053	2.166	0.093	Accept
	Within Groups	119.161	245	0.486			
	Total	122.321	248				
26. Attend the court as expert witness	Between Groups	6.954	3	2.318	6.204	0	Reject
	Within Groups	91.536	245	0.374			
	Total	98.49	248				

Table 4.24 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Level of Education

As in the table 4.24, the level of significance was ($P < 0.05$) about the business valuation and cost estimates, compliance with laws and regulation, evaluating corporate governance, ability of writing effective report and attend the court as expert witness. Yet, the level of significance was ($P > 0.05$) about the estimating the management income, financial expert in divorce case and expert in tax issues. Therefore, as the results showed that the percentage of reject is more than percentage of accept, then we reject the null hypothesis

4.3.3.7 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Level of Education

Table 4.25 shows F test for this dimension and it is about essential traits and characteristics of a forensic accountant based on demographic variable of level of education.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
27. Adaptive	Between Groups	1.546	3	0.515	0.989	0.399	Accept
	Within Groups	127.683	245	0.521			
	Total	129.229	248				
28. Analytical	Between Groups	0.888	3	0.296	0.949	0.418	Accept
	Within Groups	76.776	246	0.312			
	Total	77.664	249				
29. Confident	Between Groups	0.714	3	0.238	0.82	0.484	Accept
	Within Groups	71.386	246	0.29			
	Total	72.1	249				
30. Detail-oriented	Between Groups	0.13	3	0.043	0.139	0.937	Accept
	Within Groups	76.769	245	0.313			
	Total	76.9	248				

31. Ethical	Between Groups	1.147	3	0.382	1.169	0.322	Accept
	Within Groups	80.453	246	0.327			
	Total	81.6	249				
32. Evaluative	Between Groups	1.333	3	0.444	1.846	0.139	Accept
	Within Groups	58.965	245	0.241			
	Total	60.297	248				
33. Function well under pressure	Between Groups	0.93	3	0.31	0.78	0.506	Accept
	Within Groups	97.826	246	0.398			
	Total	98.756	249				
34. Generate new ideas and scenarios	Between Groups	1.107	3	0.369	0.686	0.561	Accept
	Within Groups	131.688	245	0.538			
	Total	132.795	248				
35. Inquisitive	Between Groups	1.475	3	0.492	1.519	0.21	Accept
	Within Groups	79.28	245	0.324			
	Total	80.755	248				
36. Insightful	Between Groups	4.009	3	1.336	2.585	0.054	Accept
	Within Groups	126.665	245	0.517			
	Total	130.675	248				
37. Intuitive	Between Groups	2.439	3	0.813	2.194	0.089	Accept
	Within Groups	91.161	246	0.371			
	Total	93.6	249				
38. Make people feel at ease	Between Groups	1.778	3	0.593	0.693	0.557	Accept
	Within Groups	209.627	245	0.856			
	Total	211.406	248				
39. Persistent	Between Groups	1.122	3	0.374	0.609	0.61	Accept
	Within Groups	150.476	245	0.614			
	Total	151.598	248				
40. Responsive	Between Groups	1.551	3	0.517	1.066	0.364	Accept
	Within Groups	118.771	245	0.485			
	Total	120.321	248				
41. Skepticism	Between Groups	0.774	3	0.258	0.987	0.4	Accept
	Within Groups	64.077	245	0.262			
	Total	64.851	248				
42. Team player	Between Groups	0.694	3	0.231	0.445	0.721	Accept
	Within Groups	128.01	246	0.52			
	Total	128.704	249				

Table 4.25 Essential Traits and Characteristics of a Forensic Accountant Based on
Demographic Variable of Level of Education

The level of significance was ($P > 0.05$) about the adaptive, analytical, confident, detail-oriented, ethical, evaluative, function well under pressure, generate new ideas and scenarios, inquisitive, insightful, intuitive, persistent, responsive, skepticism, team player and making people feel at ease, then we fail to reject the null hypothesis.

