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Presenting a Forensic Accounting Maturity Model at the Levels of Economic Enterprises, Judicial Processes, and the Government with a Focus on the Iranian Economy

Kazem Vadizadeh
PhD student in Accounting, Faculty of Management and Economics, Islamic Azad University, Science and Research Branch, Tehran
Iran.Karshenas_rasmi@yahoo.com

Azita Jahanshad
Associate Professor, Department of Accounting, Faculty of Management and Economics, Islamic Azad University, Central Tehran Branch, Tehran, Iran
Corresponding author
Az_jahanshad@yahoo.com

Zahra Poorzamani
Professor, Department of Accounting, Faculty of Management and Economics, Islamic Azad University, Central Tehran Branch, Tehran, Iran.
Zahra.poorzamani@yahoo.com

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ABSTRACT

This research aims to present a Forensic accounting maturity model at the levels of economic enterprises, judicial processes, and the government, focusing on the Iranian economy based on the five-level Capability Maturity Model (CMM). The required information was collected using grounded theory methodology, employing theoretical models and designing new hypotheses based on existing research literature through content analysis, semi-structured interviews, and the formulation of questionnaires within the framework of qualitative research .

In this study, the primary framework of Forensic accounting was initially designed within the structure of the five-level Capability Maturity Model. This was followed by integration of novel ideas from theories and models implemented worldwide, such as the comprehensive Forensic accounting model proposed by the Association of Certified Fraud Examiners (ACFE). Opinions of academic experts and Forensic accounting professionals (judicial experts in accounting and auditing, economics and commerce, banking, stock exchange, taxation, customs, computer operations and information technology, law and criminology, document forgery, and handwriting and signature verification, as well as judicial experts including judges, lawyers, and experts from intelligence and security organizations) were gathered using the Delphi technique .

Using a snowball sampling method, the themes obtained were coded according to Braun and Clarke's model (2006). The results were analyzed in two phases: 1) examining the results of variables, measurement criteria, concepts, elements, dimensions, and key indicators of Forensic accounting; 2) testing the rejection or acceptance of the proposed hypotheses by calculating the coefficient of concordance (Kendall's W) and employing analyses using the mean, median, mode, standard deviation, and variance to better describe the data concerning the general condition and distribution of opinions among respondents, which led to the design of the Forensic accounting maturity model .

In this research, 25 academic experts and Forensic accounting professionals contributed, along with 158 specialists completing the research questionnaire. The results obtained from this study identified and explained 15 variables, 93 measurement criteria, 5 concepts, 24 factors, 97 dimensions, and 94 key indicators of Forensic accounting, culminating in the design of the Forensic accounting model specific to Iran. Based on the findings, Forensic accounting in Iran remains at a preliminary level among the five examined levels, necessitating serious actions for implementing the necessary infrastructures for Forensic accounting in the levels of economic enterprises, judicial processes, and government in Iran. This research discusses the challenges and benefits of implementing the maturity model in Iran and the growth of Forensic accounting in reducing corruption and financial fraud.

Keywords: Five-level maturity model, Forensic accounting, judicial and legal accounting, financial statement fraud

1. Introduction

The multiple financial scandals, the rise of embezzlement, fraud, and both reported and unreported scams, along with the escalating concerns over organized crimes such as money laundering to support terrorism and smuggling, have intensified pressures from stakeholders, particularly government officials and policymakers. This has led to a more serious approach in developing accounting and auditing standards and crafting appropriate laws to enhance the accountability of auditors and accountants in preventing and detecting fraud within society at the level of governments and economic enterprises (Bahasin, 2017; Rezai & Karami, 2007). The ability of criminals to evade detection of their illegal activities using complex methods and techniques or to be held accountable through effective auditing and oversight methods marks the boundary that determines the success or failure of fraud analysis techniques or forensic accounting (Rezai and Riley, 2010) .

In most cases, the success in detecting fraud and economic corruption is directly related to the knowledge, skills, capabilities, and better access to information and resources of professional specialists. Thus, the demand for employing professional experts trained in fraud detection and forensic accounting is steadily increasing (Dianati Dilami, Omrani and Soltani, 2018). The detrimental effects of financial scandals in recent years have been significant, making the discussion on the fight against fraud, especially in financial and economic matters, unavoidable. Financial scandals have not only caused economic costs by harming creditors, investors, and shareholders but also generated political and social costs, undermining laws and regulations. Many economic analysts believe that the pervasiveness and extent of financial violations and the presentation of fraudulent financial statements and performances have created public concerns, damaging public trust in the financial reporting process and the performance of auditing professionals (Khajavi and Ebrahimi, 2017).

The study and progress of forensic accounting illustrate the gradual evolution of this branch of accounting and its growth in alignment with environmental conditions. A review of the history of forensic accounting and the development of this field of accounting knowledge reveals that, at different periods and depending on the type of industries and the nature of economic enterprises, the focus of forensic accounting has been shaped around specific issues and subjects. Over time, the occurrence of unique and new matters has brought about impactful changes in the auditing models within this profession (Fakhari and Eskoo, 2018). Meeting the expectations of stakeholders (considering the expansion and diversity of stakeholders in the field of forensic accounting) has served as a powerful driving force, propelling the initial models of forensic accounting towards maturity and guiding the professionals in this field.

Alongside these factors, the increasing complexity of economics, the diversity of financial instruments, the expansion of financial operations on an international scale, and the development of information technology have led to new forms of violations, fraud, and financial crimes using diverse tactics. It is natural and evident that preventive and detection methods must grow in tandem with these changes, and this knowledge must evolve step by step and model by model towards maturity. Although, based on requirements and considerations, the journey through maturity has been and will continue to be accompanied by ups and downs. This evolution in definitions, components, functions, characteristics, and so on is clearly noticeable. Forensic accounting can be described as using auditing and inspection skills to examine financial statements used in Forensic. However, in terms of its scope of work, forensic accounting has great diversity that is not necessarily aligned with this description. A forensic accountant can address a wide range of disputes, from divorce cases to fraud detection in large corporations; however, fraud is not the only reason for transformations in the forensic accounting profession since its inception (Drier, 2013).

Logically and rationally, forensic accounting must possess the capability to meet the objectives arising from its implementation. Capability can be defined as the quality of being able or qualified. In the process of forensic accounting, capability is essential. For a forensic accountant to have the ability and qualifications to meet requirements, they must possess the necessary attributes. In fact, capability can be defined as assessing the ability of units, organizations, individuals, or a system to achieve their mission-related objectives. Since the most crucial mission of forensic accounting is to assist in the prevention, detection, and combat against fraud and financial violations through the adequacy and effectiveness of processes related to risk management

connected to fraud, the capability of forensic accounting must align with its objectives. In other words, forensic accounting grows within a multifaceted context, and thus, its presence at a specific level of maturity, which indicates its possession of specific capabilities, and the suitability of this maturity level with other levels (such as those of the judicial system, cultural values, ethical standards, and individual and organizational beliefs) is of great importance. Therefore, recognizing the maturity model of forensic accounting as a tool to measure the professional needs of forensic accounting suitable for the economic environment of the country and assessing the current state of forensic accounting to improve and enhance its capabilities is an undeniable subject. In other words, the maturity model outlines the step-by-step path towards achieving greater capabilities and elevating to a higher maturity level .

Emphasis on the alignment of the maturity levels of forensic accounting with the needs of the profession and society indicates that various levels of fraud and financial violations do not require a uniform level of forensic accounting. The theoretical literature emphasizes that the maturity levels of any professional community depend on various factors, including the needs and objectives of implementing accounting and auditing, access to information, stakeholders' authority, and flow, the nature of fraud and financial violation, the legal and regulatory environment, and so on. The maturity level illustrates the levels of interaction that, depending on the situation and environmental conditions in each project, a suitable and corresponding level can be selected as desired (Yazdanyan , 2017). The relevant question to be raised in this research is: What is the current state of forensic accounting in Iran and its corresponding maturity model? Who are forensic accountants? At what stage of maturity are they located? What are the concepts, factors, dimensions, and influencing approaches of this model? Forensic accounting, as a new specialization in the field of accounting and finance, analyzes cases of fraud, financial misconduct, and identifies evidence related to financial violations. Given the increasing prevalence of financial corruption and fraud in Iran, the need for a comprehensive and efficient model in the area of forensic accounting is more prominent than ever.

2. Literature Review and Conceptual Framework

2.1. Theoretical Foundations

Forensic accounting, as a specialized area of accounting, is a combination of accounting and financial techniques and methods that focus on identifying financial fraud, embezzlement, and economic crimes. The theoretical foundations of this field encompass principles, models, and theoretical frameworks that assist researchers and auditors in better understanding and effectively applying these techniques. As a complex and specialized field, forensic accounting requires robust theoretical foundations and operational frameworks to enhance efficiency and success in detecting financial fraud. Given the advancements in technology and legal changes, further research and studies in this area are essential for updating methods and techniques. Below is a general overview of the theoretical foundations:

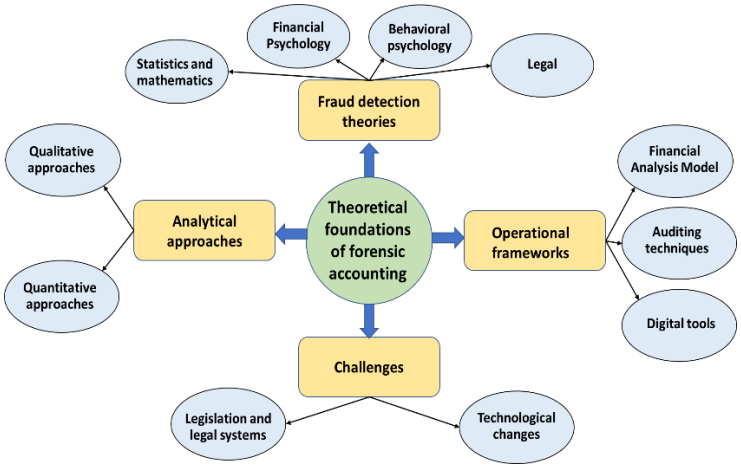


Figure 1. Overview of theoretical foundations

2.1.1. Main Theories of Fraud Detection:

This theory is based on the assumption that frauds and financial misconduct committed by suspects will ultimately be identified. Forensic accountants utilize appropriate methods and techniques in their efforts to uncover the truth within economic enterprises and financial transactions. The fraud detection theory encompasses various psychological, behavioral, legal, statistical, and mathematical theories.

Financial Psychology Theory: This theory examines human behavior and motivations that lead to fraud and financial crimes. Factors such as the exploitation of positions, lack of oversight, and unrealistic expectations can contribute to fraudulent activities. The majority of theories governing economic crimes are closely associated with the field of financial psychology.

Behavioral Psychology Theory: This theory focuses more on individual personality traits and the inherent factors that influence behavior. It emphasizes the understanding of how personal characteristics and dispositions may contribute to fraudulent behavior.

Legal Theories: According to these theories, forensic accounting should align with the financial and legal regulations within a country. Thus, theories related to law and economic regulations hold particular significance, with the belief that deficiencies in drafting laws and regulations lead to increased financial corruption and fraud (Alberk and Zimbelman, 2012).

Statistical and Mathematical Theories: These theories are grounded in the quantifiable and numerical nature of financial figures. Employing mathematical and statistical models—such as Benford's Law and various financial ratios—can uncover and report many fraudulent activities. In forensic accounting, statistical techniques are essential for analyzing data patterns and identifying anomalies that may indicate fraud.

In conclusion, these theories collectively provide a comprehensive framework for understanding the complexities surrounding fraud detection within forensic accounting. They emphasize the importance of interdisciplinary approaches, combining psychological insights, legal frameworks, and statistical methods to create a robust mechanism for identifying and addressing financial fraud effectively. This multifaceted perspective is crucial for developing a mature forensic accounting model capable of navigating the challenges and intricacies of the financial landscape.

