



## The Relationship between Electronic Auditing and External Audit Quality: A Study of a Sample of Statutory Auditors

**Dr. Bellal Abdelhalim,**  
Email: [abellal2018@gmail.com](mailto:abellal2018@gmail.com)

**Received: 04-05-2026 , Accepted: 03-08-2026 , Published: 11-08-2026**

### Abstract:

This study aims to investigate how electronic auditing tool implementation and Enterprise Resource Planning system auditing affect external audit quality. The study investigates how professional experience levels affect this relationship. The research team chose to use descriptive-analytical methods for their study. A survey instrument was developed and disseminated to a cohort of (53) mandated auditors, and the resultant data underwent scrutiny via Partial Least Squares Structural Equation Modeling (PLS-SEM). The research findings show that ERP systems produce a strong positive impact on audit quality which achieves statistical significance ( $\beta = 0.731$ ). The model explains 59.1% of the variance in quality through its predictive capabilities. The implementation of general electronic auditing tools failed to produce any direct statistical impact while the research data did not support professional experience as a moderating variable. The study finds that auditing success in digital environments requires complete integration with client embedded systems because ERP systems determine reliability more than digital tools or professional experience does. The discovery requires professional training programs to shift their educational focus toward these specific systems.

**Keywords:** Statutory Auditing, Electronic Auditing, Enterprise Resource Planning (ERP) Systems, Quality of Accounting and Financial Information.

### Introduction

The auditing profession faces growing skepticism about its operational efficiency and professional integrity because of financial crises and the downfall of major businesses and auditing firm financial misconduct. The public now questions whether auditors can deliver the verification services which stakeholders require. The main reason for this situation emerged because financial and administrative corruption took place through unethical behavior and management control which focused on personal gain instead of protecting stakeholder interests.

The users of financial statements have started applying stronger pressure because they need financial information which shows exact details about their required data that remains consistent and dependable. Professional organizations together with other institutions now face a need to develop rules which will direct the auditing process. The auditing profession receives guidance



from these bodies through a collection of standards which include both principles and recommendations that help standardize auditing operations and create global service uniformity which enables worldwide comparison. The standards focus on audit quality through various requirements which describe how external audits must achieve their highest possible standard. On the basis of the foregoing, and in view of the importance of quality in the auditing process and its influence on decision-making—particularly with the emergence of a new form of auditing, namely electronic auditing—this study seeks to address the following research problem:

**Does electronic auditing contribute to improving the quality of external auditing?**

From the main research problem, the following sub-questions can be formulated:

- To what extent does the external auditor employ electronic auditing procedures in performing the audit engagement?
- Is there a noteworthy statistical correlation, evaluated at a significance threshold of  $\alpha \leq 0.05$ , between the practice of auditing an Enterprise Resource Planning (ERP) system and the caliber of the external audit function?
- Is there a statistically significant relationship at the significance level ( $\alpha \leq 0.05$ ) between the academic and professional qualifications required for practicing electronic auditing and the quality of external auditing?

**Study Hypotheses:**

- The primary supposition (H1) posits that the degree of assimilation and application of computer-assisted audit techniques exerts a propitious and statistically noteworthy influence, with a threshold for statistical significance set at  $\alpha \leq 0.05$ , on the caliber of independent audits.
- The subsequent principal hypothesis (H2) suggests that the auditing of Enterprise Resource Planning (ERP) systems yields a salutary and statistically consequential impact, at a significance level of  $\alpha \leq 0.05$ , on the excellence of external audits.
- The third conjecture (H3) posits that professional acumen functions as a statistically significant moderator, ascertained at a significance level of  $\alpha \leq 0.05$ , in the correlation between computer-assisted audit methodologies and the standard of independent audits.
- A statistically validated association, demarcated at a significance level of  $\alpha \leq 0.05$ , exists between the utilization of computer-assisted audit techniques and the benchmark of external audits.
- A statistically substantial nexus, gauged at a significance level of  $\alpha \leq 0.05$ , is evident between the auditing of Enterprise Resource Planning (ERP) systems and the benchmark of external audits.



- A statistically noteworthy interrelation, evaluated at a significance level of  $\alpha \leq 0.05$ , is discernible between the scholastic and vocational credentials mandated for the enactment of computer-assisted audit procedures and the benchmark of external audits.

### **Study Significance:**

The significance of this study emerges, on the one hand, from highlighting the importance of adopting electronic auditing as guidelines and a framework that regulate the work of auditors while being generally accepted, and, on the other hand, from focusing on improving the quality of external auditing. Furthermore, studies of this nature stimulate and direct attention toward the process of electronic auditing and regulate professional auditing practices, thereby achieving the intended impact of its application, particularly in ensuring that the external auditing process attains a high level of quality.

### **Study Objectives:**

The overarching aim of this investigation is to elucidate the role of computer-assisted audit techniques in augmenting the caliber of independent audits, in concordance with the ensuing subsidiary goals:

- Clarifying the theoretical concepts related to electronic auditing and the quality of external auditing.
- Highlighting the importance of electronic auditing.
- Identifying the importance of the quality of external auditing.
- Examining the use of electronic auditing by statutory auditors and verifying the effectiveness of Enterprise Resource Planning (ERP) systems within economic institutions.

### **Study Methodology**

In this study, the descriptive approach was adopted due to its suitability to the nature of the topic and its ability to encompass the various aspects of the phenomenon under investigation and provide a comprehensive description of it. This approach relied on a range of specialized references in the field, including both earlier and more recent studies. In addition, the analytical approach was employed to analyze the results of the study, which relied on a questionnaire as the primary research instrument. The study also involved testing the research hypotheses using the statistical analysis software SPSS and SmartPLS.

### **Literature Review**

- Study by Al-Samrani and Al-Shuraida (2020) investigates how digital auditing benefits from artificial intelligence systems which auditors in Bahrain audit firms use to improve their audit work and their audit strategy planning efforts. The study aimed to find out which digital auditing techniques artificial intelligence systems use to improve auditing standards and support auditing methods for Bahrain audit companies. The research results demonstrated that artificial intelligence systems function as crucial factors which improve



audit quality and support Bahrain sample organizations in executing their audit strategies. The research introduced artificial intelligence as a modern element which showed how digital auditing methods produce better audit results through digital transformation of auditing processes. The research took place in Bahrain which restricts how well its results apply to other areas. The study failed to show how audit quality assessment methods evaluate professional aspects which include independence and objectivity and competence.