4.3.3.8 Core Skills of a Forensic Accountant Based on Demographic Variable of Level of Education

Table 4.26 shows F test for core skills of a forensic accountant based on demographic variable of level of education.

		Sum of Squares	df	Mean Square	F	Sig.	Accept/Reject
43. Auditing skills	Between Groups	0.245	3	0.082	0.261	0.853	Accept
	Within Groups	77.071	246	0.313			
	Total	77.316	249				
44. Critical/strategic thinker	Between Groups	0.498	3	0.166	0.537	0.657	Accept
	Within Groups	76.078	246	0.309			
	Total	76.576	249				
45. Effective oral communicator	Between Groups	1.039	3	0.346	0.84	0.473	Accept
	Within Groups	101.361	246	0.412			
	Total	102.4	249				
46. Effective written communicator	Between Groups	0.76	3	0.253	0.857	0.464	Accept
	Within Groups	72.636	246	0.295			
	Total	73.396	249				
47. Identify key issues	Between Groups	2.083	3	0.694	2.656	0.049	Reject
	Within Groups	64.321	246	0.261			
	Total	66.404	249				
48 Investigative ability	Between Groups	1.776	3	0.592	2.519	0.059	Accept
	Within Groups	57.808	246	0.235			
	Total	59.584	249				
49. Investigative intuitiveness	Between Groups	2.116	3	0.705	2.447	0.064	Accept
	Within Groups	70.908	246	0.288			
	Total	73.024	249				

50. Organize an unstructured situation	Between Groups	0.791	3	0.264	0.61	0.609	Accept
	Within Groups	105.908	245	0.432			
	Total	106.699	248				
51. Research skills	Between Groups	0.844	3	0.281	0.984	0.401	Reject
	Within Groups	70.056	245	0.286			
	Total	70.9	248				
52. Legal skills	Between Groups	0.626	3	0.209	0.713	0.545	Accept
	Within Groups	71.639	245	0.292			
	Total	72.265	248				
53. Simplify the information	Between Groups	0.949	3	0.316	1.022	0.383	Accept
	Within Groups	75.806	245	0.309			
	Total	76.755	248				
54. Solve structured problems	Between Groups	0.947	3	0.316	1.189	0.315	Accept
	Within Groups	65.061	245	0.266			
	Total	66.008	248				
55. Solve unstructured problems	Between Groups	0.394	3	0.131	0.42	0.739	Accept
	Within Groups	76.472	244	0.313			
	Total	76.867	247				
56. Synthesize results of discovery and analysis	Between Groups	0.24	3	0.08	0.234	0.872	Accept
	Within Groups	83.115	244	0.341			
	Total	83.355	247				
57. Tell the story	Between Groups	0.314	3	0.105	0.424	0.736	Accept
	Within Groups	60.577	245	0.247			
	Total	60.892	248				
58. Think like the wrongdoer	Between Groups	0.575	3	0.192	0.442	0.723	Accept
	Within Groups	106.581	246	0.433			
	Total	107.156	249				
59. Understand the goals of a case	Between Groups	0.234	3	0.078	0.273	0.845	Accept
	Within Groups	70.41	246	0.286			
	Total	70.644	249				
60. Psychology Skills	Between Groups	1.862	3	0.621	1.611	0.187	Accept
	Within Groups	94.363	245	0.385			
	Total	96.225	248				
61. Sociology Skills	Between Groups	1.228	3	0.409	1.003	0.392	Accept
	Within Groups	99.913	245	0.408			
	Total	101.141	248				

Table 4.26 Core Skills of a Forensic Accountant Based on Demographic Variable of Level of Education

The level of significance was ($P < 0.05$) about identifying key issues. However, the level of significance was ($P > 0.05$) about the auditing skills, critical/strategic thinker, investigative ability, organize an unstructured situation, research skills, solve structured problems, solve unstructured problems, synthesize results of discovery and analysis, tell the story, think like the wrongdoer, understand the goals of a case, psychology skills, sociology skills for a forensic accountant, effective oral communicator, effective written communicator, investigative ability, investigative intuitiveness and simplify the information. Therefore, the majority of results were accept, then we reject the null hypothesis

4.3.4 Part Four, Two Way ANOVA

In this part, it was used the primary profession and gender as independent factors for all dimensions to be tested, because they are helpful to get deeper result about forensic accounting services, with level of significance (α) set at 0.05.