2.1.2. Operational Frameworks in Forensic Accounting

Operational frameworks in forensic accounting are derived from models of financial analysis, auditing techniques, and digital tools. These frameworks are essential for the effective detection and analysis of financial fraud and misconduct. Below is an overview of these frameworks:

1. Models for Financial Data Analysis:

The models utilized for analyzing financial data in order to identify fraud involve statistical and empirical analysis techniques. These models can help in uncovering irregularities in financial reports and transactions by examining underlying data trends and patterns. They play a crucial role in discerning unusual activities that deviate from established norms.

2. Auditing Techniques:

Various auditing techniques, especially field audits, are fundamental in forensic accounting. These techniques allow forensic accountants to collect firsthand evidence and witness accounts, facilitating the identification and investigation of financial irregularities. Field audits often involve in-depth examinations of financial records, procedural compliance, and the efficacy of internal controls within organizations .

3. Evidence Collection Methods:

Methods for collecting evidence are vital in enabling the identification and analysis of financial fraud. This includes not only traditional evidence collection methods such as document examination but also modern techniques like digital forensics. The process may involve reviewing emails, transactions, and system logs to determine the existence and extent of fraudulent activities .

4. Digital Tools and Technologies:

The utilization of advanced software and technologies is increasingly important in forensic accounting. Digital tools can assist in the collection and analysis of financial data, allowing accountants to identify fraud patterns and irregular evidence more efficiently. Technologies such as data mining, predictive analytics, and machine learning contribute substantially by processing large volumes of financial transactions and detecting anomalies that human analysis might overlook.

As stated by Wells (2014), these operational frameworks are essential for establishing a structured and methodical approach to identify and analyze financial misconduct effectively. The integration of statistical methods, auditing techniques, and digital technology forms a robust foundation for forensic accounting, enabling experts to approach cases of fraud with precision and thoroughness. Consequently, these frameworks not only bolster the effectiveness of forensic investigations but also enhance overall accountability and transparency within the financial systems of organizations.

In conclusion, the synergy between traditional forensic techniques and modern technological advancements creates a comprehensive operational framework that aids forensic accountants in navigating complex financial landscapes while maintaining the integrity and security of financial reporting. By leveraging these frameworks, forensic accounting can lead to improved detection rates and more successful interventions against financial fraud.

2.1.3. Analytical Approaches in Forensic Accounting

Analytical approaches include both qualitative and quantitative methods. The qualitative approach involves analyzing cases and reviewing fraud mechanisms and information misuse through in-depth interviews and field investigations, while the quantitative analysis employs statistical methods and mathematical models to analyze financial data, aiding in the identification of frauds and irregular patterns (Singleton, 2010).

2.1.4. Challenges Facing Forensic Accounting

The challenges faced in forensic accounting include technological changes and weaknesses in legislation and legal systems. Technological advancements have led to challenges in detecting fraud as well as in the methods of data usage. The differences in laws and legal systems across various countries create challenges in validating and ensuring the quality of financial information (Chuo & Tan, 2019).

2.2. Literature Review:

Forensic accounting has emerged as a subfield of accounting and auditing aimed at identifying, reviewing, and analyzing financial fraud and its legal dimensions. The history of this area dates back several decades, during which it has undergone various transformations. The term "forensic accounting" has often been misunderstood by many, with the majority believing that forensic accounting is solely about investigating, reviewing, and addressing fraud. While this perception is somewhat accurate—as examining fraud is indeed a part of forensic accounting—it is much broader than just fraud investigation.

Kramble (2009) argues that there is a discrepancy between the professional and academic (scientific) perceptions of forensic accounting. He provides evidence of a gap and disconnection between academic and professional insights into forensic accounting. He states that the perception of some professors regarding forensic accounting is primarily about fraud detection, while professionals and experts believe that fraud is only a small part of forensic accounting.

However, the fundamental question is: if forensic accounting goes far beyond fraud detection, then what is forensic accounting? In response to this question, it can be said that there is no universally accepted definition of forensic accounting. The American Institute of Certified Public Accountants defines forensic accounting as the application of accounting principles, theories, and facts or hypotheses in matters related to legal disputes (litigation), encompassing all branches of accounting knowledge.

Forensic accounting involves the application of financial skills with an investigative mindset toward a range of financial issues within the framework of laws and regulations, based on accounting documents and records. The Association of Certified Fraud Examiners defines forensic accounting as follows:

"Forensic accounting includes the application and use of specialized accounting skills in matters related to potential or actual civil claims or criminal litigation. Generally, it encompasses accepted accounting principles, lost opportunity costs, income, assets, damages, internal control assessments, fraud, and any subjects that involve accounting expertise and experience within the legal system, but is not limited to generally accepted accounting principles."

Joshi (2006), emphasizing the relevance of forensic accounting in preventing and detecting fraud, states, "Auditors should be watchdogs, not detectives." This quote alone is effective in simplifying the concepts of forensic accounting. The term "forensic" means related to the Forensic. Forensic accounting is a

branch of accounting that is inherently connected to judicial judgment. In fact, it is the science of collecting and presenting financial information in a manner that is admissible in Forensic against those accused of economic crimes. The focus is on the explanatory analysis of phenomena, including the discovery of tricks and schemes (if they exist) and their effects in the field of accounting (Dong Ronjwa, 2011).

Currently, there is no specialization called forensic accounting in Iran. In Iran, official judicial experts are usually referred to as forensic accountants, who lack the necessary expertise and effectiveness as they do not receive the requisite specialized training. They often enter the field only after fraud has occurred and have strayed from their primary responsibility to prevent fraud, mostly engaging in expert evaluations and assessments. Below is the history of the formation of forensic accounting over different time periods:

2.2.1. Early History (1930s)

The emergence of the need for forensic accounting

In the early twentieth century, with the expansion of commerce and large industries, instances of fraud and financial irregularities increased significantly. This situation created a necessity for accounting to analyze these cases. The first references to forensic accounting emerged in the 1930s, following the occurrence of the Great Depression (Zimbleman, 2012).

2.2.3. The 1970s

Beginning of formal investigations - Formalization of forensic accounting

In this decade, forensic accounting was recognized as an independent discipline, with related fields such as auditing, law, and financial crimes joining this area. Several universities launched courses in forensic accounting (Krancher, 2011).

2.2.4. The 1980s:

Emergence of Domestic and International Associations Development of Educational Programs and Establishment of Associations

During this period, specialized associations such as the Association of Certified Fraud Examiners (ACFE) were established in the United States. The use of new and modern techniques for identifying financial crimes and fraud within financial systems increased (ACFE, 1988).

2.2.5. The 1990s

Adapting to Global Changes – Globalization and Rising Challenges

With the globalization of the economy and new complexities in economic security, forensic accounting increasingly faced new challenges, including international economic crimes and financial fraud. The implementation of technology and new analytical software during this era facilitated research processes and the identification of fraud (Wells, 2014).

2.2.6. The Year 2000 to Present

Expansion and Innovation – A Revolution in Accounting and Technology

This period, marked by the emergence of new technologies and big data, has brought about significant changes in forensic accounting practices. Auditors use advanced software and techniques to analyze data and identify suspicious patterns. Furthermore, the accuracy and verifiability of forensic accounting findings in Forensic rooms have increased, paving the way for the institutionalization of this field within the legal systems of countries (Chow and Tan, 2019). Forensic accounting has a vibrant and rich history that has gradually evolved from rudimentary functions into a globally recognized profession and specialty. The presentation of a forensic accounting maturity model has begun since the year 2000, aiming at the development and expansion of forensic accounting for the prevention and detection of financial fraud using various models worldwide.

As an important and specialized branch of accounting, forensic accounting is employed among judicial and financial authorities for analyzing and examining financial, economic, and legal cases. Given the complexities of the economic and judicial systems in Iran, the need for a comprehensive and structured model for evaluating and optimizing forensic accounting processes is increasingly felt. This research aims to present a forensic accounting maturity model by examining the existing structures, challenges, and opportunities in this field. By exploring the theoretical foundations and framework of forensic accounting, including the processes of analysis, calculation, and reporting of financial and economic information to support judicial decisions while emphasizing the integrity, accuracy, and transparency of financial information, it presents the forensic accounting maturity model as a vital tool for establishing financial realities.

The principles of forensic accounting include international accounting standards, various legal regulations, and ethical principles that must be adhered

to in reporting and providing financial evidence. Factors such as economic corruption, weaknesses in judicial systems, lack of transparency in information, and the absence of robust regulatory systems are challenges that can impact the forensic accounting process. The maturity model serves as a tool for assessing and improving processes in this research. This model typically includes several levels, each representing a degree of maturity and capability in forensic accounting processes and structures.

Level one, labeled as "initial," indicates a lack of transparency and standards in forensic accounting. Level two, labeled as "early maturity," signifies the commencement of some activities and processes in an individual and unsystematic manner. Level three, under "medium maturity," reflects limited interactions between entities and the initiation of work on standards and guidelines. Level four, identified as "advanced maturity," denotes collaboration between entities and the use of modern technologies. Level five, termed "complete maturity," establishes an integrated system with high transparency and trust.

Important factors such as laws and regulations, professional organizations, security and information observers, trade unions, media, and the virtual space also significantly influence the formation and enhancement of the forensic accounting system. These entities can contribute not only by offering oversight and resources for improvement but also by raising public awareness and enhancing the quality of judicial services.

The ultimate goal of this research is to identify the strengths and weaknesses of the forensic accounting system in Iran and to provide suggestions for its improvement. Notable identified outcomes of this research include recognizing perspectives, developing the maturity model, and proposing practical solutions. This study systematically explores forensic accounting and, by offering a maturity model, can assist judicial and financial entities in enhancing their performance. Ultimately, the advancement of this system contributes not only to increasing justice and transparency but also to strengthening public trust and reducing financial corruption in the country.

3. Methodology

3.1. Research Methodology

This research was conducted with the aim of presenting a maturity model for forensic accounting based on the five-level Capability Maturity Model (CMM). The required information was gathered using grounded theory methodology through theoretical models and the design of new hypotheses based on the research literature, utilizing content analysis, semi-structured interviews, and the development of questionnaires with a qualitative research approach.

In this study, the primary framework for forensic accounting was initially designed within the structure of the five-level Capability Maturity Model. This was subsequently enhanced with new ideas drawn from theories and models implemented globally, such as the comprehensive forensic accounting model from the Association of Certified Fraud Examiners (ACFE) in the United States. Additionally, opinions from academic experts and practitioners in forensic accounting (certified judicial experts in the fields of accounting and auditing, economics and business, banking, stock market, tax affairs, customs, information technology, law and criminology, forgery detection, handwriting and signature analysis, and judicial experts including judges, lawyers, and specialists from intelligence and security organizations) were obtained through the Delphi technique. The obtained themes were then coded using the Braun and Clarke model (2006) and through a snowball sampling method.

Research Methodology for the Five-Level Integrated Capability Maturity Model of Forensic Accounting:

The methodology of the five-level integrated Capability Maturity Model for forensic accounting is a conceptual framework that aids organizations in assessing and enhancing their maturity and capabilities in the field of forensic accounting. This model is particularly applicable for empowering processes, techniques, and technologies related to identifying and investigating financial fraud and corruption.

In this study, several stages were followed to establish the forensic accounting maturity model in Iran:

Stage One: Initially, an extensive literature review was conducted, including reputable articles and searching databases such as Scopus, Web of Science, etc., focusing on fraudulent reporting, financial

corruption and fraud, economic crimes and corruption, relevant laws and regulations regarding anti-corruption, embezzlement, fraud, and more. Additionally, the study involved examining economic cases and interviewing academic experts and forensic accounting specialists (certified judicial experts). In this stage, influential components impacting forensic accounting were identified. Semi-structured interviews were conducted between 2022 and 2023, revisiting some identified influential components. A total of 25 experts were interviewed using the snowball sampling method, and theoretical saturation was achieved. The data obtained from interviews were then analyzed and coded using thematic analysis, leading to the identification of the influential components of forensic accounting in Iran.

