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# Electronic Audit Role in Achieving Competitive Advantages and Support the Strategy of the External Audit in Auditing Offices in the Hashemite Kingdom of Jordan

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**Abstract**

The study aimed at identifying the role of electronic audit in achieving the competitive advantages and support the strategy of support the strategy of external audit used by audit's offices in Jordan by testing a set of hypotheses addressing the role of electronic audit in achieving competitive advantage's dimensions in audit's offices and support the strategy of audit. The study identified the obstacles that hinder the benefit of using electronic audit which aims at achieving the competitive advantages and support audit strategy followed by audit's office in the Hashemite Kingdom of Jordan. The study found that using electronic audit contributes to achieve the competitive advantages in Jordan including cost reduction, quality, flexibility, market share. Using electronic audit also contributes to support the strategy of external audit. And the study indicated that there are the obstacles hindering using electronic audit including the cost of specialized audit program, increase of general programs' prices, and their lack of suitability for all work establishments in addition to a necessity of scientific and practical qualification of auditor who specialized in information technology.

**Keywords:** electronic audit, audit strategies, audit's offices in Jordan, competitive advantages of auditing, external audit

## 1. Introduction

Technology contributes to build establishments, serve customers, compete in work market. Information technology helps to make decisions, and improve the productivity of work organizations. Information technology is considered one of the most important methods used in work facilities for providing services and producing products; it has been used to process economic data and events. Furthermore, using information technology has affected financial and accounting systems as well as internal controls in work establishments. As a result, information technology has entered the field of audit work performance and the so-called electronic audit has been emerged. Many vocational standards, which instruct, guide and organize the methods of handling these systems while auditing in an environment of information technology, have been established. Auditing based on technology improves the efficiency and capability of external audit process; electronic audit does not only reduce the time required for performing different missions and audit 's costs only but also improves the quality of audit services provided, reduce audit's dangers, and increase the profit of audit's offices and market share of audit's offices. Hence, this study identifies to which extent the electronic audit contributes to achieve the competitive advantage of audit's office and the strategy of audit.

### *1.1 The Importance of Study*

This study is important because it is one of the first studies addressing the connection between vital subjects; they are as follows: electronic audit, its roles in achieving the competitive advantage of audit's Jordanian offices. Because auditing is one of the most important sectors that add confidence to the financial data and is highly competitive, many factors which make audit's office competitive through using e-auditing are required. this study is important because it is the first one – as the researcher knows – addressing the role and the use of information technology in audit process as a tool of support the strategy of audit as well as achieving the

competitive advantage of external audit's offices. No study address this role before.

*1.2 The Purposes of Study*

This study aims at achieving the following purposes:

1-Identifying the concept and the methods of electronic audit.

2-Identyfying the role and importance of electronic audit in achieving the dimensions of competitive advantage of accounting audit's offices.

3- Identifying the role and importance of electronic audit in support audit's strategy of audit's offices.

4-Identifying the obstacles of using and applying electronic audit in Jordanian offices of accounting audit.

*1.3 The Problem of Study*

While seeking to achieve the competitive advantages, audit's offices subject to a set of internal and external factors and constraints. The most important one of them is electronic audit. Through reviewing, we noticed that there is a failure of understanding the depth of relation between electronic audit and competitive advantages and of achieving audit strategy either at a theoretical (academic) level or practical one. This has induced us to study that relation in audit's offices as a tool encouraging audit's offices to use information technology through electronic audit for achieving the competitive advantage and audit strategy and to identify the connection and its impact. In addition, the problem of study can be determined by raising the following research questions:

1- What is the nature of the component of electronic audit?

2- What are the dimensions of competitive advantage?

3- Does electronic audit contribute to achieve the competitive advantages for accounting audit's offices located in the Hashemite Kingdom of Jordan?

4- Does electronic audit contribute to achieve the strategy of external audit in accounting audit's offices located in the Hashemite Kingdom of Jordan?

5- Are there obstacles hindering the use of electronic audit in order to achieve competitive advantages and audit strategy?

*1.4 The Hypotheses of Study*

This study seeks to test the following hypotheses:

- There is a relation with a statistical significance between electronic audit and the achievement of competitive advantage in accounting audit's offices located in the Hashemite Kingdom of Jordan.

- There is a relation with a statistical significance between electronic audit and support of audit strategy in accounting audit's offices located in the Hashemite Kingdom of Jordan.

- There are obstacles hindering the use of electronic audit in order to achieve competitive advantages and audit strategy in accounting audit's offices located in the Hashemite Kingdom of Jordan.

*1.5 The Model of Research*

The research has built a hypothetical model and stemmed its variables from the pertaining theoretical studies. The model has indicated that there is a correlation between its variables as well as one way impact of electronic audit which is considered an independent variable and the competitive advantage which is considered a dependent variable.

