

**The Impact of Continuous Auditing in ERP System on  
Maximizing the Firm's Value  
"A Field Study"**

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## Abstract

The study aims to assess the impact of the Continuous Auditing (CA) in ERP system on maximizing the firm's value. To achieve the study goal, a field study was conducted through using the questionnaire lists and interviews with external auditors, academics in Egyptian universities, and IT staff (programmers and analysts of information systems) in the selected companies. The findings of the study indicated that (1) there are no significant differences among the study categories about the impact of CA in ERP system on the firm's value, (2) there is a significant relationship between applying CA in ERP system and the firm's value, and (3) there is a significant impact of applying CA in ERP system on maximizing the firm's value. Considering the previous conclusions, the researchers can suggest a set of recommendations and future studies in this direction.

**Key Words:** Continuous auditing, ERP, Firm Value

## الملخص

تهدف الدراسة إلى اختبار أثر تطبيق المراجعة المستمرة في بيئة ERP على تعظيم قيمة الشركة. ومن أجل تحقيق هدف الدراسة، تم إجراء دراسة ميدانية باستخدام عدد من استمارات الاستقصاء والمقابلات مع عينة الدراسة وتشمل المراجعين الخارجيين والأكاديميين في الجامعات المصرية. وكذلك مودعة تكنولوجيا المعلومات (من المبرمجين ومحللي نظم المعلومات) في الشركات محل الدراسة. وأشارت نتائج الدراسة إلى: (1) عدم وجود اختلافات معنوية بين فئات الدراسة حول تأثير المراجعة المستمرة في بيئة ERP على قيمة الشركة. (2) توجد علاقة ذات دلالة إحصائية بين تطبيق المراجعة المستمرة في بيئة ERP وقيمة الشركة. (3) هناك تأثير معنوي لتطبيق المراجعة المستمرة في بيئة ERP على تعظيم قيمة الشركة. في ضوء النتائج السابقة، استطاع الباحثون توضيح مجموعة من التوصيات والدراسات المتعلقة بهذا المجال.

**الكلمات الافتتاحية:** المراجعة المستمرة، تخطيط موارد المشروع، وقيمة المنشأة

## **1. Introduction**

Financial reporting has been conducted by a manual and error-prone operation. Therefore, consolidations and calculations are carried out by hand, which increases the risk of errors. In addition, penalties, and fines for non-compliance with financial reporting standards and guidelines have become harsh and severe for organizations (Susan, 2014, P.7). Financial information plays an essential role in many types of decisions. Decision making will be useful because the information needs to be accurate, relevant, and reliable. This means that it is timely and free from errors, oversights, and fraudulence (Chan & Vasarhelyi, 2011, p.2; Santosa, 2020, p.391).

So that, numerous companies rely greatly on computers and software to extend accurate information to manage business processes effectively. The reliance on information technology (IT) implementation in firms is increasingly for operating successfully and generating a competitive advantage. Enterprise resource planning (ERP) systems are the most advanced uses of IT that carried out by many corporations (Azaltun, et al., 2013, p.497).

According to (Rezaee, et al., 2018, p.173) Continuous Auditing (CA) is defined as:

“A comprehensive electronic audit process that enables auditors to provide some degree of assurance on continuous information simultaneously with, or shortly after, the disclosure of the information.”

The CA system optimized in the ERP environment can play a fundamental role in helping both management and external auditors to detect errors and avoid defalcations even in a complicated and integrated information environment. Thus, the implementation of such a system is necessary for the firms' survival (Shin, et al., 2013).

Firm value is an indicator to measure shareholders welfare. High increase in company value is a long-term goal that the company must achieve, will be reflected in the market price of its shares as the investors' evaluation of the firm can be observed through the movement of the companies' stock prices, when stock price rises, the shareholders will get more financial benefits (Purbawangsa, et al., 2020, p.984).

There is a direct relationship between the deployment of CA systems and the value of the firm. This is illustrated by the fact that corporate finance aims to improve the value of the firm by reducing the related risks and minimizing the costs associated with financing these investments (Rogers, 2009, P.62). On the other hand, CA will be achieved through improving the results of the organization depending on the identification of timely errors, fraud and creating a strong internal control environment across the organization. This effect helps to provide management with faster, more timely and more reliable information for decision-making to perform its functions effectively and efficiently, which in turn improves the firm's value (Adesina, et al., 2016, p.55).

The business and economic environment changes daily or even intraday basis in a real-time economy. For companies to maintain their competitiveness, management must make decisions depend on accurate and timely financial information. However, the traditional audit model is outdated in the real time economy and is not suitable for supplying real-time assurance. Management and auditors recognize that innovation in traditional auditing practice is necessary to meet the demand for real-time assurance.

The innovation of the traditional auditing process by using an automation technology such as CA would be an essential step towards the evolution of real-time assurance. Through the application of CA, audit can be achieved not only partially and in real-time but also with limited resources, CA improves audit quality by making financial statements free from material misstatement, errors, and fraud.

CA methodologies advance the provision of audit services by making the audit process more efficient and effective by using technology and automation. Increasing efficiency and effectiveness of the audit process enables more frequent or real-time audits and thus enhances the reliability of financial information in real time. The ideal environment for a synergy system in a CA is an Enterprise Resource Planning (ERP) system. Therefore, executives within organizations should take a strategic view of compliance by adopting technology for CA. Therefore, the three main research questions formulated in this paper are:

- To what extent are there significant differences among the study categories about the impact of CA in ERP system on the firm's value?
- Is there any relationship between applying CA in ERP system and the firm's value?
- Does applying CA in ERP system have an impact on maximizing the firm's value?

So, the authors think that CA in ERP system will lead to mitigating business risks, increasing investors' confidence in the reviewed information, preventing fraud, errors, and raising profitability. In addition, CA will contribute to growth and innovation and generate a competitive advantage; all these factors should in turn lead to improve the firm's value. Therefore, the application of CA in ERP System has an effective impact on the firm's value.