Stage Two: Measurement and assessment criteria were established for each influential component, which were again reviewed by a panel group. In the first two stages, 15 influential components and 93 measurement criteria for forensic accounting in Iran were determined. To define the maturity model, it was essential to identify upcoming steps, including examining the concepts, elements, and key dimensions of forensic accounting.

Stage Three: In this stage, a panel group of 25 members identified five concepts of forensic accounting in Iran, namely (key characteristics of forensic accountants, management of forensic accountant activities, services and roles of forensic accountants, process implementation of forensic accounting, and organizational relationships of forensic accountants).

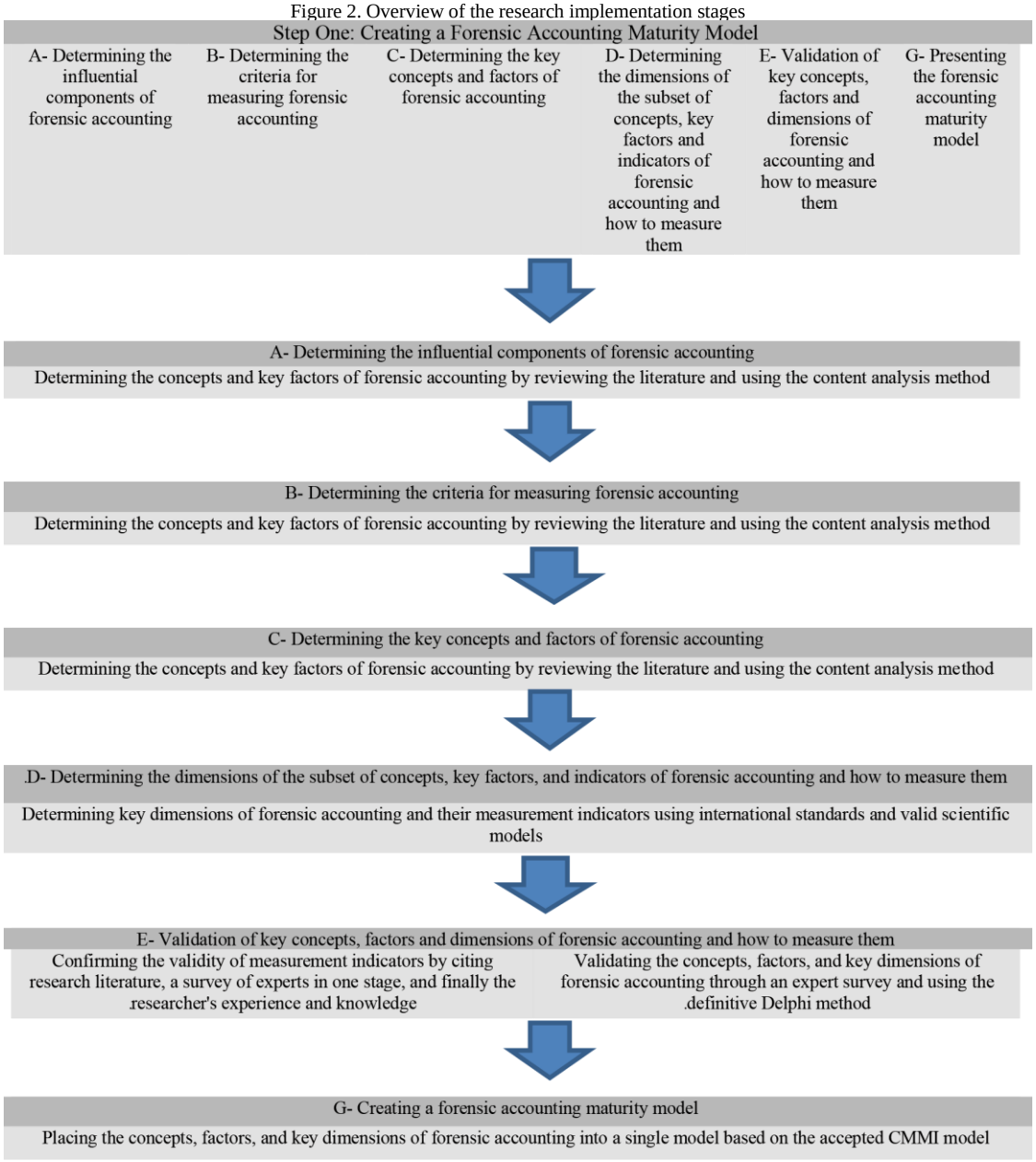
Stage Four: Based on the review of key forensic accounting concepts, 24 principal components and factors of these concepts were identified in this stage.

Stage Five: After reviewing each of the main factors, a number of dimensions and indicators of forensic accounting were identified. To monitor and validate stages three to five and review the concepts, elements, and key dimensions of forensic accounting, a questionnaire with questions posed by the researcher was distributed to respondents (the selected statistical population). A total of 158 individuals responded, and their responses were analyzed. The results were tested in three stages using the Delphi method, and the resulting findings and differences were examined.

Stage Six: In this stage, the forensic accounting maturity model for Iran was developed, detailing the influential components, measurement criteria, concepts, elements, dimensions, and indicators of forensic accounting. At each of these stages, thematic analysis was employed for data coding based on the transcripts of the interviews, identifying the maturity path of each component, criterion, concept, element, and key dimension, which were assessed using the five-level Capability Maturity Model (CMM). In the final step, feedback was obtained from 25 forensic accounting experts regarding the developed model. Based on their aggregated opinions, the research model was adjusted and revised.

The five-level integrated Capability Maturity Model for forensic accounting assists organizations in achieving a comprehensive and well-structured understanding of their capabilities in this domain. This model, focusing on continuous improvement, can help organizations reach higher levels of maturity and enhance the efficiency and effectiveness of forensic accounting operations. The following model evaluates and monitors forensic accounting in Iran by predicting its characteristics and challenges. The flowchart representing the stages of research execution is as follows:

Figure 2. Overview of the research implementation stages



3.2. Population and Sample of the Study and Scope of Research

The statistical population consists of experts and specialists in the field of forensic accounting, which involves a mix of various specialties and experiences due to the interdisciplinary nature of the. In the application forensic accounting, several areas of expertise and experience are relevant, including accounting, auditing, economics, commerce, banking, stock exchange, law, taxation, customs, psychology, and more. Therefore, the statistical community for extracting the forensic accounting maturity model was selected from experts who possess the aforementioned specialties and experiences.

The statistical population is classified into four groups. To select a sample from these individuals, the

snowball sampling method was utilized sequentially across the first to fourth groups. This means that the snowball sampling method was applied independently in each group. Given the priority placed on experience in the field of forensic accounting across all four groups, a minimum of ten years of professional work experience and specialization was considered.

Since the Delphi method involves participation from individuals with specialized knowledge on the research subject, the selection of qualified members for the group—referred to as the Delphi panel—is one of the most critical phases of this method. In this study, the panel members include 25 experts and specialists who were selected to confirm and refine the influential components, measurement criteria, concepts, elements, and key dimensions of forensic accounting. These members were chosen based on their educational background, familiarity with research methods, research experience, and practical experience in the subject matter.

Regarding the temporal scope of the study, qualitative data were collected through content analysis, interviews, and the completion of questionnaires for the periods of 2022 and 2023, along with the examination of economic cases in Forensics and data extraction concerning a ten-year period leading up to 2023. The demographic information of the panel members is summarized in the table below.

In this study, the questionnaires developed were distributed to 253 experts in forensic accounting, classified in the table below based on their area of specialization. Ultimately 158 individuals responded to the questionnaires.

Table 1. demographic information of Delphi panel participants

University Experts			**Certified Judicial Experts**			**Service Background and Organizational Position of Experts**			
Academic Degree	**Academic Rank**	**Number**	**Percentage**	**Academic Degree**	**Number**	**Percentage**	**Service Experience**	**Number**	**Percentage**
Doctorate and Master's Degree	Full Professor	1	13%	Doctorate	4	24%	Over 20 Years	5	20%
	Associate Professor	3	38%	Master's Degree	10	59%	15 to 20 Years	13	52%
	Assistant Professor and Instructor	4	50%	Bachelor's Degree	3	18%	10 to 15 Years	7	28%
Total		8	100%		17	100%		25	100%

Table 2. Description of the statistical sample by field of specialization

Statistical Population by Group and Area of Expertise				
Group	**Respondent Category**	**Specialization**	**Number**	**Total Number**
Group One	Professors, Accountants, and Auditors	Accounting - Financial Management and Auditing	7	35
		Auditing - Partners and Technical Managers	23	
		University Professors Specialized in Forensic Accounting	5	
Group Two	Certified Judicial Experts	Qualification in Accounting, Auditing, and Valuation	54	104
		Qualification in Economics, Commerce, and Contracts	12	
		Qualification in Banking Affairs	8	
		Qualification in Stock Market Affairs	7	
		Qualification in Tax Affairs	8	
		Qualification in Customs Affairs	7	
		Qualification in Computer Science and Information Technology	3	
		Qualification in Law	5	
Group Three	Specific Agents - Government Inspectors	Financial Management	2	7
		Economic Law	1	
		Accounting and Auditing	2	
		Economics and Commerce	1	
		Banking	1	
Group Four	Experts Engaged in	Private Law	2	12

Statistical Population by Group and Area of Expertise				
Group	**Respondent Category**	**Specialization**	**Number**	**Total Number**
	Judging and Legal Matters	Criminal Law and Criminology	3	
		Economic Law	2	
		Public Law	2	
		International Trade Law	3	
Total Statistical Population			158	158

From the above statistics, regarding gender, a total of 105 men (66.5%) and 53 women (33.5%) responded to the questionnaire.

In terms of the age of the respondents, 37 individuals were aged between 35 and 45 years, 83 individuals were between 46 and 50 years, and 38 individuals were older than 50 years.

Regarding the professional experience of the respondents, 17 individuals had between 10 and 15 years of experience, 93 individuals had between 15 and 20 years, and 48 individuals had more than 20 years of experience.

Additionally, in terms of educational background, 52 individuals held a bachelor's degree, 54 individuals held a master's degree, and 52 individuals had doctoral degrees.

4. Results

In this stage, the focus shifts to the analysis of data and the results obtained from interviews and qualitative studies, aimed at presenting the forensic accounting maturity model in Iran. The researcher has explored the experiences, opinions, and viewpoints of specialists in the fields of accounting and law, aiming to identify the patterns and key concepts related to forensic accounting maturity.

Given the importance of improving accuracy and transparency in financial information during judicial proceedings, there is a pressing need for a clearly defined and scientific accounting model in the Forensics. This model could contribute to better judgment, enhance the quality of audits, and increase public trust in the country's judiciary system. Therefore, the primary objective of this research is to analyze the data collected to develop and design such a model using qualitative content analysis.

Through this methodology, we aim to identify the themes and key patterns that researchers and specialists have proposed as the main elements of the forensic accounting maturity model. The opinions and experiences of a variety of users, including auditors, lawyers, judges, and other experts, are thoroughly analyzed, and the relationships between their insights and the research hypotheses are examined.

Considering the qualitative approach of the research, the quality and authenticity of the collected data have been evaluated and analyzed to ensure that the results accurately reflect the realities within the domain of forensic accounting. This chapter is designed to provide a deep and comprehensive analysis of the gathered data, striving to create a solid foundation for the development of the forensic accounting maturity model in Iran.

By meticulously and scientifically reviewing the data, we aim to uncover shared and significant indicators that can lead to optimized accounting practices within the Forensics and enhance the efficiency of the country's judicial system.