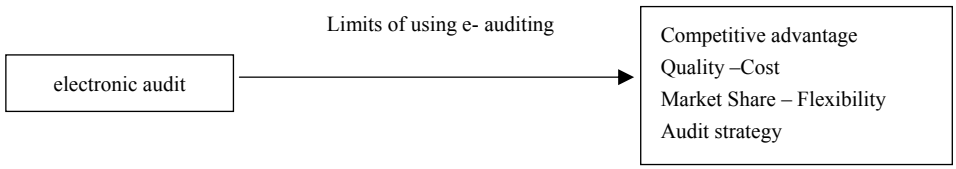


Figure 1. The model of research

*1.6 The Methods of Data Collection*

Various methods of data collection have been used for implementing the methodology of research. References, periodicals and internet have been used for covering the theoretical side. The main method used in the practical

side has been a questionnaire. Its paragraphs have been formulated in a manner complying with the two variables of research. Furthermore, the studies addressing these two variables which mentioned in the theoretical side have been used. Questionnaire's paragraphs have been characterized by simplicity and clearness. In addition, they have been subjected to scientific and objective tests which measure their reliability and validity.

## 2. Previous Studies

It has addressed various studies and researches related to the role of information technology in accounting audit; the following are some of these studies:

-Carlin, Stewart (2007)'s study entitled "auditing and the methods of support the current decision and the expected opportunities" showed that auditing environment witnesses various challenges. The most important challenges are information technology and integrating of audit companies. The study tried to answer the question related to the role and types of systems of support the decision in order to confront a contemporary environment of auditing occupation. This has been done by studying the systems and their types of support audit which are used by five international audit's offices. It has found that there are significant differences of support audit system and obstacles related to the type of support the decision and nature of electronic accounting system using in work establishments.

- Liang ( 2001)'s study entitled "electronic audit for electronic data systems by using modern data technology" aimed at discussing the requirements of applying computer based audit methods ( CAATS) which depend on modern information technology representing medium guidance systems such as security technology of internet and intelligent agents. Furthermore, this study aimed at suggesting an entry of new auditing the sub-called E-Auditing. This means that auditor' mission will be submitted electronically and mechanically via internet. The study has been a field study conducting on one of audit offices regarding loan accounts, their interest, and the debtors of one of commercial banks in Taiwan. According to this study, electronic audit model can be applied by using typical electronic auditing programs and modern tools of information technology mentioned previously. The auditor is the only person who can enter to data bases of credit department of bank, apply these typical audit programs, prepare a report of exceptions and finally send confirmations via e-mail.

Khaddash and Saymeh (2003)'s study entitled "to which extent the auditors accept using information technology in auditing" - a field study conducting on the biggest auditing offices in Jordan – aimed at identifying the importance of using information technology in auditing, testing the reality of using it and the obstacles that distort it. This study has found that Jordanian auditors are convinced of the importance of using technology in auditing and they understand that it provides more accuracy, efficiency and low cost. However, its actual use does not reach to the required level. This is due to an existence of many obstacles such as manual accounting application in some companies subjected to auditing, a lack of experience and skills of some auditors and an absence of legislation binding and organizing the use of information technology in accountancy and auditing.

Thunaibat (2002)'s study entitled "the extent and effectiveness of using information technology in auditing process" aimed at identifying the fields of using information technology in auditing and its effect on the capability and effectiveness of auditing process. The study concluded that Jordanian auditors use information technology in the fields of planning, documenting and recording the operations at low level although it contributes to improve the effectiveness of auditing in term of time spending in order to conduct calculating and writing operations, reduce the costs of audit and the number of users in auditing offices and increase the quality of auditing. Furthermore, it found that Jordanian auditor association has to organize training courses for its members in order to identify the using of information technology in auditing consistent with the international trend towards computerizing learning, services, among other.

### *2.1 Theoretical Framework: The Role and Importance of E-Auditing of Achieving the Competitive Advantage and Audit Strategies*

Today, many of modern organizations are using technology in order to perform their works and process their data; it contributes to build successful establishments as well as distinctive relationships with their clients. Consequently, their marketing share increases. Moreover, it helps to make decisions in light of these developments of information technology (Alter, 1999), improve productivity, courage the international competition. Thus, audit occupation confronts various challenges forcing it to develop continuously its tools and methods in order to provide audit services at high level of quality. Therefore, the so-called e-auditing has emerged.

### *2.2 E-Auditing and Its Role of Support Audit Strategies*

Audit strategy is a plan the auditor develops in order to perform auditing process within a determined period.

According to the nature of project operations, the works are divided by using an executive program; such program reflects the purposes of plan as practical procedures that can be followed and supervised. Auditing based on information technology contributes to achieve audit strategy with its various entries which can be illustrated as follows:

1-Documentary audit strategy: this entry depends on documentary audit; the auditor can firstly audit documents, records and finally the financial statements or this can be in reserve order. Such successive auditing makes an auditor able to issue his confirmation about the fairness of disclosure of financial statements. E-auditing helps to perform the missions of documentary audit strategy by using parallel simulation programs, general and special audit programs.

2-Systems entry: expanding the size of economic projects has led to reduce the ability of administration of controlling directly the operations and protecting project's money. This has caused to delegate powers and emerge an administrative pyramid based on a regulatory way that divides works and achieve goals through equality between the powers granted and the responsibilities required. Thus, the administration tries to use work division in order to create a type of control conducting by internal controlling team. E-auditing contributes to perform the missions of system entry strategy by using general and special auditing programs.