- Study by Miliani and Saud (2024), *The Role of Electronic Auditing in Improving External Audit Quality: The Perspective of a Sample of Professionals and Academics*. The study investigated how electronic auditing methods affected the quality of external audit work. The research results revealed a strong link between these two variables which proved that electronic auditing procedure usage led to better external audit quality. The study supported our current research results yet it failed to explain how the variables connected to each other and the exact process of using electronic auditing procedures. The current research reveals how ERP systems enable better external audit results through their beneficial impact on audit quality.
- Study by Yousfi and Farraj (2020) investigates how electronic auditing practices enable accounting professionals in Algeria to get better quality information through their field research with Algerian professionals. The research aimed to measure the extent to which electronic auditing contributes to improving the quality of accounting information and to evaluate the degree of the use of information technology in auditing activities in terms of auditing and control. The researchers conducted their investigation through a survey which included statutory auditors and accounting experts and certified accountants who worked in Algeria. The study concluded that statutory auditors, accounting experts, and certified accountants use electronic auditing in planning, control, and documentation to a level above average (60%). The study demonstrated that electronic auditing methods produce better accounting information quality through their ability to improve both the qualitative and quantitative aspects of financial records. The research focused on electronic auditing effects on accounting information quality by using quantitative data which showed technology usage at 60 percent to match our study results. The research failed to build a complete causal model which could have demonstrated how different variables affect each other through intermediary factors while it also did not separate the effects of electronic auditing on information quality from its effects on external auditing quality as a separate process.
- The study by Yakhlef and Tarchi (2020) analyzes how electronic auditing methods improve internal audit work quality which in turn produces higher value for all stakeholders under corporate governance systems. The researchers studied how electronic auditing methods



enhance internal audit work quality which leads to better stakeholder value results under corporate governance systems. The study found that auditors who use information technology for their work will perform more monitoring of internal audit function professional performance which leads to better corporate governance and business value and helps organizations reach their goals by providing effective risk management through risk management system enhancements and risk assessment processes.

### **Theoretical Framework of the Study:**

To achieve the objectives of this study, it has been structured as follows:

- First: The profession of statutory auditing.
- Second: Electronic auditing.
- Third: The role of electronic auditing in improving the quality of financial and accounting information.
- Fourth: The applied aspect, involving the distribution of a questionnaire to a group of statutory auditors.

### **1. The Profession of Statutory Auditing:**

The profession of statutory auditor is defined as: “Any natural or legal person who, on his own behalf and under his responsibility, performs the task of certifying the accuracy, regularity, and compliance of the accounts of companies and entities with the provisions of the applicable legislation.” (Law Article 10-01, 2010, p. 04).

#### **1.1 Duties of the Statutory Auditor:**

The duties of the statutory auditor are defined under Article 23 of Law 10-01 as follows (Law Article 10-01, 2010, p. 07):

- To attest that the yearly financial statements are veridical, precise, and entirely congruent with the outcomes of the prior fiscal year's activities, in conjunction with the financial solvency and holdings of organizations and establishments.
- To scrutinize the veracity of the annual financial records and their adherence to the data showcased in the administrative assessment presented by the executives to stakeholders, associates, or equity holders.
- To articulate a judgment, manifested as a specialized document, concerning the internal regulatory mechanisms sanctioned by the directorial board, the administrative council, or the executive.
- To evaluate the stipulations under which accords are finalized involving the company undergoing auditing and the institutions or entities connected to it, or involving institutions and entities wherein the directors or executives of the relevant company possess immediate or mediated equities.



- To notify the executives, the overarching assembly, or the pertinent deliberative bodies of any shortcomings detected or recognized that could impede the uninterrupted functioning of the company's undertakings.
- In instances of holding corporations and consolidated groups, the mandated auditor equally validates the exactitude and conformity of the amalgamated financial statements and their equitable depiction, predicated on accounting archives and the assessments of mandated auditors of auxiliaries or entities associated with the same decision-making epicenter.

### 1.2 Responsibilities of the Statutory Auditor

The legal responsibility of the statutory auditor arises from the contractual relationship with the company's management on the one hand, and from the non-contractual relationship with other parties—namely the users of financial statements—on the other. The legal responsibility of the statutory auditor is defined within the framework of the provisions of civil law, which represents the minimum level of professional care that must be exercised. This responsibility entails the obligation to bear the sanctions prescribed by law for violations of its provisions. The responsibilities of the statutory auditor thus extend to include civil, criminal, and disciplinary liability (Al-Sayed, 1996, p. 207).

According to International Auditing Standards and Algerian Auditing Standard 570, the responsibilities of the statutory auditor include the following (Nour, 2021, p. 170).

- Procuring ample and pertinent audit corroboration to evaluate the validity of the administration's deployment of the going concern premise in the formulation and exhibition of fiscal documents.
- Inferring, predicated on the audit substantiation garnered, whether a substantial incertitude prevails concerning the entity's aptitude to perpetuate its functions and uphold its undertakings, which would mandate revelation in the financial compendiums.
- These accountabilities persist in being pertinent even if the financial reporting infrastructure employed in the formulation of the financial statements does not unequivocally compel the administration to execute a precise appraisal of the entity's capacity to endure as a going concern.

Therefore, upon acquiring a comprehension of the audited organization, the statutory auditor can ascertain the existence of circumstances or occurrences that could engender significant uncertainty concerning the entity's capacity to persist as a going concern. Should such circumstances or occurrences be discerned, the auditor is obligated to execute supplementary audit methodologies to procure ample and pertinent substantiation, either to allay or to substantiate the apprehension pertaining to continuity. Among the courses of action that the statutory auditor ought to embark upon to evaluate the rationality of management's strategies, and their potential to ameliorate the entity's aptitude to sustain operations, are the subsequent (Nour, 2021, p. 171):



- Examining the stipulations of credit arrangements to corroborate their sufficiency.
- Scrutinizing cash flows, profitability, and any supplementary projections, and deliberating them with executive leadership.
- Dissecting and conversing about the most current interim financial declarations.
- Perusing the summarized records of the general assembly and the directorate's sessions, notably those pertaining to fiscal adversities.
- Querying the entity's legal advisor regarding the incidence of judicial proceedings or assertions and the justification of management's appraisal of their prospective consequences.
- Investigating subsequent incidents that may either enhance or compromise the entity's monetary standing.

## **2. Electronic Auditing**

The auditing profession has gained considerable importance due to its role in ensuring transparency and credibility in financial information. Despite the expansion in the scale of activities and the increasing volume of information that must be processed, stored, and presented, it has become essential to keep pace with technological developments, particularly with the emergence of the Fourth Industrial Revolution. Consequently, auditors are required to employ technological tools and rely on them in performing the auditing process.

### **2.1 Concept of Electronic Auditing**

Electronic auditing has been defined as “a systematic process for obtaining evidence related to management’s assertions about financial statements, and objectively evaluating such evidence in order to verify the extent to which management’s assertions conform to established criteria and to communicate the results to the relevant stakeholders” (Mahmoud, 2014, p. 318). It has also been defined as “a process of collecting and evaluating information in order to determine whether the use of a computerized system contributes to achieving the required objectives and specified managerial goals, such as safeguarding the organization’s assets, enabling the organization to achieve its objectives effectively, and ensuring the efficient and effective use of its resources” (Allah Ghabayen, 2012, p. 21). It is further understood as “the process of applying any type of system based on information technology to assist the auditor in planning, controlling, and documenting audit work” (Hamdouna, 2008, p. 926).