4.3.4.1 Education for the Career Path of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

In the table 4.27, it shows the result of two way ANOVA test about education for the career path of a forensic accountant based two independents variables primary profession and gender.

Question	F Test	Sig	Accept/ Reject
	Profession & Gender	Profession & Gender	
7. Appropriate Degree for Forensic Accountants	1.432	0.234	Accept
8. Necessary Level of Education for FA	1.748	0.158	Accept
9. Forensic Accounting is New Area of Enquiry	2.458	0.063	Accept
10. Forensic Accountant is Different from an independnet Auditor	0.127	0.944	Accept

Table 4.27 Education for the Career Path of a FA Based on Demographic Variable of Primary Profession and Gender

As in the table 4.27, the level of significance was ($P > 0.05$) about the level of education for a forensic accountant based on primary profession and gender, forensic accounting is a new area of enquiry, a forensic accountant is different from an auditor for a forensic accountant and appropriate undergraduate degree for a forensic accountant, then we fail to reject the null hypothesis.

4.3.4.2 Expected Benefits from a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

In this part, it was divided in two sub-hypotheses to get a result for this dimension.

4.3.4.2.1 Financial Fraud Control of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

The first sub-hypothesis of the expected benefits of a forensic accountant is about financial fraud control of a forensic accountant.

Question	F Test	Sig	Accept/ Reject
	Profession & Gender	Profession & Gender	
11. Fraud detection programs	0.203	0.895	Accept
12. FA for locating diverted funds or assets	0.726	0.537	Accept
13. FA identifies misappropriated assets	0.372	0.773	Accept
14. Reinforce the credibility of financial statements	0.395	0.757	Accept
15. Satisfy therequest for showing the truth about fraud	0.359	0.783	Accept
16. Make financial data more reliable	0.488	0.691	Accept
17. Preparing reports about litigation support consulting	0.935	0.424	Accept
18. Evaluating Internal Control System	2.506	0.06	Accept

Table 4.28 Financial Fraud Control of a Forensic Accountant Based on Primary Profession and Gender

The level of significance, as it shows in the table 4.28, was ($P > 0.05$) about reinforcing the credibility of financial statements, making the financial data more reliable, the fraud detection programs, a forensic accountant locates diverted funds or assets, a forensic accountant identifies misappropriated assets, satisfy the request for showing the truth about fraud, preparing reports about litigation support consulting and evaluating internal control system, the we fail to reject the null hypothesis.

4.3.4.2.2 Legislation, Regulation and Governance of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

Table 4.29 shows two way ANOVA test and it is about legislation, regulation and governance for a forensic accountant based on demographic variable of primary profession and gender.

Question	F Test Profession & Gender	Sig Profession & Gender	Accept/ Reject
19. Business valuation and cost estimates	0.265	0.850	Accept
20. Compliance with laws and regulation	2.120	0.098	Accept
21. Estimate the management income	0.006	0.999	Accept
22. Evaluating CG	0.653	0.582	Accept
23. Ability of writing effective report	0.152	0.928	Accept
24. Financial expert in divorce case	0.311	0.817	Accept
25. Expert in tax issues	0.294	0.830	Accept
26. Attend the court as expert witness	1.097	0.351	Accept

Table 4.29 Legislation, Regulation and Governance of a Forensic Accountant Based on Primary Profession and Gender

Table 4.29 shows that the level of significance was ($P > 0.05$) about the estimating the management income, evaluating corporate governance, financial expert in divorce case, expert in tax issues, business valuation and cost estimates, compliance with laws and regulation, ability of writing effective report and attend the court as expert witness, then we fail to reject the null hypothesis.