4.1. Validity and Reliability of the Research

In this study, content validity (the examination and assessment of the foundations and theoretical framework of forensic accounting and the use of opinions from official judicial experts in related fields such as law and finance through interviews and the completion of questionnaires to ensure all aspects under study are covered), internal validity (to ensure that the observed changes in results are due to research variables and not external factors), external validity (meaning the applicability of the extracted samples and the completeness of samples related to specialized fields), and also reliability, which refers to the consistency and repeatability of the research results, have been evaluated through two methods: inter-rater reliability (using a panel of 25 academic experts and forensic accounting specialists) and the reliability of the method (ensuring systematic consistency of the methods and alignment with the proposed model for integrated maturity capability). For determining the

level of agreement among panel members, Kendall's coefficient of concordance was used. Kendall's coefficient is a measure for determining the degree of agreement among several rank categories related to N objects or individuals. In fact, this measure can be used to find rank correlation among K sets of ranks. Such a measure is particularly useful in studies concerning "inter-rater validity." Kendall's coefficient indicates that individuals who rank several categories based on their importance fundamentally apply similar criteria for judging the significance of each category, thus reaching a consensus in this regard (Mashayekhi, 2005). This measure is calculated using the following formula:

$$W = \frac{S}{\frac{1}{12}k^2(N^3 - N)}$$

Formula for calculating Kendall's coordination coefficient

which is calculated using the following formula for the sum of the squares of the deviations of R_j values from the mean Rj values:

$$S = \sum(R_j - \frac{\sum R_j}{N})^2$$

Formula for the sum of the squares of the deviations of Rj from the mean of Rj

Rj = Sum of ratings for a factor

K = Number of sets of ratings (number of judges)

N = Number of factors rated

1/12 K2 (N3 – N) = Maximum product of squares of deviations from the mean of Rj

(i.e., the sum S that would be observed if there was complete agreement among the K ratings.)

The value of this measure is equal to one in the case of complete agreement or concordance, and equal to zero in the absence of any coordination. The table below illustrates how to interpret various values of this coefficient.

"Schmidt" provides two statistical criteria for deciding on consensus or continuing Delphi rounds. The first criterion is a strong consensus among panel members, determined based on the value of Kendall's coefficient of concordance. In the absence of such consensus, the stability of this coefficient or its slight increase over consecutive rounds indicates that has been no significant improvement in members' agreement, and the consultation process should be halted. It is worth mentioning the statistical significance of the W coefficient alone is not sufficient to stop the Delphi process. For panels with more than 10 members, even a very small W value is considered significant (Mashayekhi, 2005). Therefore, another criterion such as the significance level is used to determine the agreement or disagreement of experts regarding each of the research hypotheses. Accordingly, the hypotheses of the Delphi panel for each statement are formulated as follows:

- **\(H_0 \)**: There is agreement among experts regarding the statement in question.
- **\(H_1 \)**: There is no agreement among experts regarding the statement in question.

Sampling was conducted in a non-probabilistic and purposive manner (according to Sarmad et al., 2005), aimed at studying the consistency of responses. The distribution and collection of questionnaires and the explanation of the study's questions and objectives were primarily carried out in person and occasionally through email correspondence and phone calls. In total, 25 individuals were selected, who completed a questionnaire consisting of 263 questions, and the responses were analyzed to derive results.

Table 3. Interpretation of various values of Kendall's coordination coefficient

Interpretation of W Value and Confidence in Factor Ranking		
Confidence in Factor Order	**Interpretation**	**W Value**
Exists	Very Weak Consensus	0.1
Low	Weak Consensus	0.3
Medium	Medium Consensus	0.5
High	Strong Consensus	0.7
Very High	Very Strong Consensus	0.9

Table 4. Exploratory analysis of conceptual framework

Total variance of dimensions	Components (sub-factors)	Kaiser-Meier Proportionality Test Number and Bartlett Test	Dimensions
56.416	263	KMO = 0.895 Bartlett = 1209.136 Df = 186 Sig = 0/000	6

To this end, the Kaiser-Meyer-Olkin (KMO) index and Bartlett's test are used (Momeni and Fakhr-Qiyomi, 2007: 193).

KMO Index: The KMO index measures the adequacy of sampling and investigates the smallness of partial correlations among variables. It determines whether the variance of the research variables is influenced by the common variance of some latent and fundamental factors. The KMO value ranges from 0 to 1. If the KMO value is close to 1, the data are suitable for factor analysis; otherwise (usually below 0.6), the results of factor analysis may not be appropriate for the data.

Bartlett's Test: This test assesses when the correlation matrix is known (in mathematical terms, it seeks an identity matrix) and consequently identifies whether the structure (factor model) is suitable. If the significance level (sig) of Bartlett's test is less than 5%, the factor analysis is appropriate for identifying the structure (factor model).

As shown in the table, the KMO test statistic is greater than 0.85; this indicates that factor analysis is highly suitable for these data.

To measure and evaluate the reliability of the research instrument, Cronbach's alpha method and formula are used. This method is the most common approach for assessing reliability. The calculation of Cronbach's alpha, also known as Alpha coefficient, is affected by the average of pairwise correlations among all items of the research instrument, as well as the number of them. This method, which is used to measure the internal consistency of the measuring instrument, first calculates the variance of obtained scores and then uses SPSS software to compute the alpha coefficient (Sarmad et al., 2009).

In other words, Cronbach's alpha measures the extent to which items on a scale are consistent and is a generalized form of the Kuder-Richardson test. This coefficient fluctuates between 0 and 1, and the closer the value is to 1, the greater the consistency among the scale items (Habibpour and Safari, 2009). The range of alpha values is summarized in Table 5.

$$r_a = \frac{J}{J-1}\left(1 - \frac{\sum s^2 j}{s^2}\right)$$

Cronbach's alpha formula

Where:

J= Number of subsets of questionnaire questions

Js2= Variance of the jth subtest

S2= Variance of the total test

Ra= Cronbach's coefficient

Regarding construct validity, a preliminary sample consisting of 10 questionnaires was pre-tested in the stage of answering the hypothesis questions and the influencing variables related to Forensic accounting. Using the obtained data, the internal consistency calculated using Cronbach's alpha method. These values indicate that the questionnaires possess an acceptable level of reliability.

Table 5. Table of Cronbach's alpha value ranges

Cronbach's Alpha Coefficient and Status	
Status	**Cronbach's Alpha Coefficient**
Excellent	More than 0.9
Very Good	0.8 to 0.9
Good	0.7 to 0.8
Acceptable	0.6 to 0.7
Questionable	0.5 to 0.6
Weak	0.4 to 0.5
Unacceptable	Less than 0.4

4.2. Examination and Analysis of Hypotheses, Research Questions, Influencing Variables, Concepts, Factors, Dimensions, and Key Indicators of Forensic Accounting**

4.2.1. Examination of the Confirmation or Rejection of the Hypothesis Regarding the Presentation of the Forensic Accounting Maturity Model in Iran:**

The confirmation of hypotheses in qualitative research is a process that involves data collection, content analysis, and a thorough examination of the results and their interpretation. By carefully considering these stages and paying attention to the deep insights of respondents and interviewees, significant confirmation of hypotheses regarding the maturity of Forensic accounting in Iran can be achieved. This process will aid in establishing a strong foundation for the development of accounting models within the judicial system of the country. As observed in the table below, based on the obtained results, the eight hypotheses in Forensic accounting in Iran have been confirmed:

Table 6. Results of examining research hypotheses

Research Hypotheses and Analysis							
Row	**Research Hypotheses**	**Qualitative Questions**	**Quantitative Questions**	**Questionnaire Model**	**Cronbach's Alpha Range**	**Alpha Status**	**Hypothesis Approval/ Rejection**
1	Changes in accounting laws and regulations in Iran positively impact the quality and accuracy of forensic accounting.	What impact have recent changes in accounting laws had on accounting processes in Forensics?	How much impact do recent changes in accounting laws have on the quality and accuracy of forensic accounting?	Likert scale 1 to 5	0.879	Very Good	Hypothesis Approved (over 0.4)
2	The use of information technology and accounting software increases efficiency and accuracy in forensic accounting processes.	How have new technologies impacted the accuracy and efficiency of forensic accounting?	How much do you use accounting software?	Likert scale 1 to 5	0.772	Good	Hypothesis Approved (over 0.4)
3	The education and skill level of accountants and financial experts in Forensics influence the quality of accounting services.	How do you evaluate the impact of education on the performance and efficiency of forensic accountants?	How much does the education level of forensic accountants affect the quality of accounting services?	Likert scale 1 to 5	0.721	Good	Hypothesis Approved (over 0.4)
4	The absence of specific accounting standards for the Forensic system in Iran leads to uncertainty and disagreement in assessments.	How does the lack of specific accounting standards affect financial assessments in Forensics?	Has the absence of specific accounting standards caused disagreements in assessments? (Yes/No)	0.85	Very Good	Hypothesis Approved (over 0.4)	Hypothesis Approved (over 0.4)
5	Cultural beliefs and behaviors related to accounting in Iran influence the acceptance and implementation of new accounting models.	Has organizational culture, especially in Iranian Forensics, influenced the transition to new forensic accounting	How much do you think organizational culture in Forensics influences the acceptance of new forensic accounting	Likert scale 1 to 5	0.732	Good	Hypothesis Approved (over 0.4)

Research Hypotheses and Analysis							
Row	**Research Hypotheses**	**Qualitative Questions**	**Quantitative Questions**	**Questionnaire Model**	**Cronbach's Alpha Range**	**Alpha Status**	**Hypothesis Approval/ Rejection**
		models? How?	models?				
6	Strengthening accounting doctrines and maturity models can directly influence judges' decision-making and case outcomes.	What are the key characteristics of the maturity level of forensic accounting in Iran?	How mature is forensic accounting in Iran, in your opinion?	Likert scale 1 to 5	0.765	Good	Hypothesis Approved (over 0.4)
7	Adopting global changes in accounting and financial standards will improve and advance the forensic accounting system in Iran.	How can the use of international accounting standards impact Forensics in Iran?	To what extent do Forensics and forensic accounting comply with international accounting standards?	Likert scale 1 to 5	0.828	Very Good	Hypothesis Approved (over 0.4)
8	Deficiencies in the forensic accounting system can lead to prolonged litigation and increased legal costs.	How can shortcomings in the forensic accounting system be reduced to prevent prolonged litigation and legal costs?	How effective are appropriate forensic accounting methods in preventing prolonged litigation and reducing legal costs?	Likert scale 1 to 5	0.781	Good	Hypothesis Approved (over 0.4)

4.2.2. Examination of the Relationship Between the Following Variables and Components in Reducing Corruption and Financial Fraud in Iran:

Forensic accounting, as a key tool for transparency and preventing corruption and fraud in judicial and financial systems, can play a significant role. Based on the results obtained in this research, a total of 15 main variables have been identified through interviews and received questionnaires, as well as the level of agreement among the research group. Using Cronbach's alpha method, the following components were determined: transparency in financial reporting, existence of trading systems, government executive policies in the economic sphere, formulation of appropriate laws and regulations, efficient human resources, development of tools and techniques, information technology and technology, legal institutions, standardization and the formulation of financial and economic regulatory regulations, the services and roles of Forensic accountants, professional observers, continuous improvement, the judicial processes used in Forensics of Iran, trade unions, employer associations, professional associations, and academic centers, as well as free media and security and intelligence observers—all have significant contributions to detecting corruption and fraud and preventing them. The degree of influence of the mentioned variables and components in reducing corruption and fraud is highly interconnected and interdependent. These components, when interacting with one another, can have a considerable impact on the transparency of financial operations, fraud prevention, and increasing public trust in governments, the judicial system, and financial regulators. The application of these components within a coherent and coordinated framework significantly contributes to improving the efficiency of the judicial and financial system and ultimately reducing corruption and fraud. It is noteworthy that, separately for each of the influencing variables on Forensic accounting, a total of 93 criteria for measuring or moderating corruption and fraud have been identified and examined, which will be discussed in the tables in the following pages.