Based on the definitions presented above, electronic auditing can be understood as the application of auditing systems through information technology, representing a transition from manual operations to electronic processing, with the aim of enhancing the efficiency and effectiveness of the auditing process, expediting its completion, achieving its objectives, and expressing an opinion on the reliability of financial statements.

### **2–2 Objectives of Electronic Auditing of Financial and Accounting Accounts**



The aims of the assessor remain consistent irrespective of whether data are scrutinized by hand or via computational devices. The bedrock tenets of assessment—be they associated with commonly endorsed assessment benchmarks, canons of expert behavior, or the assessor’s juridical accountability—do not deviate based on the modality of data handling. Instead, the disparity resides in the assessment strategies and protocols implemented. The assessor may harness conventional assessment protocols, computer-facilitated assessment methodologies, or an amalgamation thereof to procure ample assessment substantiation. The rationale behind electronic assessment is to scrutinize and gauge the internal oversight that safeguards the system; consequently, when undertaking the assessment procedure, the assessor must ascertain that the ensuing stipulations are adhered to (Allah Ghabayen, 2012, p. 22).

- The existence of precautionary measures to protect computer hardware, software, and data from unauthorized access, modification, or destruction.
- The preparation and acquisition of software based on authorization from management.
- The implementation of program modifications only with the approval of management.
- Confirmation that the computational processing of transactions, digital documents, and official reports within computerized repositories is devoid of errors and wholly comprehensive.
- The handling of original data in accordance with the approved management policies.
- Verification that electronic computer data files are accurate, complete, and reliable.

### 2.3 Methods of Electronic Auditing:

To utilize information technology in the auditing process, three approaches can be adopted (Hayes.R, Dassen, Schildren, & Wallace, 1999, p. 51):

- **Auditing around the computer:** In this approach, the auditor examines only the inputs and outputs without considering the data processing operations occurring within the computer itself, assuming that the operational control systems are effective. This approach is considered one of the simplest methods of electronic auditing, as it does not require high costs or advanced computer skills and expertise. However, it is no longer considered effective given the increasing reliance of organizations on computerized systems, the growing complexity of data processing methods, and the diversity of fraud techniques that this approach is unable to detect or control (Lowerrr.T.I, Ramsay, & Sinason, 2005, p. 26).
- **Auditing through the computer:** In this approach, auditing procedures rely on the process of data processing within the computer in addition to examining inputs and outputs. The auditor verifies the accuracy of data entry and processing at the client’s system as well as the correctness of the resulting outputs (W.F, JR ans, & S.M, 2006, p. 33).
- **Auditing with the computer:** In this approach, the auditor uses certain supporting software programs, some of which require specialized skills and expertise in the field of



computing. These programs may be developed specifically for the auditor, provided by the client, or obtained from external sources (Salama, Youssef, & Zuraikat, 2011, p. 155).

### **3. Enterprise Resource Planning (ERP) System**

#### **3.1 Concept of Enterprise Resource Planning Systems**

Below are several definitions of Enterprise Resource Planning (ERP) systems:

JEAN-LOUIS LEQUEUX defines ERP as an integrated management software that brings together a set of computer applications that are structured and harmonized with one another, with the objective of integrating and improving management processes while relying on a single reference system, namely a unified database (LEQUEUX, 2008).

According to JANICE, ERP software represents a package of applications with diverse functional specializations that are integrated with one another to form an internal transaction-processing engine that ensures data sharing among the departments and activities of the organization, thereby enabling employees to focus on value-creating activities with the aim of increasing productivity levels (Ali, Mansour, & Waard, 2010, p. 09).

A study conducted by MC GAUGHEY and colleagues defines Enterprise Resource Planning (ERP) systems as one of the most significant developments associated with digital transformation. Such systems comprise a set of ready-made software applications that are integrated with one another to form a single database designed to meet the information needs of all functions within the organization and to facilitate communication and information sharing, thereby enabling the organization to manage its resources efficiently and effectively (MC gaughey & Gunasekaran, 2017).

Based on the foregoing, it can be concluded that Enterprise Resource Planning systems constitute comprehensive software that integrates all organizational functions within a shared database, enabling each function within the organization to utilize it according to its informational and data requirements. Accordingly, the fundamental basis of ERP systems is a centralized database that allows the collection of information from all integrated functions—such as accounting, human resources, marketing, and manufacturing—thereby enabling the organization to manage its resources efficiently and effectively and to achieve competitive advantages.

### **4. External Audit Quality**

#### **4.1 Concept of External Audit Quality**

No comprehensive definition of audit quality has been unanimously established among researchers. Some scholars associate it with adherence to the professional standards governing the auditing profession, while others link it to the auditor's ability to achieve the objectives of all parties involved in the auditing process. Others, in turn, relate it to the detection of errors in financial statements.



Based on the association between audit quality and the probability of detecting errors in financial statements by the auditor, DeAngelo defined audit quality as “the extent to which the auditor possesses the ability to detect errors and irregularities in the financial statements of the audited entity and to report the findings to the relevant stakeholders” (Malani & Saousla, 2024, p. 118).

Audit quality has also been defined as “the set of capabilities that enable the auditor to detect financial errors and irregularities.” From this perspective, it becomes evident that a positive relationship exists between audit quality and the quality of accounting information; the higher the level of audit quality and auditor independence, the greater the degree of confidence in accounting information (Messahem & Laghouira, 2017, pp. 442-461).

#### **4–2 Determinants of External Audit Quality**

Numerous studies and research have concluded that the quality of external auditing is influenced by several determinants. Some of these relate to the audit team responsible for conducting the audit process, while others pertain to the external business environment represented by professional organizations and users of financial reports. Additional determinants are associated with the audit firm itself. In general, audit quality is affected by the following factors (Al Shatareh & Ashoush, 2016, pp. 11-32):

- The existence of a quality control system for performance within audit firms, measured through indicators such as the number of hours spent by the auditor to complete the audit process, the size of the audited entity, and the strength of its financial position.
- The reputation, prominence, and size of the audit firm.
- The professional experience of the audit firm and the extent of the auditor’s continuity in working with the client.
- Professional litigation filed against the audit firm.
- Audit fees and other financial services provided to clients.
- The existence of audit committees within the audited entity.
- Competition among audit firms.