4.3.4.3 Essential Traits and Characteristics of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

Table 4.30 shows two way ANOVA test about essential traits and characteristics of a forensic accountant based on demographic variable of primary profession and gender.

Question	F Test Profession & Gender	Sig Profession & Gender	Accept/ Reject
27. Adaptive	1.848	0.139	Accept
28. Analytical	0.504	0.680	Accept
29. Confident	1.233	0.298	Accept
30. Detail-oriented	0.865	0.460	Accept
31. Ethical	0.199	0.897	Accept
32. Evaluative	1.065	0.365	Accept
33. Function well under pressure	2.468	0.063	Accept
34. Generate new ideas and scenarios	1.090	0.354	Accept
35. Inquisitive	0.121	0.948	Accept
36. Insightful	0.828	0.480	Accept
37. Intuitive	2.518	0.059	Accept
38. Make people feel at ease	1.049	0.372	Accept
39. Persistent	2.165	0.093	Accept
40. Responsive	0.738	0.530	Accept
41. Skepticism	1.049	0.372	Accept
42. Team player	1.574	0.196	Accept

Table 4.30 Essential Traits and Characteristics of a Forensic Accountant Based on

Demographic Variable of Primary Profession and Gender

As it shows in the table 4.29, the level of significance was ($P > 0.05$) about the adaptive, analytical, confident, detail-oriented, ethical, evaluative, function well under pressure, generate new ideas and scenarios, inquisitive, insightful, intuitive, persistent, responsive, skepticism the making people feel at ease and team player, the we fail to reject the null hypothesis.

4.3.4.4 Core Skills of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

Table 4.31 shows two way ANOVA test about core skills of a forensic accountant based on demographic variable of primary profession and gender.

Question	F Test Profession & Gender	Sig Profession & Gender	Accept/ Reject
43. Auditing skills	3.208	0.024	Reject
44. Critical/strategic thinker	2.068	0.105	Accept
45. Effective oral communicator	1.077	0.359	Accept
46. Effective written communicator	1.461	0.226	Accept
47. Identify key issues	0.951	0.417	Accept
48. Investigative ability	1.439	0.232	Accept
49. Investigative intuitiveness	2.253	0.083	Accept
50. Organize an unstructured situation	1.017	0.386	Accept
51. Research skills	0.635	0.593	Accept
52. Legal skills	1.134	0.336	Accept
53. Simplify the information	2.272	0.081	Accept

54. Solve structured problems	0.617	0.605	Accept
55. Solve unstructured problems	0.639	0.591	Accept
56. Synthesize results of discovery and analysis	0.189	0.904	Accept
57. Tell the story	0.340	0.796	Accept
58. Think like the wrongdoer	1.749	0.158	Accept
59. Understand the goals of a case	2.013	0.113	Accept
60. Psychology Skills	3.565	0.015	Reject
61. Sociology Skills	0.929	0.427	Accept

Table 4.31 Core Skills of a Forensic Accountant Based on Demographic Variable of Primary Profession and Gender

In the table 4.30, the level of significance was ($P < 0.05$) about the auditing skills, and psychology skills. While, the level of significance was ($P > 0.05$) about the effective oral communicator, effective written communicator, investigative ability, investigative intuitiveness, simplify the information, critical/strategic thinker, identify key issues, investigative ability, organize an unstructured situation, research skills, solve structured problems, solve unstructured problems, synthesize results of discovery and analysis, tell the story, think like the wrongdoer, understand the goals of a case, and sociology skills for a forensic accountant, then we fail to reject the null hypothesis.

4.4 Findings

The purpose of this study was to evaluate the level of awareness of forensic accounting services. Awareness in this study is meant as concern and sensitivity towards

the topic of forensic accounting services and its application in the way that people acquired information, perceived it and expressed conclusion.