3-Fundmental entry: because successive bankruptcies resulted by increasing fraud and manipulation operations, auditor confronted various bitter criticisms and are accused of failing because they evaluate only the internal control system and do not perform fundamental procedures such as stocktaking, cash inventory, direct supervision for the fixed assets. This entry has focused on budget and the extent of its compatibility with the principles of acceptable accountancy by using the strongest evidences such as legal documents. It means that this entry does not satisfy only with control system of project but also request audit procedures. Electronic audit helps to perform the missions of fundamental entry strategy through varying the electronic programs of parallel and testing simulation and general and special audit programs.

4-Vocational entry: it is performed according to the vocational standards; it is known that the most powerful international organizations of American accountants have established ten standards, three of them are related to field work and planning standard: supervising the field work and distributing work.

- Identifying the volume and nature of fundamental tests.

- establishing Strategy based on testing and assessing the internal control system.

E-auditing helps to perform the missions of vocational entry strategy through using information technology in order to plan and perform audit missions and issue a report.

### *2.3 E-Auditing and Its Role in Achieving the Competitive Advantage of Audit's Offices*

Competitive advantage reflects a certain feature or a set of characteristics the organization has. Consequently, it has a strong attitude towards other various parties. The real challenge faces any organization is not producing or providing the products but is the ability to meet continuously the changing needs of customers. In auditing field, the researcher finds that the competitive advantages are the ability of audit offices of providing audit and confirmation services according to the regulatory and legal requirements as well as changes of work techniques and the use of information technology. Competitive advantages are defined as a feature or a set of characteristics an organization characterized by; the organization maintains relatively these characterizations for a long time due to the difficulty of simulating them. Therefore, it profits within that period and excels other competitors by providing the products (Macuillin, 2001:81). Furthermore, competitive advantages are defined as screening and analyzing the factors relating to the activities of productivity, marketing, finance and human resources administrations, among other for identifying strong points and internal weakness; this provides the ability to work properly, seize the available opportunities and confront the threats of external environments (Al-Sayyid, 1996: 3). The researcher finds that competitive advantages of auditing fields have two dimensions: the first is internal and is based on the distinctive abilities and capabilities related to information technology the audit's offices have; the second is external and is represented by the way used to confront the development of information technology which is being used in accounting systems, financial reporting, vocational and legal requirements of electronic transactions' environment. Through competitive advantages, audit advantages can compete and excel the competitors of e-auditing field.

### *2.4 Factors Affecting the Competitive Advantages*

Treacy & Bakos have illustrated that competitive advantages are based on two factors:

a-Comparative efficiency: it means that an organization can produce the products/ services at the lowest cost in

compassion with the cost of products / services provided by other competitors. So, audit office can use e-auditing in order to provide auditing services at low cost. However, this factor mentioned above is affected by other essential factors:

* Internal efficiency: It reflects the costs incurred by the organization. They include the costs of e-auditing programs, the costs of training and developing auditor in order to apply e-auditing programs.

* Mutual organizational efficiency: it refers to the costs incurred by the organization due to dealing with outside organizations. They include the costs of connecting accounting systems of companies that need auditing services with audit office in order to perform the ongoing tests of auditing.

b-Bargaining power: it allows to an organization to achieve bargaining cases with its clients and processors in favor of it. This factor is affected by other essential factors outlined as follows:

* The costs related to research and development: they refer to the cost paid by audit's offices in order to develop electronic programs as well as vocational and scientific knowledge of their employees.

* The unique characteristics of service: these characteristics make an office distinguishable. And they refer to e-auditing services that may be characterized it in term of the accuracy of tests.

The researcher adds that information and communication technology techniques must be represented by providing modern devices and tools supplied by programs, qualified human resources able to deal such modern techniques and modern communication means for providing e-auditing services.

*2.5 The Dimensions of Competitive Advantages*

The organization is interested with clients' needs and desires and seeks to transfer them into targeted fields or capabilities called competitive dimensions which the organization chooses while providing its products and meeting market requirements. This makes the organization able to achieve the competitive advantage. Based on the above mentioned, we have noticed that there is a significant agreement regarding the dimensions of competitive advantage although there are various difference of its name which include the same concept. Table below shows these dimensions from the point of view of some researchers.

Table 1. The dimensions of competitive advantages

| Researcher | dimensions |
|---|---|
| Kotler 1997 | The best products, the lowest prices, the modernist, the rapidest |
| Evas 1993 | cost, quality, flexibility, rapidity, creativity |
| Mintazaberge 1996 | price, quality, attribution, reputation, design |
| Macmillan 2000 | Cost, excellence, flexibility, time, technology |
| Krajewski 1996 | Cost, quality, flexibility, time |
| Slack 1998 | Design, flexibility, easiness, usage, creativity |

It can be said that using e-auditing contributes to achieve the dimensions of competitive advantages as follows:

1- E-auditing and achievement of cost advantage: using e-auditing contributes to reduce the cost of audit services and increase the profit of audit offices through using audit programs in order to audit the financial data and perform quickly audit services. As a result, more than one service can be provided from more than one establishment and the time required for planning and identifying the volume of tests decreases through using experience systems and artificial intelligence. However, the auditors must have a high level of scientific and practical qualification of using e-auditing programs, software of planning auditing missions, and using devices at a high level of specifications in order to achieve the goals desired. Internal statement No 1009 has indicated that using information technology techniques improves the efficiency and effectiveness of audit procedures.