### **5. Field Study**

#### **5.1 Description of the Characteristics of the Study Sample (Demographic Profile)**

The process of describing and analyzing the demographic and professional characteristics of the sample members constitutes a fundamental basis for assessing the credibility of the field data and determining the respondents’ ability to comprehend the study variables and respond to them objectively. In the context of this research, which examines the role of electronic auditing and Enterprise Resource Planning (ERP) systems in improving audit quality, these characteristics acquire particular significance, as engagement with such concepts requires a specific combination of academic qualification and accumulated professional experience. Accordingly, the researchers surveyed a set of personal and occupational variables (educational qualification, professional



experience, and age) with the aim of constructing the “professional profile” of the surveyed sample and verifying its suitability to represent the population of statutory auditors, as illustrated in the following table:

**Table (01): Distribution of Sample Members According to Demographic Variables**

| Variable                  | Categories         | F         | P (%)      |
|---------------------------|--------------------|-----------|------------|
| Educational Qualification | Bachelor's Degree  | 20        | 37.7       |
|                           | Master's Degree    | 26        | 49.1       |
|                           | Magister           | 2         | 3.8        |
|                           | Doctorate          | 3         | 5.7        |
|                           | Other              | 2         | 3.8        |
|                           | <b>Total</b>       | <b>53</b> | <b>100</b> |
| Professional Experience   | Less than 5 years  | 4         | 7.5        |
|                           | 5 to 10 years      | 13        | 24.5       |
|                           | 11 to 15 years     | 13        | 24.5       |
|                           | More than 15 years | 23        | 43.4       |
|                           | <b>Total</b>       | <b>53</b> | <b>100</b> |
| Age                       | Less than 40 years | 4         | 7.5        |
|                           | 40 to 50 years     | 10        | 18.9       |
|                           | 50 to 60 years     | 23        | 43.4       |
|                           | More than 60 years | 16        | 30.2       |
|                           | <b>Total</b>       | <b>53</b> | <b>100</b> |

**Source:** Based on SPSS outputs.

Table (01) presents the frequency distribution and percentage proportions of the study sample members (N = 53) according to demographic variables (educational qualification, professional experience, and age).

First: The academic and cognitive dimension. When examining the academic background of the respondents, a clear predominance of individuals with high academic qualifications can be observed. The category of respondents holding a Master's degree represents the largest proportion at (49.1%), followed by those holding a Bachelor's degree at (37.7%). This distribution does not merely reflect academic degrees; rather, it carries important implications regarding the “cognitive readiness” of the study sample. The fact that more than half of the sample hold advanced degrees (Master's, Magister, and Doctorate) indicates that the targeted statutory auditors possess a modern academic background aligned with developments in higher education programs (such as the LMD system), which frequently incorporate information technology and digitalization components within accounting and auditing curricula. This solid theoretical foundation constitutes a necessary



condition for understanding the complex concepts addressed in this study, such as Enterprise Resource Planning (ERP) systems and digital data analysis mechanisms, thereby enhancing the reliability of their responses concerning the technical aspects of the questionnaire.

### **Second: The Professional Dimension and Field Experience**

The data on professional experience reveal a fundamental characteristic that distinguishes this sample, namely “professional depth.” The results indicate that the overwhelming majority of respondents (more than 92%) possess professional experience exceeding five years, while the dominant group consists of highly experienced practitioners whose experience exceeds fifteen years, representing (43.4%). This indicator constitutes a fundamental pillar for the credibility of the findings, particularly with regard to the variable of “audit quality.” An auditor who has witnessed the evolution of the profession for more than a decade and a half possesses a unique capacity to compare traditional and contemporary auditing approaches and can therefore make a judgment with professional objectivity as to whether electronic auditing genuinely enhances quality and facilitates the detection of errors, or merely serves to accelerate routine procedures, free from the superficial technological enthusiasm that may characterize less experienced practitioners.

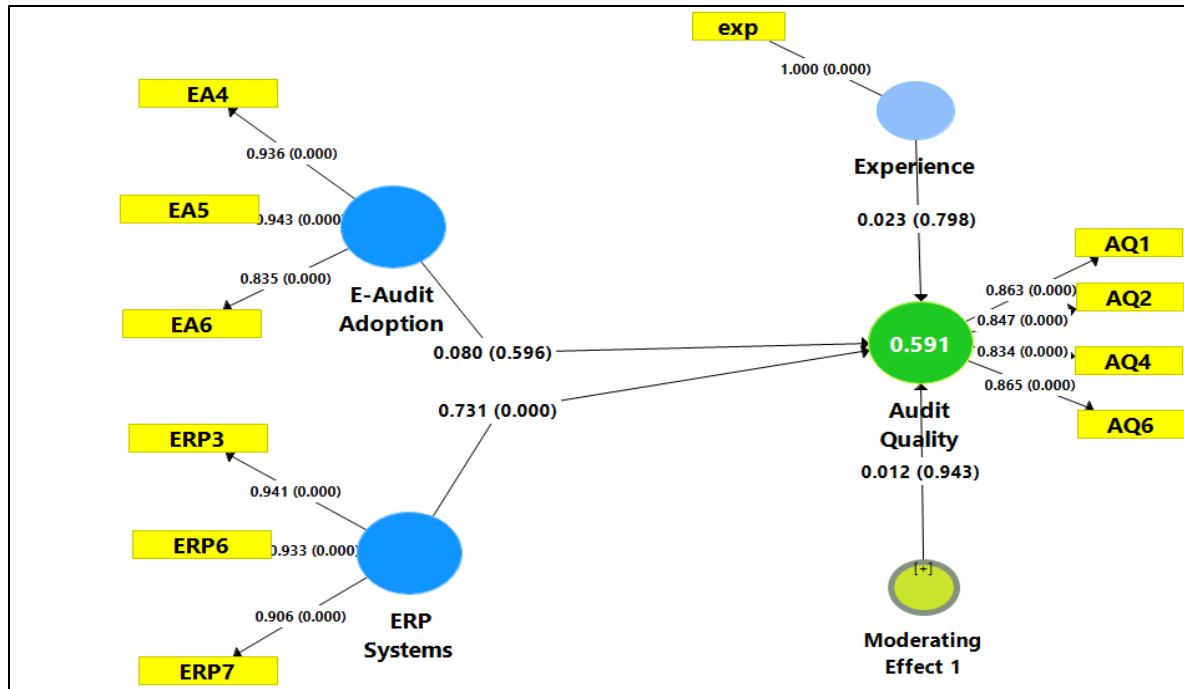
### **Third: Professional Maturity and Decision-Making**

The age distribution is fully consistent with the years of professional experience, as the sample is concentrated in the older age groups. The findings show that approximately (73.6%) of respondents are over the age of fifty. This result reflects the nature of the statutory auditing profession, which requires the accumulation of many years of professional practice before attaining professional accreditation and establishing independent audit practices. From an analytical perspective, the dominance of this age group indicates that the respondents represent the “decision-makers” within audit firms. These individuals are legally responsible for signing audit reports and are authorized to make decisions regarding investment in auditing software and staff training. Consequently, their views on the effectiveness of electronic auditing do not merely represent theoretical opinions; rather, they reflect realistic strategic orientations within their firms, thereby giving the study’s findings an important practical dimension and enhancing their potential generalizability to the professional context.