### **Research Objectives**

Main objective is to clarify the impact of CA in ERP system on the firm's value.

Sub-objectives are formulated to achieve the main objective:

- Studying and analyzing the differences among the study categories about the impact of CA in ERP system on the firm's value.
- Exploring the relationship between applying CA in ERP system and the firm's value.
- Determining the impact of applying CA in ERP system on maximizing the firm's value.

### **Research Importance**

The importance of the research is due to the following:

- ❖ It provides the field evidence around the impact of applying CA in ERP system on maximizing the firm's value and contributes to the creation of a new relationship between CA in ERP system and the firm's value.
- ❖ It focuses on the new arguments about how the audit mechanism should be and benefits from information technologies for audit and identifies CA in

ERP system as a new audit mechanism, as CA is the most appropriate method for firms that have applied the ERP system.

- ❖ It contributes to activating the role of the external auditors by conducting CA and using confidence services in the systems, thus keeping pace with the changes used in the business environment and supporting and enhancing the credibility of accounting information. It requires the auditors to be skilled and well informed with new audit technology as they must be able to use an ERP system.
- ❖ The importance of applying CA in ERP system for companies to improve the accuracy and reliability of financial reporting, enhance the audit quality and achieve competitive advantages by reducing costs, strengthening relationships with customers, better controlling over assets, operations, and financial performance, and working to improve the effectiveness of risk management that increases confidence and demand for shares, which leads to improve the firm's value.

## **2- Literature Review and Hypotheses Development**

In this section, the related literature is reviewed, and hypotheses are developed.

In 2010, Kuhn and Sutton explored the alternative structures for CA which was proposed in both the research and practice environments. They mix a focus on the practical facts of the current technological options and ERP structures with the emerging theory and research on continuous assurance models. The focus is on identifying the strengths and weaknesses of each architectural form as a basis for forming a research agenda that could allow researchers to contribute to the future development of both ERP system designs and auditor implementation strategies. The results showed that the evolution and pervasive use of ERP systems provides the critical infrastructure needed for the effective development of the assurance function from a periodic event to an ongoing process by the integration of CA applications. Research literature has shown two basic architectures for the system to develop and apply CA.

The study of (Tum, 2013) aimed to examine CA approach in the framework of literature. As a result of this investigation, CA is a new audit mechanism that is necessary in the business worldwide, that requires serious standards. The study results showed that traditional auditing function has changed related to technological progress. It is very possible that traditional auditing will change its way towards a CA that uses information technologies on a large scale.

In 2014, Malaescu and Sutton aimed to evaluate external auditors' dependence on internal audit's work when submitting the advanced audit techniques by the internal auditor and the impact of this reliance on audit hours included in the budget. The findings of this study indicated that auditors are willing to depend more on internal audit work in a continuous audit environment than in a traditional environment, and this effect is amplified when the audit report of the previous year indicates that the effectiveness of internal controls are working correct. The results indicated that auditors increase budgeted hours for the commitment at a higher rate when the customer uses traditional internal audit procedures.

In 2016, Amin and Mohamed explored the auditors' perceptions in Egypt toward the role that CA can perform in making up the challenges which face the quality of financial information that is reported online. This study also discussed the effect of the type of audit firm and years of expertise on these perceptions. The gross results showed that most auditors in Egypt agree that the CA implementation can meet the challenges related to the Internet financial reporting (IFR) environment. The results also showed that there are considerable differences between auditors working in Big 4 audit firms and those working in local companies regarding the perceptions of the effect of CA on the timeliness of information.

In 2016, Haynes and Li indicated the use of ERP software has become an essential part of conducting business for many small, medium, and large companies. This study presents a case study of accounting information specialists in different divisions of the same conglomerate in the energy industry in Houston, Texas that engaged in anti-fraud audits following the rollout of ERP systems by implementing CA processes. The results indicated that the adoption of an ERP system has a significant impact on the efficiency, fraud risk reduction, knowledge

application, as well as the credibility of the auditing team. The most important factors for the successful use of fraud mitigation techniques rely on ERP systems, which have continuous audit functions.

In 2019, Neamah and Hasan aimed to demonstrate the role of CA in activating the reliability of the ERP system. The findings of the study indicated that the application of CA techniques in enterprises that implement the ERP system helps to create an environment that allows efficient and effective control of the enterprise. In addition, the use of CA techniques helps to create a competitive advantage for enterprises that implement the ERP system by providing appropriate, reliable, and timely information that helps the decision maker to reach the right decision at the lowest cost and as quickly as possible.

In 2020, El-Serafy aimed to develop a proposed framework using CA technology adoption in ERP system to improve internal audit performance. To achieve this goal, the levels of changing from traditional auditing to CA in ERP system have been presented, the study results indicated that there is a significant relationship between adopting CA in ERP system and the internal audit performance, and there is a significant impact of adopting CA technology on improving internal audit performance, develop a proposed framework by using CA technology adoption in ERP system to improve internal audit performance.

In 2020, Al-Tarawneh, et al., indicated that the business experienced to implement ERP systems for improving operations then internal and external auditors facing new challenges need to improve their understanding within ERP environment, within ISA 610 does the external auditors mostly rely on the internal auditors' work under ERP continuous auditing. The study revealed that external auditor relies on continuous internal auditor work using ISA 610, which may indicate the need to improve external auditors' abilities in understanding and auditing computerized systems in general, especially auditing ERP systems.

In 2018, Thamrin, et al., aimed to identify the factors which impact on the firm's value. The sample of the study involved of 45 manufacturing firms listed in the Indonesia Stock Exchange (ISE) that contained financial statements during the years (2012-2016). The study results showed that at the same time the firms' value



was affected by investment decisions, financial decisions, and financial performance. The findings found that the decisions of investment and the performance of the company have a positive relationship to firm's value, but the decisions of financing have a negative impact on the value of the firm. In addition, the lateness of the firm's value demonstrated the long-term influence on the value of the firm model.