2- E-auditng and achievement of quality: using e-auditing for performing audit operations contributes to perform efficiently audit's missions and it is one of factors affecting audit's quality and the time required for performing audit services. Using audit software for performing audit missions contributes to reduces the time and effort required. For achieving this advantage, the employees must have a high level of scientific and practical qualification of electronic techniques and their usages of e-auditing.

Audit missions must be performed objectively in order to achieve audit quality. Such objectivity can be reached by using electronic techniques in audit operation and financial statement and confirmation evidences' assessment.

Moreover, electronic techniques help to achieve independence and impartiality of auditing financial statements

and detect essential errors and distortions of financial statements.

3- E-auditing and market share: using e-auditing contribute to provide contributes to provide quickly and accurately service of auditing finical statements especially in an environment where all work organizations are competing by using information technology. Thus, using information technology contributes work organizations to connect with audit office which perform audit missions.

4- E-auditing and excellence: today, information technology is considered a competitive advantage of work organizations which is used to provide organizations' products and service. Audit's offices are considered a part of these organizations which can use e-audit techniques and achieve the competitive advantage in order to provide services and connect between the company, the place of audit, and audit's office.

5- E-auditing and creativity: creativity of using e-auditing is represented by auditors who design creatively cram programs required for auditing, or develop the existing programs in order to fit the existing accounting systems. Creativity occurs when artificial intelligence programs and expert systems of auditing are used and developed.

## 3. Field Study

### *3.1 The Methodology of Study*

Analytical descriptive approach which based on studying phenomenon as it is in reality has been used. It describes accurately and expresses qualitatively and quantitatively the phenomenon. In order to collect the data required, it depends on two types of resources; they are as follows.

(1) Secondary Resources

They consist of literatures including books, periodicals, reaches, reports, Arabic and English bulletins related to the subject of this study as well as the perspective governmental documents, laws, and regulations; these resources cover the theoretical part of this study.

(2) Primary Resources

A questionnaire has designed distributed on audit's offices existing in the Hashemite kingdom of Jordan.

### *3.2 The Instrument of Study*

After viewing the theoretical part of this study, a questionnaire has been designed in order to collect the required data for achieving the purposes of the study. Five-likert scale has been used for determining the degrees of respondents' approval regarding each item of questionnaire, and transferring them to digital data which can be measured and described statistically. These degrees are as follows (strongly agree, agree, neutral, disagree, and strongly disagree). Furthermore, the scales are given ranges from 1-5, respectively.

Table 2. Analysis measure standard

| Arithmetic Mean | Degree |
|---|---|
| 1- 2.49 | Low |
| Higher than 2.49- 3.49 | Middle |
| Higher than 3.49- 5 | *High* |

### *3.3 The Population and the Sample of Study*

The population of this study consists of the auditors in Jordan after a detailed list has been obtained from Jordanian accountant association. The number of authorized external auditors has reached to 482 noting that not all are practicing audit profession. The questionnaire has been distributed on 129. However, 179 questionnaires have been returned back; 160 of them are valid for statistical analysis i.e 86.67 % of the population of study.

### *3.4 The Statistical Methods Used in Data Analysis*

Statistical Package for Social Sciences- SPSS has been used for analyzing, and testing the hypotheses.

Reliability of the study: for ensuring the reliability of study instrument, internal consistency variable, Cronbach Alpha, has been measured it has ranged between (0.84 - 0.84). Table 3 shows these treatments and ratios have been considered suitable for the purposes of this study.

Table 3. Internal consistency variable, Cronbach Alpha, of study's field

| Field | Internal consistency |
|---|---|
| Relationship between e-auditing and support audit strategy | 0.86 |
| Obstacles facing the use of e-auditing in order to achieve competitive advantages and support audit strategy. | 0.84 |
| Role of e-auditing in achieving cost advantage | 0.89 |
| Quality | 0.87 |
| Market share | 0.88 |
| Creativity and excellence | 0.90 |
| Total | 0.91 |

*3.5 Demographic Characteristics of Respondents of Questionnaire's Items*

Table 4 shows the demographic characteristics of respondents of questionnaire's items; they are as follows.

Table 4. Distribution of respondents on questionnaire's items

| | | Frequency | Percentage |
|---|---|---|---|
| Sex | Male | 148 | 92.5 |
| | Female | 12 | 7.5 |
| Type of office ownership | Individual | 90 | 56.3 |
| | partners | 70 | 43.8 |
| Qualification | Higher studies | 30 | 18.8 |
| | Diploma | 30 | 18.8 |
| | Bachelor | 100 | 62.5 |
| Experience | Less than 5 years | 40 | 25.0 |
| | From 5- 10 years | 40 | 25.0 |
| | More than 10 years | 80 | 50.0 |
| | Total | 160 | 100.0 |

Table 4 outlines the results of analysis as follows:

First: sex Table (3) indicates that 148 of respondents are male; this represents 92.5 % of the sample whereas 12 of respondents are female; this represents 7.5 %.

Second: Type of office ownership.