Table ۷. The impact of components and variables affecting forensic accounting on corruption and financial fraud

Influencing Factors and Variables on Forensic Accounting					
Row	**Influencing Factors and Variables**	**Questionnaire Model**	**Cronbach's Alpha Range**	**Alpha Status**	**Impact on Financial Fraud and Corruption**
1	Transparency and Reporting	Likert scale 1 to 5	0.961	Excellent	Alpha over 0.4 is confirmed
2	Private and Public Business Systems	Likert scale 1 to 5	0.952	Excellent	Alpha over 0.4 is confirmed
3	Government and Executive Policies	Likert scale 1 to 5	0.936	Excellent	Alpha over 0.4 is confirmed
4	Laws and Regulations	Likert scale 1 to 5	0.925	Excellent	Alpha over 0.4 is confirmed
5	Human Resources	Likert scale 1 to 5	0.917	Excellent	Alpha over 0.4 is confirmed
6	Development of Tools and Techniques	Likert scale 1 to 5	0.889	Very Good	Alpha over 0.4 is confirmed
7	Information Technology and Technology	Likert scale 1 to 5	0.872	Very Good	Alpha over 0.4 is confirmed
8	Legal Institutions, Standardization, and Development of Financial and Economic Regulations	Likert scale 1 to 5	0.868	Very Good	Alpha over 0.4 is confirmed
9	Services and Roles	Likert scale 1 to 5	0.85	Very Good	Alpha over 0.4 is confirmed
10	Professional Supervisors	Likert scale 1 to 5	0.848	Very Good	Alpha over 0.4 is confirmed
11	Continuous Improvement	Likert scale 1 to 5	0.831	Very Good	Alpha over 0.4 is confirmed
12	Judicial Process	Likert scale 1 to 5	0.724	Good	Alpha over 0.4 is confirmed
13	Professional, Employer, Trade Associations, and Academic Centers	Likert scale 1 to 5	0.718	Good	Alpha over 0.4 is confirmed
14	Free Media	Likert scale 1 to 5	0.658	Acceptable	Alpha over 0.4 is confirmed
15	Security and Intelligence Supervisors	Likert scale 1 to 5	0.631	Acceptable	Alpha over 0.4 is confirmed

4.2.3. Presenting a Maturity Model for Forensic Accounting with an Approach to the Iranian Economy:

The research group, while studying and analyzing the available resources related to the subject, extracted components, measurement criteria, concepts, factors, dimensions, and key indicators (in the first stage) and validated these items using the Delphi method with the opinions of experts in the field of Forensic accounting. Relevant tests were conducted to determine and identify them. As shown in the table below, Forensic accounting in Iran is at a preliminary level, and in some of the measurement criteria, it is very weakly positioned at the second level (emergent level).

Table ۸. Presentation of the forensic accounting maturity model with an Iranian economic approach

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
1	Professional Associations, Employer Organizations, and Academic Centers	1	Code of Ethics and Professional Conduct	-	□	-	-	-
		2	Professional and Employer Associations	□	-	-	-	-
		3	Professional Associations	-	□	-	-	-
		4	International Associations	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
		5	Professional Journals	□	-	-	-	-
		6	Professional Seminars and Conferences	□	-	-	-	-
		7	Scientific and Practical Education	-	□	-	-	-
		8	Scientific and Academic Institutions	-	□	-	-	-
2	Legal Institutions, Standardization, and Regulatory Framework Development	1	Securities and Exchange Organization	-	□	-	-	-
		2	National Tax Administration	-	□	-	-	-
		3	Forensic of Audit	-	□	-	-	-
		4	General Inspection Organization	-	□	-	-	-
		5	Auditing Organization and Certified Accountants Society of Iran	-	□	-	-	-
		6	Central Bank	-	□	-	-	-
		7	Central Insurance	-	□	-	-	-
		8	Customs	-	□	-	-	-
		9	Government Regulatory Organization	□	-	-	-	-
		10	National Competition Council	□	-	-	-	-
		11	Consumer and Producer Protection Organization	□	-	-	-	-
		12	Headquarters for Combating Economic Corruption, Money Laundering, and Terrorism Financing	□	-	-	-	-
		13	Valuation Standardization Organization	□	-	-	-	-
3	Laws and Regulations	1	Comprehensive Studies and Sustainable Regulatory Framework in Finance and Economics	□	-	-	-	-
		2	Establishing a Competitive Free Market Economy and Increasing the Private Sector's Share	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
		3	Comprehensive Regulations tailored to each organization and executive bodies with enforcement	□	-	-	-	-
		4	Continuous Review of Crimes and Punishment Laws	□	-	-	-	-
4	Security and Intelligence Supervisors	1	Security and Intelligence Organizations	-	□	-	-	-
		2	Economic and Financial Police	□	-	-	-	-
		3	Article 90 Commission of the Constitution	□	-	-	-	-
		4	Security Guards of Government Organizations	□	-	-	-	-
5	Professional Supervisors	1	Internal Auditors	-	□	-	-	-
		2	Inspectors	□	-	-	-	-
		3	Independent Auditors	-	□	-	-	-
		4	Certified Experts for Legal Proceedings	□	-	-	-	-
		5	Financial Analysts	□	-	-	-	-
		6	International Financial Supervisors	□	-	-	-	-
6	Human Resources	1	Selection and Meritocracy in Management Positions, especially in Economic and Financial Roles	□	-	-	-	-
		2	Expertise and Qualifications	□	-	-	-	-
		3	Professional Knowledge and Skills	□	-	-	-	-
		4	Experience	□	-	-	-	-
		5	Individual and Social Characteristics	□	-	-	-	-
7	Services and Roles	1	Valuation	□	-	-	-	-
		2	Fraud Risk Management	□	-	-	-	-
		3	Testimony and Certification	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
		4	Inspection and Review Services	□	-	-	-	-
		5	Arbitration and Settlement	□	-	-	-	-
		6	Monitoring and Detection of Violations and Fraud	□	-	-	-	-
		7	Assurance and Supervision	□	-	-	-	-
		8	Trustee in Judicial Proceedings	□	-	-	-	-
		9	Consultation for Litigation Parties	□	-	-	-	-
8	Private and Public Business Systems	1	Economic Business Systems	□	-	-	-	-
		2	Licensing, Permits, and Resolutions	□	-	-	-	-
		3	Government and Bank Allocated Credits	□	-	-	-	-
		4	Anti-Money Laundering Systems	□	-	-	-	-
		5	Identity Systems	□	-	-	-	-
		6	Banking, Monetary and Capital Market, Tax, Registration and Real Estate Systems	-	□	-	-	-
		7	Commercial and Customs Systems	□	-	-	-	-
9	Information Technology and Technology	1	Technological Infrastructure (Hardware, Software, and Cognitive)	□	-	-	-	-
		2	Information Security	□	-	-	-	-
		3	Databases	□	-	-	-	-
		4	Artificial Intelligence	□	-	-	-	-
		5	Information and Communication Knowledge and Skills	□	-	-	-	-
10	Judicial Process	1	Presence of Specialized Forensics and Prosecution Offices in Financial, Banking, Tax, and Capital Market Affairs	□	-	-	-	-
		2	Existence and Development of Specialized Legal Experts in	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
			Economic Affairs					
		3	Presence of Information Infrastructure in Judicial Systems (Case Formation and Systematic Processing)	□	-	-	-	-
		4	Designing a Structured Selection Process for Judges and Investigators in Economic Crime Cases	□	-	-	-	-
		5	Education and Training of Official Forensic Experts in Required Fields	□	-	-	-	-
		6	Adjusting Crimes and Penalties	□	-	-	-	-
		7	Disclosure of Violations and Training in Anti-Corruption	□	-	-	-	-
11	Transparency and Reporting	1	Application and Development of Appropriate Standards	□	-	-	-	-
		2	Reviewing the Organization and Structure of Reports	□	-	-	-	-
		3	Quality of Reporting and Timely Presentation of Reports	□	-	-	-	-
		4	Reporting and Feedback	□	-	-	-	-
		5	Designing Supervisory Systems for Reporters	□	-	-	-	-
		6	Predicting Crimes and Penalties for Non-Transparent Reporting	□	-	-	-	-
12	Free Media	1	Freedom of Expression in Exposing Non-Transparent Administrative and Commercial Relations	□	-	-	-	-
		2	Exposing Political and Economic Rents and Possible Violations	□	-	-	-	-
		3	Media Coverage of Economic Cases and Holding Public Trials	□	-	-	-	-
		4	Promoting a Whistleblower Culture in Public and Private Organizations	□	-	-	-	-
13	Continuous Improvement	1	Continuous Professional Improvement	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
		2	Increase International Communications	□	-	-	-	-
		3	Improving the Culture of Communication with Stakeholders	□	-	-	-	-
		4	Utilizing Supervisory Feedback in Improving Laws and Regulations	□	-	-	-	-
		5	Eliminating and Adjusting Parallel Professional Supervisions	□	-	-	-	-
14	Development of Tools and Techniques	1	Designing Red Lines and Utilizing Fraud Alerts and Preventative and Discovery Techniques	□	-	-	-	-
		2	Designing and Utilizing Audit and Fraud Inspection Software at Economic Enterprises and Government	□	-	-	-	-
		3	Organizing Supervision of Commercial Systems and Reviewing Them	□	-	-	-	-
		4	Interacting with International Entities and Learning from Experiences in Combating Corruption and Fraud with a Systemic Approach	□	-	-	-	-
15	Government and Executive Policies	1	Correct Implementation of Laws and Regulations	□	-	-	-	-
		2	Promoting and Disseminating Culture in Society Regarding Compliance with Legal Regulations and Creating Social Justice	□	-	-	-	-
		3	Creating Infrastructure for Corporate Governance and Continuous Supervision in Small and Large Organizations	□	-	-	-	-
		4	Using Healthy and Competent Human Resources in Managerial Positions and Human Resource Management	□	-	-	-	-
		5	Developing and Issuing Anti-Corruption and Money Laundering Guidelines and	□	-	-	-	-

Forensic Accounting Maturity Model in the Context of the Iranian Economy								
Row	**Influencing Component**	**Sub-item**	**Measurement Criteria**	**Initial Level**	**Emerging Level (Repeatable)**	**Structured Level**	**Integrated Level (Managed)**	**Optimization Level**
			Designing Supervisory Mechanisms for Anti-Money Laundering					
		6	Proportional Response to Offenders	□	-	-	-	-

4.2.4. Examination of the Relationship Among Concepts, Factors, Dimensions, and Key Indicators of Forensic Accounting in Iran:

In order to determine the validity of the concepts, factors, dimensions, and key indicators of Forensic accounting from the perspective of experts and authorities in this field, the Delphi method was used. In this section, after reviewing the personal characteristics of the respondents, the results obtained from the Delphi methods will be examined. It was mentioned in previous pages that the research team, through a study of theoretical discussions at both the domestic and international levels, sought to formulate and extract the theoretical foundations related to the topic in a way that accumulates knowledge for extracting concepts, factors, dimensions, and indicators. Following the theoretical studies, an initial questionnaire was developed, which will be explained in the subsequent stages of the process.

At this stage, an initial questionnaire was designed and given to the experts. The experts were requested to express their agreement or disagreement with the views of the research group and to confirm or reject the issues raised in the questionnaire by selecting either "yes" or "no". After collecting the responses, the items were refined and categorized, and the main questionnaire was prepared and compiled based on their opinions. In these stages, based on the results obtained from the previous step, the final questionnaire was provided to the experts. The questionnaire was designed in such a way that respondents could express their opinions on a Likert scale from 1 to 5, with options of "Strongly Agree," "Agree," "No Opinion," "Disagree," and "Strongly Disagree," and at the end of each section, they could provide their suggestions or additional comments.

The exchange of questionnaires occurred in three stages. As detailed in the tables below and in subsequent tables, in all concepts, factors, and dimensions identified by the 25-member panel group, after receiving the questionnaires and using the Cronbach's alpha method to validate the research, all concepts, factors, and key dimensions were ultimately confirmed.