For the purpose of this study, all participants were chosen in the field of auditing, because they shared a mutual interest regarding the field of forensic accounting.

However, the levels of awareness for the participants were analyzed with regard to the research questions of the study that were made based on the main principles of forensic accounting services. In addition, secondary finding part, it is the comparison between Turkey and USA of forensic accounting system and practices was discussed within the second chapter. The main aim of this study was about Turkey, the comparison was made with USA applications and legislations to be as base for the study. Therefore, it was compared the results of the profession in Turkey with USA that would help to draw the shape of profession in Turkey.

Research question was “are CPA trainees, Sworn in CPAs, CPAs and graduate students aware of forensic accounting services in Turkey?”

The comparison of forensic accounting services system and practices between Turkey and USA and it revealed that there were big differences between two countries. However, the profession of forensic accounting has taught and practiced in USA also there are standards were issued to organize the profession in USA, while in Turkey the profession is still in the first stages. Also, teaching forensic accounting is not widespread in Turkish universities. In addition, the services of forensic accounting were attributed to the committee if there was a fraudulent action (one of the committee is an accountant as it mentioned the commercial code No. 6754 in 2016) and other services are attributed

to the CPAs. The profession has no specific laws or codes to organize the profession in Turkey.

However, descriptive statistic was used to measure the mean and standard deviation for the answers of participants and majority of them agreed about the applicability of the dimensions (accepting the null hypothesis). Moreover, the T test and F test (one way ANOVA and two way ANOVA) revealed that the majority of the results were supporting the acceptance of the null hypothesis.

Measurements of awareness in this study revealed that gender did present significant level of awareness regarding forensic accounting services. Moreover, the primary profession and level of education presented significant level of awareness regarding forensic accounting services. Therefore, these results imply that there was a very high level of awareness of forensic accounting services. Then it can be said that there was statistically significant awareness of forensic accounting services in Turkey. Thus, the study resulted the following conclusions:

- Participants were aware of the education path of a forensic accountant in Turkey.
- Participants were aware of the expected benefits of a forensic accountant in Turkey.
 - Participants were aware of the financial fraud control of a forensic accountant in Turkey.
 - Participants were aware of the legislation, regulation and governance of a forensic accountant in Turkey.

- Participants were aware of traits and characteristics of a forensic accountant in Turkey.
- Participants were aware of core skills of a forensic accountant in Turkey.





Chapter Five

Conclusion and Recommendations

5.1 Conclusion

In recent years, there was a big development in field of business which led to some innovations to be experienced in the profession of accounting. All the innovations were made to meet the changes and the need in the field.

However, the latest innovation in the field of accounting is the profession of forensic accounting and it was needed for fighting against misconduct, commercial crime, as well as solving financial issues. There were many countries have adopted the new profession in their system to solve all the financial. While others have not adopted yet, due to difficulties in their system to implement the profession.

One of the purposes of this study is to provide a clear understanding of the current position of the forensic accounting profession and practices in Turkey and compared it with the USA, because USA has the best example of the profession of forensic accounting.

The profession of forensic accounting has been initiated and applied in the USA, while in Turkey it has not been applied yet. Moreover, the forensic accounting profession is well established in the U.S, because of the nature of the legal and economic systems, while in Turkey the profession has not been yet gotten a support by and governmental agency or other private ones like in the case of the USA. Whereas, a forensic accountant's services may face legal problem because of the separate regulatory bodies and legislations.

However, Turkey is ready for implementing the profession of forensic accounting, because there is a need for the profession to have a successful business and to protect the wealth of the people and the country.