Table 3 shows that the ownership of audit's office in Jordan is individual ownership and it reaches 56 %. This refers to the intensity of competition among audit's offices.

Third: Qualification Table 3 indicates that 62.5 of sample hold bachelor degree and this percentage is the highest whereas the rest hold higher degree. This demonstrates the ability of respondents to answer questionnaire's items.

Fourth: years of experience Table 3 indicates that 25% of respondents have an experience of work (less than 5 years). The table shows that the percentage of individuals who have 5 year to 10 year experience has reached 25 % whereas the percentage of individuals who have 10 year experience or more has reached to 50%. Previous results indicated that a good experience of work which half of respondents have will affect their judgment regarding research's subject.

*3.6 The Hypotheses of Study*

**Testing the first hypothesis**

It states that there is a statistical significance between e-auditing and achieving the dimensions of competitive advantage of audit's offices in the Hashemite kingdom of Jordan.

To check validity of this hypothesis, means and standard deviations of responses of sample's study of items related to the first hypothesis have been extracted. It includes the following fields:

1- the role of e-auditing in achieving the advantage of cost reduction

2- the role of e-auditing in achieving the quality of providing audit services

3- the role of e-auditing in increasing market share of audit's offices

4- the role of e-auditing in achieving creativity and excellence

The following describes the test of each field mentioned above.

**The first field: the role of e-auditing in achieving the advantage of cost reduction**

Table below illustrates the role of electronic audit in achieving the advantage cost reduction. Means and standard deviations of items related to this field and the orientation of sample study's responses on the items.

Table 5. Arithmetic means and standard deviations of Items related to the first hypothesis and related to the role of e-auditing in achieving the advantage of cost reduction

| **Items** | **Arithmetical mean** | **Standard deviation** | **the orientation of sample study's responses related to cost reduction** |
|---|---|---|---|
| Using specialized software of auditing helps to reduce the cost of audit services | 3.88 | 1.179 | High |
| Scientific qualification of using computer techniques for auditing helps to reduce the cost of all auditing services | 3.87 | 1.179 | High |
| practical qualification of using computer techniques for auditing helps to reduce the cost of all auditing services | 3.86 | 1.179 | High |
| Developed devices and communication networks used for providing audit services help to reduce audit's cost. | 3.90 | 1.179 | High |
| Electronic techniques of auditing help to reduce the cost of collecting confirmation evidences in auditing. | 3.90 | 1.179 | High |
| e-auditing helps to reduce the cost of maintaining work papers | 3.87 | 1.179 | High |
| The role of e-auditing in achieving cost advantage | 3.89 | 1.179 | *High* |

Table 5 shows arithmetical means and standard deviations of the items related to the hypothesis. They indicate that e-auditing contributes significantly to reduce the cost of audit services. Arithmetical means range from3.88-3.90; item stating that "Developed devices and communication networks used for providing audit services help to reduce audit's cost." has been at the first rank and its Arithmetical mean reaches to 4.38 whereas item stating "e-auditing helps to reduce the cost of maintain work papers" has been at the last rank and its arithmetical mean reaches to 3.88; the overall arithmetical mean reaches to 3.89.

**The second field: the role of e-auditing in achieving the quality of providing audit services**

To check validity of this field of hypothesis, means and standard deviations of responses of sample's study of items related to the first hypothesis have been extracted; it includes the role of e-auditing in achieving quality advantage. Table below outlines the role of e-auditing in achieving quality advantage.

Table 6 shows arithmetical means and standard deviations of the items related to the hypothesis. Arithmetical means range from 3.85-3.90; item stating that "Using specialized software of auditing helps to achieve the quality when quality services are provided" has been at the first rank and its Arithmetical mean reaches to 3.90 whereas item stating "Electronic techniques of auditing help to achieve the quality of collecting confirmation evidences in auditing" has been at the last rank and its arithmetical mean reaches to 3.84; the overall arithmetical mean reaches to 3.88. The orientation of sample study's responses related to the second field indicates that using e-auditing and providing the factors of success related to the scientific and practical qualification, and using the modernist techniques contributes highly to achieve the quality of audit services.

Table 6. Arithmetic means and standard deviations of sample study' reponses related to the second field of the first hypothesis, the role of e-auditing in achieving quality advantage of audit services

| Items | Arithmetical mean | Standard deviation | the orientation of sample study's responses related to the quality |
|---|---|---|---|
| Using specialized software of auditing helps to achieve the quality when quality services are provided | 3.90 | 1.17 | High |
| Scientific qualification of using computer techniques for auditing helps to achieve the quality when auditing services are provided | 3.88 | 1.18 | High |
| practical qualification of using computer techniques for auditing helps to achieve the quality when auditing services are provided | 3.88 | 1.18 | High |
| Developed devices and communication networks used for providing audit services help to achieve quality when auditing services are provided | 3.85 | 1.17 | High |
| Electronic techniques of auditing help to achieve the quality of collecting confirmation evidences in auditing. | 3.84 | 1.17 | High |
| e-auditing helps to achieve the quality of maintaining work papers | 3.85 | 1.19 | High |
| e-auditing helps to provide objectively audit services then achieve audit quality | 3.85 | 1.19 | High |
| e-auditing helps to provide independently audit services then achieve the quality | 3.86 | 1.18 | High |
| e-auditing helps to provide neutrally audit services then achieve the quality | 3.86 | 1.18 | High |
| e-auditing helps to increase coordination and integration among the various stages of audit. | 3.86 | 1.19 | high |
| e-auditing leads to improve individuals' ability of choosing evidences with high level of quality | 3.87 | 1.18 | high |
| the role of e-auditing in achieving quality advantage of audit services | 3.88 | 1.17 | *high* |

**Third field: the role of e-auditing in increasing market share of audit's offices**

To check validity of this field of hypothesis, means and standard deviations of responses of sample's study of items related to the first hypothesis have been extracted; it includes the role of e-auditing in increasing market share of audit's offices. It is outlined in table below.