In 2021, Putri, et al., aimed to assess the effect of profitability, business risk, and intellectual capital on company value. The results showed that profitability as measured by Return on Equity (ROE) does not give any influence on the company value, business risk as measured by business risk (BRISK) give positive influence on the company value, and intellectual capital as measured by value added intellectual capital (VAIC) does not give any influence on the company value.

In 2019, Hsiung, et al., explored the impact of the company's adoption of ERP systems on firm value, and to understand whether the successful setting of multiple ERP systems would affect firm value. The empirical results of this study indicated: The positive relationship between the enterprise's adoption of the ERP system and the firm value, that is, the adoption of the ERP system enhanced the firm value. The number of adoption ERP systems had a positive reaction with the firm value. It showed that the company introduced different systems, which further integrated enterprise process requirements and created firm value. The introduction period of the enterprise guidance ERP system had a negative relationship with the firm value, it is showed that the company successfully introduced the system and launched it in the shortest time, the fastest the enterprise used the ERP system for management and operation, so enhanced the firm value.

In 2020, Nur and Putra showed that it is important to implement information technology for value improvement, such as ERP implementation. This study aimed to examine the effect of ERP implementation on oil and gas firm value. The conclusions of the study appeared that ERP implementation increases firm value. ERP provides higher information quality, integrated relationship among firm's functions and departments, integrated relation between supplier and customer, as well as efficiency in resource usage.

**Previous studies declared that:**

- The necessity of the external auditor's cooperation with IT department when carrying out the CA and the importance of cooperation between the external auditor and the internal audit department to assure the continuous examination of electronic systems.
- Clarifying the importance of qualifying and training auditors to use automated applications, as the application of new technology requires a lot of qualifications and training, and there is a lack of training centers.
- The traditional auditing changes its way toward CA which widely uses information technologies and transform from manual to automation, CA would be more effective than a periodic audit, CA for the corporate transactions is not a new one, but innovations in technology have redefined it. The mechanism of CA depends on the capability of the system to detect frauds, prevent errors, risk taking and assess the type of risk effectively which in turn reflected to improve the firm's value.
- ERP systems increase the quality of financial information, obtain immediate information, and provide information in a timely to serve decision makers, which can contribute to improve the firm's value.
- This study will discuss the impact of CA in ERP system's environment on maximizing the firm's value (A field study), the contribution of applying CA in ERP system should be beneficiary for the auditors. The previous studies did not discuss the impact of CA in ERP system on the firm's value. Therefore, this is what the current study seeks by testing the study hypotheses to realize the extent to which the impact of CA in ERP system on the firm's value.

**The current study differs from previous studies in the following:**

- The study deals with the performance of CA by the external audit firms, as most of the studies dealt with CA as one of the tasks of the internal audit.

- This study complements the literature and extends its scope to include the impact of CA in ERP system on maximizing the firm's value.
- The current study provides empirical evidence about the impact of CA in ERP system on maximizing the firm's value.
- The study is characterized as being conducted in the Egyptian business environment, which differs from the majority of studies conducted in a foreign business environment.
- Applying CA in ERP system to maximize the firm's value is a new trend, which has become an essential requirement after the acceleration of new technologies and the use of information technology systems that can be useful for Egyptian companies.

Therefore, the hypotheses can be developed as follows:

H1: "There are no significant differences among the study categories about the impact of CA in ERP system on the firm's value".

H2: "There is no significant relationship between applying CA in ERP system and the firm's value".

H3: "There is no significant impact of applying CA in ERP system on maximizing the firm's value".

### **3- CA in ERP System**

The need for CA has increased in the global digital economy. Modern computer-based systems make it possible to measure and monitor business processes at an unprecedented level of detail in a real- or near real-time basis. This empowers auditors to become increasingly dependent on computer technology and software tools like ERP system (Singh, et al., 2014).

Advances in ERP systems, CA software for governance, risk, and compliance (GRC), data modeling and data analytics and other tools and techniques have made accurate, detailed, and timely financial information and data available, creating a technological infrastructure for the use of CA. The implementation of ERP systems

and related technologies precede CA implementation. However, ERP systems, the investment that is justified for management control purposes, are dual-use and adaptive to support CA. For reasons related cost, efficiency, and effectiveness (Sun, et al., 2015, p.192).

(Haynes & Li, 2016) showed that the adoption of an ERP system has a significant effect on the efficiency, fraud risk reduction, application of knowledge, as well as the credibility of the auditing team. The most important factors for the successful use of fraud mitigation techniques are based on ERP systems, which have continuous audit functions.

CA is based on two fundamental issues (Hazer, 2021, p.254):

- The audit of a transaction is done as it is happening or in a very short time, so that the anomalies are detected in real time.
- A report is issued after the audit. This report can be a formal one or a list of anomalies.

The realization of these fundamental issues enables auditors to give written assurance on the audit domain in real time.

Enterprise Resource Planning (ERP) systems are the largest software packages of information systems, which integrates all the units in an organization at the information level. The utilization of ERP system is a key point for a successful enterprise because ERP system is one of the most widely accepted choices to obtain competitive advantage for manufacturing companies (Nguyen, et al., 2021, p.127; Berić, et al., 2018, p.400).

### **3-1 CA objectives**

- 1) Businesses are shifting over to a CA because, it is to simplify the procedure of providing timely assurance on that business processes are well-controlled and complies with the business's objectives to ensure reliable results (Teeter, 2014).