According to the statistical analysis of the study hypotheses, it expressed that there was agreement about all the factors related to forensic accounting services the following point,

- i. The analysis of the mean percentage showed that there was general agreement about the education path that a forensic accountant has to study. The analysis of the mean percentage for the forensic accountant is different from the CPA showed higher percentage scores.
- ii. The mean percentage about awareness of financial fraud detection and deterrence control was very high. In addition, the analysis revealed that there were high percentage about awareness of providing services related to discovering diverted funds or assets and misconduct once.
- iii. The analysis expressed awareness and positive attitudes towards forensic accounting for providing legislation, regulation and governance services. Moreover, there was high awareness and understanding of the services of a forensic accountant that can provide them in the court room such as expert in tax issues, financial expert in divorce case.... etc.
- iv. The analysis revealed that there were high percentage about the awareness of the essential traits and characteristics that forensic accountants should gain in the field.
- v. The analysis of the mean percentage showed that there was high agreement about the awareness of the core skills that forensic accountants have to have to do the works and provide the services.

5.2 Recommendations

The place for forensic accounting education in Turkey curriculum cannot be emphasized. The need of the services of the forensic accounting is high, because the nature of fraud on the economy and other financial issues cannot be solved by anyone who has not specialized in the field of forensic accounting.

Currently, there is not widespread educational programs in Turkey. Therefore, it is recommended that forensic accounting curriculum should be added in educational institutions in Turkey.

Forensic accounting can be used to prevent, detect and respond to harm caused by fraudulent action or to solve the complicated financial issues. The lack of formal training institutions for forensic accounting techniques that lead to increase the rate of financial fraud and related activities as well as the other financial issues.

The profession of forensic accounting is practiced in other countries separately from CPAs and other professions like the USA, while forensic accounting services in Turkey are attributed to CPAs and fraudulent cases are attributed to committee (there are different members from different fields such as a lawyer, one from interior ministry in the committee and one of it is an accountant as it mentioned the commercial code No. 6754 in 2016). Also, no one can be a forensic accountant until he/she had a certification of CPA, because it gives important foundation for a forensic accountant to start his/her profession. The legal institution in Turkey should allow the forensic accountants practise their services, and it is better than committee and CPAs, because the forensic accountant is an accountant and member of judiciary system, also he/she

has knowledge of the laws in the country and other subjects. Therefore, he/she can play a great role of than the committee and CPAs.

This research has shown that forensic accounting services would go a long way in helping the country in solving a lot of financial issues. It is therefore recommended that forensic accounting services should be constituted separately, while forensic accounting is trained and educated by TÜRMOB, which is a member of IFAC. Also, they need to build/adopt programs with USIUD which is a member of ACFE.

Finally, all regulating bodies should include forensic accounting in the local profession, this may ensure that all hands are on detecting side and it will put an end to all financial issues in the country.

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Appendix

Appendix Number (One)

Questionnaire

Greetings,

The survey is going to be aimed at strength of the national capacities in support of understanding the roles of forensic accountant and external auditor. The survey is going to be conducted a sample opinion of professions and how knowledge or experience about forensic accounting to give an idea about their knowledge in forensic accounting in Turkey.

The survey communicates their views of forensic accountants' services that they can provide and the different between forensic accountants and external auditors.

I thank you for your cooperation and assure you that your views will be treated with utmost confidentiality.

General Questions

- 1 What is your Primary Profession?
 - a CPA Trainee
 - b Sworn CPA
 - c Certified Public Accountant
 - d Graduate Student

- 2 What is your gender?
 - a Male
 - b Female

- 3 What is your level of education?
 - a Bachelor Degree
 - b Master Degree
 - c Doctorate Degree
 - d Other (Please Specify)..

- 4 How many years have you been practicing your profession?
 - a 0-5 years
 - b 6-10 years
 - c 11-15 years
 - d More than 15

- 5 What licenses or professional qualifications do you possess?
 - a CPA
 - b CFA
 - c Independent Forensic Accountant
 - d CFE
 - e Other (Please Specify).....

- 6 What is your involvement with forensic accounting services?
 - a I undertake services of forensic accountants
 - b I consider myself a forensic accountant
 - c I employ forensic accountants in my firm/business
 - d I have no involvement

Education for the Career Paths of Forensic Accounting

7 What under-graduate degree major do you think is most appropriate for a forensic accountant (FA)?

- a Computer Information System
- b Economics
- c Legal Studies
- d Law
- e Auditing & Fraud Theor
- f Behavioral Sciences
- g Ethics
- h Other (Please Specify).....