Table below shows e-auditing in achieving market share advantage.

Table 7. Arithmetic means and standard deviations of sample study' responses related to the third field of the first hypothesis, the role of e-auditing in increasing market share of audit's offices

| Items | Arithmetical mean | deviation Standard | the orientation of sample study's responses |
|---|---|---|---|
| Using specialized software of auditing helps to increase market share of audit's office | 3.87 | 1.17 | High |
| Scientific qualification of using computer techniques for auditing helps to increase market share of audit's office | 3.86 | 1.19 | High |
| practical qualification of using computer techniques for auditing helps increase market share of audit's office | 3.88 | 1.17 | High |
| Developed devices and communication networks used for providing audit services help to increase market share of audit 's office | 3.89 | 1.19 | High |
| e-auditing helps to improve the efficiency of services' performance and increase clients' satisfaction | 3.88 | 1.17 | High |
| e-auditing helps to strengthen financial status of audit's offices through high productivity | 3.88 | 1.18 | High |
| the role of e-auditing in increasing market share of audit's offices | 3.87 | 1.19 | *High* |

Table 7 shows arithmetical means and standard deviations of the items related to the hypothesis. Arithmetical means range from 3.87-3.89; item stating that "Developed devices and communication networks used for providing audit services help to increase market share of audit 's office" has been at the first rank and its

Arithmetical mean reaches to 3.89 whereas item stating "Scientific qualification of using computer techniques for auditing helps to increase market share of audit 's office" has been at the last rank and its arithmetical mean reaches to 3.87; the overall arithmetical mean reaches to 3.89. This indicates that the sample of study agree highly that using e-auditing increase the market share of audit's office.

**The fourth role: the role of e-auditing in achieving creativity and excellence**

To check validity this field of hypothesis, means and standard deviations of responses of sample's study of items related to the first hypothesis have been extracted; it includes in achieving creativity and excellence advantage; it is outlined in table below.

Table 8. Arithmetic means and standard deviations of sample study' responses related to the fourth field of the first hypothesis, the role of e-auditing in achieving creativity and excellence advantage

| Items | Arithmetical mean | Standard deviation | the orientation of sample study's responses |
|---|---|---|---|
| e-auditing helps to provide the opportunity of creativity and initiative of auditor while providing audit services | 3.85 | 1.15 | high |
| e-auditing helps to decrease a necessity of experts of information technology consequently decrease the cost | 3.86 | 1.16 | high |
| e-auditing helps to provide the opportunity of creativity and initiative for auditor in order to develop audit programs in accordance with the development of accounting systems | 3.87 | 1.17 | high |
| e-auditing helps to provide the opportunity of creativity and initiative through using electronic systems in auditing by scientifically and practically qualified auditors | 3.88 | 1.17 | high |
| Scientific and practical qualification of auditor adds a competitive advantage to audit's offices. | 3.86 | 1.16 | high |
| Using developed electronic devices and communication systems in e-auditing operations adds a competitive advantage to audit's office | 3.88 | 1.19 | high |
| The role of e-auditing in achieving creativity and excellence | 3.89 | 1.179 | *high* |

Table 8 shows arithmetical means and standard deviations of the items related to the hypothesis. Arithmetical means range from 3.85-3.89; item stating that "Using developed electronic devices and communication systems in e-auditing operations adds a competitive advantage to audit's office" has been at the first rank and its Arithmetical mean reaches to 3.89 whereas item stating " e-auditing helps to provide the opportunity of creativity and initiative of audit services " has been at the last rank and its arithmetical mean reaches to 3.85; the overall arithmetical mean reaches to 3.89.

**Testing the hypothesis of study**

To check validity this field of hypothesis, means and standard deviations of responses of sample's study of items related to the first hypothesis have been extracted; it includes the role of e-auditing in achieving the advantage of cost reduction, quality, market share, creativity and excellence. These are outlined in table below.

Table 9. Arithmetical means, standard deviations of sample study's reponses pertaining to the fields of hypothesis

| Items | Arithmetical mean | Standard deviation | The orientation of responses |
|---|---|---|---|
| The roles of e-auditing in achieving the quality of audit services | 3.89 | 1.17 | High |
| the role of e-auditing in achieving quality advantage of audit services | 3.88 | 1.17 | High |
| The role of e-auditing in increasing market share of audit's offices | 3.87 | 1.19 | High |
| The role of e-auditing in achieving creativity and excellence | 3.89 | 1.17 | High |
| The role of e-auditing in achieving the competitive advantages of audit's offices | 3.89 | 1.19 | High |

Table 9 shows arithmetical means and standard deviations related to the fields of hypothesis related the role of e-auditing in achieving the competitive advantages: reducing the cost, improving the quality of audit services, increasing the market share and increasing the creativity and excellence. The overall arithmetical mean of the fields related to the role of e-auditing in achieving the competitive advantage reaches to 3.89 which is high.