Table ۹. Internal validity using Cronbach's alpha method

Questionnaire Design and Cronbach's Alpha Summary for Forensic Accounting						
Row	**Titles**	**Number of Items**	**Questionnaire Model**	**Cronbach's Alpha**	**Alpha Status**	**Connection with Higher Variables**
1	Avoiding Conflict	3	Likert scale 1 to 5	0.85	Very Good	Alpha over 0.4 is confirmed
2	Two-way Interaction with Stakeholders	4	Likert scale 1 to 5	0.805	Very Good	Alpha over 0.4 is confirmed
3	Impartiality	4	Likert scale 1 to 5	0.801	Very Good	Alpha over 0.4 is confirmed
4	Absence of Limitations	2	Likert scale 1 to 5	0.793	Good	Alpha over 0.4 is confirmed
5	Documenting Reliable Evidence of Existing Processes	11	Likert scale 1 to 5	0.79	Good	Alpha over 0.4 is confirmed

Questionnaire Design and Cronbach's Alpha Summary for Forensic Accounting						
Row	**Titles**	**Number of Items**	**Questionnaire Model**	**Cronbach's Alpha**	**Alpha Status**	**Connection with Higher Variables**
6	Determining Policies and Procedures for Managing People	4	Likert scale 1 to 5	0.789	Good	Alpha over 0.4 is confirmed
7	Monitoring and Supervision of Audit Programs	3	Likert scale 1 to 5	0.789	Good	Alpha over 0.4 is confirmed
8	Determining Reporting Procedures	6	Likert scale 1 to 5	0.785	Good	Alpha over 0.4 is confirmed
9	Coordination and Interaction	3	Likert scale 1 to 5	0.776	Good	Alpha over 0.4 is confirmed
10	Interaction between Forensic Accountants and Independent Accountants	5	Likert scale 1 to 5	0.771	Good	Alpha over 0.4 is confirmed
11	Value-Adding Activities	2	Likert scale 1 to 5	0.768	Good	Alpha over 0.4 is confirmed
12	Competence	4	Likert scale 1 to 5	0.765	Good	Alpha over 0.4 is confirmed
13	Approval of Audit Program	2	Likert scale 1 to 5	0.765	Good	Alpha over 0.4 is confirmed
14	Management of Forensic Accountants	6	Likert scale 1 to 5	0.754	Good	Alpha over 0.4 is confirmed
15	Training	3	Likert scale 1 to 5	0.746	Good	Alpha over 0.4 is confirmed
16	Services and Role of Forensic Accounting	4	Likert scale 1 to 5	0.745	Good	Alpha over 0.4 is confirmed
17	Compatibility of Audit Programs	2	Likert scale 1 to 5	0.745	Good	Alpha over 0.4 is confirmed
18	Management of Official Experts	6	Likert scale 1 to 5	0.743	Good	Alpha over 0.4 is confirmed
19	Resource Management	5	Likert scale 1 to 5	0.733	Good	Alpha over 0.4 is confirmed
20	Audit Programs for Cases	2	Likert scale 1 to 5	0.732	Good	Alpha over 0.4 is confirmed
21	Reporting to Judicial Authorities in Prosecution Offices	8	Likert scale 1 to 5	0.729	Good	Alpha over 0.4 is confirmed
22	Determining Reporting Lines	2	Likert scale 1 to 5	0.729	Good	Alpha over 0.4 is confirmed
23	Key Characteristics	3	Likert scale 1 to 5	0.721	Good	Alpha over 0.4 is confirmed
24	Reporting on Quality Assurance Improvement Programs	2	Likert scale 1 to 5	0.721	Good	Alpha over 0.4 is confirmed
25	Monitoring Stages	3	Likert scale 1 to 5	0.719	Good	Alpha over 0.4 is confirmed
26	Stakeholders' Access to Key Documents	5	Likert scale 1 to 5	0.715	Good	Alpha over 0.4 is confirmed

Questionnaire Design and Cronbach's Alpha Summary for Forensic Accounting						
Row	**Titles**	**Number of Items**	**Questionnaire Model**	**Cronbach's Alpha**	**Alpha Status**	**Connection with Higher Variables**
27	Skills	13	Likert scale 1 to 5	0.714	Good	Alpha over 0.4 is confirmed
28	Monitoring and Supervision of Audit Programs During Execution	3	Likert scale 1 to 5	0.713	Good	Alpha over 0.4 is confirmed
29	Avoidance of Independence Violations	5	Likert scale 1 to 5	0.712	Good	Alpha over 0.4 is confirmed
30	Assurance and Advisory Services	4	Likert scale 1 to 5	0.712	Good	Alpha over 0.4 is confirmed
31	Qualification and Independence of Auditors and Evaluation Groups	3	Likert scale 1 to 5	0.712	Good	Alpha over 0.4 is confirmed
32	Knowledge	14	Likert scale 1 to 5	0.711	Good	Alpha over 0.4 is confirmed
33	Providing Forensic Accounting Services	3	Likert scale 1 to 5	0.711	Good	Alpha over 0.4 is confirmed
34	Considering the Accountant Manager	3	Likert scale 1 to 5	0.711	Good	Alpha over 0.4 is confirmed
35	Independence	2	Likert scale 1 to 5	0.706	Good	Alpha over 0.4 is confirmed
36	Crime Prevention and Financial Fraud Prevention	4	Likert scale 1 to 5	0.705	Good	Alpha over 0.4 is confirmed
37	Core Concepts of Forensic Accounting	5	Likert scale 1 to 5	0.701	Good	Alpha over 0.4 is confirmed
38	Developing Audit Programs for Each Case	3	Likert scale 1 to 5	0.699	Acceptable	Alpha over 0.4 is confirmed
39	Progress	2	Likert scale 1 to 5	0.696	Acceptable	Alpha over 0.4 is confirmed
40	Documenting Steps	3	Likert scale 1 to 5	0.694	Acceptable	Alpha over 0.4 is confirmed
41	Process of Forensic Accounting Operations	7	Likert scale 1 to 5	0.688	Acceptable	Alpha over 0.4 is confirmed
42	Performance Management	6	Likert scale 1 to 5	0.681	Acceptable	Alpha over 0.4 is confirmed
43	Implementation of Different Forensic Accounting Services	3	Likert scale 1 to 5	0.681	Acceptable	Alpha over 0.4 is confirmed
44	Performance Evaluation	5	Likert scale 1 to 5	0.671	Acceptable	Alpha over 0.4 is confirmed
45	Experience	6	Likert scale 1 to 5	0.669	Acceptable	Alpha over 0.4 is confirmed
46	Support Services for Litigation	6	Likert scale 1 to 5	0.667	Acceptable	Alpha over 0.4 is confirmed
47	Determining Required Tools and Techniques	2	Likert scale 1 to 5	0.662	Acceptable	Alpha over 0.4 is confirmed
48	Individual and Social Characteristics	5	Likert scale 1 to 5	0.655	Acceptable	Alpha over 0.4 is confirmed

Questionnaire Design and Cronbach's Alpha Summary for Forensic Accounting						
Row	**Titles**	**Number of Items**	**Questionnaire Model**	**Cronbach's Alpha**	**Alpha Status**	**Connection with Higher Variables**
49	Reporting Limitations in Implementation	3	Likert scale 1 to 5	0.654	Acceptable	Alpha over 0.4 is confirmed
50	Revision of Reports	3	Likert scale 1 to 5	0.645	Acceptable	Alpha over 0.4 is confirmed
51	Developing Annual Forensic Accounting Programs	7	Likert scale 1 to 5	0.644	Acceptable	Alpha over 0.4 is confirmed
52	Employment	3	Likert scale 1 to 5	0.643	Acceptable	Alpha over 0.4 is confirmed
53	Organizational Relationships	2	Likert scale 1 to 5	0.641	Acceptable	Alpha over 0.4 is confirmed
54	Reporting Results to Stakeholders	5	Likert scale 1 to 5	0.638	Acceptable	Alpha over 0.4 is confirmed
55	Execution of Forensic Accounting Work	5	Likert scale 1 to 5	0.633	Acceptable	Alpha over 0.4 is confirmed
56	Follow-up of Results	4	Likert scale 1 to 5	0.628	Acceptable	Alpha over 0.4 is confirmed
57	Reporting and Accountability Relationships	6	Likert scale 1 to 5	0.628	Acceptable	Alpha over 0.4 is confirmed
58	Timing of Implementing Audit from Case Execution	5	Likert scale 1 to 5	0.627	Acceptable	Alpha over 0.4 is confirmed
59	Fees	2	Likert scale 1 to 5	0.605	Acceptable	Alpha over 0.4 is confirmed
60	Determining Policies and Procedures for Quality Assurance Improvement	7	Likert scale 1 to 5	0.601	Acceptable	Alpha over 0.4 is confirmed

4.2.5. Coding the Forensic Accounting Maturity Model Using the Five-Level Integrated Capability Model:

The coding method in qualitative research is a tool used for data analysis and information organization. In this study, which presents a five-level maturity model for Forensic accounting, coding can assist the researcher in identifying and organizing key concepts, themes, and patterns present in the data. The coding method can help identify and define each of the five levels of Forensic accounting maturity. Through coding, it is possible to identify the challenges and obstacles facing each level. Various causes and motivations for achieving each of the maturity levels can be recognized. Additionally, coding can assist in evaluating the strengths and weaknesses, as well as the factors that require improvement.

Ultimately, through the use of coding, the relationship between maturity levels and their effects on reducing corruption and fraud at the level of government, Forensics, and economic enterprises can be examined. This allows for the implementation of effective policies and strategies in the area of Forensic accounting for greater efficiency, prevention, and reduction of corruption and fraud. Below are the results obtained from coding using the Braun and Clarke method (2006 model) within the framework of the five-level Integrated Capability Maturity Model (CMM), identifying 15 influential variables of Forensic accounting in Iran. It is worth mentioning that this article is derived from a doctoral dissertation titled "Presentation of the Forensic Accounting Maturity Model in Iran," in which all criteria for measuring the 15 identified variables have also been coded according to the five-level Integrated Capability Maturity Model.

Maturity Model for Forensic Accounting in Iran (CMM Approach)

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
1	Transparency and Reporting	At this level, financial transparency and reporting are at a minimum. Financial information is not fully and clearly provided, and public access to financial data is very limited.	Some initial principles of financial transparency and reporting begin to emerge, but significant issues remain. Overall, transparency is improved, but information may be incomplete and scattered.	Significant improvements in transparency and financial reporting quality can be observed. Judicial and financial institutions gradually adopt practices in accordance with national and international standards.	Transparency has reached a high level and financial reports are prepared regularly, accurately, and in compliance with international standards. Financial information is easily accessible to the public, and entities are accountable.	Maximum possible transparency and financial reporting have been achieved. Financial information is not only reported fully and accurately but relevant entities actively seek to improve information and keep themselves updated using advanced technologies.	Transparency and financial reporting serve as key variables in the forensic accounting maturity model in Iran, enhancing efficiency, trust, and accountability within the judicial and financial systems. These variables strengthen integrity and sustainability in the accounting and judicial system of the country by defining the pathway for progress at each maturity level.
2	Commercial and Trade Systems (Private and Public)	At this level, commercial and trade systems are generally inactive or ineffective. Business information is collected in a scattered and non-transparent manner.	Some basic commercial and trade systems have started to operate, but they are still insufficient.	Financial institutions begin to utilize more advanced systems that can effectively gather and analyze business information.	Advanced commercial systems are employed that are fully optimized in terms of efficiency and transparency.	All financial and commercial entities benefit from integrated and fully operational systems, with information readily accessible to the public and stakeholders.	Commercial and trade systems, as a key variable in the forensic accounting maturity model in Iran, have the potential to enhance transparency, efficiency, and accountability. The use of these systems at various maturity levels aids in fostering integrity in the financial and judicial system, which can reduce corruption and enhance public trust.
3	Government and Executive Policies	At this stage, economic executive policies are weak and insufficient. The lack of supportive and regulatory policies can lead to corruption, lack of transparency, and distrust in the financial and judicial system.	Some initial economic policies begin to emerge that can help strengthen transparency and cohesion in the accounting system, but are still inadequate.	Economic policies become more documented and cohesive, gradually supporting the accounting and judicial systems.	Economic policies are well-developed and efficiently applied within accounting and judicial systems.	At this level, economic policies are fully integrated and contribute to maximum transparency and efficiency within the accounting and judicial system.	Government executive policies serve as a key variable in the forensic accounting maturity model in Iran and can enhance efficiency, transparency, and accountability in financial and judicial sectors. These policies influence each level of maturity and play a critical role in the integrity of the forensic accounting system. Improved