In light of the foregoing, it can be stated that the study sample represents a select group of professional practitioners who combine strong academic qualifications with extensive field experience. This balanced combination provides the study with strong inferential validity, as the data originate from a highly experienced group that is well aware of both the risks and opportunities associated with the electronic auditing environment. Accordingly, the findings derived from the study are characterized by accuracy, objectivity, and the capacity to identify the relationships among the study variables.



Figure 01: The study model



**Source:** Generated from the outputs of the SmartPLS program.

Figure (01) illustrates the structural configuration of the study's conceptual framework as designed using the SmartPLS software. The diagram presents the hypothesized direct effect paths originating from the independent variables, namely E-Audit Adoption and ERP Systems, toward the dependent variable, Audit Quality. In addition, the figure highlights the inclusion of the variable Experience within the model to test its role as a moderating variable, represented by the interaction term (Moderating Effect 1) shown in the diagram. The yellow rectangles represent the measurement indicators adopted to measure each latent variable, while the arrows indicate the causal directions of the relationships that will be tested statistically.

## 2.5 Evaluation of the Measurement Model

The examination of the measurement model constitutes a pivotal stage in ensuring the validity of the study's structural framework. Its primary objective is to verify the extent to which the indicators accurately represent their latent variables, thereby establishing a reliable foundation for testing the research hypotheses.

### 1.2.5 Convergent Validity

The test of convergent validity represents a fundamental component in the evaluation of reflective measurement models. It aims to ensure that the set of indicators assigned to measure a particular latent variable actually share a high proportion of variance and converge around the same concept they were designed to measure. To verify this methodological requirement, three complementary



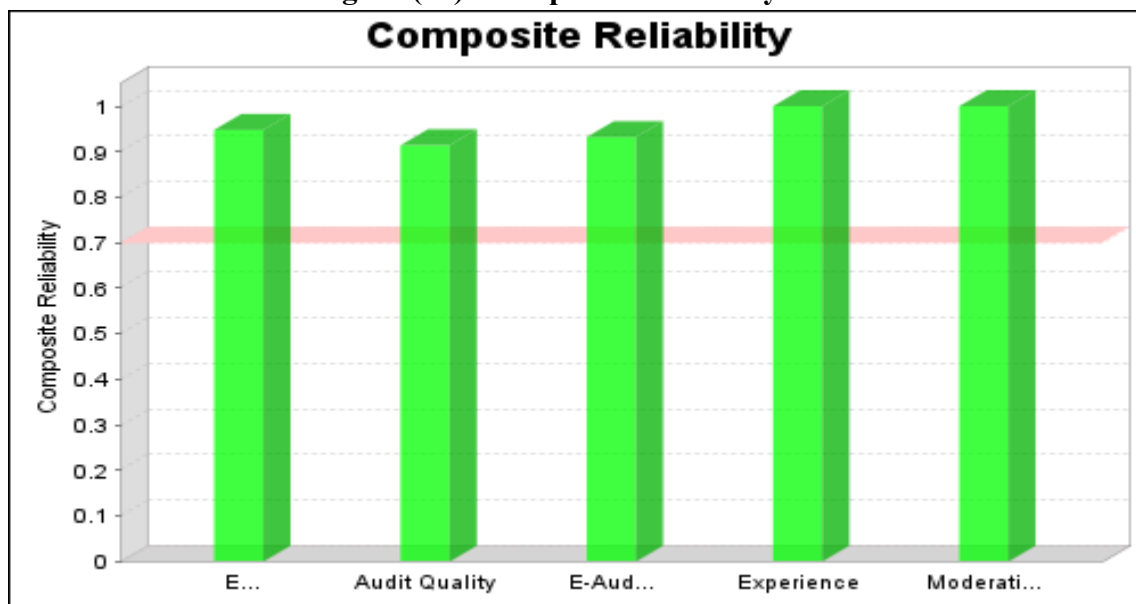
statistical criteria were employed: the examination of outer loading values, the assessment of composite reliability, and the calculation of the average variance extracted (AVE). These measures ensure that each latent variable is capable of explaining more than half of the variance of its indicators with an acceptable level of measurement accuracy.

**Table (02): Results of the Measurement Model Evaluation (Loadings, Reliability, and Convergent Validity)**

| Constructs                      | Items | Loadings | $\alpha$ | CR    | (AVE) |
|---------------------------------|-------|----------|----------|-------|-------|
| Adoption of Electronic Auditing | EA4   | 0.936    | 0.892    | 0.932 | 0.821 |
|                                 | EA5   | 0.943    |          |       |       |
|                                 | EA6   | 0.835    |          |       |       |
| ERP Systems                     | ERP3  | 0.941    | 0.918    | 0.948 | 0.859 |
|                                 | ERP6  | 0.933    |          |       |       |
|                                 | ERP7  | 0.906    |          |       |       |
| Audit Quality                   | AQ1   | 0.863    | 0.875    | 0.914 | 0.727 |
|                                 | AQ2   | 0.847    |          |       |       |
|                                 | AQ4   | 0.834    |          |       |       |
|                                 | AQ6   | 0.865    |          |       |       |

Source: Based on the outputs of SmartPLS.

**Figure (02): Composite Reliability Test**



The data presented in Table (02) reveal that the measurement model possesses robust psychometric properties. With regard to the individual reliability of the indicators, all outer loadings exceeded the standard threshold (0.708), with the values of the main variables ranging between (0.834) and



(0.943), confirming that each indicator explains more than 50% of the variance of its associated latent variable. Concerning internal consistency, the values of both Cronbach's alpha and composite reliability (CR) showed high levels exceeding the minimum acceptable threshold (0.7) for all variables, reflecting a high degree of homogeneity among the items. Finally, convergent validity was established, as the values of the Average Variance Extracted (AVE) surpassed the threshold of (0.50), with the lowest value among the main variables reaching (0.727), indicating that the latent variables are capable of explaining the variance of their indicators with high efficiency.

### 5.2.2 Results of Discriminant Validity

Discriminant validity is verified through the Fornell–Larcker criterion matrix, whereby the square root of the AVE (values shown in bold) must be greater than the correlations with other variables.

**Table (03): Discriminant Validity Matrix According to the Fornell–Larcker Criterion**

| Variables           | Audit Quality | E-Audit Adoption | ERP Systems | Experience | Mod Effect |
|---------------------|---------------|------------------|-------------|------------|------------|
| Audit Quality       | 0.853         |                  |             |            |            |
| E-Audit Adoption    | 0.322         | 0.906            |             |            |            |
| ERP Systems         | 0.765         | 0.329            | 0.927       |            |            |
| Experience          | 0.22          | 0.015            | 0.264       | 1          |            |
| Moderating Effect 1 | 0.076         | 0.053            | 0.075       | 0.197      | 1          |

**Source:** Based on SmartPLS outputs.

To ensure the statistical distinctiveness of the variables from one another, the Fornell–Larcker criterion was applied, as illustrated in Table (03). The results clearly indicate that the condition of discriminant validity has been satisfied, as the diagonal values—representing the square root of the Average Variance Extracted (AVE)—are, in all cases, greater than the correlation values located below or to the left within the same row and column. For example, the square root of the AVE for the variable “ERP systems” reached (0.927), which is higher than its correlation with the variable “audit quality,” recorded at (0.765). These findings confirm that each variable in the model measures a distinct and independent construct from the others, thereby preventing conceptual overlap and supporting the robustness of the structural model.