8 What is the highest level of education that you think is needed to be a successful FA?

- a Undergraduate degree
- b Master's degree
- c Doctorate Degree
- d Other Degree (Please Specify).....

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
9	Forensic accounting is a relatively new area of enquiry					
10	The Forensic accountant is different from the independent auditor					

Expected Benefits from Forensic Accountant

Financial Fraud Control		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
11	Fraud detection programs					
12	Forensic accounting can be used to Locate diverted funds or assets					
13	Forensic accounting can Identify misappropriated assets					
14	Reinforce the credibility of financial statements					
15	Satisfies the request for showing the truth about fraud					
16	Make financial information more reliable					
17	Prepare a report about litigation support consulting					
18	Internal control evaluation					
Legislation, Regulation and Governance		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
19	Business valuations and cost estimates					
20	Compliance with applicable laws and regulations					
21	Estimate the management income					
22	Evaluate Corporate governance system					
23	Ability of writing effective report					
24	Financial Expert in Divorce Case					
25	Expert in tax issues					
26	Attend the court as expert witness					

Essential Traits and Characteristics of Forensic Accountant

Please identify from the under mentioned essential traits and characteristics that a forensic accountant needs to possess		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
27	Adaptive					
28	Analytical					
29	Confident					
30	Detail-oriented					
31	Ethical					
32	Evaluative					
33	Function well under pressure					
34	Generate new ideas and scenarios					
35	Inquisitive					
36	Insightful					
37	Intuitive					
38	Make people feel at ease					
39	Persistent					
40	Responsive					
41	Skepticism					
42	Team player					

Core Skills of Forensic Accountant

Please identify from the under mentioned skills that a forensic accountant needs to possess		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
43	Auditing skills					
44	Critical/strategic thinker					
45	Effective oral communicator					
46	Effective written communicator					
47	Identify key issues					
48	Investigative ability					
49	Investigative intuitiveness					
50	Organize an unstructured situation					
51	Research skills					
52	Legal skills					
53	Simplify the information					
54	Solve structured problems					
55	Solve unstructured problems					
56	Synthesize results of discovery and analysis					
57	Tell the story					
58	Think like the wrongdoer					
59	Understand the goals of a case					
60	Psychology Skills					
61	Sociology Skills					

Appendix Number (Two)

A Document proved for distributing the questionnaires

T.C.
OKAN ÜNİVERSİTESİ
SOSYAL BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜ

Sayı: 35111711/3.22.1402/245

04 / 03 / 2016

Sayın İlgili,

Üniversitemizde Doktora öğrencisi olan Mohamed Issa, "Awareness of Forensic Accounting Services in Turkey and comparison with USA (Türkiye'de Adli Muhasebe Hizmetleri Farkındalığı ve ABD ile karşılaştırılması" konulu tezi üzerinde çalışmaktadır. Kendisi tez çalışmalarını için ekteki anketi kullanmaktadır.

Bilgilerinize arz/rica ederim.

Lisansüstü Eğitim Dekanı



Prof.Dr. Erdiñç TELATAR

Başarıyı destekliyoruz!



OKAN ÜNİVERSİTESİ SOSYAL BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜ
Avni Dilligil Sok. No: 18 (Profilo AVM Karşısı) Mecidiyeköy / Şişli / İstanbul
Telefon: +90 (212) 212 65 26 / Faks: +90 (212) 216 18 03
www.okan.edu.tr

Appendix Number (Three)

List of professors who check the questionnaires

NO	Name	Specialization	University
1	Dr. Ali Altuğ Biçer	Accounting and Auditing	İstanbul Ticaret Üniversitesi
2	Dr. Hasri Bin Mustafa	Accounting	University of Putra Malaysia
3	Dr. Mohamed Almajbre	Accounting and Finance	University of Benghazi