- 2) CA process aims to reduce overall costs and distribute the work throughout the entire year. Simultaneously, CA, in conjunction with systems like ERP, can improve the accuracy and reliability of financial statements, while also reducing the time to produce them (Ragan, et al., 2014, p.350).
- 3) CA methodologies increase audit coverage and higher-risk areas with far less labor intensive and thus have the possibility of reducing the current constraints enabling a timelier assurance (Gonzalez, et al., 2012).
- 4) The final goal of a CA program should be to open an organization to independent and external scrutiny thereby establishing broad-based trust, which obviates the need for costly auditing (Baksa, 2015, p.30).

### **3-2 Core components of CA**

Technology is more efficient than it used to be and at a lower cost. innovations were specified to be critical in a CA system: (Abo, 2014, p.17).

- A powerful processor: for real-time reporting.
- Disk mirroring: Redundant Array of Independent Disks (RAID) allowed for mass storage capability.
- Extensive amounts of inexpensive storage: this was allowed by the evolution of petabytes; they are the next unit of measure after terabytes and allows for more storage space at the same cost.
- Security: the data must be transferred or stored electronically. data reliability is one of the assurances that the system has to offer.

**3-3 Conditions that must be considered when implementing CA in ERP system:** (Fouad, 2016, p.586).

- 1- The necessity for the external auditor to cooperate with the IT department when applying the continuous audit approach.
- 2- The importance of cooperation between the external auditor and the internal audit department to ensure continuous examination of electronic systems.
- 3- The importance of qualifying auditors to use automated applications.

Implementing the CA system offer an innovative approach to auditing in the ERP-based environment because it facilitates both internal auditor and external auditor to achieve the audit objectives efficiently and effectively. So, firms should focus on 3 changes: (1) shifting from periodic auditing to CA; (2) moving from an auditing approach that relies on information collected by individuals to one which uses electronic system, including ERP system; and (3) adoption of a risk-based auditing support system (Shin, et al., 2013, p.593).

### **3-4 Methodology of CA in ERP System**

Many studies have considered the advantages of applying CA in ERP system (Shin, et al., 2013; Razaee, 2013; Kanellou & Spathis, 2011, 2013) as follows:

- CA technology in ERP system adds value to business reports published electronically due to timely submission of the audit report, timely disclosure, and fraud of financial information, ensuring that information is safe, accurate, and reliable in decision-making.
- CA technology in ERP system gives confidence and credibility to business reports because of issuing customized reports suitable for internal and external use.
- Comprehensiveness and flexibility by providing website protection services.

Therefore, Relying on CA by the external auditor in the ERP system environment contributes to improving the quality of electronic business reports because of providing the audit report immediately. The use of CA helps to create a competitive advantage for companies that apply ERP system by providing relevant, reliable, and timely information at the lowest cost and as quickly as possible and reducing fraud and risk and enhancing audit effectiveness and efficiency.

### **4- Firm's Value**

In the era of globalization and rapid technological advances today, the development of the business world, both in the service sector and in production, is developing very rapidly, this has an impact on business competition between companies, and it requires each company to improve its performance to be able to compete for market position and maintain business continuity so that the

company's goals are achieved properly. The main objective of publicly companies is to increase the prosperity of company owners or shareholders by increasing company value. This is because firm value is a parameter of the success level of company management in managing its resources (Salim & Firdaus, 2020, p.41).

According to (Momon, et al., 2021, p.42) defined Firm value is:

“The sum of the present value of future cash flows generated by the company's current assets plus potential investment projects. The current share value not only reflects current earnings capacity but also reflects expectations of future operating and investment performance. Firm value can be seen from the maximization of shareholder wealth. Firm value is related to stock prices, by looking at high stock prices, the firm value is also high. A high firm value will make the market believe not only in the company's current performance but also in the company's prospects”.

Financial performance provides information needed by investors, and Firm's value is used to reflect the real value of the company more realistically by considering the concept of market value. The investors need the actual value of the firm to be a factor to consider for them to invest in the company (Harnida, et al., 2021, p.791).

Firm value is especially critical to more organizations and investors because it represents the true value of the company. The major goal of investors is to choose a company that will certainly bring profits to them as much as possible. This means that every company must have good performance to show that it is wealthy, stable, and reliable for more and more investment to come into the firm (Le Ha & Minh, 2020, p.626).

#### **4-1 Firm's value objectives**

- Generally, a company will always try to achieve its goals, both short-term goals such as maximizing corporate profits with resources owned and long-term goals such as being able to increase firm value and the welfare of shareholders (Bandanuji & Khoiruddin, 2020, p.200). The primary objective of the company in the business world is to maximize the value of the firm and get maximum profit. Corporate value is not only influenced by

economic performance but can also come from performance obtain from social activities (Ardillah, 2018, p.60).

- The main purpose of the company, according to the theory of the firm, is to maximize the wealth or value of the company. Maximizing the firm value is very important for a company, because by maximizing the value of the company, one also maximizes shareholder wealth, which is the main goal of the company. The company value is reflected in the bargaining power of the stock; if the company is seen as a company that has a good prospect in the future, the value of the stock will be very high (Hirdinis, 2019, p.177).

#### **4-2 Benefits of ERP system for the firm: (Nur & Putra, 2020)**

- Help firm to make less costly and timely accounting process.
- Increase employee effectively to generate sales and reduce production cost.
- Help the firm activities to be automated.
- Improve higher financial performance (such as return on investment and assets turnover), and market give positive response to it.
- Help firm to improve return on assets.
- Improve firm productivity.
- Improves supply chain performance to generate revenue.
- Improves information integration to generate better information quality.
- Helps manager to perform better monitoring and control function. Integrated system can eliminate limitation across firms' functions so manager can get reliable information to make best decision.
- Help firm to reduce the needs of large employees and working forces.

Therefore, the implementation of ERP system helps firm business in many aspects (include in operational, financial, market share aspects), it can be concluded that ERP system implementation has positive effect on firm value.

The adoption of ERP system increases the firm value because investors believed that the introduction of ERP systems into enterprises would accelerate the process timeliness, production efficiency, improved business processes and productivity,



the market value of firms could be increased, so improved the firm's value (Hsiung, et al., 2019).