Furthermore, arithmetic mean has been compared with the standard mark (3)- the acceptance standard of the

hypothesis- by using T- test as shown in table 10.

Table 10. Arithmetical means, standard deviations and "T" test for the items in comparison with standard (3)

| E-auditing and achieving the competitive advantage in audit's offices | **No.** | **Arithmetical mean** | **Standard deviation** | **T value** | **Degrees of freedom** | **Significance level** |
|---|---|---|---|---|---|---|
| | 160 | 3.89 | 1.19 | 9.585 | 159 | .000 |

Table above shows that there are statistically significant differences (0.05≥a) between arithmetical mean and standard mark (3) where the "T" value has reached to 9.585; and the statistical significance has reached to (0.000). As a result, this hypothesis, stating that there is a statistical significance between e-auditing and achieving the dimensions of competitive advantage of audit's offices in the Hashemite kingdom of Jordan, has been accepted.

**Testing the second hypothesis**

It states that there is a statistical significance between e-auditing and support audit strategy of audit's offices in the Hashemite Kingdom of Jordan.

To check validity this field of hypothesis, means and standard deviations of responses of sample's study of items related to the second hypothesis have been extracted. Table below outlines that:

Table 11. Arithmetic means and standard deviations of the responses of sample's study of items related to the second hypothesis

| **Items** | **Arithmetical mean** | **deviation Standard** | **The orientation of the responses of sample study** |
|---|---|---|---|
| Using e-auditing programs helps to support documentary audit strategy | 3.62 | 1.238 | High |
| Providing and electronic devices in audit's offices and using them when audit services are provided helps to support documentary audit strategy | 3.70 | 1.300 | High |
| Providing auditor qualified scientifically in aspects and usages of e-auditing helps to support documentary audit strategy | 3.70 | 1.300 | High |
| Providing auditor qualified practically in aspects and usages of e-auditing helps to support documentary audit strategy | 3.70 | 1.300 | High |
| Using e-auditing program in auditing helps to support system entry strategy of auditing | 3.62 | 1.238 | High |
| Providing electronic devices in audit's offices and using them in auditing helps to support systems entry strategy | 3.62 | 1.238 | High |
| Providing auditor qualified scientifically in aspects and usages of e-auditing helps to support documentary audit strategy | 3.71 | 1.300 | High |
| Providing auditor qualified practically in aspects and usages of e-auditing helps to support documentary audit strategy | 1.300 | 3.70 | High |
| Using e-auditing programs in auditing helps to support fundamental entry strategy | 3.70 | 1.300 | High |
| Providing electronic devices in audit's offices and using them in auditing helps to support fundamental entry strategy | 3.70 | 1.300 | High |
| Providing auditor qualified scientifically in aspects and usages of e-auditing helps to support fundamental entry strategy | 3.70 | 1.300 | High |
| Providing auditor qualified practically in aspects and usages of e-auditing helps to support fundamental entry strategy | 3.70 | 1.300 | High |
| Using e-auditing programs in audit helps to support vocational entry strategy in auditing | 3.68 | 1.300 | High |
| Providing electronic devices in audit's offices and using them in auditing help to support vocational entry strategy | 3.69 | 1.300 | High |
| Providing auditor qualified scientifically in aspects and usages of e-auditing helps to support vocational entry strategy | 3.67 | 1.300 | High |
| Providing auditor qualified practically in aspects and usages of e-auditing helps to support vocational entry strategy | 3.52 | 1.244 | High |
| Relationship between e-auditing and support audit strategy | 3.68 | 1.273 | *High* |

Table 11 shows arithmetical means and standard deviations of the items related to third hypothesis. Arithmetical means range from 3.52- 3.71; item stating that "Providing auditor qualified scientifically in aspects and usages of e-auditing helps to support auditing strategy related system entry" has been at the first rank and its Arithmetical mean reaches to 3.71 whereas item stating "Providing auditor qualified practically in aspects and usages of e-auditing helps to support vocational entry strategy" has been at the last rank and its arithmetical mean reaches to 3.52; the overall arithmetical mean reaches to 3.68. the respondents of the items related to this hypothesis agree highly on the role of e-auditing in achieving audit strategy.

Furthermore, arithmetic mean has been compared with the standard mark (3)- the acceptance standard of the hypothesis- by using T- test as shown in table 12.

Table 12. Arithmetical means, standard deviations and "T" test for the items in comparison with standard (3)

| E-auditing and support audit strategy of audit's offices | **No.** | **Arithmetical mean** | **Standard deviation** | **T value** | **Degrees of freedom** | **Significance level** |
|---|---|---|---|---|---|---|
| | 160 | 3.68 | 1.273 | 6.790 | 159 | .000 |

Table above shows that there are statistically significant differences (0.05≥ a) between arithmetical mean and standard mark (3) where the "T" value has reached to 6.790; and the statistical significance has reached to (0.000). As a result, this hypothesis, stating there is a statistical significance between e-auditing and support audit strategy of audit's offices in the Hashemite Kingdom of Jordan, has been accepted.