### 3.5 Structural Model Evaluation

After verifying the quality and adequacy of the measurement model, the statistical analysis proceeds to the stage of evaluating the structural model in order to examine its explanatory power and overall quality. This stage requires the examination of several statistical indicators, most notably the collinearity test using the Variance Inflation Factor (VIF) and the measurement of effect size ( $f^2$ ). In addition, the predictive relevance indicator ( $Q^2$ ) is employed as a principal criterion for assessing the predictive capability of the model. Chibout et al. (2024, p. 255) indicate



that the results of this test are extracted for the dependent variables, and for them to be considered acceptable, the value must exceed zero (0.0). The higher this value rises and the closer it approaches one, the stronger the predictive relevance of the model.

**Table (04): Comprehensive Assessment of the Structural Model Quality (Structural Model Assessment)**

| Evaluation Domain    | Indicator               | Unit / Path                       | Value         |
|----------------------|-------------------------|-----------------------------------|---------------|
| Collinearity         | VIF (Range)             | Audit Quality items (AQ1–AQ6)     | 2.148 – 2.699 |
|                      |                         | E-Audit items (EA4–EA6)           | 2.057 – 3.821 |
|                      |                         | ERP System items (ERP3–ERP7)      | 2.554 – 4.663 |
|                      |                         | Experience item (EXP)             | 1             |
|                      |                         | Moderating variable (Interaction) | 1             |
| Explanatory Power    | R <sup>2</sup>          | Audit Quality                     | 0.591         |
|                      | Adjusted R <sup>2</sup> | Audit Quality                     | 0.557         |
| Effect Size          | f <sup>2</sup>          | ERP Systems → Audit Quality       | 1.078         |
|                      |                         | E-Audit Adoption → Audit Quality  | 0.014         |
|                      |                         | Experience → Audit Quality        | 0.001         |
|                      |                         | Moderating Effect → Audit Quality | 0             |
| Predictive Relevance | Q <sup>2</sup>          | Audit Quality                     | 0.382         |

**Source:** Based on SmartPLS outputs.

The structural model underwent diagnostic testing which produced indicators that proved its strong methodological framework and its ability to explain relationships. The assessment process started by analyzing the strength of internal connections because the Variance Inflation Factor (VIF) results from Table 04 showed no signs of multicollinearity in the model. The study results show strong confidence that variables remain independent while each model path represents an original effect which does not duplicate other effects. The basic structure allowed researchers to measure total explanatory power (R<sup>2</sup>) which showed that the investigated variables explained about 59.1% of audit quality level variation. The model demonstrates its ability to identify crucial elements which shape modern auditing operations through this specific percentage.

The research team used partial effect sizes (f<sup>2</sup>) to determine the explanatory power of their model because this analysis method uncovered the fundamental mechanics which connect these variables. The results indicated the clear dominance of the variable “Enterprise Resource Planning (ERP) systems,” which exhibited an exceptionally large effect, thereby positioning it as the central pillar of the model. The research revealed that electronic auditing tools together with professional experience did not play a major role in this study. The research result shows that digitalization



functions as a non-essential element because the system type which auditors use determines the most important factor.

The predictive relevance test ( $Q^2$ ) revealed a value of 0.382 which confirmed the model's quality. The results demonstrate that the theoretical framework possesses strong predictive abilities when it comes to forecasting audit quality through ERP environment characteristics which increases the practical usefulness of the research and its discovered facts.

#### 4.5 Analysis and Discussion of Hypothesis Testing Results

This stage represents the culmination of the study's analytical process, marking the transition from the diagnostic evaluation of the model to the empirical testing of the hypothesized causal relationships. After confirming the structural robustness of the proposed model, the bootstrapping resampling algorithm was employed with 5,000 subsamples to estimate the significance of the path coefficients with a high level of statistical precision. This procedure aims to determine the validity of the proposed research hypotheses and to identify the nature and strength of the relationships between the independent variables (ERP systems and electronic auditing) and the dependent variable (audit quality), as well as to verify the existence of any interaction effect of the experience variable, in accordance with the statistical results presented below.

**Table (05): Results of Hypothesis Testing**

| Hypothesis     | Path                                    | $\beta$ | Mean  | STDEV | T Value | P Value | Decision |
|----------------|-----------------------------------------|---------|-------|-------|---------|---------|----------|
| H <sub>1</sub> | ERP Systems<br>→ Audit<br>Quality       | 0.731   | 0.712 | 0.112 | 6.537   | 0       | Accepted |
| H <sub>2</sub> | E-Audit<br>Adoption →<br>Audit Quality  | 0.08    | 0.084 | 0.151 | 0.53    | 0.596   | Rejected |
| H <sub>3</sub> | Moderating<br>Effect →<br>Audit Quality | 0.012   | 0.032 | 0.168 | 0.071   | 0.943   | Rejected |

**Source:** Based on the outputs of the bootstrapping procedure in SmartPLS.

Based on the outputs of the Bootstrapping algorithm presented in Table (05), the study hypotheses were tested in order to determine the statistically significant paths. The detailed results are as follows:

- **Testing the first hypothesis (H1): The effect of ERP systems on quality.** The results revealed a strong and statistically significant positive effect of the variable “Enterprise Resource Planning systems” on “audit quality,” with a path coefficient of ( $\beta = 0.731$ ), supported by a high t-value ( $T = 6.537$ ) and a significant probability value ( $P = 0.000 <$



0.05). Accordingly, the first hypothesis is accepted. This result confirms the fundamental role played by the integrated data environment in enabling the auditor to access comprehensive and reliable audit evidence, which is directly reflected in the quality of the professional opinion issued.

- **Testing the second hypothesis (H2): The effect of adopting electronic auditing on quality.** Contrary to expectations, the results did not indicate a statistically significant effect of the variable “adoption of electronic auditing” (in its general sense) on quality in the presence of ERP systems, as the path coefficient was weak ( $\beta = 0.080$ ) and statistically insignificant ( $T = 0.530$ ,  $P = 0.596 > 0.05$ ). Accordingly, the second hypothesis is rejected. This may be explained by the fact that merely using conventional digital tools without integration with the client’s centralized systems does not produce a substantive difference in perceived quality.
- **Testing the third hypothesis (H3): The moderating role of experience.** With regard to the interaction effect, the results did not demonstrate a statistically significant moderating role for the variable “professional experience” in the relationship between the independent variables and audit quality, as the values obtained were ( $T = 0.071$ ,  $P = 0.943 > 0.05$ ). Consequently, the third hypothesis is rejected. This noteworthy finding suggests that “system efficacy” within the ERP environment imposes objective and standardized quality criteria that reduce the influence of individual differences related to the auditor’s years of professional experience.