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
							policies enhance the system's capacity to meet financial and legal requirements while increasing public trust.
4	Laws and Regulations	At this level, economic laws and regulations are weak and insufficient. The absence of clear and enforceable regulations can lead to corruption and lack of transparency in the forensic accounting system.	Some basic economic laws have been drafted, but still lack comprehensive and sustainable implementation.	Economic laws and regulations are improved and enforceable, paving the way for better accounting practices.	At this level, laws and regulations are fully developed and systematically implemented within the forensic accounting systems.	Economic laws and regulations are fully and systematically enforced within the financial and judicial system, contributing to maximum transparency and efficiency.	The establishment of sustainable economic laws and regulations is a key variable in the forensic accounting maturity model in Iran. These can strengthen transparency, reduce corruption, and increase efficiency in financial and judicial systems. Having an independent and coherent legal framework raises public trust and creates the necessary conditions for sustainable economic growth. Legal frameworks empower related entities and promote integrity in accounting operations, improving overall efficiency.
5	Human Resources	At this level, specialized and efficient human resources are severely limited and financial and judicial institutions lack the capabilities to perform their duties effectively.	Some specialized human resources are gradually employed in financial and judicial institutions, but there is still a need for strengthening and development.	Specialized human resources are strengthened, and financial and judicial institutions begin to utilize these resources in fulfilling their duties.	Efficient and skilled human resources are effectively utilized within forensic accounting systems and play a crucial role in enhancing efficiency.	Financial and judicial institutions fully exploit specialized and efficient human resources, optimizing their processes for maximum effectiveness.	Specialized and efficient human resources, as a key variable in the forensic accounting maturity model in Iran, can enhance transparency, efficiency, and accountability in financial and judicial sectors. By providing expertise, suitable training, and professional skills, these resources help institutions reach higher maturity levels and foster integrity across all factors impacting the accounting

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
							system. A skilled workforce can lay the groundwork for sustainable growth and advancement in the forensic accounting system.
6	Development of Tools and Techniques	At this stage, accounting tools and techniques are limited and insufficient, with financial and judicial institutions relying on rudimentary and traditional approaches.	Some basic tools and techniques have been developed but their application is limited, requiring further advancement.	More advanced tools and techniques begin to emerge and are utilized by financial and judicial institutions in their processes.	Tools and techniques are widely used within judicial and financial systems and have high efficiency.	At this level, all tools and techniques are fully integrated and advanced, achieving maximum effectiveness and transparency.	The development of advanced tools and techniques serves as a key variable in the forensic accounting maturity model in Iran, enhancing the quality, transparency, and efficiency of financial and judicial systems. These tools improve processes, reduce errors, and enhance data analysis, increasing the capacity of the forensic accounting system to comply with legal and financial requirements, thereby fostering greater integrity and public trust.
7	Information Technology and Technology	At this level, information technology and modern technologies are either absent or improperly utilized. Financial and judicial entities rely on traditional manual methods for data management.	Some initial software and technologies are employed but their use remains limited and needs further development.	Novel information technology and modern tools are more extensively employed by financial and judicial entities, leading to observable improvements in processes.	At this level, modern technologies are fully implemented in forensic accounting systems, leading to favorable results.	All modern technologies are comprehensively and integratively utilized in financial and judicial institutions, achieving maximum effectiveness and transparency.	Information technology and modern technologies as a key variable in the forensic accounting maturity model in Iran can significantly improve the efficiency, transparency, and accountability of the accounting and judicial system. By enhancing processes, minimizing errors, and improving data analysis, these technologies bolster the forensic accounting system's capacity for compliance with legal and financial requirements.

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
							Ultimately, their application can lead to greater integrity and alignment among these systems, enhancing public trust.
8	Legal Institutions, Standardization, and Regulatory Frameworks	At this level, legal institutions and financial regulatory frameworks either do not exist or fail to function properly. Organizations operate without adequate oversight, leading to increased corruption and lack of transparency.	Basic legal institutions and regulations are beginning to form but still lack sufficient effectiveness and need strengthening.	Legal institutions and standardizations operate more effectively, yielding noticeable impacts on the forensic accounting system.	At this level, legal institutions and regulations are implemented effectively and significantly aid in improving performance within the forensic accounting systems.	All legal and standardizing institutions operate in a fully integrated and effective manner, achieving maximum maturity within the forensic accounting system.	Legal institutions and financial regulatory frameworks serve as a key variable within the forensic accounting maturity model in Iran, improving transparency, efficiency, and accountability in financial and judicial systems. By establishing legal frameworks and valid standards, these institutions contribute to integrity and coherence in forensic accounting, ultimately building a sustainable and transparent financial system that enhances public trust and aids in the country's economic development.
9	Services and Roles	At this level, the presence of forensic accountants as independent experts is not significant, and judicial institutions rely on traditional methods for managing accounting and financial records.	The role of forensic accountants begins to take shape, but further improvement and development are still needed.	Forensic accountants with greater expertise are employed and play a vital role in enhancing financial transparency.	At this level, forensic accountants are active within the judicial system and effectively utilize their capabilities across various financial and accounting sectors.	At this stage, forensic accountants are recognized as an independent and reliable entity within the judicial system and have achieved maximum effectiveness.	Forensic accountants are a key variable in the forensic accounting maturity model in Iran, contributing to improved quality, transparency, and accountability within financial and judicial systems. By enhancing their expertise and expanding their roles, these accountants can foster greater integrity and coherence within forensic accounting, ultimately strengthening public trust and supporting

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
							financial justice.
10	Professional Supervisors	At this level, supervisory institutions and auditing do not operate effectively, and audits are informal and inadequate. Financial institutions lack transparency and necessary advancements in their processes.	Supervisory and auditing institutions are beginning to form, but their impact is not yet significantly observable.	Professional auditors and inspectors are more actively involved in financial processes and the judicial mindset, contributing to improved transparency.	At this level, professional supervisors not only play a role in auditing and inspecting but also aid in enhancing processes and employing advanced techniques for monitoring.	At this stage, professional supervisors are recognized as independent and respected entities within the forensic accounting system, reaching maximum efficiency and transparency.	Professional supervisors and auditors, as a key variable in the forensic accounting maturity model in Iran, can enhance the quality and transparency of financial and judicial systems. Given their crucial role in monitoring and enforcing standards, they can ultimately improve the efficiency of judicial systems and increase public trust by linking financial and judicial processes and fostering greater integrity.
11	Continuous Improvement	At this stage, accounting and judicial processes and methods operate informally and at a minimum level. There are no reforms or improvements, and prior methods continue without analysis.	Some processes improve, but these changes are limited and unsystematic. Awareness of the need for improvement exists, but no serious action is taken.	Organizations begin to pay more attention to improving processes and methods, establishing a systematic approach to improvement.	At this level, processes and methods are actively improved and come close to maximum efficiency, with greater alignment with international standards.	At this stage, continuous improvement of methods and processes becomes an intrinsic part of the organizational culture, and institutions achieve maximum maturity and efficiency.	Continuous improvement of methods and processes serves as a key variable in the forensic accounting maturity model in Iran, enhancing quality, transparency, and efficiency within financial and judicial systems. Due to the importance of this variable across all maturity levels, implementing a systematic and integrated approach for ongoing improvement can foster public trust and reinforce the legal and financial framework of the country. This process helps accounting and judicial institutions become more aligned and improve the economic and social system.

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
12	Judicial Process	In this stage, the judicial system operates informally and inefficiently, with judicial processes lacking transparency and coherence.	The judicial system is gradually taking shape, with some operations improving, but still at risk of inefficiency.	Judicial processes improve more formally, with judicial entities striving to enhance efficiency and transparency.	At this level, judicial entities are nearing maximum efficiency and transparency, achieving greater coherence in judicial procedures.	At this stage, the judicial system and processes are fully integrated, with high-quality administrative and legal standards.	The judicial system and improvement of judicial processes, as a key variable in the forensic accounting maturity model in Iran, can enhance efficiency, transparency, and accountability within financial and judicial systems. Given the importance of this system across various maturity levels, establishing an integrated approach for process improvement and efficiency enhancement can build public trust and advance legal and financial structures. Such improvements can be achieved through ongoing process enhancements, collaboration among institutions, and revisions to laws and regulations.
13	Professional Associations, Employer Organizations, and Academic Centers	At this stage, the judicial system operates informally and inefficiently, with judicial processes lacking transparency and coherence.	The judicial system is gradually taking shape, with some operations improving, but still at risk of inefficiency.	Judicial processes improve more formally, with judicial entities striving to enhance efficiency and transparency.	At this level, judicial entities are nearing maximum efficiency and transparency, achieving greater coherence in judicial procedures.	At this stage, the judicial system and processes are fully integrated, with high-quality administrative and legal standards.	The judicial system and improvement of judicial processes, as a key variable in the forensic accounting maturity model in Iran, can enhance efficiency, transparency, and accountability within financial and judicial systems. Given the importance of this system across various maturity levels, establishing an integrated approach for process improvement and efficiency enhancement can build public trust and advance legal and financial

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
							structures. Such improvements can be achieved through ongoing process enhancements, collaboration among institutions, and revisions to laws and regulations.
14	Free Media	At this stage, there is limited and non-transparent information regarding accounting and judicial processes, with media effectively not acting in this area.	At this level, traditional and online media begin to cover issues related to accounting and judiciary, but their impact remains limited.	In this stage, media increasingly publishes news and analyses related to accounting and judiciary, leading to greater public awareness.	At this level, media and online platforms actively contribute to increasing transparency and accountability in the forensic accounting system.	At this stage, media platforms act as credible and independent tools in enhancing the forensic accounting system and influence decision-making processes.	News agencies, free media, and online platforms, as a key variable in the forensic accounting maturity model in Iran, can significantly influence the improvement of quality, transparency, and accountability within financial and judicial systems. Given the necessity for a strong and independent media at all maturity levels, an integrated approach to facilitate information exchange and transparency can improve processes and enhance public trust in the financial and judicial systems. These changes can ultimately enhance the legal and financial structure of the country and facilitate accountability among relevant institutions.

Row	Influencing Variables	Initial Level	Emerging Level (Repeatable)	Structured Level	Integrated Level (Managed)	Optimization Level	Benefits of Implementation
15	Security and Intelligence Supervisors	In this stage, security and intelligence supervisory institutions do not have a cohesive presence, and there is no oversight on accounting and judicial processes.	At this level, security and intelligence supervisors show greater diligence in overseeing financial and judicial activities, implementing initial measures.	In this stage, they begin to establish more systematic methods and practices for overseeing financial and judicial data.	At this level, security and intelligence supervisors actively monitor accounting and judicial processes, preventing violations.	At this stage, security and intelligence supervisors have established a fully advanced and integrated system encompassing all aspects of security and information management.	Security and intelligence supervisors, as a key variable in the forensic accounting maturity model in Iran, can effectively enhance the quality, transparency, and efficiency of financial and judicial systems. Given the need for a robust oversight framework at all maturity levels, establishing an integrated approach to facilitate monitoring and protecting information can improve processes and enhance security within the financial and judicial systems. These changes not only foster trust between citizens and judicial entities but also improve the country's legal and financial structure.