**Testing the third hypothesis**

It states that there are obstacles that limit the benefit of using e-auditing in achieving competitive advantages and audit strategy of audit's offices in the Hashemite kingdom of Jordan. To check validity this field of hypothesis, means and standard deviations of responses of sample's study of items related to the third hypothesis have been extracted. Table below outlines that:

Table 13. Arithmetic means and standard deviations of the performance of sample study related to the third hypothesis

| **Items** | **Arithmetical mean** | **Standard deviation** | **The orientation of responses of sample study** |
|---|---|---|---|
| The cost of audit programs is one of obstacles of using e-auditing | 3.62 | 1.238 | High |
| Lack of scientific qualification of e-auditing techniques is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| Lack of practical qualification of e-auditing techniques is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| A necessity of developing e-auditing programs in accordance with the development of accounting information technology in the companies, the place of auditing is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| A necessity of developing e-auditing in accordance with the nature of accounting information technology in the companies, the place of auditing. There is no unified system of accounting information technology is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| There is no a clear definition for organizing the standards of e-auditing | 3.53 | 1.171 | High |
| Lack of authentic proof regarding e-auditing proofs is one of obstacles of using e-auditing | 3.53 | 171 | High |
| The problem of maintaining electronic proofs for a short time is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| Applying manual and electronic system in some work establishments is one of obstacles of using e-auditing | 3.53 | 1.171 | High |
| Auditor distrusts using electronic systems ad relying on audit programs | 3.53 | 1.171 | High |
| Lack of experience of using e-auditing | 3.53 | 1.171 | High |
| Obstacles of using e-auditing | 3.54 | 1.174 | *High* |

Table 13 shows arithmetical means and standard deviations of the items related to third hypothesis. Arithmetical means range from 3.52- 3.52; item stating that the cost of audit programs is one of obstacles of using e-auditing

"has been at the first rank and its Arithmetical mean reaches to 3.62 whereas item stating" auditor distrusts using electronic systems ad relying on audit programs has been at the last rank and its arithmetical mean reaches to 3.52; the overall arithmetical mean reaches to 3.54. the responses of items indicated that the sample agrees highly on the obstacles hindering the use of e-auditing in audit process.

Furthermore, arithmetic mean has been compared with the standard mark (3)- the acceptance standard of the hypothesis- by using T- test as shown in table 14.

Table 14. Arithmetical means, standard deviations and "T" test for the items in comparison with standard (3)

| | No. | Arithmetical mean | Standard deviation | T value | Degrees of freedom | Significance level |
|---|---|---|---|---|---|---|
| Ogbastcle | 160 | 3.54 | 1.274 | 5.810 | 159 | .000 |

Table above shows that there are statistically significant differences (0.05≥a) between arithmetical mean and standard mark (3) where the "T" value has reached to 5.810; and the statistical significance has reached to (0.000). As a result, this hypothesis, stating that there are obstacles that limit the benefit of using e-auditing in achieving competitive advantages and audit strategy of audit's offices in the Hashemite kingdom of Jordan, has been accepted.

## 4. Results and Recommendations

### *4.1 Results*

**The study has reached to the following results:**

1- There is a statistical significance between e-auditing and achieving the dimensions of competitive advantage of audit's offices located in the Hashemite kingdom of Jordan. The responses of respondents have indicated that e-auditing contributes to achieve the following competitive advantages: cost reduction, quality, market share, creativity and excellence.

2- There is a statistical significance between e-auditing and support audit's strategy of audit's offices located in the Hashemite Kingdom of Jordan.

3- There are obstacles that hinders the benefit of using e-auditing which achieve the competitive advantages and audit's strategy used in audit's offices located in the Hashemite kingdom of Jordan including the cost of electronic software specialized of audit and a necessity of organizing e-auditing in term of issuing vocational laws and standards which organize e-auditing.

4- The cost of purchasing electronic audit programs, developing them or modernizing the electronic programs which required an auditor qualified in the most important programs and applications, is one of obstacles of using e-auditing.

5- Developing of information technology which is used increasingly by work organizations in Jordan has imposed a new reality on auditor who has to cope with this development and use information and communication technology while providing audit services.

### *4.2 Recommendations*

In light of the results mentioned above, the study has recommended the following:

1- It has been recommend that it is necessary to improve auditor's understanding of importance of information technology of providing audit's services and its role in achieving the competitive advantage of audit's office working in information technology environment.

2- It has been recommended that it is necessary to improve auditor's understanding of the importance of e-auditing of support audit strategies in information technology environment.

3- It has been recommended that it is necessary to hold training course for developing the vocational performance of auditor in order to be able to use e-auditing in planning audit's operation, collecting audit's evidences and preparing audit report.

4- It has been recommended that auditors must be encouraged to join such training courses specialized of information technology and its usages of auditing.

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**Notes**

Note 1. www.IT.org.com

Note 2. www.Microsoft.com

Note 3. www.imaginatik.com