#### **4-3 The impact of CA in ERP system on maximizing the Firm's value**

Modern companies can create added value and competitive advantage if have the ability in technology and innovation. By knowing the competitive advantage, the company will be able to maximize its strength to compete with other companies. If the company's competitive advantage can be maximized, the company's ability to generate greater profits that shows the company's financial performance is increasing in one direction with a better company value. In conjunction with the stakeholder theory, it is explained that all company activities lead to value creation, value ownership and utilization of intellectual resources enabling companies to achieve competitive advantage and increase added value (Setiany, et al., 2020).

The application of CA technologies in ERP system increases the confidence managers and employees place in data for decision making and reporting. This in turn should improve the speed and quality of decision-making. In addition to improving speed and quality of decisions, technology can provide business value to an organization. Business value includes a sustainable competitive advantage, positive return on investments, higher productivity, and lower costs. If the CA technology reduces the cost of internal control, the cost of compliance, as well as increases the effectiveness of the audit process, then this creates positive business value (Vasarhelyi, et al, 2012; Rikhardsson & Dull, 2016).

There are several advantages of adoption CA in ERP system which have positive impact on organizations are categorized into (Wiegerinck, 2019):

- Reduce risk (higher quality of business process).
- Reduce costs on the audit (by greater productivity, increase in effectiveness, reducing the existing the workload on the audit results in reducing the time and costs on an audit spend, higher quality of the audit).
- Creates value for organization, value creation is mentioned as (more frequent audit, improved reporting and decision making, the scalability of CA).

Hence, applying CA in ERP system offers numerous features to organizations, including cost savings, greater accounting accuracy, provides early detection of discrepancies within the accounts, improving profitability, continuous inspection, more timely disclosure of accurate financial information, enhanced fraud risk management, and reinforcing investors' confidence (Gonzalez & Hoffman, 2018). Using of these benefits will improve and maximize the firm's value. Therefore, the application of CA in ERP system has a positive impact on the firm's value.

## **5-Methodology:**

The field study includes a description of the audit firms applied CA technology and companies that applied ERP system in Egypt, society, sample, the data collection method, and statistical techniques.

### **5-1 Population and Sample:**

The authors distributed the questionnaire lists with in the selected audit firms, as these firms already applied CA and companies applying ERP system related to the study. The study sample consisted of (74) external auditors with a percentage of (38%), (72) of academics with a percentage of (37%) and (51) IT staff with a percentage of (26%). The final number of questionnaires lists totaled (197). The questionnaire lists were distributed to the study sample to answer at a specific time, then the data were collected and statistically analyzed after testing statistical viability for the normal distribution of the data, where the response rate can be illustrated in table (1):

**Table (1)**

**Distribution of the Study Sample According to the Response Rate**

Statement	Frequency	Percent	Valid Percent	Cumulative Percent
External auditors	74	37.6	37.6	37.6
Academics	72	36.5	36.5	74.1
IT Staff	51	25.9	25.9	100.0
Total	197	100.0	100.0	

(Source: researcher's calculation)

- Distribution of the study sample and community according to the scientific qualification.

**Table (2)**

**Distribution of the study sample according to the scientific qualification**

Qualification	Frequency	Percent
BSc	98	49.7
Diploma	26	13.2
MSc	40	20.3
PhD	33	16.8
<b>Total</b>	<b>197</b>	<b>100.0</b>

(Source: researcher's calculation)

The table (2) illustrates that a big number of the respondents have a high level of education (Diploma, MSc, and PhD), as they represent (50.3%) about half of the respondents.

Distribution of the study sample and community according to experience in the academic and auditing field.

**Table (3)**

**Distribution of the study sample according to experience in the academic and auditing field**

Experience in Academic and Audit	Frequency	Percent
Less than 5 years	26	13.2
Between 5-10 years	107	54.3
More than 10 years	64	32.5
<b>Total</b>	<b>197</b>	<b>100.0</b>

(Source: researcher's calculation)

The table (3) shows the high level of academic and auditing experience, as (86.8) of the respondents have more than 5 years of experience and deal with their profession for a reasonable period.

- Distribution of the study sample according to training courses.

**Table (4)**

**Distribution of the study sample according to training courses**

<b>Training courses</b>	<b>Frequency</b>	<b>Percent</b>
Continuous	141	71.6
Don't have	14	7.1
Other	42	21.3
Total	197	100.0

(Source: researcher's calculation)

The table (4) declares the high level of training courses, as (71.6%) of the respondents who have continuous courses.

Through the previous presentation it is possible to confirm the possibility of relying on the results obtained as they are based on a high balance of experience and education.

### **5-2 Study Variables:**

- Independent variable (X) is the CA in ERP system including variables from X1 to X6 totaling (44) factors.
- Dependent Variable (Y) is Firm's Value including variables from Y1 to Y3 totaling (23) factors.

### **5-3 Data Collection:**

The authors depended on the following resources to achieve the main study objective:

- ❖ The questionnaire list is considered as a basic tool for collecting the needed data about the impact of CA in ERP system on maximizing the firm's value,

and the researchers relied on some previous Arabic and foreign studies to assist in preparing the required questionnaire about the field study.

- ❖ The researchers used the questionnaire list to collect the needed data through the chosen sample of external auditors, academics, and IT staff (Specialists in the field of designing and programming information systems) represented by the study population.

#### **5-4 Statistical Techniques**

Many statistical techniques have been used in the study as follows:

- Descriptive Analysis, Cronbach's Alpha, One-Sample Kolmogorov-Smirnov Test, Kruskal-Wallis Test, Correlation analysis, and Multiple Regression Analysis.

#### **The validity and reliability of the study variables**

To determine the efficiency of the questionnaire list, the researcher can use the test of Cronbach's Alpha which measures the reliability and stability of the survey. According to statistical standards, the value is accepted in case of the desired limits (equal or greater than 60%) to apply the results to the study population.