## 6. Conclusion:

Enterprise Resource Planning systems function as vital operational tools which enable businesses to execute their primary business processes. These systems enable organizations to operate their information systems through two main functions which focus on general organizational needs and specific requirements for accounting information systems. The system achieves this goal by merging all accounting and non-accounting information into one database which serves as a common resource for different organizational departments to access information stored within this database. The external auditor must perform their duties through electronic auditing procedures during the audit engagement because these methods help them acquire trustworthy and full audit evidence which directly affects the auditor's professional opinion quality. The auditor maintains this through their constant dedication to learning new professional skills and their ability to stay current with technological progress.

## Study Recommendations:

The research findings have led to the development of multiple essential recommendations which contain the following elements:



- The necessity of developing professional references and a unified professional guide addressing both the theoretical and practical aspects of electronic auditing.
- The National Chamber of Statutory Auditors needs to establish continuous professional training programs which will help external auditors maintain their skills for evolving technological systems.
- The field of external auditing needs universities to create academic programs which will teach students about artificial intelligence and electronic auditing methods.
- The organization of study days together with national and international conferences serves to draw experts who specialize in artificial intelligence and electronic auditing and new auditing domains.

Bibliography List:

- Al Shatareh, A. Q., & Ashoush, I. A. (2016). Implications of Developing the Quality of External Auditing Offices Performance in the Jordanian Business Environment. *Journal of Economic Administrative and Financial Research*.
- Ali, M. A., Mansour, I., & Waard, L. H. (2010). The Impact of Using Enterprise Resource Planning Software on Improving the Efficiency of Value Creation. *Jordanian Journal of Business Administration*.
- Allah Ghabayen, A. G. (2012). *The Impact of Using Concurrent Auditing Techniques on Improving Audit Quality from the Perspective of External Auditors*. Mafrq: Faculty of Finance and Business Administration Al Albayt University.
- Al-Sayed, N. M. (1996). *Strategic Review Framework Theory and Practice*. Cairo: Al Jalaa Library.
- Hamdouna, T. (2008). The Extent of Using Information Technology in the Electronic Auditing Process in Palestine and Its Impact on Obtaining High Quality Evidence Supporting the Auditor Neutral Professional Opinion on the Fairness of Financial Statements. *The Islamic University Journal of Human Research Affairs of Scientific Research and Graduate Studies The Islamic University Gaza Palestine*, 16(01).
- Hayes.R, Dassen, R., Schildren, A., & Wallace, P. (1999). Principles Of Auditing:An Introduction To International Standards On Auditing, 2nd Ed. *Hall Financial Times*.
- Law Article 10-01. (2010). *Official Gazette of the Algerian Republic Issue 42*. Algiers, Algeria: Official Gazette of the Algerian Republic.
- Lowerrs.T.I, Ramsay, .., & Sinason, .. (2005). Auditing And Assurance Services. *Mc Graw-Bill Irwin*.
- Mahmoud, H. S. (2014). The Impact of Using Electronic Auditing on Improving the Quality of Accounting Information An Applied Study on Auditors in the Gaza Strip. *Accounting Thought*, 18(4).



Malani, O., & Saousla, N. (2024). The Role of Electronic Auditing in Improving the Quality of External Auditing A Perspective from Professionals and Academics. *Journal of Research in Financial and Accounting Sciences*, 09(01).

MC gaughery, R., & Gunasekaran, A. (2017). Enterprise resource planing ERP:present and future. *International journal of entreprisse information systems(8)*.

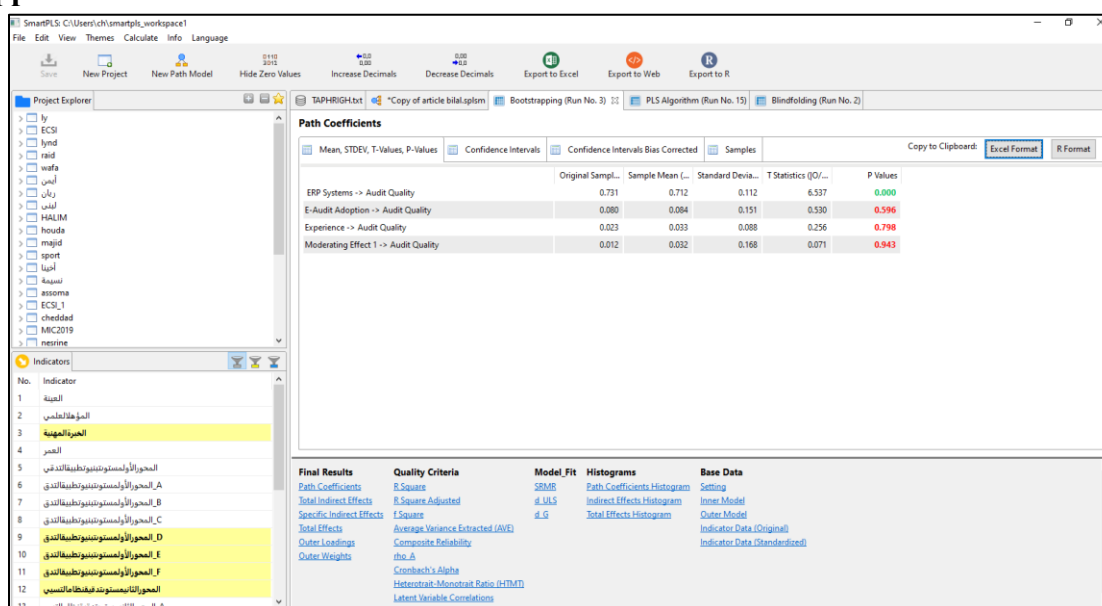
Messahem, M., & Laghouira, S. (2017). The Contribution of Professional Specialization of the External Auditor to Improving Audit Quality A Field Study on a Sample of External Auditors. *Journal of Industrial Economics*.

Nour, E. D. (2021). *International Framework for Financial Auditing*. Algiers: Noumidia Publications.

Salama, M. R., Youssef, A., & Zuraikat, K. O. (2011). *Science of Auditing Practical Accounts*. Amman: Dar Al Masirah for Publishing Distribution and Printing.

W.F, M., JR ans, G., & S.M, a. (2006). Auditing And Assurance Services:A Systematic Approach 4th Ed. *Mc Graw-Hill Irwin*.