5. Discussions and Conclusions

This study examined and analyzed the existing structures in Forensic accounting in Iran and provided a maturity model to improve related processes. These findings elucidate the current status, identify challenges, and offer solutions for enhancing the Forensic accounting system. The findings are categorized into several main axes as follows:

5.1. Response to the Hypotheses Regarding Forensic Accounting and Presentation of the Maturity Model

In this study, eight hypotheses and quantitative and qualitative questions were raised in the area of Forensic accounting to present a maturity model. The hypotheses are framed within the influence of laws and regulations, information technology, and new accounting software (positive impact and confirmation of the hypothesis); the level of education and skills of Forensic accountants on the quality of services provided to the Forensics (positive impact and confirmation of the hypothesis); the lack of specific standards and the subjectivity in evaluations (negative impact and confirmation of the hypothesis); the impact of cultural beliefs and behaviors on the acceptance of Forensic accounting in society (positive impact and confirmation of the hypothesis); the influence of the maturity model implementation on judges' decision-making and case outcomes (positive impact and confirmation of the hypothesis); the effects of adapting to global changes in accounting on Forensic accounting (positive impact and confirmation of the hypothesis); the reasons for prolonged litigation processes and increased legal costs in Forensics (positive impact and confirmation of the hypothesis).

Through the collection and analysis of data, utilizing the Delphi technique, and snowball sampling to gather expert opinions and validate these opinions using Cronbach's alpha model and consensus measurement (Kendall's coefficient), all hypotheses in Forensic accounting in Iran were confirmed.

5.2. Identification and Elaboration of Influential Variables, Measurement Criteria, Concepts, Elements, Dimensions, and Key Indicators of Forensic Accounting in Iran

In this study, based on the interviews and prepared questionnaires, 93 measurement criteria were considered for 15 influential components of Forensic accounting. The concepts, factors, dimensions, and key indicators were also evaluated based on the influential components and measurement criteria. According to the results of the interviews and structured questionnaires, a total of 5 concepts, 24 key factors, 97 dimensions, and 94 key indicators have been extracted and identified.

Through data analysis, utilizing the Delphi technique, and snowball sampling to gather expert opinions and validate these opinions using the Cronbach's alpha model and consensus measurement (Kendall's coefficient), as well as descriptive statistics such as mean, median, mode, standard deviation, and variance, the relevant data were confirmed.

5.3. Maturity Level of Forensic Accounting in Iran:

The maturity level of Forensic accounting in Iran depends on various factors. According to the current research, this maturity is at a preliminary and basic level. It can be improved through the implementation of Forensic accounting and advancements in areas such as specialized training, utilization of new technologies, enhancing transparency, improving the formulation of laws and regulations, enhancing the quality of law enforcement, and employing accounting specialists to increase the maturity level.

5.4. Challenges and Advantages of Implementing the Forensic Accounting Maturity Model in Iran:

The implementation of the accounting model in Iran can significantly improve efficiency and transparency at the levels of economic entities, government, and the judiciary. However, there are also challenges along this path that require careful attention and planning. To fully leverage the benefits of this model, it is necessary to make efforts to reduce entry barriers and provide suitable educational and legal frameworks. The implementation of the accounting model in Iran faces multiple challenges and advantages at the levels of economic entities, government, and the judiciary. Below, the challenges, advantages, and practical suggestions related to the implementation of this model are examined separately at these three levels:

Table ۱۰. Benefits, challenges, and suggestions for implementing the forensic accounting model in businesses, the government, and the judiciary

Implementation Levels and Challenges in Forensic Accounting

Row	Level of Implementer	Benefits of Implementation	Challenges of Implementation	Practical Recommendations in Forensic Accounting
1	Economic Enterprise	- Increased Financial Transparency: Implementing standard accounting models enables firms to provide more accurate financial information, enhancing transparency and investor trust.	- High Entry Costs: Implementing new accounting systems requires initial investment and staff training, which may pose challenges for many enterprises.	- Establish modern accounting systems and software, utilizing fraud detection software for financial data analysis.
	- Improved Decision-Making: Proper accounting systems empower managers to make better decisions based on financial data and actual performance.	- Resistance to Change: Some employees and managers may resist changes to accounting systems, especially if they are more comfortable with older methods.	- Train and enhance employees' skills in forensic accounting concepts and techniques to prevent and detect fraud.	
	- Reduced Fraud and Errors: Comprehensive and accurate accounting systems can help identify and prevent fraud and financial errors.	- Motivations for Fraud Scenarios: Due to the separation of ownership from management, conflicts of interest may arise, leading enterprises to resist transparency and forensic accounting implementation.	- Cooperate and interact with forensic accounting specialists and official experts to analyze violations in economic enterprises.	
2	Government	- Better Auditing: Implementing a standard accounting model helps the government oversee the financial performance of enterprises and	- Law Regulation and Enforcement: Current legal and regulatory conditions may hinder the	- Develop appropriate legal and regulatory frameworks in the field of forensic

Row	Level of Implementer	Benefits of Implementation	Challenges of Implementation	Practical Recommendations in Forensic Accounting
		organizations more effectively.	establishment of a suitable legal framework for implementing new accounting models.	accounting.
	- Attracting Investment: Financial transparency and reduced administrative corruption facilitate the attraction of foreign investors and promote economic growth.	- Need for Training and Cultural Shift: Training government employees and fostering a culture of accessing financial data and using it correctly are essential.	- Develop IT infrastructure and create databases and information systems to collect and analyze financial data from enterprises, organizations, and executive bodies. Recommend that existing trading and commercial systems undergo scrutiny due to structural issues related to violations involving permits and allocated credits by auditors and experts.	
	- Better Economic Analysis: Accurate financial data allows the government to provide better analysis of the national economic situation and to create more precise policies.	- High Implementation Costs: Utilizing new technologies and establishing fundamental infrastructure for implementing forensic accounting at the governmental level may be costly due to economic sanctions, and adequate budgeting for its implementation is essential.	- Establish an independent oversight body to monitor the implementation of forensic accounting and evaluate its effectiveness across different institutions.	
	- Cultural and Ethical Development: The main challenge in implementing the forensic accounting maturity model at government structures stems from the lack of necessary ethical and value-based infrastructure in human resources.	- Training and Enhancing Knowledge: Continuous education for judges and staff in financial and economic areas is crucial.		
	- Reducing Disagreements in Judicial Case Formation: With forensic accounting implementation, judicial cases can be processed within a specified timeframe, preventing the creation of certain cases due to financial summary transparency limiting expert interpretations.	- Expertise Shortage in Human Resources: The judiciary may lack access to financial experts and auditors with requisite expertise for comprehensive and thorough reviews.	- Utilize specialized experts and professionals in forensic accounting in judicial cases.	
3	Judiciary	- Improved Accuracy and Speed in Case Handling: Accurate accounting systems assist the judiciary in faster and more accurate assessments of financial and auditing cases.	- Lack of Specialization in Forensics: The absence of specialized Forensics presents challenges to implementing forensic accounting.	- Create standardized procedures and mechanized processes for evaluating financial and economic cases.
	- Corruption Prevention: Implementation of precise accounting reduces opportunities for corruption within the judicial system, enhancing public trust in the judiciary.	- Old Mechanisms: Antiquated legal and institutional foundations may hinder rapid and effective changes within judicial systems.	- Establish specialized judicial bodies in capital markets, banking, insurance, innovative technologies including cryptocurrencies, and economic and commercial matters.	

5.5. Results of the Research:

1) Considering the diversity and complexities of research in this field, it is essential to examine and compare domestic and international studies. This research compares domestic and international studies in the area of Forensic accounting. Forensic accounting, as one of the important fields of study, is rapidly developing. In comparing domestic and foreign research, significant differences can be noted in methodologies, topics, and existing challenges.
2) While domestic research has focused more on specific issues and local needs, international studies, by utilizing analytical techniques and diverse subjects, have achieved greater advancements.
3) Empowering domestic researchers through training, resource provision, and creating opportunities for collaboration with international researchers can contribute to improving the quality of research in this field.
4) Research on Forensic accounting in developing countries, including Iran, is relatively new and has received attention primarily over the last two decades. These studies examine general topics such as financial fraud, investigative methods, and techniques for analyzing financial data. Gradually, universities and educational institutions in Iran have begun to offer specialized courses and workshops in Forensic accounting.
5) Research conducted on Forensic accounting in Iran typically focuses on the legal and jurisprudential aspects of fraud and deception (Rastehmidan, 1398). The history of Forensic accounting research in developed countries such as the United States, the United Kingdom, and Canada dates back to the late 1980s. Extensive research has been conducted in these countries regarding the methods for analyzing and identifying financial fraud. Developed countries have achieved further advancements in this area through the establishment of specialized institutions and associations, particularly the Association of Certified Fraud Examiners (ACFE) and the Association of Certified Forensic Accountants, which have made considerable efforts to conduct comprehensive research related to various industries (Sutton, 2014).
6) In domestic research, the use of qualitative methods such as interviews with auditors and case studies is common. Additionally, theoretical discussions and case studies are more frequently utilized in universities. The lack of reliable and extensive data and the shortage of financial resources for scientific research are problems that domestic researchers face (Khakzad, 1399). In foreign research, the use of empirical data and field studies, as well as methodologies such as experimental tests and statistical predictions, is widely observed. Foreign researchers typically employ advanced analytical models and data analysis software to validate their findings (Piers, 2018).
7) Domestic research often focuses on specific topics such as banking audits and financial fraud in government organizations. These studies have primarily addressed internal needs and financial corruption in Iran. A low focus on new techniques and modern technologies in research and a lack of diversity in research topics are among the existing challenges (Yazdi, 1400). Foreign research encompasses a wide range of topics, including the exploitation of big data, customer behavior analysis, and financial risks associated with fraud. The application of big data and advanced analytical methods in foreign research are distinguishing features that set them apart (Jones, 2020).
8) Domestic research has contributed to increasing public and specialized awareness of the importance of Forensic accounting; however, there is still a long way to go for advancement and updating information. Organizing conferences and training workshops to expand knowledge and skills in this field could be beneficial (Nikookar, 1401). The results of foreign research have aided in the establishment and reform of laws and regulations concerning financial behaviors and fraud in various countries. The establishment of research and academic centers has contributed to providing updated curricula and enhancing many skills while paying attention to contemporary issues (Smith, 2019).

In Iran, there has been limited focus on providing a comprehensive model for Forensic accounting, and there are only a few articles available that primarily address the presentation of a conceptual framework at the level of economic entities. In this research, which is currently being presented, various aspects of Forensic accounting have been designed, including the conceptual model of Forensic accounting at the level of economic entities, judicial processes, and government. By conducting a comparative study of reputable articles in this field and obtaining the perspectives of academic experts and Forensic accounting specialists (certified judicial experts), the variables, components, measurement criteria, concepts, elements, dimensions, and key indicators of Forensic accounting have been elucidated and identified.

By implementing the Forensic accounting maturity model in Iran, transparency and accuracy in judicial processes will be established, and a model or handbook for adjudication will be designed to reduce ambiguities and financial disputes. Serious steps will be taken to develop modern software and utilize new technologies. The necessities for providing a Forensic accounting model include: 1) the necessity of converging judicial processes, 2) improving the skills of Forensic accountants, and 3) building the trust of domestic and foreign investors due to transparency in financial information and reporting.

Finally, it is suggested that for future research, researchers focus on areas such as the use of new technologies in Forensic accounting, aligning and updating laws and regulations pertaining to Forensic accounting, and analyzing financial fraud in specific high-risk economic sectors. The researcher's suggestions in this regard are outlined as follows:

- Examining the Impact of Artificial Intelligence and New Technologies on the Analysis of Fraudulent Financial Data.
- Developing Algorithms and Business Intelligence Software for Detecting Financial Fraud at the Government and Economic Entity Levels.
- Analyzing New Legal Requirements in the Field of Forensic Accounting and Their Impact on Audit Methods.
- Studying the Challenges of Forensic Accounting in Implementing International Financial Reporting Standards (IFRS) and Compliance with National Laws.
- Analyzing the Challenges and Opportunities of Forensic Accounting in Relation to Bitcoin and Cryptocurrencies.
- Developing Accounting and Financial Reporting Methods for Fraudulent Transactions Involving Cryptocurrencies.