#### **The reliability of measurements in the Study**

It means that the same results of the measurements will be given in case of redistributing them at any time and under the same conditions. To test the reliability and stability of the questionnaire, Cronbach's Alpha test is used.

#### **The validity of the Items in the Study**

The validity of any measurements was confirmed through the reliability coefficient, as it was one of the main statistical methods.

**Table (5)**  
**The reliability & validity of the basic variables in the survey**

Basic Axes of the Questionnaire	Coding	Number of statements	Reliability coefficient	Validity coefficient
Reasons for applying CA in ERP system	X1	9	0.663	0.814
Motives for using CA by the external auditor	X2	6	0.756	0.869
Advantages of applying CA in ERP system	X3	11	0.755	0.868
Conditions and requirements for applying CA in ERP system	X4	7	0.698	0.835
Characteristics of CA in ERP system	X5	6	0.569	0.754
Challenges of Applying CA in ERP system	X6	5	0.766	0.875
Total Items of (X)		44	0.879	0.937
The impact of applying ERP system on the firm's value	Y1	4	0.805	0.897
Benefits of applying ERP system for a company's business	Y2	7	0.640	0.8
The impact of CA in ERP system on maximizing the Firm's value	Y3	12	0.804	0.896
Total Items of (Y)		23	0.876	0.936
Total Items of (X & Y)		67	0.932	0.965

(Source: researcher's calculation)

- Table (5) illustrates that the value of validity coefficient at the survey level in general is (96.5%), which is statistically good. The validity coefficient values for all the questions and axes of the survey list are (0.814, 0.869, 0.868, 0.835, 0.754, 0.875, 0.897, 0.8, 0.896) also statistically good. The validity coefficient is 60% or more.
- Table (5) also shows that the value of the reliability coefficient at the survey level in general is (93.2%), which is statistically good. The reliability coefficient values for all the questions and statements of the

survey list are (0.663, 0.756, 0.755, 0.698, 0.569, 0.766, 0.805, 0.640, 0.804) also statistically good. The reliability coefficient is 60% or more. Therefore, the survey list has a high degree of internal consistency and reliability, and the researcher can rely on them to achieve the objectives of the study and popularize the results.

**Table (6)**  
**The results of (Kolmogorov-Smirnov) test for the normal distribution of the data**

<b>Coding</b>	<b>Questionnaire Axes</b>	<b>Test Statistic</b>	<b>P-value</b>
X1	Reasons for applying Continuous auditing in ERP system.	0.155	.000
X2	Motives for using Continuous auditing by the external auditor.	0.219	.000
X3	Advantages of applying CA in ERP system.	0.118	.000
X4	Conditions and requirements for applying CA in ERP system.	0.186	.000
X5	Characteristics of CA in ERP system.	0.177	.000
X6	Challenges of Applying Continuous Auditing in ERP system.	0.143	.000
Y1	The impact of applying ERP system on the firm's value.	0.167	.000
Y2	Benefits of applying ERP system for a company's business.	0.247	.000
Y3	The impact of Continuous auditing in ERP system on maximizing the Firm's value.	0.096	.000

(Source: researcher's calculation)

Table (6) illustrates that P-value (significant) for test statistic in Kolmogorov test is less than (0.05), so the data does not follow the normal distribution. On the other

hand, the researcher will rely on nonparametric tests to prove the hypotheses validity and achieve more accurate results.

## **Results Discussion and Hypothesis Testing**

### **Testing the First Hypothesis**

“There are no significant differences among the study categories about the impact of CA in ERP system on the firm’s value”. To test this hypothesis, the researcher can use (Kruskal-Wallis Test) which aims to test the significance of differences in the mean between the study sample (external auditors, academics in Egyptian universities, IT staff) about the impact of CA in ERP system environment on maximizing the firm’s value. This test shows if there are differences between the opinions of the sample on CA in ERP system (X) and firm’s value (Y). Table (7) illustrates the results of Kruskal-Wallis Test as follow:

**Table (7)**

**Kruskal-Wallis test results related to the impact of CA in ERP system and the firm’s value**

Axes		Mean Rank			Kruskal-Wallis Test	
		External Auditors	Academics in Egyptian universities	IT staff	Chi-Square	P-value
X1	Reasons for applying CA in ERP system.	102.67	97.51	95.77	0.525	0.769
X2	Motives for using CA by the external auditor	104.95	91.81	100.52	2.062	0.357
X3	Advantages of applying CA in ERP system.	98.84	98.05	100.57	0.060	0.971
X4	Conditions and requirements for applying CA in ERP system.	95.55	104.88	95.71	1.259	0.533
X5	Characteristics of CA in ERP system.	97.76	103.22	94.84	0.721	0.697



X6	Challenges of applying CA in ERP system.	91.81	106.15	99.34	2.374	0.305
Y1	The impact of applying ERP system on the firm's value.	103.15	93.70	100.46	1.088	0.580
Y2	Benefits of applying ERP system for a company's business.	99.28	95.78	99.28	0.433	0.805
Y3	the impact of CA in ERP system on maximizing the Firm's value.	99.95	98.19	98.76	0.036	0.982

(Source: researcher's calculation)

The results of Kruskal-Wallis test according to table (7) illustrate that there are no differences among the sample members around (Reasons for applying CA in ERP system, Motives for using CA by the external auditor, Advantages of applying CA in ERP system, Conditions and requirements for applying CA in ERP system, Characteristics of CA in ERP system, Challenges of applying CA in ERP system, The impact of applying ERP system on the firm's value, Benefits of applying ERP system for a company's business, the impact of CA in ERP system on maximizing the Firm's value.) because the significance level is more than 5%.