## 7. Appendices





Output1 [Document1] - IBM SPSS Statistics Viewer

File Edit View Data Transform Insert Format Analyze Direct Marketing Graphs Utilities Add-ons Window Help

Statistics

|   | الحالات الفعلي | الحالات المفقودة | المجموع |
|---|----------------|------------------|---------|
| N | Valid          | 53               | 53      |
|   | Missing        | 0                | 0       |

Frequency Table

الجنس

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid   | 2         | 3.8     | 3.8           | 3.8                |
| فلسطين  | 20        | 37.7    | 37.7          | 41.5               |
| مصر     | 26        | 49.1    | 49.1          | 90.6               |
| مليبي   | 2         | 3.8     | 3.8           | 94.3               |
| البحرين | 3         | 5.7     | 5.7           | 100.0              |
| Total   | 53        | 100.0   | 100.0         |                    |

العمر

|                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------|-----------|---------|---------------|--------------------|
| Valid             | 4         | 7.5     | 7.5           | 7.5                |
| من 5 سنوات        | 13        | 24.5    | 24.5          | 32.1               |
| من 5 إلى 10 سنوات | 13        | 24.5    | 24.5          | 56.6               |
| من 11 إلى 15 سنة  | 23        | 43.4    | 43.4          | 100.0              |
| Total             | 53        | 100.0   | 100.0         |                    |

الجنس

|                  | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-----------|---------|---------------|--------------------|
| Valid            | 4         | 7.5     | 7.5           | 7.5                |
| من 40 سنة        | 10        | 18.9    | 18.9          | 26.4               |
| من 40 إلى 50 سنة | 23        | 43.4    | 43.4          | 69.8               |
| من 50 إلى 60 سنة | 16        | 30.2    | 30.2          | 100.0              |
| Total            | 53        | 100.0   | 100.0         |                    |

IBM SPSS Statistics Processor is ready | Unicode ON

---

SmartPLS C:\Users\smartpl\workspace\

File Edit View Themes Calculate Info Language

Save New Project New Path Model Add Data Group Generate Data Groups Clear Data Groups

Project Explorer

- ly
- EC3
- lynd
- raid
- wafa
- ابني
- راني
- HALIM
- houde
- majid
- spont
- أجندا
- تسمية
- assoma
- EC3\_1
- cheiddad
- MIC2019
- nesrine
- rouaghe
- zouaida
- houde2025
- article bilal
- article bilal
- Copy of article bilal
- TAPHRIQH (53 records)
- tds.asma@gmail.com
- hibaboube878@gmail.com
- Archive

TAPHRIQH.txt \*Copy of article bilal.splom Bootstrapping (Run No. 3) PLS Algorithm (Run No. 15) Blindfolding (Run No. 2)

Re-Analyze Open External

Delimiter: Comma Encoding: UTF-8

Value Quote Character: None Sample size: 53

Number Format: US (example: 1,000.23) Indicators: 24

Missing Value Marker: None Missing Values: 0

| Indicators                             | Indicator Correlations | Raw File | No. | Missing | Mean  | Median | Min   | Max   | Standard Devia... | Excess Kurtosis |
|----------------------------------------|------------------------|----------|-----|---------|-------|--------|-------|-------|-------------------|-----------------|
| المحور الأول المستند لتطبيق التفتيش    |                        |          | 5   | 0       | 4.113 | 4.000  | 3.000 | 5.000 | 0.372             | 3.213           |
| المحور الأول المستند لتطبيق التفتيش_A  |                        |          | 6   | 0       | 4.113 | 4.000  | 4.000 | 5.000 | 0.317             | 4.484           |
| المحور الأول المستند لتطبيق التفتيش_B  |                        |          | 7   | 0       | 2.208 | 2.000  | 1.000 | 4.000 | 0.959             | -0.627          |
| المحور الأول المستند لتطبيق التفتيش_C  |                        |          | 8   | 0       | 3.623 | 4.000  | 1.000 | 5.000 | 1.086             | -0.228          |
| المحور الأول المستند لتطبيق التفتيش_D  |                        |          | 9   | 0       | 4.226 | 4.000  | 4.000 | 5.000 | 0.419             | -0.198          |
| المحور الأول المستند لتطبيق التفتيش_E  |                        |          | 10  | 0       | 4.208 | 4.000  | 4.000 | 5.000 | 0.406             | 0.211           |
| المحور الأول المستند لتطبيق التفتيش_F  |                        |          | 11  | 0       | 4.189 | 4.000  | 4.000 | 5.000 | 0.391             | 0.709           |
| المحور الثاني المستند لتطبيق التفتيش   |                        |          | 12  | 0       | 4.189 | 4.000  | 4.000 | 5.000 | 0.391             | 0.709           |
| المحور الثاني المستند لتطبيق التفتيش_A |                        |          | 13  | 0       | 4.226 | 4.000  | 4.000 | 5.000 | 0.419             | -0.198          |
| المحور الثاني المستند لتطبيق التفتيش_B |                        |          | 14  | 0       | 4.245 | 4.000  | 4.000 | 5.000 | 0.430             | -0.536          |
| المحور الثاني المستند لتطبيق التفتيش_C |                        |          | 15  | 0       | 4.283 | 4.000  | 4.000 | 5.000 | 0.450             | -1.058          |
| المحور الثاني المستند لتطبيق التفتيش_D |                        |          | 16  | 0       | 4.283 | 4.000  | 4.000 | 5.000 | 0.450             | -1.058          |
| المحور الثاني المستند لتطبيق التفتيش_E |                        |          | 17  | 0       | 4.302 | 4.000  | 4.000 | 5.000 | 0.459             | -1.260          |
| المحور الثاني المستند لتطبيق التفتيش_F |                        |          | 18  | 0       | 4.302 | 4.000  | 4.000 | 5.000 | 0.459             | -1.260          |
| المحور الثالث المستند لتطبيق التفتيش   |                        |          | 19  | 0       | 4.208 | 4.000  | 4.000 | 5.000 | 0.406             | 0.211           |
| المحور الثالث المستند لتطبيق التفتيش_A |                        |          | 20  | 0       | 4.208 | 4.000  | 4.000 | 5.000 | 0.406             | 0.211           |
| المحور الثالث المستند لتطبيق التفتيش_B |                        |          | 21  | 0       | 4.226 | 4.000  | 4.000 | 5.000 | 0.419             | -0.198          |
| المحور الثالث المستند لتطبيق التفتيش_C |                        |          | 22  | 0       | 4.264 | 4.000  | 4.000 | 5.000 | 0.441             | -0.819          |
| المحور الثالث المستند لتطبيق التفتيش_D |                        |          | 23  | 0       | 4.226 | 4.000  | 3.000 | 5.000 | 0.461             | 0.037           |
| المحور الثالث المستند لتطبيق التفتيش_E |                        |          | 24  | 0       | 4.226 | 4.000  | 4.000 | 5.000 | 0.419             | -0.198          |