**Table (8)**

**Kruskal-Wallis test results according to the scientific qualification**

Axes		Mean Rank				Kruskal-Wallis Test	
		BSc	Diploma	MSc	PhD	Chi-Square	P-value
X1	Reasons for applying CA in ERP system.	105.91	83.00	115.46	71.14	14.886	0.002
X2	Motives for using CA by the external auditor	109.51	89.46	102.14	71.52	12.301	0.006
X3	Advantages of applying CA in ERP system.	95.91	110.23	112.74	82.68	6.361	0.095
X4	Conditions and requirements for applying CA in ERP system.	92.26	115.17	105.25	98.70	4.118	0.249
X5	Characteristics of CA in ERP system.	91.44	120.19	122.53	76.23	17.881	0.000
X6	Challenges of applying CA in	94.13	131.88	89.25	99.36	10.830	0.013

	ERP system.						
Y1	The impact of applying ERP system on the firm's value.	103.79	99.06	115.50	64.73	16.588	0.001
Y2	Benefits of applying ERP system for a company's business.	93.77	122.63	109.55	83.12	9.332	0.025
Y3	the impact of CA in ERP system on maximizing the Firm's value.	92.07	113.15	118.98	84.23	10.212	0.017

(Source: researcher's calculation)

Table (8) proves that there are no differences among the sample opinions according to the scientific qualification regarding the variables (Advantages of applying CA in ERP system, Conditions, and requirements for applying CA in ERP system), because the significance level is more than 5%, except the variables (X1, X2, X5, X6, Y1, Y2, Y3) because all of them are less than 5%.

**Table (9)**

**Kruskal-Wallis test results according to years of experience**

Axes		Mean Rank			Kruskal-Wallis Test	
		Less than 5 years	Between 5-10 years	More than 10 years	Chi-Square	P-value
X1	Reasons for applying CA in ERP system.	119.40	109.73	72.77	20.930	0.000
X2	Motives for using CA by the external auditor	104.02	102.96	90.34	2.281	0.320
X3	Advantages of applying CA in ERP system.	56.00	97.27	119.37	23.195	0.000
X4	Conditions and requirements for applying CA in ERP system.	70.85	96.82	114.08	11.459	0.003
X5	Characteristics of CA in ERP system.	80.69	93.80	115.13	8.935	0.011
X6	Challenges of applying CA in ERP system.	130.19	77.80	121.77	33.694	0.000
Y1	The impact of applying ERP system on the firm's value.	125.33	87.06	108.27	12.397	0.002
Y2	Benefits of applying ERP system for a company's business.	81.42	96.88	109.68	4.923	0.085
Y3	the impact of CA in ERP system on maximizing the Firm's value.	59.23	98.64	115.75	18.241	0.000

(Source: researcher's calculation)

The results of table (9) declare that there are no differences among the study sample according to the years of experience regarding the variables (Motives for using CA by the external auditor, Benefits of applying ERP system for a company's business) as the significance level is more than 5%, except the variables (X1, X3, X4, X5, X6, Y1, Y3) because all of them are less than 5%.

**Table (10)**  
**Kruskal-Wallis test results according to training courses**

Axes		Mean Rank			Kruskal-Wallis Test	
		Continuous	Don't have	Other	Chi-Square	P-value
X1	Reasons for applying CA in ERP system.	88.47	148.14	117.98	20.113	0.000
X2	Motives for using CA by the external auditor	93.15	119.39	111.86	5.622	0.060
X3	Advantages of applying CA in ERP system.	96.89	107.96	103.08	0.759	0.684
X4	Conditions and requirements for applying CA in ERP system.	103.43	87.86	87.86	3.121	0.210
X5	Characteristics of CA in ERP system.	94.55	126.04	104.92	4.584	0.101
X6	Challenges of applying CA in ERP system.	97.13	116.54	99.44	1.520	0.468
Y1	The impact of applying ERP system on the firm's value.	90.46	138.11	114.62	13.401	0.001
Y2	Benefits of applying ERP system for a company's business.	95.66	113.32	105.44	1.926	0.382
Y3	The impact of CA in ERP system on maximizing the Firm's value.	94.99	119.25	105.73	3.060	0.217

(Source: researcher's calculation)

- The results of table (10) declare that there are no differences between the study sample according to the training courses around the variables: Motives for using CA by the external auditor, Advantages of applying CA in ERP system, Conditions and requirements for applying CA in ERP system, Characteristics of CA in ERP system, Challenges of applying CA in ERP system, Benefits of applying ERP system for a company's business, the

impact of CA in ERP system on maximizing the Firm's value. Because all the previous variables are more than 5% (significance level).

➤ The results also showed that there are differences among the study sample according to the training courses around the variables (Reasons for applying CA in ERP system and the impact of applying ERP system on the firm's value), as they are less than 5%.

Therefore, the researchers can accept the study hypothesis: "There are no significant differences among the study categories about the impact of CA in ERP system on the firm's value".

### Testing the Second Hypothesis

"There is no significant relationship between the applying of CA in ERP system and the firm's value ". To test this hypothesis, the spearman coefficient will be used for correlation analysis and table (11) can show the results of this test as follows:

**Table (11)**  
**Matrix correlation coefficients between the basic Variables (X & Y)**

	Statistics	CA in ERP system (X)	Firm's Value (Y)
CA in ERP system (X)	Correlation coefficient (Spearman)	1	.697**
Firm's Value (Y)	Significance level		0.000
	Correlation coefficient (Spearman)	.697**	1
	Significance level	0.000	
	Significance level (0.01)		

(Source: researcher's calculation)

- The table (11) can illustrate the strong positive correlation between the basic variables (X, Y) (CA in ERP system & Firm's Value), as the correlation coefficient is (0.697\*\*) according to the correlation of Person, and at a significance level of (1%). It is also noted that there is an assurance related to the validity of the statements that can be used to measure the study variables, therefore the basic variables (X, Y) are really correlated, as result of the previous explanation, we can refuse the second hypothesis: "There is no significant relationship between applying CA in ERP system and the firm's value" and accept alternative hypothesis that there is significant relationship between applying CA in ERP system and the firm's value.

### **Testing the Third Hypothesis**

- "There is no significant impact of applying CA in ERP system on maximizing the firm's value". The table (12) illustrates the results of multiple regression analysis as follows:

**Table (12)**  
**The results of multiple regression test related to the most important variables affecting Firm's Value**

Symbol	Variables	Unstandardized coefficients		Standardized Coefficients	T	P-value	TOL	VIF
		B	Std. Error					
X1	Reasons for applying CA in ERP system.	0.093	0.060	0.124	1.551	0.123	0.404	2.478
X2	Motives for using CA by the external auditor	0.147	0.051	0.233	2.866	0.005	0.389	2.569
X3	Advantages of applying CA in ERP system.	0.177	0.048	0.218	3.705	0.000	0.743	1.347
X4	Conditions and requirements for	0.024	0.047	0.035	0.523	0.602	0.561	1.782

	applying CA in ERP system.							
X5	Characteristics of CA in ERP system.	0.119	0.058	0.157	2.047	0.042	0.440	2.275
X6	Challenges of applying CA in ERP system.	0.171	0.034	0.296	5.022	0.000	0.745	1.342
Constant					1.075			
Correlation coefficient (R)					.714			
Determination Coefficient (R2)					.509			
Adjusted determination coefficient (Adj.R2)					.494			
F-test					32.871			
P-value					0.000			

(Source: researcher's calculation)

- ❖ Table (12) explains significance of the model in testing the most important variables affecting the dependent variable (Y), as (F-test) is (32.871) and (P-value) is (0.000), which can show that the model is valid for predicting the value of (Y) and the results have a statistical significance as the significance level is (0.000) less than (5%), which helps us in making the decision. Moreover, the variance inflation factor (VIF) for each variable is less than (10) and tolerance (T) is greater than (0.1) for each variable, meaning that there is no multi-collinearity among the explanatory variables so the researcher can rely on the results of this model. The accuracy of the regression analysis can be evaluated through the high correlation (.714) between the independent variables in the previous table and the dependent variable (Y: Firm's Value), and the determination coefficient (R2) reveals that the explanatory variables are contributing to illustrate 50.9% of the variation in (Y) dependent variable.
- ❖ The results show that the variables (Challenges of applying CA in ERP system, Advantages of applying CA in ERP system, Motives for using CA by the external auditor, Characteristics of CA in ERP system) have a positive impact on the dependent variable (Y: Firm's value) at 5%

significance level. Whether the variables (X1: Reasons for applying CA in ERP system and X4: Conditions and requirements for applying CA in ERP system) have insignificant impact on (Y) Firm's value.

We can use the following equation to illustrate the main result obviously:

$$Y = 1.075 + 0.093X_1 + 0.147X_2 + 0.177X_3 + 0.024X_4 + 0.119X_5 + 0.171X_6$$

Therefore, we can refuse the third hypothesis: "There is no significant impact of applying CA in ERP system on maximizing the firm's value" and accept the alternative hypothesis that there is a significant statistical impact of applying CA in ERP system on maximizing the firm's value.

## **6. Conclusions, Recommendations, and Future Studies**

### **6.1 Conclusions**

Applying CA in ERP system helps to create competitive advantages for companies by providing appropriate and reliable information that helps the decision maker to reach the right decisions at the lowest cost as quickly as possible and reinforcement relationships with clients.

The application of CA techniques in ERP system helps to create an environment that allows for efficient and effective control of the firm, which leads to enhance good performance of the company and better control of assets, operational and financial performance.

The results indicated that the first hypothesis "There are no significant differences between the study categories about the impact of CA in ERP system and the firm's value" was accepted.

The results indicated that the second hypothesis "There is no significant relationship between the applying of CA in ERP system and the firm's value" was rejected and accept alternative hypothesis that there is a significant relationship between applying CA in ERP system and the firm's value.

The results indicated that the third hypothesis "There is no significant impact of applying CA in ERP system on maximizing the firm's value" was rejected and accept alternative hypothesis that there is a significant impact of applying CA in ERP system on maximizing the firm's value, the results showed that the variables (Challenges of applying CA in ERP system, Advantages of applying CA in ERP system, Motives for using CA by the external auditor, Characteristics of CA in ERP system) have a positive impact on the dependent variable (Firm's value).

#### **6-2 Recommendations:**

Based on the study's findings, some recommendations can be stated in several aspects. Firstly, encouraging companies on the importance of applying CA in ERP system as one of the modern technological innovations used in preparing financial reports with the aim of creating an added value represented in providing accurate, appropriate, and reliable information to decision makers, which is reflected in raising the investors' confidence in financial reports and increasing the firm's value. Secondly, establishing continuous training and qualification courses for auditors to enable them to enhance their technological skills and developing skills related to modern computerized and electronic information systems and benefit from them in facilitating the audit process and control it. Thirdly, companies should focus on the scientific research, as this will develop new methods of doing work very well and pave the way to new technologies that can be seen in the future.



### **6-3 Study Limitations**

- There is a limitation to generalize the study results, as the authors could rely on the different audit firms applied CA and companies applying ERP system in Egypt.
- The research is limited to the role of the external auditor in performing CA in ERP system to give credibility to the information contained in the financial reports, without extending this to the role of the internal auditor in the continuous examination of the ERP system.

### **6-4 Future Studies**

The authors determined a number of future studies related to the study such as:

- ❖ The impact of the integration of ERP systems and CA on the company's competitive performance.
- ❖ Measuring the impact of ERP systems on the company's performance using non-financial indicators.
- ❖ The role of CA in XBRL in improving the quality of accounting information.
- ❖ The impact of ERP systems on the profitability of the company.
- ❖ The role of CA in predicting the company's continuity.

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